UNTAR
Universitas Tarumanagara

UNTAR untuk INDONESIA

SURAT TUGAS
Nomor: 624-R/UNTAR/PENELITIAN/II/2024

Rektor Universitas Tarumanagara, dengan ini menugaskan kepada saudara:

NURAINUN BANGUN, Dra., Ak., M.M.

Untuk melaksanakan kegiatan penelitian/publikasi ilmiah dengan data sebagai berikut:

Judul	:	Factors Influencing the Integrity of Financial Statements
Nama Media	:	Economics and Business Quarterly Reviews
Penerbit	:	The Asian Institute of Research
Volume/Tahun	:	Vol. 6, No.4 December 2023
URL Repository	:	https://www.asianinstituteofresearch.org/

Demikian Surat Tugas ini dibuat, untuk dilaksanakan dengan sebaik-baiknya dan melaporkan hasil penugasan tersebut kepada Rektor Universitas Tarumanagara

05 Februari 2024
Rektor

Prof. Dr. Ir. AGUSTINUS PURNA IRAWAN

Print Security : c354f700e899594103fce37efe375965

Disclaimer: Surat ini dicetak dari Sistem Layanan Informasi Terpadu Universitas Tarumanagara dan dinyatakan sah secara hukum.

ISSN 2775-9237 (Online)

Asian Institute of Research

Economics and Business Quarterly Reviews

Vol. 6, No.4 December 2023

Asian Institute of Research
Connecting Scholars Worldwide

Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4 December 2023

Economics and Business Quarterly Reviews
ISSN 2775-9237 (Online)

Table of Contents i

Economics and Business Quarterly Reviews Editorial Board iii

Analyzing the Influence of Internal and External Environments on Trust-Building Processes in Tolombong Garut Center, Indonesia 1
Dini Turipanam Alamanda, Ervina Idhariani, Asep Saepuloh, Muhammad Farhan Gymnastiar

Stock Price Analysis Through Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO in Health Sector Companies on the Indonesia Stock Exchange for the 2019-2022 Period 16
Annisa Digmawati, Fanny Suzuda Pohan, Zainul Kisman

Theoretical Framework on Analyzing the Relationship and its Mechanism Between Stock Markets and Bitcoin Market with Specialization in Vietnam 29
Dang Phong Nguyen, Do Hoai Linh

Motivating Factors and Online Behavior Influencing the Choice of Community-Based Tourism Preferences of Generation Z in Vietnam 39
Nguyen Thi Van Anh, Pham Minh Hoang

Exploring the Factors Influencing Purchasing Intention of Bangladeshi Consumers on E-Commerce Platform Daraz.com.bd 56
Islam Md Jahidul, Anamika P. Sunil

Does Privatisation Improve Financial and Operating Performance of a Firm? The Case of Tanzania Breweries Ltd 74
Papias Daudi Njaala

Human Capital and Institutional Ownership Roles on Profit Sustainability in Banking 95
Endang Etty Merawati, Syahril Djaddang, Ari Kristanto, Stella Natasha

Sohar Industrial Clusters: Navigating Policy Implementation Barriers 109
Abdullah Khamis Al Mukhaini, Figen Yesilada

The Impact of Regulatory Changes on the Effectiveness to Earn Positive Margin for their Investors 128
Sanja Petrinić Turković

Conceptualizing E-commerce Strategy as a Tool for Internationalization Performance 140
Joy D.M. Alokpo, James M. Kilika

Economics and Business Quarterly Reviews
ISSN 2775-9237 (Online)

Industrial Targeting in Indonesia: An Empirical Approach for Growth Diagnostics 160
Muhammad Arditya Rindimajangga

Regulation of Medical Devices – A Poland and U.S. Study: Marketing and Legal Aspects 177
Richard J. Hunter, Jr., Héctor R. Lozada, John H. Shannon, Gary H. Kritz

Factors Influencing the Integrity of Financial Statements 200
Lailah Fujianti, Nurainun Bangun, Eka Putri Wahyuningtias

Directors Gender Diversity, Company Size, Sales Growth against Financial Pressure with Intellectual Capital as Moderation 214
Masno, Supratikta, Florentina Raines

Socioeconomic and Proximate Determinants of High Fertility in Timor-Leste 230
Wilson Rajagukguk

Swipe, Tick, Buy: Exploring E-Wallet Structures that Translate Browsers into Buyers Among Gen Z and Gen Y 244
Cristina Teresa N. Lim, Edgar Chang

Compatibilities of University Entrepreneurship Program and Students' Entrepreneurial Characteristics in Indonesia 255
Bagas Narendra Parahita, Ghufronudin, Anis Suryaningsih, Nur Fatah Abidin, Lies Nurhaini

Simple Estimations of the Natural Rate of Interest in Japan with the Band-Pass Filters 266
Kazuhiko Nakahira

Audit Delay: Complexity of Company Operations as Moderation Variable 277
Karlina Johansyah, Firda Ayu Amalia, Novitasari Agus Saputri, Agung Prasetyo Nugroho Wicaksono

Impact of Credit Risk Pricing on Commercial Banks' Loan Performance in Nigeria 292
James Joel Gunen, M. C. Duru, P. P. Njiforti

Economics and Business Quarterly Reviews
ISSN 2775-9237 (Online)

Economics and Business Quarterly Reviews Editorial Board

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 1-15
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.535

Analyzing the Influence of Internal and External Environments on Trust-Building Processes in Tolombong Garut Center, Indonesia

Dini Turipanam Alamanda[1], Ervina Idhariani[1], Asep Saepuloh[1], Muhammad Farhan Gymnastiar[1]

[1] Faculty of Economics, Garut University

Correspondence: Dini Turipanam Alamanda, Garut University, Garut, 44151, Indonesia.
E-mail: manda@uniga.ac.id

Abstract
The Tolombong Center in Garut Regency, which is in Balubur Limbangan District, is one of the superior unique products of Garut Regency. However, in its development, the Center was constrained to be able to increase its production capacity due to both internal and external factors. The trust-building process is considered necessary for business actors who are members of the Center to be able to survive and be sustainable. This study aims to analyze the influence of the internal environment and the external environment on trust-building. The sampling method used is saturated sampling technique which consists of 40 tolombong entrepreneurs. The study results show that the internal and external environments significantly influence trust-building, meaning that the internal and external environments contribute to increasing trust-building. The implications of this research can be used as material for formulating Sentra strategies in Garut Regency in general and material for consideration for the formation of MSME clusters.

Keywords: Internal Environment, External Environment, Trust-Building Process, Strategic Management

1. Introduction

Micro, small, and medium-sized enterprises (MSMEs) have great potential to drive economic growth in remote and rural areas (Mohapatra et al., 2020). In many cases, MSMEs are local initiatives that utilize local resources and develop the local economy (Brook, 2010). This helps reduce the development gap between urban and rural areas. MSMEs in Indonesia generally have a small scale and are independent (Alamanda et al., 2019). It can affect the ability of MSMEs to collaborate due to limited resources and networks. In addition, MSMEs have limited access to knowledge, information and resources needed to develop effective collaboration, which can affect the ability to build relationships and mutual trust between business actors. Intense competition and market uncertainty

can create a business environment that only supports collaboration between MSMEs (Karnowati & Handayani, 2022). Mutual distrust and concern about losing competitive advantage can hinder cooperation (Setyadi, 2022).

Trust-building is key to establishing successful collaboration between MSME actors in a centre (Bogren & von Friedrichs, 2016; Noor et al., 2021). With mutual trust, cooperation and exchange of information between MSMEs may be improved, which can limit the potential of MSME centres to achieve common goals. Strong trust-building between MSME actors in centres can create closer cooperation, more efficient exchange of resources, and more innovative collaboration. This can increase the competitiveness and joint growth of MSMEs in the centres.

MSME centers usually consist of a group of MSMEs engaged in the same or similar sectors, located relatively close, interacting, and collaborating (Alamanda et al., 2022). The aim of establishing MSME centres is to increase the competitiveness and growth of MSMEs through synergy, exchange of resources, and collaboration between business actors. Garut Regency's bamboo handicraft centres, including tolombong, have potential and can contribute to the local economy. One of the Joint Business Groups (KUB) that has the potential to become a center is KUB Tolombong, located in Selaawi Village, Balubur Limbangan District, Garut Regency. Tolombong is a round concave container with a square base of tightly woven bamboo. Tolombong is useful as a place to store rice or glassware. In addition, tolombong is also used to store food and carry grain from the fields to the house. Data for 2020 shows that the area of bamboo gardens in Garut is 323.10 hectares which can produce 726,492 tons.

However, tolombong business owners in Garut Regency experienced various problems in development and operations, such as management, capital, marketing, and production. One of the main problems often faced by tolombong business owners is the need for more active participation and good interaction between businesses. Therefore, business owners must strengthen communication and interaction with business owners to build strong trust.

Internal and external factors of MSMEs are believed to influence the trust-building in the formation of MSME centres (Alamanda et al., 2019). Internal factors consist of strengths and weaknesses, while external factors consist of opportunities and threats that also have an influence. The influence of the internal and external environment on the trust-building process can vary depending on the context and characteristics of the MSME. Every MSME has unique dynamics and challenges that can affect its trust-building process. Therefore, in-depth and specific research related to certain MSME centers may need to be carried out to gain a clearer understanding of the influence of the internal and external environment on the trust-building process in that context. Based on the background of the problem, this study aims to determine the influence of internal and external factors on the trust-building process in the Tolombong Joint Business Group in the Garut Regency.

2. Literature Review

2.1. Internal and External Factors in Strategic Management

Strategic management is crucial to business success, particularly for MSMEs (Isfianadewi, 2019). These enterprises face unique challenges and must navigate internal and external factors to thrive in a competitive market. Internal factors refer to the characteristics and resources within the organization, while external factors encompass the broader business environment. Research has shown that failure factors for SMEs can be both internal and external (Jafari-Sadeghi et al., 2022). This suggests that owners of SMEs need to take on greater responsibility for learning business management skills.

Additionally, the driving effect of internal and external environments on green innovation strategy has been explored (Cao & Chen, 2019a). The study found that external environment pressures and internal environment driving forces influence the choice of green innovation strategy, with top management's environmental awareness moderating this relationship. The COVID-19 pandemic has had a significant impact on businesses, including MSMEs. A study conducted in Jakarta found that the pandemic clustered business activities into three states: survival, decline, and flourishing (Mariyudi et al., 2022). Businesses that could adjust their interaction models

using online application platforms, such as education, food/beverage delivery, and health products, could remain stable.

On the other hand, businesses heavily reliant on physical presence, such as public transportation and tourism, experienced a decline. However, some businesses, such as telecommunications, online shopping, and health products, flourished by adapting to market dynamics and utilizing online platforms. Strategic decision-making is another critical aspect of strategic management. The literature suggests that strategic decision-making processes play a vital role in the effective performance of organizations (Alhawamdeh & Alsmairat, 2019). Internal and external environmental factors influence managers' decision-making and performance. Decision support systems can also aid decision-makers by providing timely information, which can enhance the performance of strategic decisions. In the context of MSMEs, strategic management is essential for financial success. Strategic management in MSMEs is diverse, with small enterprises facing challenges such as limited access to capital and a focus on administration (Wilujeng, 2021). However, strategic management is crucial for the development and success of these enterprises. Trust-building processes are also important in strategic management. While not explicitly mentioned in the provided references, trust-building is a fundamental aspect of strategic management (Yip & Schweitzer, 2015). Trust between stakeholders, such as employees, customers, and partners, can enhance collaboration, communication, and organizational performance.

Strategic management plays a crucial role in the success of MSMEs (Alamanda et al., 2019). Internal and external factors, such as environmental pressures, innovation capabilities, and market dynamics, influence strategic decision-making and the choice of strategies. The COVID-19 pandemic has highlighted the importance of adapting to changing circumstances and utilizing online platforms. Trust-building processes are also essential for effective strategic management. Overall, strategic management is a multifaceted process that requires careful consideration of various factors to ensure the success and sustainability of MSMEs.

In the field of strategic management, internal factors, including business functions (Helmond, 2022) and management functions (Chungyas & Trinidad, 2022), play a crucial role in shaping an organization's strategic direction and overall performance. Business functions and management functions, have a direct impact on strategic management. Strategic management involves the formulation and implementation of strategies to achieve organizational goals. A study by Pearce et al., (1987) highlighted that effective strategic management requires the alignment of internal factors with the external environment. Internal factors, including business functions and management functions, provide the foundation for strategic decision-making and resource allocation.

Business functions refer to the various operational areas within an organization that are responsible for specific tasks and activities (Mamun et al., 2016). These functions, such as marketing, finance, operations, and human resources, collectively contribute to the overall success and performance of an organization. Marketing functions drive customer satisfaction, brand equity, and market share (Ebrahimi & Banaeifard, 2018). Finance functions ensure financial stability, effective resource allocation, and profitability. Operations functions enable efficient production, delivery, and quality management. Human resources functions facilitate employee engagement, talent development, and retention. Organizations must effectively manage and align these business functions to enhance performance and maintain a competitive edge (Masenya, 2022).

Management functions, including planning, organizing, leading, and controlling, are key elements of effective leadership. The literature emphasizes the impact of management functions on organizational success. According to Kotler (2017), effective management functions can provide strategic direction, inspire employees, and drive innovation. Additionally, a study by Karim & Afnan (2020) stated that Mintzberg identified ten managerial roles, including decision-making, communicating, and resource allocation, which are critical for effective management. The findings suggest that effective management functions are essential for organizational effectiveness and employee satisfaction.

Several researchers have recognized the significance of integrating business and management functions for organizational success (Tarigan et al., 2021). For instance, Almasri et al. (2013) highlighted the importance of aligning business functions with management functions to achieve strategic objectives. They argued that the

effective integration of functions facilitates coordination, enhances communication, and improves decision-making processes. Furthermore, a study by Rahimi et al. (2016) emphasized the role of management functions in integrating business functions, leading to improved operational efficiency and organizational performance.

Managing internal factors, including business and management functions, poses various challenges. For example, Silvius & Schipper (2019) identified barriers to effective integration, such as organizational silos, lack of communication, and resistance to change. Overcoming these challenges requires adopting best practices. A study by Saad et al., (2018) emphasized the importance of effective leadership, employee involvement, and clear communication channels to successfully manage internal factors. These best practices enable organizations to streamline processes, foster collaboration, and enhance overall performance.

The effective management and integration of business functions contribute to achieving competitive advantage and improved performance (Mustikowati et al., 2021). Additionally, effective management functions, including planning, organizing, leading, and controlling, are essential for effective leadership.

In the field of strategic management, external factors such as the macro environment and the industrial environment significantly influence an organization's strategic decision-making and performance (Wang & Cao, 2022). The macro environment includes broader societal forces and trends, while the industrial environment focuses on the specific industry in which an organization operates.

The macro environment encompasses various external factors that are beyond the control of an organization but have a substantial impact on its strategic management. Factors within the macro environment include political, economic, social, technological, environmental, and legal (PESTEL) influences (Vojinović et al., 2022). The industrial environment focuses on the specific industry in which an organization operates and includes factors such as competitors, customers, suppliers, and potential entrants (Walter Colombo et al., 2021). Understanding the dynamics of the industrial environment is crucial for effective strategic management. Porter's Five Forces framework is often used to analyze the competitive forces within an industry, including the bargaining power of buyers, bargaining power of suppliers, threat of new entrants, threat of substitute products or services, and intensity of competitive rivalry (Porter, 2000). Industry-specific factors, such as market structure, industry growth, and technological advancements, influence strategic decision-making.

The macro environment and the industrial environment are interconnected and influence each other in strategic management. For instance, changes in the macro environment, such as shifts in consumer preferences or technological advancements, can significantly impact the competitive dynamics within an industry. A study by Sigalas & Pekka Economou (2013), highlighted the importance of aligning an organization's resources and capabilities with the opportunities and threats arising from both the macro environment and the industrial environment. Organizations need to monitor and adapt to changes in both environments to remain competitive and achieve strategic objectives.

Organizations employ various strategic responses to effectively manage external factors in the macro environment and the industrial environment. These responses include adaptation, differentiation, collaboration, and innovation. For example, a study by Veliyath & D'Aveni (1996) highlighted the importance of strategic maneuvering, such as creating new markets or disrupting existing ones, in response to changes in the industrial environment. Additionally, organizations may engage in collaborations or strategic alliances to leverage resources and capabilities in the face of external challenges.

2.2 Trust-Building Process

Trust plays a vital role in the success and growth of Micro, Small, and Medium Enterprises (MSMEs) and clustered MSMEs. The trust-building process involves developing and nurturing relationships among various stakeholders, including business owners, employees, customers, suppliers, and partners. Trust-building is particularly critical for MSMEs due to their limited resources and their need to establish and maintain relationships with customers, suppliers, and other stakeholders. Studies have shown that trust positively impacts various aspects of MSME

performance, such as customer loyalty, supplier relationships, and employee commitment. For instance, (Borges et al., 2021)highlighted that trust facilitates information exchange and cooperation among stakeholders, leading to improved performance and business outcomes. Trust-building strategies in MSMEs involve consistent communication, reliability, and fulfilling commitments.

Several factors contribute to the trust-building process in MSMEs and clustered MSMEs. These factors include communication, reliability, competence, shared values, reputation, and governance mechanisms. Effective communication, both internal and external, fosters understanding, transparency, and openness among stakeholders. Reliability refers to fulfilling promises and delivering products or services as agreed upon. Competence refers to the perceived expertise and skills of the parties involved. Shared values and mutual understanding create a foundation for trust, while reputation serves as a signal of trustworthiness. Governance mechanisms, such as contracts, legal frameworks, and industry associations, provide a formal structure to build and maintain trust.

MSMEs and clustered MSMEs face specific challenges in the trust-building process. Limited resources, information asymmetry, lack of established reputation, and cultural differences can hinder trust formation. For instance, Khanra et al. (2021) highlighted that smaller firms often struggle with limited resources and face challenges in building trust due to information gaps and uncertainties. Overcoming these challenges requires proactive efforts to establish credibility, develop long-term relationships, and invest in building trust through repeated interactions and shared experiences.

Trust enhances relationships, fosters cooperation, and improves various aspects of organizational performance. Effective trust-building strategies involve consistent communication, reliability, competence, shared values, reputation, and governance mechanisms. However, MSMEs and clustered MSMEs face unique challenges in the trust-building process, including limited resources and information asymmetry (Peter Timmer, 2022). Overcoming these challenges requires proactive efforts, collaborative approaches, and investment in long-term relationships.

Taking initiative, owing action, driving results, building credibility, and exuding authenticity are essential components of building trust, they represent specific behaviors and qualities that contribute to establishing and nurturing trust within relationships. Taking initiative involves being proactive and demonstrating a willingness to go above and beyond expectations. Individuals who take initiative are self-starters and actively seek opportunities to contribute, solve problems, and add value. By taking the initiative, individuals show their commitment to the relationship and their willingness to invest effort and resources. This behavior fosters trust by showcasing reliability, dedication, and a genuine interest in the success of the partnership.

Owning action refers to being accountable for one's words, decisions, and commitments. When individuals take ownership of their actions, they accept responsibility for their behaviors and outcomes. This attribute is crucial in trust-building as it demonstrates reliability and integrity. By owning their actions, individuals show that they can be trusted to follow through on their promises, meet deadlines, and take responsibility for any mistakes or shortcomings.

Driving results entails being focused on achieving goals, delivering high-quality work, and consistently meeting or exceeding expectations. Individuals who prioritize driving results demonstrate competence and a commitment to excellence. By consistently delivering on commitments and producing positive outcomes, they establish a reputation for reliability and build trust among their peers and stakeholders.

Building credibility involves establishing a track record of honesty, competence, and reliability over time. It requires consistently demonstrating integrity, being transparent in communications, and delivering on promises. Credible individuals inspire trust because they consistently act in alignment with their words, maintain confidentiality when necessary, and exhibit ethical behavior. Building credibility is a gradual process that relies on consistently upholding ethical standards and consistently delivering on commitments.

Exuding authenticity means being genuine, transparent, and true to oneself. Authentic individuals are comfortable with their strengths and weaknesses and do not feel the need to pretend or present a false image. They build trust

by being honest, transparent, and sincere in their interactions. Authenticity creates an environment of openness and fosters trust by allowing others to feel comfortable and confident in their interactions. Taking initiative, owning action, driving results, building credibility, and exuding authenticity are all integral components of the trust-building process. These attributes contribute to establishing and nurturing trust within relationships by demonstrating reliability, accountability, competence, and authenticity. By embodying these qualities, individuals can create an environment of trust where collaboration, openness, and mutual respect can thrive. In this study, the trust-building process used is derived from the concept (Vaidyhanatan, 2019), which includes:

1. Taking initiative is a form of individual awareness that realizes that one needs to do something to meet personal needs or to achieve certain goals, with indicators: participate actively, demonstrate optimism, and prioritize the community.
2. Owning action refers to actions, actions, or behaviors carried out by someone in his life to achieve the expected goals. The indicators consist of following up, planning, and demonstrating integrity.
3. Driving results are made or produced by someone through certain efforts and implementations. To achieve the desired result, a person must try his best according to his abilities. Indicators of this dimension include: collaborating, executing to plan, and achieving.
4. Building Credibility is an important measure for organizations in maintaining relationships with stakeholders and their trust. The indicators in building Credibility are: owning the result, communicating the program, and managing consequences.
5. Exuding authenticity. When business is conducted according to the principles of honesty, success can be achieved. Being honest is also a strong foundation for the company. The indicators are: staying in line with beliefs, being vulnerable, and being honest.

Based on the description above, the framework can be described in Fig 1.

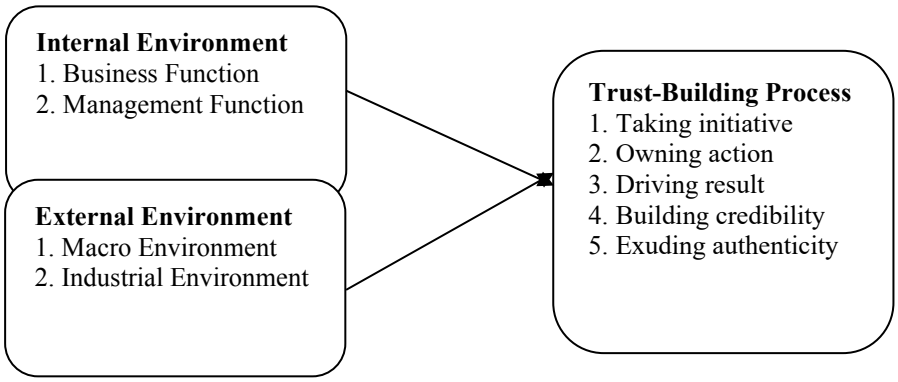


Figure 1: Conceptual Framework

Source: Authors (2023)

3. Method

This study used a quantitative method, which involved data collection and interpretation of the data obtained. The data used in this study were obtained through questionnaires and surveys. This research was included in descriptive and associative research because it intends to describe and verify the influence of the internal and external environments on the trust-building process at the Tolombong Garut MSME Center. The population in this study were all business owners of Tolombong Centre in Selaawi Village, Balubur Limbangan District, Garut Regency. The sampling technique is saturated because the population is relatively small (40 Tolombong business owners). Data were collected using research instruments and analyzed using the PLS-SEM quantitative method.

In the measurement technique in this study, the measuring tool used was a questionnaire made with an orderly structure. This research uses a Likert scale analysis suitable for measuring MSMEs' attitudes, views, and

perceptions towards the trust-building process. Based on the time, this research was used cross-sectional method because it was conducted in January - June 2023. Once collected, the data was analyzed using the Partial Least Square (PLS) -Structural Equation Modeling (SEM) analysis technique with the help of WarpPLS version 5.

There are three test stages in the WarpPLS analysis (Amaliana et al., 2020a), namely:

3.1 Outer Model Analysis

The outer model analysis is carried out to study the relationship between variables and their indicators. Several indicators that can assess the outer model include:

a. Convergent validity, where the outer loading value is > 0.7, communality > 0.5, and Average Variance Extracted (AVE) > 0.5. A loading factor score between 0.50-0.60 is still acceptable if the model is still under development.
b. Discriminant validity, the value of the cross-loading factor, is used to determine the discriminant validity of a construct. The correlation between the construct and other constructs in the model is also examined. The model has good discriminant validity if the AVE value of each construct is greater than the correlation between the constructs in the model. Therefore, discriminant validity occurs when two different instruments measuring two different constructs are uncorrelated, and their scores are also uncorrelated.
c. Composite reliability or combined reliability is a latent variable that can be said to have good reliability if a construct meets the "role of thumb" criteria, namely, the combined reliability value > 0.7 and Cronbach's alpha value > 0.7.
d. The ideal Average Variance Extracted (AVE) > 0.5, indicating that more than half of the variance of the measured construct can be explained by the indicators used in the measurement. In other words, the higher the AVE value, the better the quality of the measured constructs.

3.2 Inner Model (Structural Model)

Inner model analysis can provide important information in evaluating the quality of a model and its accuracy in predicting survey results. If the Q^2 value > 0, then the model has good predictive relevance, but if the Q^2 value ≤ 0, then the model has poor predictive relevance.

3.3 Hypothesis Testing

H_{01}: $\rho = 0$, the internal environment has no significant effect on the trust-building process of the Tolombong Garut Center.
H_{11}: $\rho \neq 0$, the internal environment has significant effect on the trust-building process of the Tolombong Garut Center
H_{02}: $\rho = 0$, the external environment has no significant effect on the trust-building process of the Tolombong Garut Center.
H_{12}: $\rho \neq 0$, the external environment has significant effect on the trust-building process of the Tolombong Garut Center

If the significance value is > 0.05 then H_0 is rejected then H_1 is accepted, or if the significant value is <0.05 then H_0 is accepted then H_1 is rejected. The path diagram of the analysis model is presented in Fig 2.

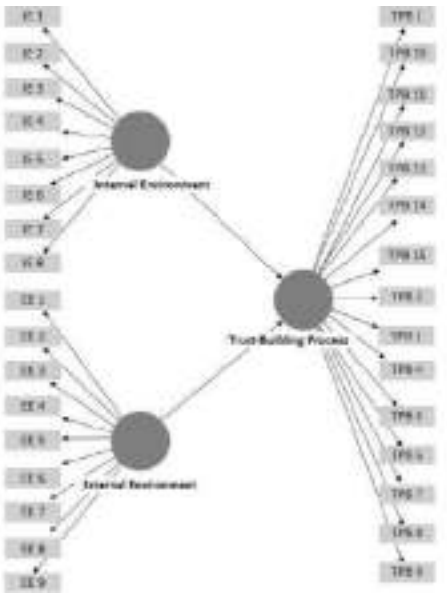


Figure 2: Measurement Model

Source: WarPLS Output (2023)

4. Result and Discussion

4.1 Outer Model Analysis

a. Convergent Validity

The indicator is considered invalid if the loading factor value is less than 0.7 or less than 0.5. If there is an indicator with a value below 0.5, it must be removed from the model to improve its validity, namely indicators LI2, LI3, LE2, LE4, LE5, LE8, LE9, TBP2, TBP3, TBP10, TBP12, TB13, TBP9, and TBP15. Fig.3 is the result of modifying the second output loading factor.

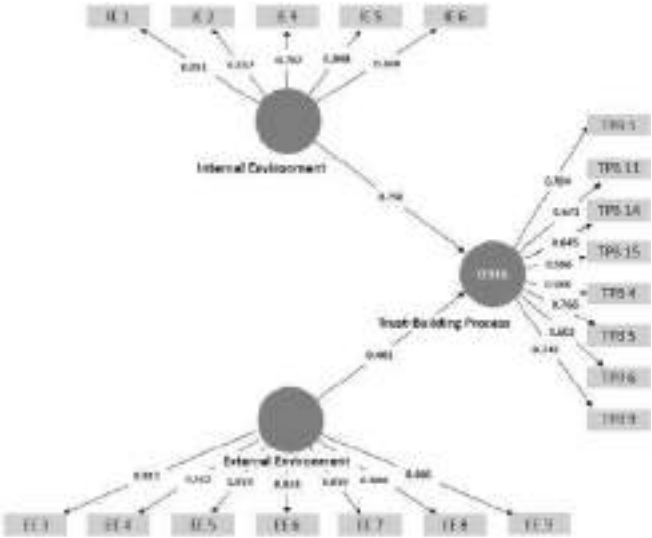


Figure 3: Loading factor

Source: WarPLS Output (2023)

Table 1: Cross Loading

	External Environment	Internal Environment	Trust-building process
LE 3	0.811	0.217	0.422
LE 4	0.912	0.320	0.604
LE 5	0.919	0.478	0.727
LE 6	0.853	0.134	0.449
LE 7	0.819	0.243	0.580
LE 8	0.806	0.045	0.333
LE 9	0.666	0.242	0.435
LI 1	0.335	0.851	0.784
LI 2	0.270	0.557	0.396
LI 4	0.073	0.767	0.588
LI 5	0.304	0.848	0.766
LI 6	0.180	0.608	0.602
TBP 1	0.335	0.851	0.784
TBP 11	0.712	0.335	0.671
TBP 14	0.774	0.338	0.645
TBP 15	0.793	0.274	0.606
TBP 4	0.073	0.767	0.588
TBP 5	0.304	0.848	0.766
TBP 6	0.180	0.608	0.602
TBP 9	0.470	0.567	0.740

Source: WarPLS Output (2023)

Based on Table 1, each indicator on the research variable has the highest cross-loading value on the related variable and is higher than the cross-loading value on the other variables. This shows that the indicators used have a good ability to differentiate variables. Evaluation of the ability of discriminant validity of these indicators can also be seen through the AVE value for each indicator. For a good model, the AVE value must exceed 0.5. The AVE values for each indicator meet the criteria, and has good discriminant validity (Table 2).

Table 2: Average Variant Extracted (AVE)

	AVE
Internal Environment	0.689
External Environment	0.542
Trust-building process	0.531

Source: WarPLS Output (2023)

In addition, composite reliability is used to test the reliability of indicators on certain variables, with a criterion value greater than 0.7. Table 3 shows that the Cronbach alpha and composite reliability values for each construct above 0.6 and 0.7 respectively, which means that all constructs in this study can be considered reliable.

Table 3: Construct Reliability

	Cronbach's Alpha	Composite Reliability
Internal Environment	0.924	0.953
External Environment	0.780	0.818
Trust-building process	0.831	0.843

4.2 Inner Model Analysis

The path coefficient of the internal environment on the trust-building process is 0.750, which is greater than the influence of the external environment on the trust-building process, which is 0.401 (Fig. 4). In addition, the variables in the model have a positive value indicating that the greater the path coefficient value of the exogenous variables on the endogenous variables, the stronger the influence between exogenous variables on the endogenous variables.

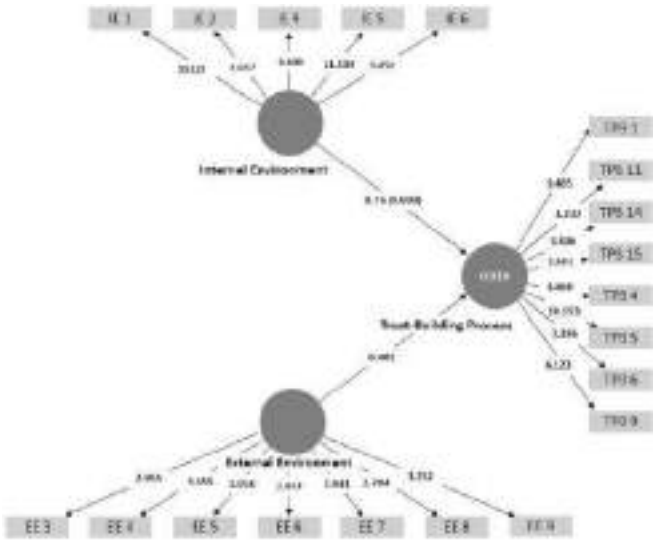


Figure 4: Inner Model
Source WarPLS Output (2023)

The internal environment has an F-Square value of 0.710, and the external environment has an F-Square value of 0.597, indicating that the internal and external environment significantly influences the trust-building process. The data processing results also show an Adjusted R-Square value of 0.911 or 91.1%; this indicates that exogenous variables can explain variations in endogenous variables, although other factors still influence outside the research model. The significance of the prediction model in testing the structural model can be seen from the t-statistic value between the endogenous and exogenous variables. Table 4 is the value of Q^2 Predictive Relevance. The results of the calculation of Q^2 in this study amounted to 0.389 or 38.9%, meaning that the model in this study has a relevant predictive value, where the model used can explain the information contained in the research data of 38.9.1%.

Table 4: Summary of Inner Model Criteria Assessment

Criteria	**Standard**	**Bootstraping Result**
Estimation of the F-Square path coefficient for the effect size	0.35 = Strong 0.15 = Moderate 0.02 = Weak	Internal Environment = 0.710 (strong) External Environment = 0.597 (strong)
Adjusted R-Square	0.67 = Strong 0.33 = Moderate 0.19 = Weak	Trust-Building Process = 0.916 (strong
Prediction (Q^2)	Q^2 > zero provides evidence that the model is predictive	Trust-Building Process = 0.389

Source: WarPLS Output (2023)

4.3 Hypothesis Testing

Hypothesis testing is done by comparing the t-statistics and t-tables. If the t-statistic value is greater than the t-table value, then the hypothesis can be considered proven. In this context, at the 95% confidence level (with an alpha of 5%), the t-table value for both hypotheses is 1.96. After testing using the bootstrapping method with SmartPLS 4.0, the results of the hypothesis are presented in Table 5.

Table 5: Path Coefficient

		Original sample (o)	Sample mean (m)	Standard deviation (stdev)	T statistics	P values
Internal Environment Trust-building process	≥	0.401	0.379	0.102	3.940	0.000
External Environment Trust-building process	≥	0.750	0.753	0.083	8.990	0.000

Source: WarPLS Output (2023)

The internal environment within the *Tolombong* Center significantly influences the trust-building process for business actors. This result is supported by the positive path coefficient value of 0.410 and the p-values , which indicate an influence between the internal environment variables and the trust-building process, which is equal to 0.000. In addition, the T-statistic value, which is quite large with a value of 3.940, also shows positive results. That is, the results of this study indicate that the better the internal environment in the *Tolombong* Centers, the more the trust-building process in *Tolombong* business actors will improve.

Good business and management functions can influence MSMEs' trust in other MSMEs in a central ecosystem (Alamanda et al., 2019). If MSMEs can produce high-quality products or services, other MSMEs will feel more confident about them. Good quality reflects a commitment to customer satisfaction and demonstrates professionalism in business. Setting competitive prices can help build trust between SMEs. Other MSMEs will trust and cooperate with those offering reasonable and fair prices. MSMEs that comply with the rules and regulations that apply in their business show responsibility and integrity and can increase the trust of other MSMEs in the central ecosystem (Bogren & Friedrichs, 2016; Vaidyhanatan, 2019; Yip & Schweitzer, 2015).

Clear and open communication between MSMEs can help build trust (Isfianadewi, 2019). MSMEs that can communicate well regarding business plans, policies, and problems that may arise will gain the trust of other MSMEs. Running business operations reliably and consistently builds trust. MSMEs that can be relied upon in terms of timely product delivery, honest transaction settlement, and fulfilling commitments will earn the trust of other MSMEs. MSMEs willing to collaborate and share knowledge with others can build trust and strengthen relationships within the central ecosystem. Through exchanging information and experiences, MSMEs can support each other and grow together. MSMEs that run a business with good integrity and ethics will gain the trust of other MSMEs. Strong business ethical principles like honesty, fairness, and social responsibility will help build a good reputation and trust within the central ecosystem.

Although several studies have found that internal factors do not affect the trust-building process (Cao & Chen, 2019b; Jafari-Sadeghi et al., 2022; Wilujeng, 2021), the results of this study believe that good business and management functions complement and support each other in building trust between MSMEs in the central ecosystem. By having solid business and management practices, MSMEs can strengthen collaborative relationships and generate mutual benefits within the ecosystem.

At the *Tolombong* Garut Center, the internal environment could be better. In general, each MSME still needs

production governance and carries out production processes based on routines. An unorganized internal environment results in operational inefficiencies in the *Tolombong* Garut Center. In business, change is inevitable. *Tolombong* Garut Center players realize that there has yet to be any innovation in their business, which makes *Tolombong* MSME players believe that when they lose opportunities or cannot adapt quickly to market changes.

So far, *Tolombong* MSMEs need to pay more attention to matters such as integrity, transparency, or openness, so stakeholders such as the government and potential investors doubt the ability of MSMEs to deliver promised results or comply with business ethics standards. In addition, the limited production funds make *Tolombong* MSME give good wages to their employees. Young employees have the potential to seek a better work environment, which can negatively impact the operational continuity of MSMEs, and only employees who are old and still have family ties survive.

In addition to the internal environment, the external environment at the *Tolombong* Center has a significant role in the trust-building process for *tolombong* business actors in Garut Regency. This can be proven by the positive and significant path coefficient value of 0.750 and the relationship between the external environment and the trust-building process which is statistically significant with a p-values of 0.000. In addition, the t-statistic value, which is relatively high at 8,990, also shows positive results. This means that the better the external environment at the *Tolombong* Center, the more the trust-building process for the *Tolombong* business actors will improve.

Trust-building is essential in the relationship between the organization and various stakeholders (Amaliana et al., 2020b). Trust-building can include the trust of customers, employees, business partners, governments, and the general public. In this context, the macro environment and industrial environment significantly influence the trust-building process.

Tolombong Garut MSMEs need help to access the capital or funding needed to increase production activities. Government support regarding low-interest loan programs, subsidized funding, or adequate financing schemes can help *Tolombong* Garut MSMEs obtain the funds needed to invest in equipment or more efficient technology.
So far, the process of making *Tolombong* is done manually and traditionally, starting with sorting bamboo slats as the basic material. After getting the appropriate bamboo segments, the bamboo slats are split into small pieces and sharpened or mashed. The plaiting process is done patiently and takes a long time. Technology utilization in splitting, sharpening, and refining can speed up production.

Tolombong industry have several threats that newcomers may face. With the entry of new entrants, competition in the *Tolombong* industry can become more intense. New entrants have aggressive marketing strategies, new product innovations, or more efficient production capabilities. *Tolombong* woven craftsmen from Tasikmalaya City are direct competitors of the *Tolombong* Garut MSME Center. They may have the same knowledge and skills in weaving and operate in the same market.

Tolombong also has competitors from alternative products, such as rice bowls or better known as rise boxes, made of plastic or wood. While having different aesthetics than traditional woven, these products may offer lower prices or practicality in everyday use. Traditional woven from other countries can also become competitors by offering cheaper raw materials so they can enter the market at more competitive prices or have a uniqueness that is attractive to customers.

To face competitors in the *Tolombong* woven industry, it is important to continuously improve product quality, maintain the characteristics and uniqueness of traditional woven, and build strong relationships with customers. Innovation in design, effective marketing, additional product development, and differentiation in terms of quality, price, or customer service can be strategies for maintaining market share and competitive advantage.

5. Conclusion

There is a positive influence between the internal and external environments on the trust-building process at the Tolombong Garut MSME Center. Suppose the internal and external environment at the Tolombong Center is good.

In that case, the level of trust building between all business actors involved in the Tolombong Center will be even higher.

Paying attention to the internal and external environment is important for MSMEs to be able to adapt to market changes, meet customer expectations, build strong relationships with business partners, and take advantage of growth opportunities. By understanding the internal and external environment well, MSMEs can take appropriate actions to maintain their competitiveness and growth in a competitive market.

Author Contributions: In the development of this article, each author played a distinctive and indispensable role. Alamanda was instrumental in the early stages, driving the idea generation, framing the central problems, and ensuring that the overall content of the article had a coherent narrative (original draft preparation, review & editing). Idhariani, with her analytical prowess, undertook the task of data collection and subsequently performed a thorough analysis using WarPLS; she also took the lead in interpreting the results yielded by the software, bridging the gap between raw data and meaningful insights. Saepuloh, with a keen eye for academic literature, navigated through previous works to anchor our research and was the guiding force in deciding the research methodology, ensuring that our approach was both innovative and grounded. Lastly, Gymnastiar served as the practical hands-on expert, diligently carrying out observations (project administration) and taking on the crucial role of validating the measurement tools. Furthermore, he spearheaded the discussion, shedding light on the intricate facets of our findings, and meticulously oversaw the manuscript's formatting and linguistic accuracy to guarantee its scholarly rigor.

Funding: This research was funded by the "Indonesia Ministry of Education, Culture, Research, and Technology - Directorate General of Higher Education, Research, and Technology", BIMA Basic Research Grant 2023.

Conflicts of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics approval: All respondents participating in this study have been fully informed and understand the research process. They are aware of the study's objectives and have been apprised of how their data will be processed and utilized within the research context. By continuing their participation, respondents acknowledge their comprehension and voluntary agreement to these terms.

References

Alamanda, D. T., Novani, S., Raynaldi, M., Anggadwita, G., & Kijima, K. (2019). Designing Strategies using IFE, EFE, IE, and QSPM analysis: Digital Village Case. *The Asian Journal of Technology Management*, *12*(1).

Alamanda, D. T., Ramdhani, A., Kusmiati, E., & Shiddieq, D. F. (2022). The Development of the Cracker MSME Cluster in Garut Regency, Indonesia. *Journal of Economics and Business*, *5*(4). https://doi.org/10.31014/aior.1992.05.04.456

Alhawamdeh, H. M., & Alsmairat, M. A. K. (2019). Strategic Decision Making and Organization Performance: A Literature Review. *International Review of Management and Marketing*, *4*(9), 95–99. https://doi.org/10.32479/irmm.8161

Almasri, A. K., M. Alsaraireh, J., & M. K bader, D. (2013). The Effect of Strategic Business Objectives Alignment with Information Management on Enhancing Small Organization Performance. *International Journal of Computer Applications*, *72*(3), 24–29. https://doi.org/10.5120/12475-8870

Amaliana, L., Solimun, Fernandes, A. A. R., & Nurjannah. (2020a). Efficiency of parameter estimator of various resampling methods on warppls analysis. *Mathematics and Statistics*, *5*(8), 481–492. https://doi.org/10.13189/ms.2020.080501

Amaliana, L., Solimun, S., Fernandes, A. A. R., & Nurjannah, N. (2020b). Efficiency of Parameter Estimator of Various Resampling Methods on WarpPLS Analysis. *Mathematics and Statistics*, *5*(8), 481–492. https://doi.org/10.13189/ms.2020.080501

Bogren, M., & Friedrichs, Y. von. (2016). Trust-Building Processes in Women's Entrepreneurship. *Journal of Enterprising Communities People and Places in the Global Economy*, *1*(10), 70–100. https://doi.org/10.1108/jec-08-2015-0043

Bogren, M., & von Friedrichs, Y. (2016). Trust-Building Processes in Women's Entrepreneurship. *Journal of Enterprising Communities*, *1*(10), 70–100. https://doi.org/10.1108/JEC-08-2015-0043

Borges, J. A. R., Neuberger, S., Saatkamp, H. W., Lansink, A. O., & Darr, D. (2021). Stakeholder Viewpoints on Facilitation of Cross-Border Cooperation. *European Planning Studies*, *4*(30), 627–642. https://doi.org/10.1080/09654313.2021.1988061

Brook, M. (2010). Successful Economies Mean Successful Communities. The Experience of 25 Years of Local Economic Development in the London Borough of Wandsworth. *Local Economy the Journal of the Local Economy Policy Unit*, *25*(1), 81–86. https://doi.org/10.1080/02690940903545455

Cao, H., & Chen, Z. (2019a). The Driving Effect of Internal and External Environment on Green Innovation Strategy-the Moderating Role of Top Management's Environmental Awareness. *Nankai Business Review International*, *10*(3), 342–361. https://doi.org/10.1108/NBRI-05-2018-0028

Cao, H., & Chen, Z. (2019b). The Driving Effect of Internal and External Environment on Green Innovation Strategy-the Moderating Role of Top Management's Environmental Awareness. *Nankai Business Review International*, *3*(10), 342–361. https://doi.org/10.1108/nbri-05-2018-0028

Chungyas, J. I., & Trinidad, F. L. (2022). Strategic Management Practices and Business Performance of Cooperatives in Ifugao, Philippines: Basis for Strategic Planning Model. *International Journal of Management & Entrepreneurship Research*, *4*(2), 84–104. https://doi.org/10.51594/ijmer.v4i2.293

D'Aveni, R. A. (1994). *Hypercompetition: Managing the Dynamics of Strategic Maneuvering*. Free Press. https://doi.org/10.2307/258639

Ebrahimi, A., & Banaeifard, H. (2018). The Influence of Internal and External Factors on The Marketing Strategic Planning in SNOWA Corporation. *Journal of Business and Industrial Marketing*, *33*(8), 1065–1073. https://doi.org/10.1108/JBIM-02-2018-0083

Helmond, M. (2022). *Strategic Performance Management Achieving Long-term Competitive Advantage through Performance Excellence*. Springer Cham. https://doi.org/https://doi.org/10.1007/978-3-030-98725-1

Isfianadewi, D. (2019). Strategic Orientation and Supply Chain Quality Management on Msme's Quality Performance: Case of Earthenware Kasongan. *Proceedings on Engineering Sciences*, *1*(2), 219–234. https://doi.org/10.24874/PES01.02.019

Jafari-Sadeghi, V., Amoozad Mahdiraji, H., Budhwar, P., & Vrontis, D. (2022). Understanding the De-internationalization of Entrepreneurial SMEs in a Volatile Context: A Reconnoitre on the Unique Compositions of Internal and External Factors. *British Journal of Management*. https://doi.org/10.1111/1467-8551.12688

Karim, A., & Afnan, D. (2020). Kiai Interpersonal Managerial: Henry Mintzberg Perspective. *Journal of Leadership in Organizations*, *2*(2). https://doi.org/10.22146/jlo.56290

Karnowati, N., & Handayani, E. (2022). Mediation Role of Business Performance on Entrepreneurship Orientation and Market Orientation to Create MSME Competitiveness in Pandemic Times. *International Journal of Research in Business and Social Science (2147- 4478)*, *11*(6), 2147–4478. https://doi.org/10.20525/ijrbs.v11i6.1980

Khanra, S., Kaur, P., Patnaik, S., Malik, A., & Dhir, A. (2021). A Resource-based View of Green Innovation as a Strategic Firm Resource: Present Status and Future Directions. *Business Strategy and the Environment*, *4*(31), 1395–1413. https://doi.org/10.1002/bse.2961

Kotler, P. (2017). Customer Value Management. *J. Creat. Value*, *3*(2), 170–172. https://doi.org/https://doi.org/10.1177/2394964317706879

Mamun, A. Al, Muniady, R. A. L., Permarupa, P. Y., Zainol, N. R. B., Nawi, N. B. C., & Malarvizhi, C. A. (2016). Social Capital and Entrepreneurial Competencies: A Study Among Women Micro-entrepreneurs in Malaysia. *The Journal of Developing Areas*, *50*(5), 363–370. https://doi.org/10.1353/jda.2016.0050

Mariyudi, M., Ikramuddin, I., Anwar, K., & Matriadi, F. (2022). Cluster Business Development Model of Agribusiness-Based MSMEs During the COVID-19 Pandemic. *Journal Research of Social, Science, Economics, and Management*, *1*(6), 711–720. https://doi.org/10.36418/jrssem.v1i6.81

Masenya, T. M. (2022). *Integrating Talent and Knowledge Management Practices in the New Normal Business Environment*. https://doi.org/10.4018/978-1-7998-8451-4.ch006

Mohapatra, D. S. S., Commerce, P. G. in, & Finance., M. in. (2020). Regional Trends in Financing and Growth of Indian MSMEs. *International Journal of Management and Humanities*, *5*(3), 10–12. https://doi.org/10.35940/ijmh.c1164.115320

Mustikowati, R. I., Sarwoko, E., Arief, M., & Nurfarida, I. N. (2021). Marketing Investigation: Customer Relationship Management and Innovation to Improve Competitive Advantage and Business Performance. *Humanities and Social Sciences Letters*, *9*(4), 430–438. https://doi.org/10.18488/journal.73.2021.94.430.438

Noor, R. N. H. R. M., Ibrahim, C. K. I. C., & Belayutham, S. (2021). Making Sense of Multi-Actor Social Collaboration in Building Information Modelling Level 2 Projects: A Case in Malaysia. *Construction Economics and Building*, *4*(21). https://doi.org/10.5130/AJCEB.v21i4.7829

Pearce, J. A., Freeman, E. B., & Robinson, R. B. (1987). The Tenuous Link Between Formal Strategic Planning and Financial Performance. *Academy of Management Review*, *12*(4), 658–675. https://doi.org/10.5465/amr.1987.4306718

Peter Timmer, C. (2022). Periphery and Small Ones Matter: Interplay of Policy and Social Capital. *Bulletin of Indonesian Economic Studies*, *58*(1), 97–99. https://doi.org/10.1080/00074918.2022.2056937

Porter, M. E. (2000). Location, Competition, and Economic Development: Local Clusters in a Global Economy. *Economic Development Quarterly*, *14*(1). https://doi.org/10.1177/089124240001400105

Rahimi, F., Møller, C., & Hvam, L. (2016). Business Process Management and IT Management: The Missing Integration. *International Journal of Information Management*, *36*(1). https://doi.org/10.1016/j.ijinfomgt.2015.10.004

Saad, Z. M., Sudin, S., & Shamsuddin, N. (2018). The Influence of Leadership Style, Personality Attributes and Employee Communication on Employee Engagement. *An International Journal*, *10*(3).

Setyadi, T. (2022). Strategic Alliances, Competitive Advantages, And Bandwagon Effect In The Perum Perhutani Wood Industry. *International Journal of Science and Environment (IJSE)*, *2*(2), 47–53. https://doi.org/10.51601/ijse.v2i2.24

Sigalas, C., & Economou, V. P. (2013). Revisiting the concept of competitive advantage. *Journal of Strategy and Management*, *6*(1), 61–80. https://doi.org/10.1108/17554251311296567

Silvius, G., & Schipper, R. (2019). Planning Project Stakeholder Engagement from a Sustainable Development Perspective. *Administrative Sciences*, *9*(2), 46–56. https://doi.org/10.3390/admsci9020046

Tarigan, Z. J. H., Mochtar, J., Basana, S. R., & Siagian, H. (2021). The Effect of Competency Management on Organizational Performance Through Supply Chain Integration and Quality. *Uncertain Supply Chain Management*, *9*(2), 283–294. https://doi.org/10.5267/j.uscm.2021.3.004

Vaidyhanatan. (2019). *The Five Step Process of Building Trust*. LinkedIn. https://www.linkedin.com/pulse/five-step-process-building-trust-sathish-vaidyanathan

Vojinović, N., Stević, Ž., & Tanackov, I. (2022). A Novel IMF SWARA-FDWGA-PESTEL Analysis for Assesment of Healthcare System. *Operational Research in Engineering Sciences: Theory and Applications*, *5*(1), 139–151. https://doi.org/10.31181/oresta070422211v

Walter Colombo, A., Karnouskos, S., & Hanisch, C. (2021). Engineering human-focused Industrial Cyber-Physical Systems in Industry 4.0 context. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *379*(2207). https://doi.org/10.1098/rsta.2020.0366

Wang, J., & Cao, H. (2022). Improving Competitive Strategic Decisions of Chinese Coal Companies Toward Green Transformation: A Hybrid Multi-criteria Decision-making Model. *Resources Policy*, *75*. https://doi.org/10.1016/j.resourpol.2021.102483

Wilujeng, I. P. (2021). Understanding The Internalization Stratey For MSMEs. *International Journal of Science, Technology & Management*, *2*(4), 1133–1140. https://doi.org/10.46729/ijstm.v2i4.249

Yip, J. A., & Schweitzer, M. E. (2015). Trust Promotes Unethical Behavior: Excessive Trust, Opportunistic Exploitation, and Strategic Exploitation. In *Current Opinion in Psychology* (Vol. 6). https://doi.org/10.1016/j.copsyc.2015.09.017

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 16-28
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.536

Stock Price Analysis Through Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO in Health Sector Companies on the Indonesia Stock Exchange for the 2019-2022 Period

Annisa Digmawati[1], Fanny Suzuda Pohan[2], Zainul Kisman[3]

[1,2,3] Management Study Program, Faculty of Economics and Business, Trilogy University Jl. TMP. Kalibata No.1, Jakarta, 12760, Indonesia

Correspondence: Zainul Kisman. Email: zainulkisman@trilogi.ac.id

Abstract
This study intends to examine how the stock prices of health sector companies listed on the Bursa Efek Indonesia are affected by Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO. The research method employed is quantitative research, where the data used is secondary data in the form of health sector company's financial reports published on the Bursa Efek Indonesia. The sampling technique used is a non-probability sampling approach, which uses the purposive sampling as a method. The sample in this study is 17 health sector companies listed on the Bursa Efek Indonesia for the 2019-2022 period. The analysis technique used is panel data regression analysis. According to the research, Cash Ratio partially has no impact on the stock price of the company, the Net Profit Margin, Debt to Assets Ratio, and TATO all have a significant impact. The stock price of the company is also impacted simultaneously by Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO.

Keywords: Cash Ratio, Debt to Assets Ratio, Net Profit Margin, Stock Price, TATO

1. Introduction

1.1. Background

The capital market is a place where various financial instruments are traded. One of Indonesia's capital market institutions, the Indonesia Stock Exchange (IDX) facilitates trading of financial instruments between investors and government organizations or institutions. The capital market offers investors a wide variety of investments from which they can choose based on their risk tolerance and investment objectives. Meanwhile, for organizations, the capital market is a place to obtain additional assets for organizational functional activities so that companies are

able to compete with other companies. Companies that have offered instruments to the general public through an Initial Public Offering (IPO) are companies that are listed on the capital market.

Instruments that are traded in the capital market include bonds, mutual funds, warrants, stocks, and others. Shares are proof of someone's ownership in the form of legal letters to a company. The health sector company is one of the companies that issues shares on the Indonesia Stock Exchange (IDX). The Health Sector is a company that has a fairly good growth rate from time to time, especially during the Corona virus pandemic. From data from the Central Statistics Agency (BPS), health sector companies had the highest growth in 2011, which was 9.25 percent, and continued to experience changes from 2017 to 2021. Growth in the health sector can be seen in Figure 1 below:

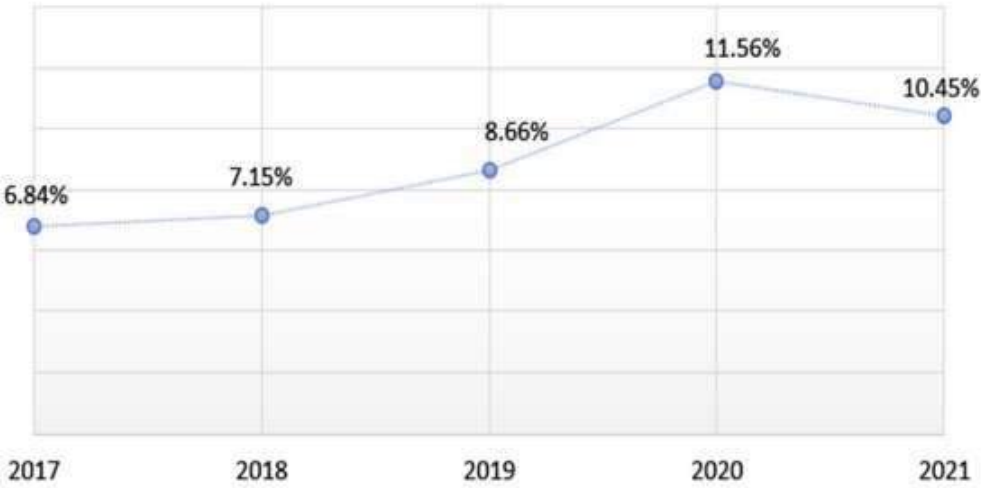


Figure 1: Health Sector Growth Against National GDP

Source: Central Bureau of Statistics, 2023

In investing, investors also need to evaluate the company's performance, so that they can assess whether the company will be able to fulfill its obligations to investors.

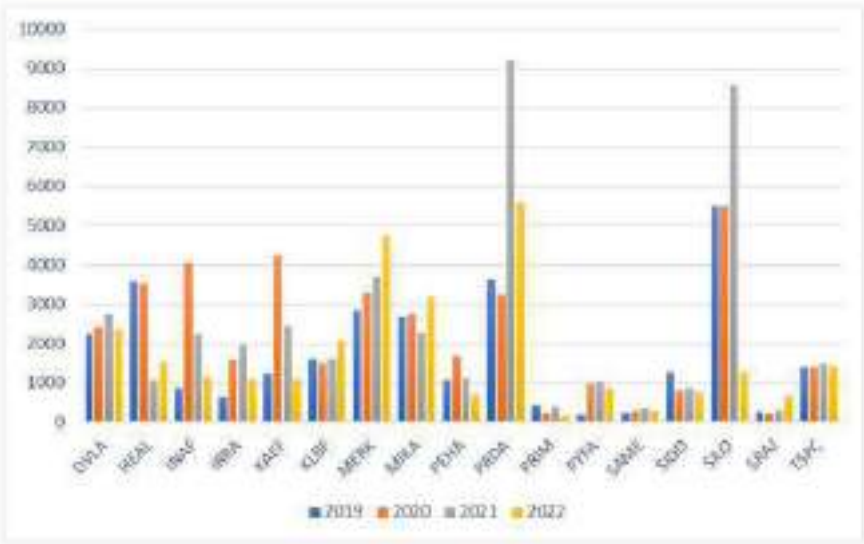


Figure 2: Health Sector Company Share Price Data 2019-2022

Source: Indonesia Stock Exchange

From Figure 2 above, it is known that the stock prices of each company have continued to change since 2019-2022. A company's share price can change for a variety of reasons. In this study Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and Total Assets Turnover are used to examine changes in company stock prices.

1.2. Formulation of the problem

Based on the background above, the formulation of the problem in this study is:

1. How do the Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO partially affect the stock price of health sector companies?
2. How does the Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO simultaneously influence the Stock Price of Health Sector Companies?

1.3. Research Objectives

The objectives of this research are:

1. To determine the effect of Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO partially on the Stock Price of Health Sector companies?
2. To determine the effect of Net Profit Margin, Debt to Assets Ratio, Cash Ratio, and TATO simultaneously on the Share Price of Health Sector companies?

2. Literature Review

2.1. Stock price

The share price is the price set by a company for other parties who wish to own shares. Jogiyanto (in Rohma and Sary, 2022) explains that the price of a share that occurs in the stock market at a certain time is determined by market participants and is determined by the demand and supply of shares in the capital market. If the demand for a stock is high, then the stock price will also be high, conversely if the supply is high then the stock price will fall.

2.2. Net Profit Margins

Net Profit Margin (NPM) is a ratio that describes the level of net profit from business activities. NPM provides information about operational efficiency and a company's ability to generate profits. NPM calculation can be done by comparing the value of net profit with operating income. The higher the NPM value, it shows a good condition for the company. In addition, this value can also be used to compare the company's financial performance with its competitors in the same industry. According to Gitman (2015) NPM can be calculated using the following formula:

$$Net\ Profit\ Margin = \frac{Net\ Profit}{Sales}$$

2.3. Debt to Assets Ratio

Debt to Assets Ratio (DAR) is a ratio that measures how much a company's debt affects the management of company assets. In other words, this ratio describes the proportion of company assets or assets that are funded by debt. The DAR calculation can be done by comparing the total debt value with the total assets. The lower the DAR value, the better, because the financial risk that the company has is not too big, which means that the company is not too dependent on the debt it has for its operational activities. However, a high DAR value for a company does not mean that the company is not doing well, as long as the company is able to take advantage of its debt to generate or increase sales. then it will have a positive impact on company performance. According to Gitman (2015) DAR can be calculated using the following formula:

$$Debt\ To\ Assets\ Ratio = \frac{Total\ Debt}{Total\ Assets}$$

2.4. Cash Ratio

Cash Ratio (CAR) is a ratio that measures the extent to which a company's finances are through cash and cash equivalents owned by the company. CAR calculation can be done by comparing the value of cash and cash equivalents with short-term debt. A company with a CAR value above one indicates that the company has

sufficient funds to pay off the company's short-term obligations. According to Gitman (2015) CAR can be calculated using the following formula:

$$Cash\ Ratio = \frac{Cash}{Current\ Liabilities}$$

2.5. Total Assets Turnover

Total Assets Turnover (TATO) is a ratio that measures a company's ability to generate sales or income by utilizing all of its assets. TATO calculation can be done by comparing the sales value with the company's total assets. The higher the value of TATO, it shows the company's effectiveness in utilizing its assets to generate sales. According to Gitman (2015) TATO can be calculated using the following formula:

$$Total\ Assets\ Turnover = \frac{Sales}{Total\ Assets}$$

2.6. Framework

This study uses independent variables including NPM, DAR, CAR, and TATO and the dependent variable is Stock Price. To see the relationship between the independent variables and the dependent variable, the following framework is made:

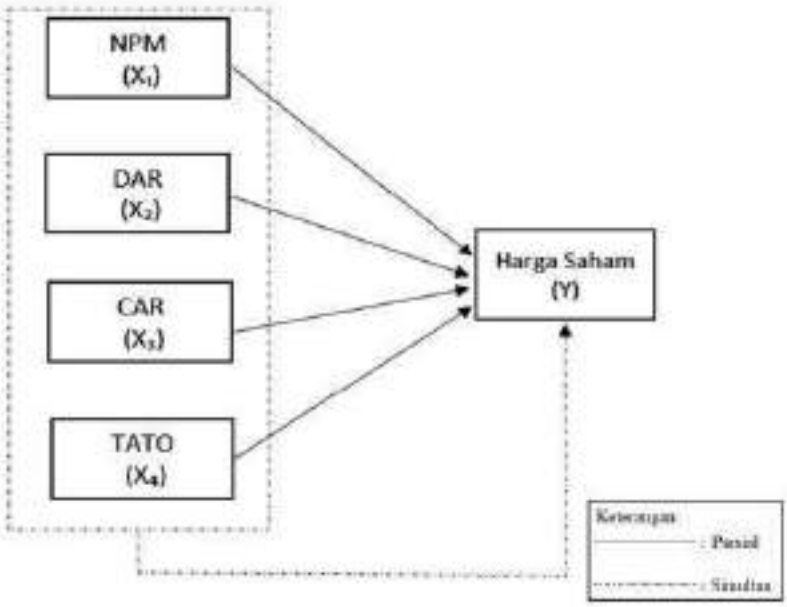


Figure 3: Framework
Source: Author Processed, 2023

3. Research Methods

3.1. Data Types and Sources

The type of data used in this study is secondary data in the form of company financial reports sourced from the official website of the Indonesia Stock Exchange (IDX), IDN Financial, and the official website of each company.

3.2. Population and Sample

The population in this study were all health sector companies listed on the Indonesia Stock Exchange, namely 30 companies. The technique used in selecting the sample is purposive sampling method, with the following sample criteria:

Table 1: Research Sample

No.	Sample Criteria	Number of Samples
1	Health sector companies listed on the Indonesian Stock Exchange	30
2	Health sector companies that do not present financial reports for 2019-2022	(12)
3	Companies suspended by the IDX during 2019-2022	(1)
Number of selected samples		17
Total Observation Data (4 x 17)		68

Sample: Indonesia Stock Exchange

Based on the table above, it was obtained that the number of companies selected as the research sample was 17 companies, with the following data:

Table 2: Selected Company Data

No.	Code	Company Name	IPO Date
1	DVLA	Darya-Varia Laboratoria Tbk.	11 Nov 1994
2	HEAL	Medikaloka Hermina Tbk.	16 Mei 2018
3	INAF	Indofarma Tbk.	17 Apr 2001
4	IRRA	Itama Ranoraya Tbk.	15 Okt 2019
5	KAEF	Kimia Farma Tbk.	04 Jul 2001
6	KLBF	Kalbe Farma Tbk.	30 Jul 1991
7	MERK	Merck Tbk.	24 Mar 2015
8	MIKA	Mitra Keluarga Karyasehat Tbk.	26 Des 2018
9	PEHA	Phapros Tbk.	26 Des 2018
10	PRDA	Prodia Widyahusada Tbk.	07 Des 2016
11	PRIM	Royal Prima Tbk.	15 Mei 2018
12	PYFA	Pyridam Farma Tbk	16 Okt 2001
13	SAME	Sarana Meditama Metropolitan Tbk	11 Jan 2013
14	SIDO	Industri Jamu dan Farmasi Sido Muncul Tbk	18 Des 2013
15	SILO	Siloam International Hospitals	12 Sep 2013
16	SRAJ	Sejahteraraya Anugrahjaya Tbk.	11 Apr 2011
17	TSPC	Tempo Scan Pacific Tbk.	17 Jun 1994

Source: Indonesia Stock Exchange

3.3. Data analysis method

This study used panel data regression analysis with the help of the Eviews 12 program. In estimating panel data regression, three model approaches were used including the Common Effect Model (CEM), Fixed Effect Model (FEM), Random Effect Model (REM), in addition to other analyzes that carried out include the Classical Assumption Test, and Hypothesis Testing

4. Research Result

4.1. Descriptive Analysis Results

Table 3: Descriptive Statistics Analysis Results

	HS	NPM	DAR	CAR	TATO
Mean	7.181923	8.808388	37.18795	81.31275	0.783916
Median	7.275571	8.551816	33.34822	61.99487	0.821809
Maximum	9.056806	38.50467	94.37102	303.3580	1.687538
Minimum	5.153292	-37.45167	5.013208	5.765337	0.237055
Std. Dev.	0.935268	12.49703	20.94347	63.82436	0.322774
Skewness	-0.458904	-0.685198	0.550758	1.049930	0.165259
Kurtosis	2.526894	5.695965	2.485168	3.770794	2.705660
Jarque-Bera	2.843203	24.38990	3.998354	13.34275	0.522028
Probability	0.241327	0.000005	0.135447	0.001267	0.770270
Sum	459.6431	563.7368	2380.029	5204.016	50.17060
Sum Sq. Dev.	55.10776	9839.080	27633.61	256633.5	6.563534
Observations	64	64	64	64	64

Source: Author Processed, 2023.

Based on table 3 above, the results of the analysis of the Net Profit Margin variable in a 4-year period obtained a maximum value of 38.50% and a minimum value of -37.45%. The maximum value of 38.50% occurs at PT Pyridam Farma Tbk in 2022, while the minimum value of -37.45% occurs at PT Indofarma Tbk in 2022. The average value is 8.80% with a standard deviation of 12.49%. This shows that the Net Profit Margin variable has a fairly high data distribution because the standard deviation value is greater than the average value (12.49% > 8.80%), so that the data deviation on the Net Profit Margin variable can be said to be unfavorable.

The results of the analysis of the variable Debt to Assets Ratio in a period of 4 years obtained a maximum value of 94.37% and a minimum value of 5.01%. The maximum value of 94.37% occurs at PT Indofarma Tbk in 2022, while the minimum value of 5.01% occurs at PT Royal Prima Tbk in 2022. The average value is 37.19% with a standard deviation of 20.94%. This shows that the Debt to Assets Ratio variable has a fairly low data distribution because the standard deviation value is smaller than the average value (20.94% < 37.19%), so that the data deviation on the Debt to Assets Ratio variable can be said to be quite good.

The results of the analysis of the variable Cash Ratio in a period of 4 years obtained a maximum value of 303.36% and a minimum value of 5.77%. The maximum value of 303.36% occurs in PT Prodia Widyahusada Tbk in 2022, while the minimum value of 5.77% occurs in PT Phapros Tbk in 2020. The average value is 81.31% with a standard deviation of 63.82%. This shows that the Cash Ratio variable has a fairly low data distribution because the standard deviation value is smaller than the average value (63.82% < 81.31%), so that the data deviation on the Cash Ratio variable can be said to be quite good.

The results of the analysis of the Total Assets Turnover variable in a period of 4 years obtained a maximum value of 1.69X and a minimum value of 0.24X. The maximum value of 1.69X occurs at PT Itama Ranoraya Tbk in 2021, while the minimum value of 0.24X occurs at PT Sarana Meditama Metropolitan Tbk in 2019. The average value is 0.78X with a standard deviation of 0.32X. This shows that the Total Assets Turnover variable has a fairly low data distribution because the standard deviation value is smaller than the average value (0.32X <0.78X), so that the data deviation on the Total Assets Turnover variable can be said to be quite good.

4.2. Regression Model Selection

1. Chow test

Table 4: Chow test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	13.668583	(16,43)	0.0000
Cross-section Chi-square	115.583264	16	0.0000

Source: Author Processed, 2023

Based on the results of the chow test in table 4 above, it is known that if the probability value is ≤ 0.05, then the Fixed Effect Model is selected.

2. Hausman test

Table 5: Hausman test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.760220	4	0.4394

Source: Author Processed, 2023

Based on the results of the Hausman test in table 5 above, it is known that if the probability value is > 0.05, then the Random Effect Model is selected.

3. Lagrange Multiple Test

Table 6: Lagrange Multiple Test

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	35.34225 (0.0000)	0.661614 (0.4160)	36.00387 (0.0000)
Honda	5.944935 (0.0000)	-0.813397 (0.7920)	3.628545 (0.0001)
King-Wu	5.944935 (0.0000)	-0.813397 (0.7920)	1.625315 (0.0520)
Standardized Honda	6.910977 (0.0000)	-0.551381 (0.7093)	0.928797 (0.1765)
Standardized King-Wu	6.910977 (0.0000)	-0.551381 (0.7093)	-0.648428 (0.7416)
Gourieroux, et al.	–	–	35.34225 (0.0000)

Source: Author Processed, 2023

Based on the results of the multiplier Lagrange test in table 6 above, it is known if the probability value≤ 0.05, then the Random Effect Model is selected.

4.3. Classic assumption test

1. Multicollinearity Test

Table 7. Multicollinearity Test

Correlation				
	NPM	DAR	CAR	TATO
	NPM	DAR	CAR	TATO
NPM	1.000000	-0.585967	0.572092	0.156224
DAR	-0.585967	1.000000	-0.736448	-0.103053
CAR	0.572092	-0.736448	1.000000	0.136022
TATO	0.156224	-0.103053	0.136022	1.000000

Source: Author Processed, 2023

Based on table 7 above, the results are obtained if there is not a single independent variable that has a correlation value of more than 0.9 so it can be concluded that the independent variables in this research model do not have multicollinearity problems.

2. Normality test

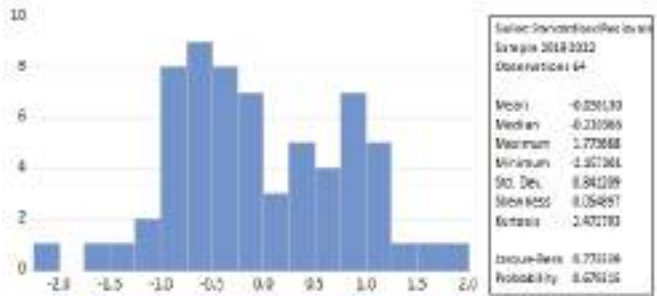


Figure 1: Normality test
Source: Author Processed, 2023

Based on Picture 4 above, the results of the JB probability of 0.68 are greater than the significant value (0.68 > 0.05), so it can be concluded that the data in the study are normally distributed.

3. Heteroscedasticity Test

Table 8: Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.042599	0.316973	3.289236	0.0017
NPM	0.002860	0.005662	0.505072	0.6154
DAR	-0.004182	0.004193	-0.997383	0.3227
CAR	-0.001438	0.001225	-1.174173	0.2450
TATO	-0.076289	0.218983	-0.348378	0.7288

Source: Author Processed, 2023

Based on table 8 above, the results show that the probability of all variables is greater than the significant value of 0.05, so it can be concluded that the data in the study are free from heteroscedasticity problems.

4.4. Panel Data Regression Analysis

From the Chow Test, Hausman Test, and Lagrange Multiplier Test that have been carried out, the results obtained are that the Random Effect Model is the right model to use.

Table 9: Panel Data Regression Results Model Random Effects

Dependent Variable: HS
Method: Panel EGLS (Cross-section random effects)
Date: 07/27/23 Time: 09:49
Sample: 2019 2022
Periods included: 4
Cross-sections included: 17
Total panel (unbalanced) observations: 64
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.604528	0.479907	11.67836	0.0000
NPM	0.015220	0.007459	2.040569	0.0458
DAR	0.018002	0.005943	3.029235	0.0036
CAR	0.001752	0.001603	1.093366	0.2787
TATO	0.869380	0.322178	2.698445	0.0091

Effects Specification	S.D.	Rho
Cross-section random	0.805259	0.8063
Idiosyncratic random	0.394633	0.1937

Weighted Statistics

R-squared	0.203960	Mean dependent var	1.756164
Adjusted R-squared	0.149991	S.D. dependent var	0.470783
S.E. of regression	0.397875	Sum squared resid	9.339989
F-statistic	3.779212	Durbin-Watson stat	2.024273
Prob(F-statistic)	0.008389		

Source: Author Processed, 2023

Based on table 9 above, the regression equation is obtained as follows:

Y = 5.6045 + 0.0152 NPM + 0.0180 DAR + 0.0017 CAR + 0.8693 TATO +ε

1. The constant value is 5.6045, meaning that the Share Price (Y) is worth 5.6045 if the NPM, DAR, CAR and TATO variables each have a value of 0.
2. The regression coefficient value of the NPM variable (X_1) is positive at 0.0152%, meaning that every 1% increase in NPM assuming other variables are constant, it will cause an increase in stock prices by 0.0152%.
3. The regression coefficient value of the DAR variable (X_2) is positive 0.0180%, meaning that every 1% increase in DAR assuming other variables are constant, it will cause an increase in stock prices by 0.0180%.
4. The regression coefficient value of the CAR variable (X_3) is positive at 0.0017%, meaning that every 1% increase in CAR assuming other variables are constant, it will cause an increase in stock prices by 0.0017%.
5. The regression coefficient value of the TATO variable (X_4) is positive at 0.8693%, meaning that every 1% increase in TATO assuming other variables are constant, it will cause an increase in stock prices by 0.8693%.

4.5. Hypothesis testing

1. Coefficient of Determination(R^2)

Based on table 9 above, it can be seen that the R-squared value is 0.20 or 20%. These results show that 20% of the dependent variable, namely stock prices, can be explained significantly by independent variables including NPM, DAR, CAR, and TATO, while the remaining 80% is explained by other variables outside this study.

2. F-Test

Based on table 9 above, the results of the probability f-statistic of 0.008 are smaller than the significant value of 0.05 ($0.008 \leq 0.05$), so it can be concluded if Ho5 is rejected, which means simultaneously all independent variables including NPM, DAR, CAR and TATO have a significant effect on price company stock.

3. T-test

Based on the results of the Random Effect Model test in table 9 above, it is known that the probability values of the NPM, DAR, and TATO variables are ≤ 0.05, so it can be concluded that these three variables partially have a significant effect on the company's stock price. while the CAR variable with a probability value of > 0.05 indicates that partially this variable has no significant effect on the company's stock price.

5. Discussion

5.1. The Effect of NPM on Stock Prices

Based on the partial test results, the probability value of the NPM variable is 0.046 which is less than the significant value of 0.05, meaning that the NPM variable has a significant effect on the company's stock price. This can show if the NPM variable is one of the considerations for investors when making investment decisions in a company. The results of this study are in line with previous research conducted by Zuhri S. et al (2020) which found that partially NPM has a significant effect on the company's stock price. In contrast to research conducted by Ismawati LA, et al (2021), which obtained results if NPM did not affect stock prices. Unlike the research conducted by.

5.2. The Effect of DAR on Stock Prices

Based on the partial test results, the results of the probability value of the DAR variable are 0.004 which is less than the significant value of 0.05, which means that partially the DAR variable has a significant effect on the company's stock price. This can show if the DAR variable becomes one of the considerations and references for investors when making investment decisions which will ultimately affect the company's stock price. This is in line with previous research conducted by Rizky P., and Aditia D. (2020), which obtained results if the DAR variable had a significant effect on the company's stock price. In contrast to the research conducted by Roesida and Fandi (2020) which obtained results if DAR did not have a significant effect on the company's stock price.

5.3. The Effect of CAR on Stock Prices

Based on the partial test results, the probability value of the CAR variable is 0.279 which is greater than the significant value of 0.05, which means that the CAR variable does not have a significant effect on the company's stock price partially. This shows that the CAR variable has not become a material consideration and reference for investors to make investment decisions in a company. This is in line with previous research conducted by Nazara LK et al (2021) which obtained results if CAR did not affect the company's stock price. In contrast to research conducted by Islavella N., and Sari NR (2022), which obtained results if the CAR variable had an effect on the company's stock price.

5.4. The Effect of TATO on Stock Prices

Based on the partial test results, the results of the probability value of the TATO variable are 0.009 which is less than the significant value of 0.05, which means that the TATO variable partially has a significant effect on the company's stock price. This can show if the TATO variable is one of the considerations and references for investors when making investment decisions which will ultimately affect the company's stock price. This is in line with previous research conducted by Dian IS (2020), which obtained results if the TATO variable had a significant and positive effect on the company's stock price. In contrast to the results of research conducted by Nazara LK, et al (2021) which obtained results if TATO did not affect the company's stock price.

6. Conclusion

Based on the results of the data analysis that has been carried out, the results obtained in this study are: 1) NPM partially has a significant effect on stock prices in Health Sector companies listed on the Indonesia Stock Exchange for the period 2019-2022, 2) DAR partially has a significant effect on prices shares in Health Sector companies listed on the Indonesia Stock Exchange for the period 2019-2022, 3) CAR partially does not have a significant effect on share prices in Health Sector companies listed on the Indonesia Stock Exchange for the period 2019-2022, 4) TATO partially affects prices shares in Health Sector companies listed on the Indonesia Stock Exchange for the period 2019-2022, 5) NPM, DAR, CAR,and TATO simultaneously have a significant impact on share prices in Health Sector companies listed on the Indonesia Stock Exchange for the 2019-2022 period.

7. Suggestion

It is better for companies and investors to pay more attention to the company's financial performance because based on research that has been done, financial performance has a considerable influence on stock prices, especially Net Profit Margin, Debt To Assets Ratio, and Total Assets Turnover which are proven to have an effect on changes in stock prices. company. In addition, it is better for future researchers to use other variables that have not been used in this study, so that parties who need related information can find out what other factors can affect changes in stock prices.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Akbar, M. I., &; Gustyana, T. T. (2021). The effect of profitability, dividend policy and leverage on company value (case study on metal and mineral mining sub-sector companies listed on the Indonesia Stock Exchange for the period 2015-2019). *eProceedings of Management*, *8*(5).

Alamsyah, M. F. (2019). The influence of profitability, company size and market value on share prices in the metal and mineral mining sub-sector on the Indonesia Stock Exchange (IDX). *Journal of Management*, *11*(2), 170-178.

Anwar, A. M. (2021). The Effect of Current Ratio (CR), Debt to Equity Ratio (DER), Return On Asset (ROA) on Stock Price (Case study on food and beverage sector companies listed on IDX in 2017-2019). Scientific Journal of Accounting Students, 1(2), 146-157.

Central Bureau of Statistics (BPS). "[2010 Series] GDP Growth Rate 2010 Series (Percent), 2022", https://www.bps.go.id/indicator/11/104/1/-seri-2010-laju-pertumbuhan-pdb-seri-2010.html, accessed March 10, 2023.

Basuki, A. T., &; Prawoto, N. (2017). Regression Analysis in Economic and Business Research (Equipped with SPSS &; Eviews Application). Jakarta: PT Grafindo

Indonesia Stock Exchange. 2023. Stock List, https://www.idx.co.id/id, accessed February 2023

Indonesia Stock Exchange. 2023. Financial & Annual Report, https://www.idx.co.id/id**,** accessed February 2023

Efendi, Johan M. and Dwi Dewianawati. 2021. Financial Management. Yogyakarta: CV.Bintang Surya Madani.

Ghozali, Imam. 2020. Applications of Multivariate Analysis with IBM SPSS 23 Program, Ed.8. Semarang: Diponegoro University Publishing Board.

Gustmainar, J., &; Mariani, M. (2018). Analysis of the effect of current ratio, debt to equity ratio, gross profit margin, return on investment, and earnings per share on share prices in LQ 45 companies listed on the Indonesia Stock Exchange in 2010-2016. *Bilancia: Scientific Journal of Accounting*, *2*(4), 465-476.

Hantono. 2018.The concept of financial statement analysis with ratio and SPSS approach. Yogyakarta: CV Budi Utama

Harpono, F. F., & Chandra, T. (2019). The Influence Of DER, ROE, PER, EPS, And DPS On Stock Prices Of Health And Pharmaceutical Companies That Listed On IDX For The Year 2010–2017. *Bilancia*, *3*, 78.

Hidayat, S. (2020). The effect of Total Asset Turnover (TATO) and Debt to Equity Ratio (DER) on stock prices with profitability as an intervening variable (survey of food and beverage sub-sector manufacturing companies listed on the Indonesia Stock Exchange in 2012. *Eqien-Journal of Economics and Business*, *7*(1), 102-110.

Islavella, N., &; Sari, N. R. (2022). The Effect of Return on Asset (ROA), Return on Equity (ROE), Current Ratio and Cash Ratio on Share Prices of Mining Companies Listed on the Indonesia Stock Exchange (2019-2021 Period). *Axiom Journal of Accounting Research*, *21*(1), 67-80.

Ismawati, L. A., Wijayanti, A., &; Fajri, R. N. (2021). The Effect of Net Profit Margin, Price To Book Value, and Dividend Per Share on Share Prices in LQ 45 Index Companies. JAE (Journal of Accounting and Economics), 6(3), 40-48.

Karmila and Ida Ernawati. 2018. Capital Markets. Yogyakarta: KTSP.

Cashmere. (2018). Financial Statement Analysis. Eighth printing. Jakarta: King Grafindo

Kosasih, Dian Tami. 2021. Looking at the Potential of Health Sector Stocks until the End of 2021, https://www.liputan6.com/saham/read/4698321/melihat-potensi-saham-sektor-kesehatan-hingga-akhir-2021, accessed April 12, 2023.

Lubis, Mayang Sari. 2018. Research Methodology. Yogyakarta: Deepublish.

Maghfirah, S. (2018). Effect of Financial Ratio on Share Price of Companies Listed in Jakarta Islamic Index (JII). 1-136.

Martalena and Maya M. 2019. Introduction to Capital Market. Yogyakarta: ANDI OFFSET.

Menaung, C. A., Mangantar, M., &; Van Rate, P. (2022). ANALYSIS OF FINANCIAL PERFORMANCE OF SHARE PRICES OF FOOD AND BEVERAGE COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE FOR THE 2015-2019 PERIOD. *EMBA Journal: Journal of Economic, Management, Business and Accounting Research, 10*(1), 695-705.

Nazara, L. K., Sitorus, F. D., Perangin-angin, J. R. W., & Saputri, M. W. (2021). The effect of debt to equity ratio, return on equity, cash ratio, and total asset turn over on stock prices in service companies for the 2017-2019 period. *Scientific Journal of Management, Economics, & Accounting (MEA*), *5*(2), 33-49.

Nurkholik, N., &; Kristianti, R. D. (2021). ANALYSIS OF STOCK PRICE DETERMINANTS IN FOOD AND BEVERAGE INDUSTRY SUB-SECTORS LISTED ON THE IDX. *Dynamics of Financial and Banking Accounting*, *10*(1), 18-35.

Purwanti, Agustina. 2022. "Health Sector Performance Improves in the Middle of a Pandemic", https://www.kompas.id/baca/telaah/2022/03/01/kinerja-sektor-kesehatan-kian-meningkat-di-tengah-pandemi, accessed March 10, 2023

Daughter, V. A., &; Justicia, N. (2021). The impact of financial ratios on share prices of consumer goods companies listed on the Indonesia Stock Exchange. Lisyabab: Journal of Islamic and Social Studies, 2(1), 1-16.

Rahmawati, A., Ishak, D., &; Yusniar, Y. (2019). Determinants of stock prices on the Indonesia Stock Exchange (2014-2019 period). SEIKO: Journal of Management &; Business, 2(2), 256-262.

Rahmawati, S. A., Suharti, T., &; Yudhawati, D. (2023). The Effect of CR, ROE, and DAR on Share Prices in Mining Sector Companies. *Journal of Management and Business Economics (JEMB*), *2*(1), 57-64.

Ramadhan, P. R., &; Nasution, D. A. D. (2020). Analysis of the determinants of share prices of agriculture sector companies listed on the Indonesia Stock Exchange. *Journal of Accounting and Business Research*, *20*(2), 162-171.

Ristyawan, M. R. (2019). The effect of Return on Equity (ROE), Debt to Assets Ratio (DAR), Price to Book Value (PBV) and Net Profit Margin (NPM) on the return of shares of plantation sector companies listed on the Indonesia Stock Exchange for the period 2011-2017. *Journal of Business Economics and Entrepreneurship*, *8*(1), 1.

Sari, D. I. (2020). The effect of quick ratio of total asset turnover and return on investment on stock price. Balance: Journal of Accounting and Business, 5(2), 123-134.

Sikapiuangmu.ojk.go.id. Causes of Ups and Downs in a Company's Share Price, https://sikapiuangmu.ojk.go.id/FrontEnd/CMS/Article/10507, accessed June 28, 2023

Sugiyono. (2017). Quantitative, Qualitative, and R&D Research Methods. Alfabeta: Bandung

Sugiyono. (2018). Educational Research Methods Quantitative, Qualitative, and R&D Approaches. Bandung: Alfabeta.

Sulistiawati, N., Rosmanidar, E., &; Ifazah, L. (2023). THE EFFECT OF DER, ROE, CR, NPM ON STOCK PRICES (Study on Palm Oil Plantation Industry Sub-Sector Companies in 2018-2021). Journal of Student Research, 1(4), 184-206.

Suteja, I gede Novian. (2018). Financial Performance Analysis with Altman Z-Score Method at PT Ace Hardware Indonesia Tbk. Monetary V (1): 12-17.

Tambunan, T. (2021). ANALYSIS OF THE INFLUENCE OF PER, EPS, ROA AND DER ON THE SHARE PRICE OF MACHINERY AND HEAVY EQUIPMENT SUB-SECTOR COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE IN 2015-2019. *Jurakunman (Journal of Accounting and Management*), *14*(1), 66-77.

Tyas, N. H., & Siti Almurni, M. U. R. N. I. (2020). The effect of company size, profitability, and leverage on the share price of property and real estate companies listed on the Indonesia Stock Exchange in 2015 2018. The effect of company size, profitability, and leverage on the share price of property and real estate companies listed on the Indonesia Stock Exchange in 2015 2018.

Vijaya, David. 2017. Financial Management Concepts and Their Application. Jakarta: PT. Grasindo.

Zuhri, S., Juhandi, N., Sudibyo, H. H., &; Fahlevi, M. (2020). Determination of Share Prices of Food and Beverage Subsector Manufacturing Companies. *Journal of Industrial Engineering &; Management Research*, *1*(2), 25-34.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 29-38
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.537

Theoretical Framework on Analyzing the Relationship and its Mechanism Between Stock Markets and Bitcoin Market with Specialization in Vietnam

Dang Phong Nguyen[1], Do Hoai Linh[2]

[1] Posts and Telecommunication Institute of Technology, Vietnam. Email: nguyendp@ptit.edu.vn
[2] National Economics University, Vietnam. Email: linhdh@neu.edu.vn

Correspondence : Do Hoai Linh. Email: nguyendp@ptit.edu.vn

Abstract
The article focuses on studying the theoretical framework of the connectedness between many stock markets and the Bitcoin market with a specific review in Vietnamese market. With a desk-based approach, content aspects are focused on including a research overview of financial contagion and inter-market relationship. The majority of the related researches confirmed that the contagion between Bitcoin and stock market existed in many different contexts. The two most popular mechanisms for the spillover effect analyzed in these studies were safe-haven characteristic and investor behavior. If Bitcoin could serve as a safe – haven, investors tended to shift the portfolio from stock to this crypto in case of a downtrend leading to the movement of cash flow out of stock market. On the other hand, when investors had sentiment on Bitcoin value, they would prefer investing more in this crypto to holding only securities, which also results in a contagion between two markets.

Keywords: Bitcoin, Stock Market, Contagion, Spillover, Safe-Haven, Investor Sentiment

1. *Research overview of financial contagion and the relationship among markets*

The concept of the contagion among markets and financial assets had received more attention when global crises tended to occur more frequentlty. In the early stages, researches about contation focused mainly on the impulses of critical shocks across countries. The sign of contagion among markets had been identified for a long time. Until 1997, Asian economics crisis occured to be considered as a significant wake-up call for economists to pay attention on market connectedness. Many examples of market contagion could be listed, such as, the most typical one – The Great Depression in 1929-1933. In September 1929, originating in the United States, global financial risks began to expand rapidly. Goods and products were mass-produced but difficultly consumed and sold to the market. After that, the crisis put a sginificant impact on other capitalist countries. Many countries such as France and Great Britain would also be affected, leading to reduction of trade and production. In 1930 in Germany, industrial output fell by 77%, and Italy, Poland, Japan, and Romania all suffered the damage from financial crises. The origin of the crisis is explained by many economists. However, in terms of the contagion of the crisis from the US to global, the issue was not really considered at that time.

Economic scientists took strong notice of contagion and connectedness after the significant consequences of Mexican crisis in 1994, Asian crisis in 1997 and the collapse of Russian monetary system in 1998. Studies during this initial period concentrated on the fundamental opinion that explained the mechanism of shock spillover across economies. ***Basically, this perspective supported that the reason for contagion would be the influence of international trade on exchange rates among contries***. The strongger two nations cooperated, the more considerably their relationship would be affected. Case study by Zhang et al. (2003) analyzed the contagion from the public debt crisis in Argentina in 2002 spread to Brazil. The author used Bayesian test to show that a contation existed between Argentina and Brazil from by an economic crisis. The reason was explained that because of the devaluation of the Argentine Peso, the balance of payments became noticeably unbalanced and public debt structure between these two countries also changed. Argentina debt to Brazil became worse, pottentially lead to a budget deficit in Brazil.

However, this viewpoint did not comprehensively explain extensive crises, between geographically distant countries and narrow trade relations. It was further extended with explanations of the common market, the similarities between monetary policies, and macroeconomic factors in the studies of Corsetti et al. (1999), Gerlach and Smets (1994) and Corsetti et al. (2005). During the Aisan crisis in 1997, many developing Asian countries experienced vulnerable characteristics in macro-economic management and financial system operations such as: weak domestic currency and exchange rate peg to the USD, huge public debt, poor control of the banking system, high NPL ratio and low capital adequacy. Corsetti et al. (2005) used the correlation coefficient calculation and Fisher test to measure the correlation of the Hong Kong stock market with developing Asian stock markets. The results show that there was shock spillover during the 1997 crisis from Hong Kong to Singapore and the Philippines markets.

The second point of view explains the spread of shocks among various markets from a financial perspective. ***This financial view aimed attention at the limitations and inefficiencies in the banking management and international capital markets***. Researchers on this view proposed several theories such as common lenders (Goldstein et al., 2000), margin calls or wealth effect (Calvo, 1999) to explain financial contagion. Basically, this group of theories suggests that contagion was triggered when there was a financial intermediary lending or investing in two countries. When a crisis in one country occurred, this financial intermediary temded to suffer losses, which forced them to stop lending or sell off assets in the other country. With two different markets, this explanation became similar in the situation that one market suffered crisis, its banking system would invest in another ones or move assets from that market to compensate. A new research direction of this arguement refered to the involvement the financial institutions network. Allen and Gale (2000) suggested that when a shock occurs, members of the financial network would together shard risks and adjust their portfolios, which created spillover among the community.

The final view refered to the coordination of the market on many macro and micro perspectives. The two main research topics of this view are investor behavior and policy makers' reactions. This coordination viewpoint has been considered as the main research direction recently because obtained results can clarify the contagion and spillover not only on the macro level among countries or economies; but also shows the connectedness of different markets or asset classes in many countries simultaneously. The studies in this topic tended to take some regular subjects such as gold market, oil market, and stock market as in the research of Hussain and Riaz (2019), Asad et al. (2020) and Kocaarslan et al. (2019). Some new relationship persectives were introduced such as the contagion between financial markets and commodity market such as (Khan and Masih, 2021) or (Khan et al., 2015); the linkage of banking and energy industry in study of Ayadi et al. (2021). The common point of all these studies could be recognized that they seemed to be interested in the contagion of the financial market, notably the stock market, with other ones. The coordination view emphasized the impacts that asymmetric information problems drove different market participants to make different decisions about their assets, even there would no significant influences on the market. As a result, when the adjustment of financial assets took place, the spillover could occur to the others.

2. *Studies on the relationship of the stock market and Bitcoin*

Bitcoin can be considered as the most typical cryptocurrency. The definition of cryptocurrencies by Bank for International Settlements recognized cryptocurrency with 3 basic elements originated from the characteristics of Bitcoin. These concepts became standardized for all cryptocurrency later. First, a set of rules called "protocols which consists of many computer codes that specifies how participants can make transaction thanks to the crypto. Second, there will be a ledger storing the history of all transactions in the system. Finally, a decentralized network of participants will be constructed, whose information would be updated, stored and sercured in the ledger and subject to every rules of the protocol. In the IMF Fintech report conducted by Tobias Adrian and Tommaso Mancini Griffoli (2019), cryptocurrency can be considered as a Also known as cryptocurrency, a private sector digital asset that depends primarily on cryptography and distributed ledger or similar technology..

Bitcoin was first establish in November 2008 by the time of the global financial crisis. That crisis was not the main reason causing the origin of Bitcoin but the strong motivation of its appearance. The financial crisis in 2008 was originated from the progressive collapse of real estate bubbles and banking system in the United States. Quickly shock transmissions would be spread globally to Europe and Asia, which made seriuos damage to these economies. The failure of centralized management of governments was blamed for the consequences of the crisis by the Bitcoin creator. As a result, an idea of a decentralized financial system – DeFi has found. DeFi would be recognized as a form of distributed ledger that was not under control of any government or organization. The system will decentralize peer-to-peer authorization for all members which allows transactions among parties to be executed without depending on any financial institutions. By the support of Blockchain, members on the network will be guaranteed with informative transparency, cyber sercurity and completed anonymity on the transactions. Any actions arising on the system such as updating data, repairing system, and information extraction will be notified simultaneously to all members. Actions will be taken place only when more than 51% of the members approve. Bitcoin is the crytocurrency that is traded on this system and conventionally used as a token of value for participating in validating activities, as well as extending blockchains. Bitcoin will be simultaneously issued and accepted right after the decision by all members.

2.1 The impact of Bitcoin on stock markets.

These studies considered Bitcoin as part of cryptocurrencies group that make impacts on country's stock markets.

To be more specific, Dorfleitner and Lung (2018) conducted research on the impact of cryptocurrencies on investment activities in the financial markets. The study built a portfolio with two components and took place from August 2015 to August 2018. The first one contained 8 cryptocurrency including Bitcoin and some major crypto in the market. The second one was gathered from European stock market. The results demonstrated that the addition of cryptocurrency to an effectively diversified portfolio would make rate of return and risk ratios of the entire portfolio simultaneously increase in the growth market conditions. In recession scenario, additional investment in cryptocurrencies did not benefit investors and also did not make any negative effects on the portfolio return as a whole.

The results of Sami and Abdallah (2021) demonstrated more specificly the influence of cryptocurrencies on the stock market. Two authors conducted research in the Middle East and North Africa market - MENA for the period from 2014 to 2018 with 2000 observations collected from CoinMarketcap. The authors tested 3 hypotheses including: the cryptocurrency market had considerable impacts on stock markets in MENA region; the impact of the cryptocurrency on the stock market depended on regulational framework and state structure. Countries which executed strict policies or did not pay much attention in cryptocurrencies would recieve negative impacts on stock market. Conversely, countries which run flexible policies will get positive influences. The paper applied multivariable regression model to estimate the intergration between stock index in MENA region as dependent variable and 5 independent variables including: national GDP, oil production, protective index when parties involved in a financial transaction, volume of crytocurrencies traded and the rate of return in the crytocurrency market. It came to a clear conclusion that cryptocurrency market has a strong impact on stock market in the MENA

region. For countries that banned cryptocurrencies, every 1% increase in cryptocurrency market value would cause a decrease by 0.15% in stock market. Meanwhile 1% crypto growth led to an increase by 0.13% in stock index in countries that allowed the circulation of cryptocurrencies. According to this result, positive impacts would only take place in the countries which executed flexible and soft policies for cryptocurrency. However, the two authors also emphasized that the extreme volatility of the cryptocurrency market also brought a lot of risks to the stock markets in MENA region.

Research by Moritz Holtmeier and Philipp Sandner (2019) also shared the same conclusion about the impacts of cryptocurrencies on the stock market according to the degree of regulatory rigidity. In their research, the two authors point out that the origin of the price volatility of Bitcoin or other cryptocurrencies was due to a lack of flexibility in the supply and lack of regulation. The most positive impact of cryptocurrencies on the financial system would be recognized as promoting the development of international payments. However, this impact tended to decrease based on 2 factors, decreasing familiarity with cryptocurrencies and increasing strictness of cryptocurrency regulation in countries. The authors' research was conducted in developing countries. The results show that the impact of Bitcoin on these countries seemed not to be large because the openness to cryptocurrencies was narrow and the desire for exposuring to this currency was not very popular.

Regarding the risk management in the Bitcoin market, Srokosz and Kopyscianski (2015) did a research with empirical evidence which pointed out that Bitcoin 's high volatility and related regulatory issues could easily lead to instability. Research by Gulled et al. (2018) also confirmed that the extreme price volatility of Bitcoin not only made the financial sector unstable, but also limited the number of people using Bitcoin as a means of payment. The research was conducted by using qualitative methods such as in-depth interviews with experts in finance, economics, and technology; synthesis analysis of the answers based on several case studies; comparation and contrast.

The common point of these studies coud be summarized that impact from Bitcoin on the stock market had certainly existed. However, the impact was not very clear. Sometimes it only took under several specific conditions related to policy, state management or market characteristics. The impact of Bitcoin on markets could be considered to be inconsistent across studies demonstrating both negative and positive significance. In addition, these studies were conducted mainly on developed markets or markets with wider openness to Bitcoin such as the Middle East, Africa region. There were barely researches which have been examined in developing countries, typically in Southeast Asia – the location with a relatively large amount of Bitcoin ownership and cautious Bitcoin and cryptocurrencies management.

2.2 Safe-haven characteristics of Bitcoin with different financial assets in the market

This research direction analyzed whether Bitcoin could benefit investors in diversifying risks when made investment in the stock market or other financial assets and could experience spillover effects from the fluctuation of separate financial markets. These studies were developed mainly from late 2016 to early 2021. That period withnessed the huge increase in Bitcoin price, which turned this crypto into an innovative, attractive, and profitable investment channel.

Research by Bouri et al. (2017) analyzed the correlation between Bitcoin and some major stock market indices such as S&P500, UK FTSE 100, Germany DAX30, Japan Nikkei 225 and China MSCI along with several other markets such as the bond market, Forex and gold market. The authors wanted to evaluate Bitcoin's diversification and safe-haven relative to other markets. The results pointed out that Bitcoin could be considered as a suitable asset for diversification and a strong safe-haven asset in Asian stock markets during downturns phrase. Research by Bouoiyour et al. (2019) compared the safety of Bitcoin with gold and assessed whether Bitcoin could become an alternative safe-haven asset. The author applied the Markov transition model and moving average method to evaluate the risk correlation amongs gold, Bitcoin and other financial assets such as securities. The results proposed that Bitcoin shared many characteristics with gold such as being more reliable in recession, having its own intrinsic value, and being slightly affected by other financial assets. In particular, Bitcoin contributed for portfolio diversification more than gold. The authors concluded that Bitcoin was a safe-haven asset.

Kamran et al. (2022) confirmed similar results when conducted a study of Bitcoin as a safe-haven asset with the Australian stock market. The results showed that Bitcoin's safe-haven character has still presented on the Australian stock market. However, this feature seemed to be weak and unstable when Bitcoin was added to different stock portfolios. Weak safe-haven was also found in the study of Kumamoto and Zhuo (2021). The authors compared the characteristics of Bitcoin and gold in correlation with the US stock market. The results revealed that Bitcoin's safe-haven performance tended to be weaker than that of gold, providing only diversification for stock investors in the United States.

Contrary to the above review, some researches indicated that Bitcoin was not a safe-haven asset compared to the stock market. Study of Bouri et al. (2017), and Smales (2019) evaluated the correlation between Bitcoin and the stock market with the S&P500 index and S&P ETF. Both researches found the same conclusion that Bitcoin was not a safe-haven asset for stock investors. Smales observed that Bitcoin price remained highly volatile and less liquidity than the stock market even under crisis-free conditions. The result was similar to the study of Conlon and McGee (2020). Two authors analyzed Bitcoin's safe-haven during the Covid-19 crisis in 2020. The paper asserted that Bitcoin was not a safe-haven asset because Bitcoin increased the risk of portfolio loss and remained bearish when the S&P500 stock market declined.

The conclusions drawn from these researches were not homogeneity. The majority argued that Bitcoin seemed not to have the characteristics of a safe-haven asset, or exists at a weak level. However, these studies did not negate the benefits of portfolio diversification for stock investors. Besides, these researches direction barely refered to policy implications for administration and government agencies, but more towards investors in the market. Similar to the previous research direction, the context of this direction was mostly located in developed and influential markets such as the United States, Japan and China without much attention on the risk correlation between Bitcoin and stock markets in developing countries.

2.3 Spillover effect or market contagion – the relationship between Bitcoin and the stock market in global context

This research direction got some opposite assumption to the previous above. The risk-correlation research argument wanted to determine whether Bitcoin reflected some aspects of a safe-haven asset which did not transmit or receive recessionary shocks in relationship with other assets. The third viewpoint wanted to examine and measure the existence of contagion in the relationship between Bitcoin and the stock market. Characteristically, Granger or Kyrtsou-Labys causality tests were often used to detect contagion before quantitative models ARGH and VAR were executed to measure the spillover effect. This topic tended to be more popular than the two previous one about Bitcoin and stock market.

Panagiotidis et al. (2019) measured the spread in the rate of return and volatility between Bitcoin and traditional financial assets including the stock market, foreign exchange market, gold and oil. The author applied an alternate VAR and FAVAR model to compute the impulse response among asset types. The results pointed out that there was a strong correlation between Bitcoin and the traditional stock market. In addition, Asian stock markets were increasingly receiving strong impacts from Bitcoin’s price movement. However, the impacts gradually diminished after 2 years from the moment that some government such as China and India established some strict policies against this currency.

Elsayed et al. (2021) evaluated the spillover effect between Bitcoin and traditional financial assets under the impact of the Covid-19 pandemic. The model applied was the Time- Time-Varying Parameter VAR Model (TVP-VAR). The results demonstrated that, under the impact of the Covid pandemic, the level of contagion influence between Bitcoin and other financial assets increased significantly and remained at a high level. Bitcoin played as the transmitter of volatility to traditional financial assets, including the stock market. This is a one-way relationship. Bitcoin did not receive the shock transmitted from other assets. The only factor influencing Bitcoin volatility can be recognized as economic policy uncertainty (EPU index).

Thai Hung (2022) adopted similar approach to analyze the relationship among Bitcoin, gold market, crude oil and US stock market. The study executed generalized VAR model and the Kyrtsou-Labys nonlinear causality test. The given results demonstrated that US stock market suffered from volatility spillovers of Bitcoin market. Bitcoin return was subject to a spread from the US stock market, gold and crude oil markets. Price drop of Bitcoin caused more impacts on stock market than price increase. The correlation between the return rate of Bitcoin and the US stock market was relatively strong. As the S&P 500 index rose, the rate of return of Bitcoin also increased.

Continuing to study the contagion between Bitcoin and other financial assets, Jiahong Li and Ping Li (2022) only measured the spillover effect between Bitcoin and other assets within China. There were 4 subjects chosen including stock market, foreign currency market, derivatives market, real estate market and commodity market. The results also confirmed that there was a spillover effect in the relationship between Bitcoin and these assets. Bitcoin tended to receive volatility spillovers more than transmitted it to other markets. This contagion seemed to be minor, but the magnitude would increase whenever an unexpected events occured in the stock market.

2.4 Literature review of spillover effect between Vietnamese stock market and Bitcoin market

Contrary to the popularity in the perception of the Vietnamese market about Bitcoin as well as cryptocurrencies, the number of studies on the relationship betweemn Bitcoin and Vietnamese economy, financial system, or stock market was still narrowed. Vietnamese researchers had done many studies about the relationship between Bitcoin and foreign stock markets instead of Vietnam such as Huynh et al. (2020), Thai Hung (2021), Thai Hung (2022), Khanh Quoc (2022), Ha and Nham (2022). These above studies have all taken place in the US or European stock markets. A minority of research examined in Vietnamese background within a very general scale.

Đang Vuong Anh (2018) approached from the definition of cryptocurrencies and judgments about the impact of this currency on the market. The study mentioned some most typical characteristics of Bitcoin such as instability, flexible conversion, and anonymity. The paper indicated that the government would face some challenges to statistic and manage the capital flows between cryptocurrency market and traditional markets.

Research by Tran Thi Xuan Anh and Ngo Thi Hang (2020) pointed out the fact that, although there would be still no specific legal provisions in trading and business activities with cryptocurrencies, Vietnamese investors had been trading cryptocurrencies very actively. From 2018 to 2023, the weekly Bitcoin transaction value has reached an average of nearly 1 billion VND. The volume peaked at 4 billion VND per week in August 2019 and reach approximately 2.9 billion VND per week in May 2020. The transaction was mainly executed in the form of buying and selling through smartphone applications. The study did not specify the possible effects of investors' shift to the cryptocurrency market in Vietnam. The most influenced market was the stock market. The report by Nguyen Kieu Giang and Youkyung Lee (2021) concludes that Bitcoin could be considered as one of the main causes of capital outflows from the Vietnamese stock market.

The report of IMF experts including Nada Choueiri et al. (2022) on the relationship between Bitcoin and the Vietnamese stock market drew some interesting conclusions. The correlation of rate of return and volatility between Bitcoin and the Vietnamese stock market ranked at first place in Southeast Asia and witnessed a strong increase after the impact of the Covid-19 pandemic. Specifically, the correlation of returns between Bitcoin and the Vietnamese stock market increased from 0.01 to 0.3 and the correlation of volatility increased from 0.19 to 0.46. The relationship between Bitcoin and Vietnam's stock market seemed to get strongger.

To et al. (2022) might be one of the rare studies aimed directly at the relationship between the Bitcoin market and the Vietnamese stock market. The research used the TVP-VAR model to analyze the relationship between some cryptocurrencies and the Vietnamese stock market. The results confirmed that large-cap coins such as Bitcoin and Ethereum put a strong impact on the Vietnamese stock market. In particular, the period with the strongest impact was the period when the Covid-19 pandemic broke out in Vietnam in 2020-2021. The influence became weaker than in the pre-Covid-19 period.

2.5 The explaination of the spillover mechanism between the Bitcoin market and the stock market

From the literature review, it can be seen that the gap between scope, diversity, and conclusion of research on the relationship between Bitcoin and stock markets in many countries. This relationship seems to be attractive to investors, researchers and policy makers globally. Despite many arguement around this concept, the majority of articles in this topics came to the same conclusion that contagion and spillover effect existed between Bitcoin and stock market.

However, the explaination for this spillover had received a little attention. The correlation between the Bitcoin market as an international market, and the stock market as a domestic market did not completely fall within the three fundamental explanations for the spillover mechanism of crisis shocks reviewed above. The Bitcoin market and the stock market seemed not to represent macroeconomics relationship as in the theory of international trade relations. Bitcoin and stock market linkage represented some aspects of contagion in the international interbank system and capital markets. Third line of study on market regulation in terms of micro/macro adaptation or investor behavior provided the most comprehensive explanations for the spillover mechanism between the Bitcoin market and the stock market.

The two most approved explaination for the contagion between Bitcoin and stock market could be considered as the safe haven feature of Bitcoin and investor sentiment analysis. The first direction of research was presented 2.2. When Bitcoin has the characteristics of a safe-haven asset, investors would restructure their portfolios to this crypto when the stock market crash, which caused the spillover effect between the two markets. The second research direction was based on an important valued characteristic of Bitcoin as well as cryptocurrencies - community. When Bitcoin was increasingly accepted and suggested by a large, more investors would tend to diversify their portfolios with Bitcoin. That action would potentionally cause an impact on stock market through investment cash flows and risk spillover mechanism.

The first research direction could include Bouri et al. (2017), Bouoiyour et al. (2019), Kumamoto and Zhuo (2021) or Kamran et al. (2022). The mentioned studies all proved that Bitcoin contained all the characteristics of a safe-haven asset. However, the recent period of 2021 - 2023 witnessed a sharp decline in the price of Bitcoin as well as the cryptocurrency market, which pointed out that the safe-haven Bitcoin would be imperfect. Bitcoin was only considered a “safe haven” in each specific period and conditions. Research by Adjani and Husodo (2022) on the safe-haven of Bitcoin and gold with 5 ASEAN stock markets during Covid 2020 shown that the safe – haven Bitcoin only occurred in the short term in the relatioship with JKSE (Indonesia), STI (Singapore) and PSEI (Philippines). Research by Chan et al. (2023) assessed the "safe haven" of Bitcoin and gold in the US stock market before and after the Covid pandemic. The results showed that Bitcoin did not present as a safe-haven during the time of the pandemic crisis. Research by Bahloul et al. (2023) on the safe - haven of Bitcoin with several international stock markets. According to the research, Bitcoin was highly hedging for the US and Chinese markets, only acted as a safe-haven for the Chinese market instead of US, UK and some other European countries. Yatie (2022) and Fabris and Jesic (2023) both concluded that Bitcoin was not a safe-haven asset to the European stock market. This currency could be owned only for hedging certain risks for investors' portfolios.

The second research direction proposed to analyze the relationship between the Bitcoin market and the stock market from the perspective of investor behavior. Bouoiyour et al. (2015) and Koutmos (2022) both argued that the value of Bitcoin or other cryptocurrencies tended to be influenced by investor sentiment and acceptance. Naifar and Altamimi (2023) conducted a study on the influence of investor sentiment and media attitudes on the profitability of Bitcoin. The results indicated that, in terms of stock market growth or decline due to the Covid-19 pandemic, investor sentiment had a negative impact on Bitcoin price. Jo et al. (2020) applied a 5-factor Fama-French valuation model to assess the impact of investor sentiment on Bitcoin price. The authors adopted the opinions of investors on global stock exchanges (AAII index and VIX index). The results concluded that the return of Bitcoin increases when investors' perception of the stock market was pessimistic and decreased when investors felt optimistic. In the opposite direction, the influence of investor sentiment on Bitcoin on the stock market has research by Budiarso and Pontoh (2023) in the relationship of Bitcoin and the Indonesian stock market. The conclusion indicated that investors' preference for Bitcoin caused the Indonesian stock market to strongly fluctuate.

The volatility of Bitcoin would also have made this crypto become more attractive to the Indonesian investors.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Adjani Z. N. and Zaafri Husodo (2022), Bitcoin and gold as hedging instruments for ASEAN-5 stock market, pp. 296-299.

Allen Franklin and Douglas Gale (2000), Financial Contagion, *Journal of Political Economy,* No.108(1), pp. 1-33.

Asad Muzaffar, Mosab I. Tabash, Umaid A. Sheikh, Mesfer Mubarak Al-Muhanadi and Zahid Ahmad (2020), Gold-oil-exchange rate volatility, Bombay stock exchange and global financial contagion 2008: Application of NARDL model with dynamic multipliers for evidences beyond symmetry, *Cogent Business & Management,* No.7(1), pp. 1849889.

Ayadi Ahmed, Marjène Gana, Stéphane Goutte and Khaled Guesmi (2021), Equity-commodity contagion during four recent crises: Evidence from the USA, Europe and the BRICS, *International Review of Economics & Finance,* No.76, pp. 376-423.

Bahloul Slah, Mourad Mroua and Nader Naifar (2023), Re-evaluating the hedge and safe-haven properties of Islamic indexes, gold and Bitcoin: evidence from DCC–GARCH and quantile models, *Journal of Islamic Accounting and Business Research*.

Bouoiyour Jamal, Refk Selmi, Aviral Tiwari and Olaolu Olayeni (2015), What determines Bitcoin's value?

Bouoiyour Jamal, Refk Selmi and Mark Wohar (2019), Bitcoin: competitor or complement to gold?, *Economics Bulletin*.

Bouri Elie, Peter Molnár, Georges Azzi, David Roubaud and Lars Ivar Hagfors (2017), On the hedge and safe haven properties of Bitcoin: Is it really more than a diversifier?, *Finance Research Letters,* No.20, pp. 192-198.

Budiarso Novi Swandari and Winston Pontoh (2023), The preference of Bitcoin and stocks in Indonesia, *The Contrarian : Finance, Accounting, and Business Research,* No.1(2), pp. 54-60.

Calvo Guillermo (1999), *Contagion in Emerging Markets: When Wall Street Is a Carrier,* Winter Camp in International Finance, AEA 1999 New York Meetings.

Chan Jireh Yi-Le, Seuk Wai Phoong, Seuk Yen Phoong, Wai Khuen Cheng and Yen-Lin Chen (2023), The Bitcoin Halving Cycle Volatility Dynamics and Safe Haven-Hedge Properties: A MSGARCH Approach, *Mathematics,* No.11(3), pp. 698.

Conlon Thomas and Richard McGee (2020), Safe haven or risky hazard? Bitcoin during the Covid-19 bear market, *Finance Research Letters,* No.35, pp. 101607.

Corsetti Giancarlo, Paolo Pesenti and Nouriel Roubini (1999), What caused the Asian currency and financial crisis?, *Japan and the World Economy,* No.11(3), pp. 305-373.

Corsetti Giancarlo, Marcello Pericoli and Massimo Sbracia (2005), 'Some contagion, some interdependence': More pitfalls in tests of financial contagion, *Journal of International Money and Finance,* No.24(8), pp. 1177-1199.

Đang Vuong Anh (2018), *The impact of cryptocurrency on financial markets, currencies, and finance*, [Access onn 20/08 2022], from: https://tapchitaichinh.vn/nghien-cuu-trao-doi/nghien-cuu-dieu-tra/anh-huong-cua-tien-ma-hoa-doi-voi-thi-truong-tai-chinh-tien-te-139858.html

Dorfleitner Gregor and Carina Lung (2018), Cryptocurrencies from the perspective of euro investors: a re-examination of diversification benefits and a new day-of-the-week effect, *Journal of Asset Management,* No.19(7), pp. 472-494.

Elsayed Ahmed, Giray Gozgor and Chi Keung Lau (2021), Risk Transmissions between Bitcoin and Traditional Financial Assets during the COVID-19 Era: The Role of Global Uncertainties, *International Review of Financial Analysis,* No.81.

Fabris Nikola and Milutin Jesic (2023), Are Gold and Bitcoin a Safe Haven for European Indices?, *Journal of Central Banking Theory and Practice,* No.12, pp. 27-44.

Gerlach Stefan and Frank Smets (1994), *Contagious speculative attacks,* Bank for International Settlements.

Goldstein Morris, Graciela Kaminsky and Carmen Reinhart (2000), *Assessing Financial Vulnerability: An Early Warning System for Emerging Markets*,

Gulled Abdirahman, Jakaria Hossain and Henrik Höglund (2018), 'Bitcoins Challenge to the Financial Institutions A qualitative study of how Bitcoin technology affects the traditional transaction system'.

Ha Le Thanh and Nguyen Thi Hong Nham (2022), An application of a TVP-VAR extended joint connected approach to explore connectedness between WTI crude oil, gold, stock and cryptocurrencies during the COVID-19 health crisis, *Technological Forecasting and Social Change,* No.183, pp. 121909.

Hussain Nazakat and Imran Riaz (2019), CONTAGION AND INTERDEPENDENCE AMONG GOLD, OIL, FOREX, AND ASIAN EMERGING EQUITY MARKETS.

Huynh Toan Luu Duc, Muhammad Ali Nasir, Xuan Vinh Vo and Thong Trung Nguyen (2020), "Small things matter most": The spillover effects in the cryptocurrency market and gold as a silver bullet, *The North American Journal of Economics and Finance,* No.54, pp. 101277.

Jiahong Li and Ping Li (2022), Volatility Spillovers between Bitcoin and Chinese Economic and Financial Markets, *SSRN*.

Jo Hoje, Haehean Park and Hersh Shefrin (2020), Bitcoin and sentiment, *Journal of Futures Markets,* No.40.

Kamran Muhammad, Pakeezah Butt, Assim Abdel-Razzaq and Hadrian Geri Djajadikerta (2022), Is Bitcoin a safe haven? Application of FinTech to safeguard Australian stock markets, *Studies in Economics and Finance,* No.39(3), pp. 386-402.

Khan Aftab, Sarkar Kabir, Omar Bashar and Mansur Masih (2015), TIME VARYING CORRELATION BETWEEN ISLAMIC EQUITY AND COMMODITY RETURNS: IMPLICATIONS FOR PORTFOLIO DIVERSIFICATION, *The Journal of Developing Areas,* No.49, pp. 115-128.

Khan Aftab and Mansur Masih (2021), *Do Islamic stocks and commodity markets comove at different investment horizons - evidence from wavelet time-frequency approach*,

Khanh Quoc Nguyen (2022), The correlation between the stock market and Bitcoin during COVID-19 and other uncertainty periods, *Finance Research Letters,* No.46, pp. 102284.

Kocaarslan Baris, Ugur Soytas, Ramazan Sari and Ecenur Ugurlu (2019), The Changing Role of Financial Stress, Oil Price, and Gold Price in Financial Contagion among US and BRIC Markets, *International Review of Finance,* No.19(3), pp. 541-574.

Koutmos Dimitrios (2022), Investor sentiment and bitcoin prices, *Review of Quantitative Finance and Accounting,* No.60.

Kumamoto Masao and Juanjuan Zhuo (2021), Hedge and safe haven status of Bitcoin: copula-DCC approach, *Economics Bulletin,* No.41(1), pp. 125-136.

Moritz Holtmeier and Philipp Sandner (2019), The impact of crypto currencies on developing countries, *Frankfurt School of Finance & Management gGmbH*.

Nada Choueiri, Anne-Marie Gulde-Wolf and Tara Iyer (2022), *Crypto is More in Step With Asia's Equities, Highlighting Need for Regulation*, [Accessed on 22/08 2022], from: https://blogs.imf.org/2022/08/21/crypto-is-more-in-line-with-asian-equities-highlighting-need-for-regulation/

Naifar Nader and Sohale Altamimi (2023), Asymmetric impact of investor sentiment and media coverage news on bitcoin returns, *Managerial Finance*.

Nguyen Kieu Giang and Youkyung Lee (2021), *Tesla and Bitcoin to Blame for Exodus From Vietnam's Stocks*, [Accessed on 22/08 2022], from: https://www.bloomberg.com/news/articles/2021-12-09/tesla-and-bitcoin-to-blame-for-exodus-from-vietnam-s-stocks#xj4y7vzkg

Panagiotidis Theodore, Thanasis Stengos and Orestis Vravosinos (2019), The effects of markets, uncertainty and search intensity on bitcoin returns, *International Review of Financial Analysis,* No.63, pp. 220-242.

Sami Mina and Wael Abdallah (2021), How does the cryptocurrency market affect the stock market performance in the MENA region?, *Journal of Economic and Administrative Sciences,* No.37(4), pp. 741-753.

Smales L. A. (2019), Bitcoin as a safe haven: Is it even worth considering?, *Finance Research Letters,* No.30, pp. 385-393.

Srokosz Witold and Tomasz Kopyscianski (2015), Legal And Economic Analysis Of The Cryptocurrencies Impact On The Financial System Stability, *Journal of Teaching and Education,* No.4, pp. 619-627.

Thai Hung Ngo (2021), 'BITCOIN AND CEE STOCK MARKETS: FRESH EVIDENCE FROM USING THE DECO-GARCH MODEL AND QUANTILE ON QUANTILE REGRESSION*European Journal of Management and Business Economics*.

Thai Hung Ngo (2022), Asymmetric connectedness among S&P 500, crude oil, gold and Bitcoin, *Managerial Finance*.

To Trung-Thanh, Le Ha, Thi Nguyen and Ngoc Anh Tran (2022), An Application of a TVP-VAR Extended Joint Connected Approach to Investigate Dynamic Spillover Interrelations of Cryptocurrency and Stock Market in Vietnam, *Journal of International Commerce, Economics and Policy,* No. 14.

Tobias Adrian and Tommaso Mancini Griffoli (2019), *The Rise of Digital Money,* IMF, 9781498324908/2664-5912, IMF.

Tran Thi Xuan Anh and Ngo Thi Hang (2020), Current status and trends in cryptocurrency development in Vietnam - some policy recommendations, *Journal of international economics and management, Foreign Trade University*.

Yatie Alhonita (2022), Crypto-assets better safe-havens than Gold during Covid-19: The case of European indices.

Zhang Lei, Marcus Miller and Kannika Thampanishvong (2003), Learning to Forget? Contagion and Political Risk in Brazil, *Royal Economic Society Annual Conference 2003* No. 3785.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 39-55
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.538

Motivating Factors and Online Behavior Influencing the Choice of Community-Based Tourism Preferences of Generation Z in Vietnam

Nguyen Thi Van Anh[1], Pham Minh Hoang[2]

[1] University of Labor and Social Affairs. Email: nguyenvananh83@ulsa.edu.vn
[2] Le Quy Don High School for the Gifted, Da Nang. Email: hoangpham06.forwork@gmail.com

Abstract
The research examines the motivations for community-based tourism with four types, including "Learning," "Spending time with family," "Nature," and "Experience - Exploration." The investigation involved scrutinizing each statement using Likert 5-scale questions. Among the four motivations for Gen Z in Vietnam participating in this type of tourism, the "Enjoying nature" motivation has the highest average score of 4.22 and is the only one that reached the threshold of "Strongly Agree." For those young people who intend to engage in community-based tourism, similar to those who have already participated, the "Enjoying nature" motivation has the highest average score, with 4.15 points. The group that has already participated shows a significant difference in the data regarding the level of online behavior before participating in tourism. Concerning the travel behavior of "Reading travel reviews on social media," it is the most commonly performed activity, with 95.65% in the group that has participated and 9.259% in the group with the intention to participate.

Keywords: Motivations, Online Behavior, Decision-Making, Community-Based Tourism Preferences, Young People, Gen Z, Vietnam

1. Raising the Issues

According to the Vietnam National Tourism Administration (2019), community-*based* tourism is defined as an activity in which a community's population participates in tourism. Currently, community-based tourism is considered the most sustainable form of tourism that brings economic development benefits to local residents. Community-based tourism not only helps people protect ecological resources but also preserves and promotes the unique cultural aspects of the locality. Vietnam has great potential in terms of natural landscapes, historical and cultural values of ethnic communities, customs and ways of life, and diverse culinary culture in various regions, providing a strong foundation for the development of community-based tourism (Doan Manh Cuong, 2019).

Community-based tourism is increasingly attracting many tourists due to its intimate and authentic nature. It includes various forms depending on factors such as topography, historical length, and natural scenery.

This study aims to understand the motivations of Gen Z young people (1997-2012) who intend to or have chosen community-based tourism and their online behaviors before, during, and after their participation in community-

based tourism. The research team conducted an examination of the concept of community-based tourism, various types of community-based tourism, an overview of tourism studies, community-based tourism, and travel motivations, as well as studies related to online behaviors in tourism in general and community-based tourism in particular. By analyzing and synthesizing these findings in combination with survey results from 336 young people, including 230 who have participated in community-based tourism (69%), 81 who intend to do so (24%), and 25 who do not plan to (7%), the research team examined online behaviors before, during, and after trips for the young people who have engaged in community-based tourism, as well as behaviors before trips for the young people who have not yet traveled but plan to do so in the near future. This allowed for a comparative analysis between the two groups. Additionally, the study investigated the motivations for community-based tourism, categorizing them into four types: 'Learning,' 'Spending time with family,' 'Nature,' and 'Experience - Exploration.' Each motivation was assessed using Likert 5-scale questions to calculate the average value of each motivation, enabling a comparison between the two surveyed groups to identify similarities and differences in travel motivations

2. Theoretical Basis

2.1. Community-based tourism

2.1.1. Community-based tourism

Community-based tourism is regarded as a type of tourism that attracts many visitors due to its close and authentic nature. When tourists engage in community-based tourism, they are invited to villages and areas where local residents live. Here, they are provided with accommodation and have the opportunity to enjoy local, traditional dishes and specialties. Additionally, tourists experience the daily lives of local residents, allowing them to explore and learn about the cultural and traditional values of the region. The expenses incurred by tourists contribute to the income of local communities, ultimately leading to various sustainable economic development benefits for the area (Dinh Thuy Dung, 2022).

According to Article 15, Clause 3 of the 2017 Tourism Law: *Community-based tourism is a type of tourism developed based on the cultural values of the community. It is managed, organized, exploited, and benefited from by the local community.*

Community-based tourism is a type of tourism that involves the participation of the local community in the supply chain and management of tourism. This tourism model is established and developed based on the community's own culture, managed, organized and benefited by the local community (Vinpearl, 2021).

Therefore, we can understand that *community*-based *tourism is an activity in which a local community engages in tourism. In other words, it is a type of tourism in which the local community participates in the supply chain and management of tourism. This form of tourism is developed based on the community's culture and is managed, organized and benefited by the local community.*

2.1.2. Types of community-based tourism

Community-based tourism is a highly diverse tourism model that encompasses various types depending on factors such as geographical terrain, historical length, and natural landscapes. According to Hoteljob.vn (2021), some common forms of community-based tourism include:

Ecotourism: This type of community-based tourism takes place in areas with suitable conditions. Tourists visit these areas to explore the beauty of the local culture and social life while being environmentally conscious.
Cultural Tourism: Cultural community-based tourism is based on the local culture, history, and archaeology of the area to create unique and attractive tourism products.

Agricultural Tourism: This form of community-based tourism allows visitors to experience life in the local agricultural areas, such as animal farms, combined agriculture and forestry farms, fruit orchards, vegetable gardens. Visitors can both tour and engage in local farming activities.

Indigenous Tourism: Indigenous community-based tourism directly involves local indigenous people and minority ethnic communities in tourism activities to attract and serve tourists.

Village Tourism: Village community-based tourism is a type where rural villages in the area create economic benefits through tourism. They attract tourists by sharing the activities of rural life and providing services related to food, accommodation, and entertainment for those interested.

Arts and Crafts: This type of community-based tourism is particularly well-developed in areas with a long history. It combines tourism with hands-on activities to create beautiful art or handicraft products.

2.2. Travel motivation

The concept of travel motivation is used to refer to a collection of attributes that play the role of causes for a person to engage in a travel activity (Li M, Zhang H, Xiao H, Chen Y, 2015). It also explains the behavior of tourists because it forms the motivations and attractions behind each type of behavior (Crompton JL, 1979). Travel motivation is directly related to the reason why a person decides to engage in travel activities (Chen CF, Chen FS, 2010).

Travel motivation is the reason for the act of traveling in order to satisfy the needs and desires of tourists. It is a subjective factor that encourages people to turn their travel needs into actual actions. Furthermore, travel motivation indicates the psychological reasons that encourage individuals to travel, choose a destination, and engage in a particular type of travel (Mai TT, et al, 2013)

Travel motivation is considered a key factor in explaining the behavior of tourists. Dann G., (1977) argued that these motivations include both push and pull factors that drive individuals to engage in travel behavior. Push motivations are factors that stimulate or create desires within the tourist (Uysal M, Hagan LR, 1993; Crompton, 1979). Push factors include escaping from routine life, relaxation, demonstrating status, physical health and fitness, adventure, social interaction, spending time with family, and seeking enjoyment (Crompton, 1979). Pull motivations are generated from external influences (Yoon Y, Uysal M, 2005), related to situational and perceptual inspiration through various objective factors, such as the attractiveness of the destination (Yoon Y, Uysal M, 2005). Pull motivations are primarily studied in relation to tangible resources that determine the attractiveness of a destination (Kim S, Lee C, & Klenosky D, 2003), natural and historical attractions, cuisine, people (Ha T.T.T, et al, 2019), supporting technological means, entertainment, and destination image promotion.

In contrast to extrinsic motivation, intrinsic motivation is the drive for performing actions that inherently provide satisfaction or enjoyment without being influenced by external factors (Legault, 2016). Travel motivation is part of consumer motivation, which includes both extrinsic and intrinsic motivation, driving consumer purchasing and service use behavior. In tourism studies, motivation is a crucial factor as it determines supply and demand in the tourism service market (Fields, 2002; Mahika, 2011; Johnson & Thomas 1992)."

Regarding intrinsic motivation driving travel intentions and decisions, experimental studies have yielded different results from various perspectives. Beard & Ragheb (1983) proposed a model called Ragheb LMS based on Maslow's hierarchy of needs and divided travel motivation factors into four components as follows: (i) Cognitive component: learning and exploration activities; (ii) Social component: the need for social relationships and the need for respect from others; (iii) Skill-related component: determining how individuals engage in recreational activities to achieve accomplishments, leadership, and competition; these activities are often physical in nature; (iv) Avoidance component: identifying the need for escape from life's stressors, including avoiding social interaction, seeking independence, tranquility, and relaxation.

Mahika (2011) suggests that travel motivations are to some extent influenced by individual characteristics of the travelers, which include: (i) Personality traits; (ii) Lifestyle of the individual; (iii) Past experiences, both positive and negative; (iv) The individual's past (nostalgia for specific places); (v) Perspective or viewpoints of the individual; (vi) Socioeconomic status. A study by Pham Quoc Tri & Trinh Thi Thu (2021) on factors influencing the decision to choose rural tourism destinations based on community engagement in the North Central region of Vietnam proposed a model that includes two primary categories: (1) internal factors, and (2) external factors. The internal factors consist of four intrinsic motivations, namely (1) the desire for exploration, (2) the desire for relaxation, (3) the desire for social interaction, and (4) economic motivation, with the desire for social interaction and relaxation having the most significant impact. Smith et al., (2020) conducted a study on motivations, experiences, and demographics of cultural tourists, an essential component of community-based tourism, in Budapest. They identified seven key cultural tourism experiences. The statistical analysis of 614 responses received from tourists in Budapest in April 2019, spanning various age groups(from 18 to over 74), nationalities (including the UK, France, Germany, Italy, and Spain), and genders (52% female and 48% male), revealed that almost every age group rated two experiences, 'enjoying the atmosphere' and 'enjoying food and drinks,' with an average score above 6 on the Likert scale. A study by Hanh et al., (2021) on student satisfaction with community-based tourism activities in Hoa Vang District, Da Nang, measured student motivations in participating in these activities. It identified three extrinsic motivations and one intrinsic motivation: 'Having a personal desire to engage in educational and experiential travel.' The study yielded an average score of 4.1525 for this motivation, the highest among the four motivations measured. Chanapong Arpornpisal (2018) identified four driving motivations for travel behavior.

Jutamas Phengkonaa and Paithoon Monpanthongb (2022) conducted a study to classify domestic tourists visiting community-based tourism destinations in Thailand based on their motivations. The research used quantitative research as the primary research method to achieve its objectives. A self-administered online survey was conducted with 384 tourists, and the primary data was analyzed using cluster analysis. The study identified three clusters of tourists, which included "learning tourists," "entertainment tourists," and "multi-purpose tourists." These tourist groups differed in terms of their travel motivations, with four types of motivations taken into consideration: "Learning," "Spending time with family," "Nature," and "Experiencing and Exploring." Additionally, social demographic profiles and online behaviors were also considered. The results of the study provide significant insights for scholars and practitioners, allowing them to understand the differences between tourist groups and develop more tailored marketing strategies for community-based tourism destinations based on each customer segment. Furthermore, there were notable differences between the three tourist groups concerning age and gender.

2.3. Online travel behavior

In recent years, the global travel trend has shifted towards unique travel experiences that contribute to the sustainable development of the tourism industry. Furthermore, the combination of travel with information technology is a notable trend, enhancing the customer experience and creating new opportunities for the tourism sector. Online travel businesses will need to update and offer products and services that meet these needs to attract customers. Customers are seeking convenience, flexibility, and cost savings in booking hotels, flights, tours, and other services. This presents an opportunity for online travel businesses to develop suitable products and services to attract customers (Ngo Thai Hoang Tuan, 2023).

As the behavior of travelers is gradually changing, instead of going to local agencies, they are now booking tours directly on travel company websites. According to the World Tourism Organization, tourists have entered a new phase known as connected tourism. In this phase, travelers actively seek destinations, tours, hotels, book flights, and related services. Travelers also proactively post comments and reviews about hotels, tours, and the quality of services during their journeys. These reviews are often considered more trustworthy than information from professional travel surveying and rating agencies (Thanh Giang, 2019).

According to the Vietnam E-Commerce Association (VECOM), global online travel agency (OTA) brands such as Agoda.com, Booking.com, Traveloka.com, Expedia.com (including Trivago.com, Hotel.com) hold up to 80% of the market share in Vietnam. Technology platforms have significantly contributed to the development of the

tourism industry. All travel companies aim to have the best tools to help customers find products and services quickly. However, travel experts emphasize that conducting online travel is not just about creating a website or a mobile app; it's also about effectively and conveniently attracting customers to use their products (Thanh Giang, 2019).

According to Nguyen Thi Hong Ngoc (2017), online reviews have become one of the information channels that travelers use when making their choices. Applying a model of the factors affecting travelers' decisions based on opinions from tourists, the author analyzed the impact of online reviews on hotel choices in Hue. The research results proposed a model assessing the influence of online reviews on hotel selection decisions. This implies that the management and development of information channels based on online reviews by hotels need to focus on improving customer care activities, providing information, meeting, and supporting travelers when they visit Hue.

In their 2022 study, Jutamas Phengkonaa and Paithoon Monpanthongb examined the online travel behavior of three groups of customers: "learning-oriented tourists," "entertainment-oriented tourists," and "multi-purpose tourists." They investigated the behavior of these groups before, during, and after their community-based travel experiences. When planning a trip, most tourists read travel reviews from social media, which was the highest proportion of tourists compared to other clusters. Discussion boards were also used as sources for travel reviews of tourists in this cluster. They received travel information and promotion through emails more than other clusters. They mainly searched for travel information via destination websites and search engines. Contacting service providers, reserving tourism products and services as well as checking the status of location, weather, or traffic through websites were other online activities performed by the tourists before taking a trip. While traveling, they shared travel experience on social media, checked-in at destinations, live broadcasted showing their experience, and searched for more travel information in the nearby locations. After the trip, tourists also continued posting travel experiences on social media and sharing video clips on YouTube. It was notable that the tourists in this cluster were more interested in writing travel reviews on destination websites, blogs, review websites, and discussion boards more than other clusters. These showed that most tourists in this cluster were more active in using online while traveling and after returning home from a trip than those tourists of other clusters.

3. Research Methodology

3.1. Data collection method:

To investigate "*Motivating factors and online behavior influencing the choice of community-based tourism preferences of Generation Z young people in Vietnam*", the research team employed two research methods: desk research (reviewing published materials through various media) and sociological surveys (collecting responses from Gen Z young people in Vietnam). The collected data will be aggregated and analyzed using Excel and SPSS software.

Through the desk research method, the research team examined literature on community-based tourism destinations, various forms of community-based tourism, and articles related to motivations and behaviors in tourism in general and community-based tourism in particular. This was done using academic databases such as Researchgate, Scien Direct, IEE Explore, Scopus, Emerald, Insight, Taylor & Francis Online, in addition to the Google Scholar search tool and various travel and community-based tourism information websites. Subsequently, the research team developed a survey questionnaire to conduct a sociological investigation into the motivational and online behavior factors that influence the choice of community-based tourism among Gen Z young people in Vietnam.

For the sociological survey, the research team conducted preliminary surveys and discussions with Gen Z tourists in Vietnam who have shown interest in and have visited community-based tourism destinations. These discussions used a preliminary measurement scale concerning motivational and online behavioral factors specific to community-based tourism, following the approach outlined by Jutamas Phengkonaa & Paithoon Monpanthongb (2022). Participants in the discussions were encouraged to provide their opinions on relevant aspects to enhance the survey questionnaire. The preliminary research sample consisted of 10 individuals. The findings from this

preliminary research were used to refine the research questionnaire. After finalizing the survey questionnaire, the research team distributed and collected responses via the Google Form link (https://docs.google.com/forms/d/e/1FAIpQLSepkjrKCFcE-PuELITpz_VnL6bw3XXhS0kouNeebjkIP6Xobg/viewform) from Gen Z young people in Vietnam.
Data collection methods employed a convenience sampling approach and the snowball sampling method (finding the next subjects based on recommendations or introductions from those who participated in the initial survey) to ensure an adequate sample size. A total of 336 survey responses were collected, with 311 respondents indicating that they had traveled to community-based tourism destinations and intended to select this type of tourism.

3.2. Data processing method:

The research team used a Likert 5-scale when constructing the survey questionnaire for motivational questions, where: 1. Strongly Disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Strongly Agree. To assess the impact level of each factor, the team calculated the range and average value of each factor and determined the average score within which response categories it falls.

Range Value = (Maximum - Minimum) / n = (5-1) / 5 = 0.8

The assessment categories based on average score values are as follows:

+ 1.00 - 1.80: Strongly Disagree
+ 1.81 - 2.60: Disagree
+ 2.61 - 3.40: Neutral
+ 3.41 - 4.20: Agree
+ 4.21 - 5.00: Strongly Agree

For questions related to online behavior, the questions were designed to assess whether Gen Z young people in Vietnam "Yes" or "No" engage in specific behaviors. This helped identify which behaviors are frequently practiced and which are less common among these young individuals, serving as a basis for discussions and exchanges with community-based tourism professionals, particularly in the context of community-based tourism.

4. Survey Results of Motivating Factors and Online Behavior of Gen Z Young People in Vietnam about Community-Based Tourism

4.1. Descriptive statistics of survey participants

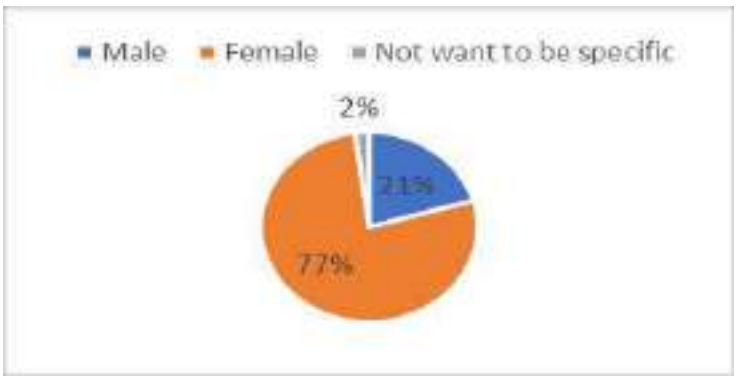


Figure 1: Gender of survey participants
Source: Survey results

Participating in the survey were 336 young individuals, including 69 males (21%), 260 females (77%), and 7 who preferred not to specify (2%).

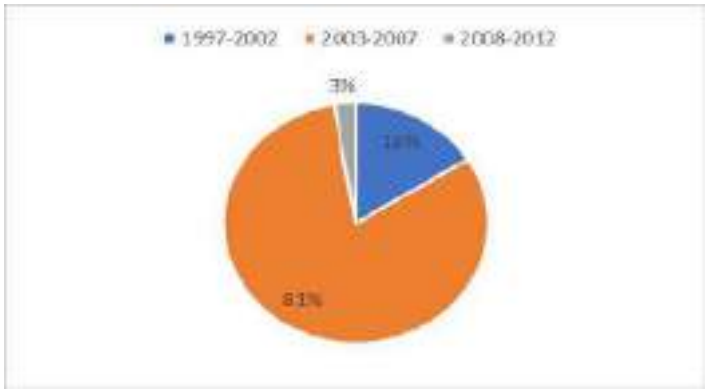


Figure 2: Survey participants' age
Source: Survey results

Participating in the survey were 336 young individuals, including 54 born in 1997-2002 (16%), 273 born in 2003-2007 (81%), and 9 born in 2008-2012 (3%).

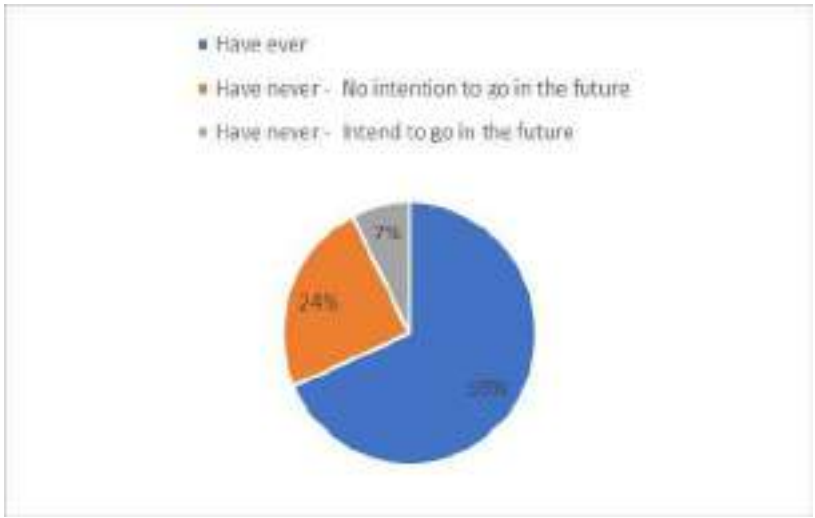


Figure 3: Percentage of Survey Participants Engaging in Community-Based Tourism
Source: Survey results

Participating in the survey were 336 young individuals, of which 230 had previously engaged in community-based tourism (69%), 81 had not but intended to (24%), and 25 had not and had no intention to do so (7%).

4.2. Online Behavior

4.2.1. For the group that had engaged in community-based tourism

Table 1: Online Behavior Before Engaging in Community-based Tourism
(For those who had experienced community-based tourism)

	Yes		**No**	
	People	**%**	**People**	**%**
Reading travel reviews on social media	**220**	**95.65**	10	4.35
Reading travel reviews on online forums	188	81.74	42	18.26

Reading travel reviews from blogs	189	82.17	41	17.83
Reading travel reviews from review websites	176	76.52	52	22.61
Searching for travel information on destination websites	202	87.83	28	12.17
Using search engines to find travel information	**210**	**91.30**	20	8.70
Asking or messaging acquaintances and friends about the destination	200	86.96	30	13.04
Contacting service providers	162	70.43	68	29.57
Pre-booking travel products and services	183	79.57	47	20.43
Checking location/weather/traffic information on websites	204	88.70	26	11.30
Searching for travel information from travel agency websites	158	68.70	72	31.30
Receiving travel information and promotions through email	105	45.65	**125**	**54.35**
Creating travel-related topics on forums	91	39.57	**139**	**60.43**

Source: Survey results

Regarding online behavior before participating in community-based tourism, for the group of young people who have previously engaged in this type of tourism, it is evident that "Reading travel reviews on social media" and *"Searching for travel information on search engines"* are the two most common online behaviors, with 95.65% and 91.30% of survey participants, respectively, reporting that they performed these activities. Conversely, *"Receiving travel information and promotions through email"* and *"Creating travel-related topics on forums"* are the two least commonly practiced online behaviors, with only 54.35% and 60.45% of participants, respectively, indicating their involvement.

Table 2: Online Behavior While Participating in Community-Based Tourism
(For those who had experienced community-based tourism)

	Yes		**No**	
	People	**%**	**People**	**%**
Posting images/videos on social media	186	80.87	44	19.13
Checking in at various locations	204	88.70	26	11.30
Searching for travel products and services within the vicinity	**205**	**89.13**	25	10.87
Making advance bookings for travel products and services	158	68.70	72	31.30
Livestreaming travel products and services	46	20.00	**184**	**80.00**

Checking location/weather/traffic on the web	**207**	**90.00**	23	10.00

Source: Survey results

\

In terms of online behavior while participating in community-based tourism, the group of young people who had previously engaged in this type of travel demonstrated that 'Checking location/weather/traffic on the web' and 'Searching for travel products and services within the vicinity' were the most common online behaviors, with 90.00% and 89.13% of respondents indicating that they engaged in these activities. 'Livestreaming travel products and services' was the least frequently performed behavior, with 80% of survey participants choosing not to engage in this activity.

Table 3: Online Behaviors After Participating in Community-Based Tourism
(For those who had experienced community-based tourism)

	Yes		**No**	
	People	**%**	**People**	**%**
Posting photos/videos on social media	196	85.22	34	14.78
Writing travel reviews and sharing them on travel platforms (Traveloka, etc.)	70	30.43	160	69.57
Writing travel reviews and sharing them on social media (Facebook, Instagram, etc.)	103	44.78	127	55.22
Writing travel reviews and sharing them on Google Maps	52	22.61	178	77.39

Source: Survey results

In terms of online behavior after participating in community-based tourism, for the group of young people who had previously engaged in this type of travel, the following trends were observed: "Posting images/videos on social media" was the most prevalent online behavior, with 85.22% of survey participants having engaged in this activity. Sharing experiential reviews appeared to be less common.

"Writing travel reviews and sharing them on social media (Facebook, Instagram, etc.)" was done by 44.78% of individuals who traveled in the community. *"Writing travel reviews and sharing them on travel platforms (Traveloka, etc.)"* were practiced by just 30.43% of the surveyed individuals who had participated in community-based tourism. *"Writing travel reviews and sharing them on Google Maps"* were the least commonly practiced behaviors, with only 22.61% of survey participants opting for this activity. *In general, individuals often share their experiences on social media through images and videos, while writing and sharing travel reviews on various platforms are less popular.*

4.2.2. For the group yet to participate in community-based tourism

Table 4: Online behaviors before engaging in community-based travel
(For the group that hasn't traveled in this manner but intends to do so in the near future)

	Yes		**No**	
	People	**%**	**People**	**%**
Reading travel reviews on social media	**75**	**92.59**	6	7.41

Reading travel reviews on online forums	67	82.72	14	17.28
Reading travel reviews from blogs	68	83.95	13	16.05
Reading travel reviews from review websites	66	81.48	15	18.52
Searching for travel information on destination websites	**75**	**92.59**	6	7.41
Searching for travel information on search engines	**73**	**90.12**	8	9.88
Asking or messaging acquaintances and friends about the destination	68	83.95	13	16.05
Contacting service providers	57	70.37	23	28.40
Pre-booking travel products and services	59	72.84	22	27.16
Checking location/weather/traffic information on websites	70	86.42	11	13.58
Seeking travel information from travel agencies' websites	58	71.60	23	28.40
Receiving travel information and promotions via email	44	54.32	**37**	**45.68**
Creating travel-related topics on forums	37	45.68	**44**	**54.32**

Source: Survey results

In general, *'Reading travel reviews on social media'* and *'Searching for travel information on destination websites'* are the two most common online behaviors among young individuals with the intention to participate in community-based tourism, both with a percentage of 92.59%. *'Receiving travel information and promoting travel via email'* and *'Creating travel-related topics on forums'* are the least performed actions, chosen by only 54.32% and 45.68% of survey participants.

4.3. Motivations for participating in community-based tourism

4.3.1. For those who have participated in community-based tourism

Table 5: Motivations for learning when participating in community-based tourism
(For those who have engaged in this form of tourism)

Learning	**1**	**2**	**3**	**4**	**5**	**Average score**	**Motivating level**	**Threshold of recognition**
Learning about local culture, traditions, and way of life	17	6	28	98	81	3.96	1	Agree
Exchanging experiences with local residents	11	7	50	103	59	3.83	2	Agree

Learning how to cook local dishes	14	11	55	94	56	3.73	3	Agree
Learning how to make local products	15	12	55	91	57	3.71	4	Agree

Source: Survey results

The majority of young people who have participated in community-based tourism **agree** with the idea of engaging in travel for the purpose of learning, with average scores ranging from 3.71 to 3.96. Among them, the motivation '*Learning about local culture, traditions, and way of life*' is the highest with an average score of 3.96.

Table 6: Motivations for spending time with family when participating in community-based tourism
(For those who have engaged in this type of tourism)

Family	**1**	**2**	**3**	**4**	**5**	**Average score**	**Motivating level**	**Threshold of recognition**
Spending time with family	20	3	17	72	118	4.15	1	Agree
Nostalgia for childhood memories	15	13	52	76	74	3.79	3	Agree
Visiting friends and family	18	10	37	86	79	3.86	2	Agree

Source: Survey results

Similarly, the majority of young people who have participated in community-based tourism agree that they engage in such travel to spend time with family and friends. Among these motivations, *'Spending time with family'* is the most agreed-upon, with an average score of 4.15.

Table 7: Nature-Related Motivations for Participating in Community-Based Tourism
(With those who have experienced this form of travel)

Nature	**1**	**2**	**3**	**4**	**5**	**Average score**	**Motivating level**	**Threshold of recognition**
Appreciating the beauty of natural landscapes	17	2	11	79	121	4.24	1	***Strongly agree***
Experiencing the local weather and atmosphere	14	4	13	86	113	4.22	2	***Strongly agree***
Engaging in native nature-related activities (camping, hiking...)	14	2	17	86	111	4.21	3	***Strongly agree***

Source: Survey results

Traveling for nature is the only motivation with a consensus, where all three statements receive **'Strongly Agree,'** and the difference between them is not more than 0.03 points. Among these, the motivation '*To appreciate the beauty of natural landscapes'* has the highest agreement with an average score of 4.24.

Table 8: Motivations for experiential exploration when participating in community-based tourism
(With the group that has already engaged in this type of tourism)

Experience - Exploration	**1**	**2**	**3**	**4**	**5**	Average score	**Motivating level**	**Threshold of Recognition**
Gaining more experiences and new adventures	14	2	17	86	111	4.21	2	***Strongly agree***
To relax and unwind	15	1	12	90	112	4.23	1	***Strongly agree***
To find new sources of inspiration	15	3	29	88	95	4.07	3	Agree
To escape from a monotonous and hectic lifestyle	14	8	42	78	88	3.95	4	Agree
To create personal value by participating in local life"	17	9	48	71	85	3.86	5	Agree

Source: Survey results

In the group of young people who have already participated in community-based travel, there are 2 motivations in the *"Discovery Experience Motivation"* category that have a threshold of **"Strongly Agree,"** which are *"Traveling to relax and unwind"* with a score of 4.23 and "*Traveling to gain more experiences and new adventures*" with a score of 4.21.

4.3.2. For those who have not participated but intend to do so in the near future

Table 9: Learning motivation when participating in community-based travel
(For the group that has not gone but intends to do so in the near future)

Learning	**1**	**2**	**3**	**4**	**5**	**Average score**	**Motivating level**	**Threshold of recognition**
To learn about the indigenous culture, traditions, and way of life	3	2	9	45	22	4.00	1	Agree
To exchange experiences with local people	3	3	16	42	17	3.83	2	Agree
To learn how to cook local dishes	3	5	20	34	19	3.75	4	Agree
To learn how to make local products	4	5	15	35	22	3.81	3	Agree

Source: Survey results

The majority of young people who intend to participate in community-based tourism agree with the idea of traveling to learn, with average scores ranging from 3.81 to 4.00. Among them, the motivation *"Learning about local culture, traditions, and lifestyles"* has the highest average score of 4.00.

Table 10: Motivations for spending time with family when participating in community-based tourism
(With the group of those who haven't been but intend to do so in the near future)

Family	1	2	3	4	5	Average score	Motivating level	Threshold of recognition
Spending time with family	5	3	7	30	36	4.10	1	Agree
Nostalgia for childhood memories	3	4	16	37	21	3.85	2	Agree
Visiting friends and family	5	5	18	25	28	3.81	3	Agree

Source: Survey results

Similarly, the majority of Gen Z individuals who intend to participate in community-based tourism agree with the idea of spending time with family. Among these motivations, *"Spending time with family"* is the most agreed-upon motivation with an average score of 4.10. On the other hand, the motivation *"Visiting friends and family"* has the lowest score with 3.81.

Table 11: Motivations for traveling for nature when participating in community-based tourism
(With the group of those who haven't been but intend to do so in the near future).

Nature	1	2	3	4	5	Average score	Motivating level	Threshold of recognition
Appreciating the beauty of natural landscapes	4	1	4	38	34	4.20	1	Agree
Experiencing the local weather and atmosphere	2	3	10	37	29	4.09	3	Agree
Engaging in native nature-related activities (camping, hiking...)	4	2	5	35	35	4.17	2	Agree

Source: Survey results

Traveling for nature is the only motivation among young individuals with the intention to participate in community-based tourism that has an average score above 4 for all motivations. Among these motivations, *"Observing the beauty of natural landscapes"* is the most agreed-upon motivation with an average score of 4.20. The motivation with the lowest average score is *"Experiencing the local weather and atmosphere"* with 4.09 points.

Table 12: Motivations for exploratory experiences when participating in community-based tourism
(With the group of those who haven't been but intend to do so in the near future).

Experience Exploration	1	2	3	4	5	Average score	Motivating level	Threshold of recognition

Gaining more experiences and new adventures	3	1	4	41	32	4.21	1	***Strongly Agree***
To relax and unwind	3	1	6	37	34	4.21	1	***Strongly Agree***
To find new sources of inspiration	3	1	10	35	32	4.14	3	Agree
To escape from a monotonous and hectic lifestyle	3	2	10	36	30	4.09	4	Agree
To create personal value by participating in local life"	4	3	16	31	27	3.91	5	Agree

Source: Survey results

The motivation to participate in community-based tourism for exploratory experiences is generally highly rated by most Gen Z individuals. All options, except *"Creating value for oneself by engaging in local life"* (average score of 3.91), have an average score above 4. The motivations *"To gain new experiences and explore"* and *"To relax and unwind"* have the highest average score of 4.21.

5. Some Exchanges and Discussion

It can be seen that among the four categories of motivations for participating in community-based tourism among Vietnamese Gen Z young people who have engaged in this type of tourism, the motivation "***Enjoying nature"*** is the highest-rated, with an average score of 4.22. It's the only motivation with a "**Strongly Agree"** rating. The other three categories of motivations are all rated as "**Agree**" with an average score of 3.81 or higher. The motivation ***"Learning"*** has the lowest average score.

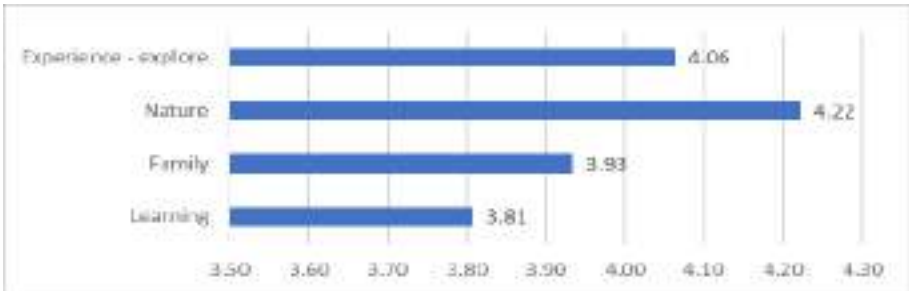


Figure 4: Motivations for participating in community-based tourism
(With the group who has already participated in this type of tourism)
Source: Survey results

For young people with the intention to engage in community-based tourism, similar to those who have already participated in this type of tourism, the motivation ***"Enjoying nature"*** also has the highest average score of 4.15 points. All motivations are recognized as "**Agree**."

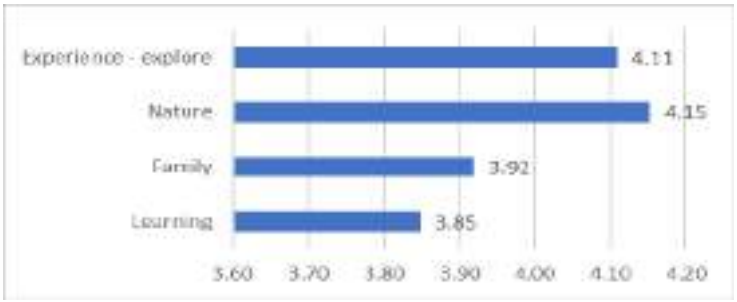


Figure 5: Motivations for participating in community-based tourism
(With the group who hasn't participated yet but intends to do so in the near future)
Source: Survey results

There is a significant similarity in the motivations for community-based tourism between the two groups: those who haven't gone yet but have the intention and those who have already participated. The motivation for "Enjoying nature" is the highest and the motivation for "Learning," is the lowest.

For the ***"Learning motivation,"*** both groups' responses fall under the **"Agree"** category. Similarly, the "***Spending time with family motivation"*** is perceived as **"Agree"** in both groups. However, there is a difference in the motivation ***"Nature."*** While the group that has already participated in community-based tourism tends to categorize it as **"Strongly agree,"** the other group, who hasn't yet participated but intends to, places it in the **"Agree"** category. This suggests that the appreciation of natural landscapes, weather, local atmospheres, and experiencing local activities might require firsthand experience. This could be considered one of the advantages of community-based tourism in Vietnam. It is essential to promote community-based tourism more extensively to provide detailed information about destinations, emphasizing the enjoyment of space, landscapes, and atmosphere so that young travelers can better understand the values that community-based tourism brings.

As for the ***"Experiencing and Exploring motivation,***" both survey groups express a similar sentiment. They strongly agree with motivations like "*Traveling for gaining new experiences*" and *"Traveling for relaxation and stress relief,"* with all other responses falling under the **"Agree"** category.

There is a significant similarity in online behaviors before participating in community-based tourism among both groups. The most visually striking commonality is the behavior of *"Reading travel reviews on social media,"* which is prevalent in both groups. It is conducted by 95.65% of the group that has already participated and 92.59% of the group with the intention to participate. There is a minor difference in the ranking of behaviors between *"Searching for information about travel on destination websites"* and *"Searching for travel information on search engines."* Specifically, *"Searching for information about travel on destination websites"* ranks third in the group that has already participated but second in the group with the intention to participate. Furthermore, in the group that has already participated, **there is a more significant variation in the levels of engagement in these behaviors.** *Online travel is becoming an essential trend in the tourism industry, and Vietnam is considered a country with immense potential in this regard*. Therefore, there is a need to promote the strong application of new technology platforms to create convenience for both domestic and international consumers; Learn from the experiences and skills of leading global companies in online travel, which include aspects such as booking flights, hotel accommodations, and tour packages; Create opportunities for partnerships and collaborations among online travel service providers should be encouraged; Increase interest and support from government agencies for the online travel sector.

6. Conclusion

Community-based tourism is often understood as the involvement of a local community in tourism activities. This initiative typically starts organically in places with scenic attractions and historical sites that attract tourists, and the local population actively participates in serving the needs of travelers. According to a report by Google and Temasek, the scale of online tourism in Vietnam reached 3.5 billion USD in 2018, showing a 15% growth rate. It is estimated that by 2025, this figure will rise to 9 billion USD. Vietnam's tourism market currently ranks fifth

among six countries in the Southeast Asia region, and there is a significant untapped potential, particularly in community-based tourism. The consensus between the government, businesses, and local communities is crucial for the sustainable development of community-based tourism. This form of tourism can significantly contribute to making Vietnam's tourism sector "a true driver of economic growth, spurring the development of various other sectors and contributing to the formation of a modern economic structure"

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Beard, J.G.; Ragheb, M.G. (1983). *Measuring Leisure Motivation*. J. Leis. Res. (1983), 15, 219–228, doi:10.1080/00222216.1983.11969557.

Chanapong Arpornpisal (2018). *Tourism Elements Influence the Decision Making in Traveling to Visit Phra Pathom Chedi, Nakhon Pathom, Thailand.* Asian Administration and Management Review. Volume 1 Number 1 (January-June 2018)

Chen CF, Chen FS (2010). *Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists.* Tourism Management. 2010;31(1):29–v. Available from: https: //doi.org/10.1016/j.tourman.2009.02.008

Crompton JL (1979). *Motivations for pleasure vacation.* Annals of Tourism Research. 1979; 6(4):408–424. Available from: https: //doi.org/10.1016/0160-7383(79)90004-5.

Dann G. Anomie (1977). *Egoenhancement and tourism.* Annals of Tourism. 1977;4(4):184–194. Available from: https://doi.org/ 10.1016/0160-7383(77)90037-8.

Dinh Thuy Dung (2022). What is community-based tourism? Forms, characteristics, and impacts. https://luatduonggia.vn/

Doan Manh Cuong (2019). Developing sustainable community-based tourism (Part 1). https://vietnamtourism.gov.vn/post/29392"

Ec Mahika (2011). *Current trends in tourist motivation.* https://www.researchgate.net/publication/284671490_Current_trends_in_tourist_motivation

Gnoth, J. (1997). *Tourism Motivation and Expectation Formation. Annals of Tourism Research*. 24, 283-304. http://dx.doi.org/10.1016/S0160-7383(97)80002-3

Greg Richards (2002). *Tourism and Gastronomy.* https://www.researchgate.net/publication/322925141_Tourism_and_Gastronomy

Fields, D.L. (2002). *Taking the Measure of Work: A Guide to Validated Scales for Organizational Research and Diagnosis.* Sage Publications, Thousand Oaks.

Ha TTT, et al (2019). Influences of Push and Pull Factors on Tourist Loyalty towards Hoi An Destination. Hue University Journal of Economics and Development. 2019;128(5A):147–167. Available from: 10.26459/hueuni-jed. v128i5A.5044.

Hoteljob.vn (2021). What is community-based tourism? 6 prominent forms of community-based tourism. https://www.hoteljob.vn/

Huy Le (2019). Online tourism is expected to reach 9 billion USD by 2025. https://vietnamtourism.gov.vn/post/29436

Jutamas Phengkonaa & Paithoon Monpanthongb (2022). *Motivation-Based Segmentation and Online Behaviors of Tourists Participating in Community-Based Tourism: A Case Study of Thailand.* Journal of Multidisciplinary in Social Sciences (January - April 2022), 18(1): 23-36

Kim S, Lee C, & Klenosky D (2003). *The influence of push and pull factors at Koreannational parks.* Tourism Management. 2003;24:169–180. Available from: https://doi.org/10.1016/ S0261-5177(02)00059-6

Le Thai Phuong, Phan Kim Ngan, Nguyen Thi Bao Nguyen (2022). "Community-Based Tourism Preferences of Young Adults in Da Nang for Local and Nearby Destinations." http://jst.tnu.edu.vn/jst/article/view/5472/pdf

Li M, Zhang H, Xiao H, Chen Y (2015). *A grid-group analysis of tourism motivation.* International journal of tourism research. 2015;17(1):35–44. Available from: https://doi.org/10.1002/jtr. 1963.

Lisa Legault (2016). *Intrinsic and Extrinsic Motivation.* https://www.researchgate.net/publication/311692691_Intrinsic_and_Extrinsic_Motivation

Mai TT, et al (2013). "Introduction to Tourism." Hanoi: Labor and Social Affairs.

Melanie Kay Smith, Ivett Pinke-Sziva, Zombor Berezvai, Karolina Buczkowska-Gołąbek (2020). *The changing nature of the cultural tourist: motivations, profiles and experiences of cultural tourists in Budapest.* https://www.tandfonline.com/doi/abs/10.1080/14766825.2021.1898626

Miroslav D. Vujicic, James Kennell, Alastair M Morrison, Djordjije Vasiljevic (2020). *Fuzzy Modelling of Tourist Motivation: An Age-Related Model for Sustainable, Multi-Attraction, Urban Destinations.* https://www.researchgate.net/figure/Tourist-motivations-by-Beard-and-Ragheb-1983_tbl1_344808829

Ngo Thai Hoang Tuan (2023). Forecasting Trends in the Online Tourism Industry for 2023. https://www.brandsvietnam.com/congdong/topic/330604-Du-bao-xu-huong-nganh-du-lich-truc-tuyen-2023

Nguyen Thi Hong Ngoc (2017). The Impact of Online Reviews on Tourists' Hotel Selection Decisions in Hue. Journal of Science, Hue University: Economics and Development; ISSN 2588–1205. Volume 126, Number 5D, 2017, Pages 41–51; DOI: 10.26459/hueuni-jed.v126i5D.4489

Nguyen Thi Hoai Dung, Tran Thi Thu Huyen (2023). The Impact of Tour Group Size on the Relationship between Memorable Travel Experiences and Intention to Revisit Domestic Tourist Destinations in Community Tourism in Vietnam. https://js.ktpt.edu.vn/index.php/jed/article/view/1105

Nguyen Thi Thanh Ngan (2023). Exploring Tourist Demand for Community Tourism in Lac Duong District, Lam Dong Province. http://scholar.dlu.edu.vn/bitstream/

Nguyen Thi Van Hanh, Tran Tuyen. Travel Motivations in the Context of Advanced Technology Application. Journal of Science and Technology Development - Social Sciences and Humanities, 5(3), 1158-1165

Peter Johnson and Barry Thomas, eds. (1992). *Perspective on Tourism Policy*. Cassell, P.O. Box C831, Rutherford, NJ 07070. 1992. 240p. https://journals.sagepub.com/doi/10.1177/004728759203100222

Pham Quoc Tri, Trinh Thi Thu (2022). Factors Affecting the Decision to Choose Rural Community-Based Tourism Destinations in the North Central Region. https://vjol.info.vn/index.php/isscr/article/view/66190

Government (2017). Tourism Law. Law No. 09/2017/QH14, dated June 19, 2017.

Thanh Giang (2019). Developing Online Tourism - A Challenging Game. https://tapchitaichinh.vn/phat-trien-du-lich-truc-tuyen-cuoc-choi-day-thu-thach.html

To Van Hanh, Pham Thi Minh Chinh, Pham Thi Chi (2022). Developing Community-Based Learning Tourism in Hòa Bắc Commune, Hoa Vang District, Da Nang City https://ctujsvn.ctu.edu.vn/index.php/ctujsvn/article/view/4430

Uysal M, Hagan LR (1993). *Motivation of pleasure to traveland tourism.* In M. A. Khan, M. D. Olsen, & T. Var (Eds.), VNR'SEncyclopedia of Hospitality and Tourism. 1993;p. 798– 810.

Vinperl (2021). Community Tourism: Top 4 Most Attractive Destinations. https://vinpearl.com

Yoon Y, Uysal M (2005). *An examination of the effects of motivation and satisfaction on destination loyalty: a structural model.* Tourism Management. 2005;26(1):45–56. Available from: 10. 1016/j.tourman.2003.08.016

Zurina Mohaidin, Koay TZE WEI, Mohsen Murshid (2017). *Factors influencing the tourists' intention to select sustainable tourism destination: a case study of Penang, Malaysia.* International Journal of Tourism Cities

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 56-73
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.539

Exploring the Factors Influencing Purchasing Intention of Bangladeshi Consumers on E-Commerce Platform Daraz.com.bd

Islam Md Jahidul[1], Anamika P. Sunil[2]

[1] College of Economics and Management, Zhejiang Normal University, Zhejiang, China
[2] School of Management Engineering, Zhengzhou University, Zhengzhou, Henan, China

Correspondence: Anamika P. Sunil, School of Management Engineering, Zhengzhou University, Zhengzhou, Henan, China, Zip - 450001. Tel: +8613084997114. E-mail: anamika13@gs.zzu.edu.cn

Abstract
The e-Commerce sector has seen dramatic growth in Bangladesh since the early 2000s, although at the time the country lacked prevalent internet access with a reliable online transaction system. The Bangladesh Government is currently working on digitalizing the nation but the adoption rate of e-commerce is relatively low. This paper intends to comprehend the factors that influence the purchase intention of Bangla4deshi consumers from the e-commerce platform Daraz.com.bd. The survey questionnaire was encased in an online link for respondents to complete and submit. The survey received 302 respondents' data. It was established that the respondents' socio-demographic profiles – genders, age groups, and education levels – exhibited a significant impact on online purchase intention. Trust and quality were not correlated to online purchase intention while privacy negatively affected the purchase intention. Price, delivery, returning policy, and social influence affect purchase intention positively. Interaction test results showed that the effects of privacy and price, privacy and quality, and delivery and social influence hurt the dependent variable. However, these factors discretely affected purchase intention positively. The interaction between privacy and social influence, and quality and social influence enhance one another to demonstrate a positive effect on purchase intention. The results might help the company understand and target its future consumers and create focused advertisements for them. Additionally, to enhance the purchase intention of Daraz.com.bd visitors, the company needs to focus on improving certain factors while keeping in mind the interaction effect.

Keywords: E-Commerce, Purchase Intention, Bangladesh, B2C, Daraz.com.bd

1. Introduction

1.1 E-commerce Industry in Bangladesh

E-commerce is a fast-expanding industry in Bangladesh influencing both domestic and international trade. Although the Bangladeshi government is putting in a lot of effort to digitalize the country and grow the business, e-commerce is not widely adopted in the country. With the introduction of 3G and 4G internet connections as well as the quick uptake of online purchasing, the Bangladeshi e-commerce sector was predicted to increase by 70% in

recent years. However, only 3.4% of Bangladesh's retail market is made up of e-commerce. Internet penetration is rising in Bangladesh, 40% of the population participates in the development of local e-commerce, F-commerce (small startup businesses conducting online business through Facebook pages), and e-grocery firms.

Business-to-customer (B2C) e-commerce is still in the initial stage and faces a multitude of problems. Among the top companies in the nation are the online marketplace Daraz, which is supported by Rocket Internet, and the e-retailer Pickaboo backed by Foxconn, Bagdoom, and Chaldal. Although the number of consumers has grown in recent years, consumers are still not used to online shopping. Regardless, e-commerce envisions a promising future in Bangladesh. Bangladesh has 99% geographical coverage in voice and data connectivity. Figure 1. shows the growth of internet subscribers in Bangladesh. According to the Bangladesh Telecommunication Regulatory Commission (BTRC), the total number of Internet Subscribers in Bangladesh reached 117.3 million at the end of May 2021 of which 9.8 million use broadband connections whereas the remaining are mobile internet users.

.

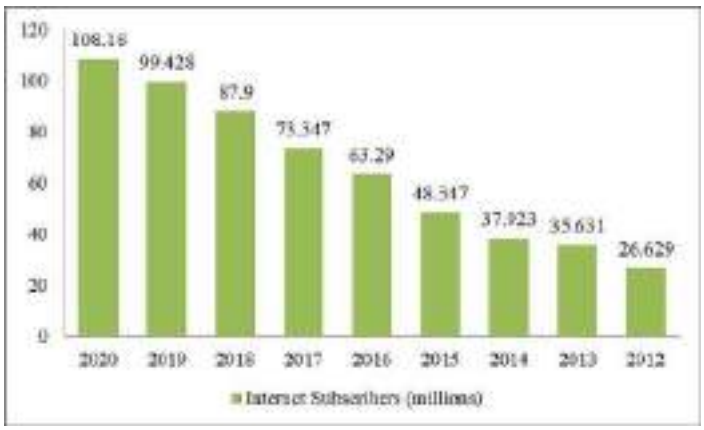


Figure 1: Reports of Internet Subscribers

Source: BTRC

The aim of this research is, therefore, to explore key factors that influence e-commerce purchase intention among Bangladeshi consumers thus enabling the e-commerce businesses to make significant modifications to attract consumers to conduct online shopping. Deduced from prior studies, it is to be noted that there are several factors influencing consumers to use B2C e-commerce services in Bangladesh of which privacy, trust, payment security, delivery, and price are crucial.

1.2 Daraz Bangladesh

Daraz Bangladesh is a leading e-commerce company in Bangladesh that offers its customers considerable online shopping opportunities as well as an online showroom for its vendors. Daraz was established in 2012 and is the preferred online marketplace for South Asia. It is now conducting business in South Asian nations including Pakistan, Bangladesh, Sri Lanka, Myanmar, and Nepal. Its marketplace features 30,000 vendors and 500 brands, and its 5 million users may choose from 2 million goods. It was able to dominate the market by being the first movers. Consumer electronics, home furnishings, clothing, consumables, cosmetics, and sporting items are just a few of the products available on Daraz. Additionally, it provides a variety of payment methods, including cash-on-delivery. After acquiring the online marketplace Daraz in May 2018, Chinese internet giant Alibaba increased its presence in Bangladesh, a move that changed the e-commerce environment in Bangladesh. Currently, Alibaba Group Holding Limited is the owner of Daraz.

1.3 Significance and Methodology of the Study

While e-commerce adoption is a well-established research topic in developing countries, this issue is addressed by only a few researchers in Bangladesh. Smartphones have taken everything into the consumer’s hands and online shopping is getting trendy in Bangladesh. The E-commerce Association of Bangladesh (E-Cab) and the trade body

for e-commerce in Bangladesh estimate there are 700 e-commerce sites and around 8,000 e-commerce Facebook pages in Bangladesh. People enjoyed endless searching options, comparing prices, home delivery, and most importantly personalization on e-commerce portals, to the point that many businesses made their web platforms for online consumers. Daraz.com.bd is one of them.

Daraz Bangladesh has a great opportunity, and the company is convinced that emerging markets will multiply in the next few years. So, analyzing the factors that influence consumers' purchase intention is the most significant concern for Daraz Bangladesh. This paper focuses on the factors influencing the purchase intention of Daraz.com.bd. Privacy and returning policies gradually become very important factors in determining consumers' purchase intention, so the current study includes these two factors as well to explore their relationships with consumer satisfaction in the context of Bangladesh's E-commerce.

The study aims to investigate the variables that affect Bangladeshi customers' desire to purchase on the B2C e-commerce platform Daraz.com.bd. Primary and secondary data from multiple Bangladeshi sources are collected for this purpose. To better identify the elements influencing e-commerce customers' purchasing intentions, the questionnaire was made available to Bangladeshi internet users. The research questions were generated prudently before conducting a pilot test with 20 participants. The pilot test is done to gather preliminary data and to conduct a reliability test to make sure the questionnaires are reliable and valid. The leading survey was then conducted by involving 302 Bangladeshi internet and Daraz.com.bd users. After gathering the primary information from 302 respondents, a validity test was employed to evaluate the model's construct, which included ten factors related to e-commerce usage intention, including privacy, payment security, trust, price, quality, social influence, delivery, customer service, return policies, and purchase intention. After the validity test, a co-relationship test and regression analysis were carried out. Following the regression analysis, an interaction test was run to tell whether any of the variables may have been indirectly related or had a combined impact on the dependent variable. Figure 2. illustrates the research map.

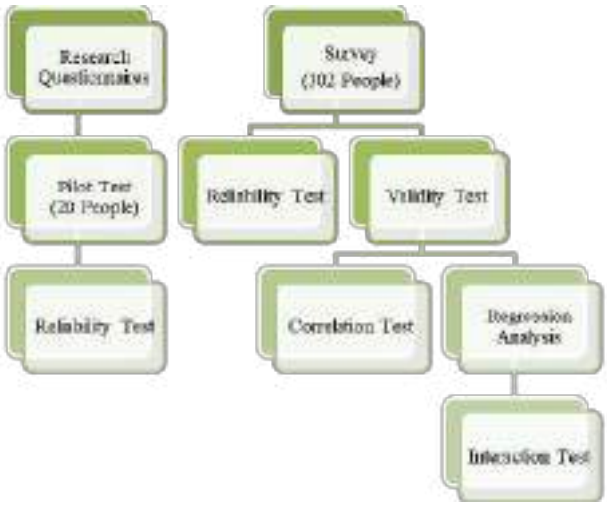


Figure 2: Research Map

1.4 A Literature Review on E-commerce and Online Purchase Intention

The adoption of e-commerce in developing countries presents different challenges than those in developed countries (Molla & Licker, 2005). The most important factors for e-commerce adoption in developing countries are organizational, technological, and environmental factors (Tornatzky & Fleischer, 1990). The finding of Dixit and Dutta (2010) depicted that acceptance of e-commerce services by Indian customers is influenced by many factors such as security and privacy, trust, familiarity, and awareness. Arun (2013) found that in the case of online shopping, previous online purchasing experience, purchasing intention, and online trust have significant effects on buyer purchasing intention. According to Hasbullah (2016), recommendations from friends and family are helpful when making an online purchase.

With a GDP growth rate of above 7%, Bangladesh's economy is regarded as one of the world's fastest-growing major economies. According to Ahammad et al. (2017), Bangladesh must develop and use e-commerce technologies for the nation to advance. Customers who shop online in Bangladesh are happy to do so and are more likely to do so in the future (Jubayer, 2015). Online shopping allows consumers to compare costs and search for various items to assist them in deciding which item(s) to buy (Hoque, 2014). Consumers are paying increasing attention to e-commerce since it offers benefits such as reduced transportation costs, the ability to shop from anywhere at any time, and quick access to a selection of items (Qazi, 2014). Consequently, consumers and marketers may contribute significantly to the country's economy through e-commerce.

Customer satisfaction is described as a post-evaluation of buying decisions (Churchill Jr. & Surprenant, 1982). To continue using the e-commerce platform, consumers need to trust that they are offered better products and services than other alternatives (Bhattacherjee, 2001a). Consumers' channel-choice behavior is studied in the service outputs model by Bucklin (1972), who argues that channel services exist and remain profitable through the quality of service and benefits to consumers. Although satisfaction is a behavioral approach that affects consumers' purchase intention, e-commerce platform preference is a choice of consumer behavior that is based on their previous experience (Coughlan et al. 2001), and consumer preferences differ with the shopping experience (Heilman et al., 2000). A range of B2C success stories demonstrate that customer service provided before and after the purchase is necessary for e-commerce consumers' repeated purchases (Shanker et al., 2000).

According to Warshaw and Davis (1985), intention to purchase is an advance plan for the future purchase of specific services or products. The intention shows that consumers will assess perceived quality from their experience and they search for information through preference and the external environment, evaluate the alternative, and make a purchase decision in the final stage (Zeithaml, 1988; Dodds et al., 1991).

Consumers' expectations of payment security and safety have significant effects on their online purchase intention (Limayem et al., 2000). Online retailers must create further convenience for their consumers by reducing the delivery time and increasing the product and customer service quality (Coughlan et al., 2001). The study by Hoque et al. (2015) demonstrates that perceived usefulness is a significant factor in describing the user's adoption of e-commerce and that security concerns and privacy aspects are crucial issues that hinder the adoption of the system. Asghar and Stephen (2013) found that security and privacy are the main barriers to e-commerce adoption. Increased security could prevent potential damages from unreliable exchanges, hacking, or reduced access control to essential information (Hesson & Alameed, 2007). Fram and Grady (1995) found that most concerns consolidated into collecting business transaction issues such as lack of security and a lack of alternative payment options. Security concerns notably affect the individual choice to buy from the Internet (Yang & Jun, 2002). Salisbury (2001) found that perceived security is a much stronger determinant of the intention to purchase online than the website's perceived ease of use and utility. Likewise, Miyazaki and Fernandez (2001) showed that the rate of online product purchases is highly related to the perceived security control possessed by a website. Islam et al. (2011) found security and privacy are substantial factors in the adoption of m-commerce services.

Due to the lack of face-to-face interaction between the buyer, the consumer, and the product, the sense of customer trust is significantly reduced in online shopping (Cho et al. 2007). Trust concerning online shopping includes confidence in abstract systems, technically or socially (Sydow, 1998). Trust is an essential factor influencing consumer behavior, and it determines the success of technology adoption such as e-commerce (Holsapple and Sasidharan, 2005). According to Palvia (2009), trust has a significant effect on purchase intention through usage attitude. Building trust between two parties is crucial for companies that do business online (Chawdhry et al., 2002; Chew, 2007; Luarn and Lin, 2005; Petre et al., 2006). Vaidyan (2008) found in his study that functional and security factors in web design have a significant impact on consumers' trust in e-commerce websites. Barakat & El Sheikh (2010) researched shopping centers in Amman, Jordan and the results indicated that trust and utility have a strong positive influence on new technology acceptance.

The promise of savings is an important motive that attracts consumers to shop online. Ziethaml (1982) proposed that consumers encode and interpret actual prices in ways that are meaningful to them. Therefore, it has been concluded that it is the perceived price, not the actual cost, of a product that affects consumers' product evaluation

and choices (Jacoby & Olson, 1977; Zeithaml, 1988). As per Malc et al. (2016), price fairness has not only influenced the consumers to buy a product but also spread a negative perception about the seller. Some online resources like video blogs changed the consumers' mindset on the physical and social attractiveness of luxury brand perceptions and attitude homophily on para-social interaction (PSI). Lichters et al. (2016) have observed that the compromise effect for buying durable goods is more robust than the fast-moving consumer goods. Alba et al. (1997) pointed out that online shopping enables customers to obtain more information about both price and non-price information as a result of cost search. Since consumers can obtain more online price information and compare it with a few clicks across online retailers, they are likely to shop online when a product's price is high rather than low.

E-service quality is characterized as the degree to which a site encourages productive and successful shopping, purchasing, and delivery (Parasuraman et al., 2005), and it is also crucial for differentiating among electronic commerce (e-commerce) providers and gaining competitive advantage (Benaroch & Appari, 2011; Kim & Lee, 2009; Shaaban & Hillston, 2009). A study found that the most crucial aspect of information quality is the provision of sufficiently current data (Nicolaou & McKnight, 2006). For example, a high degree of variety and timely information about products or services provide online customers with a sense of excitement and helps them make better purchasing decisions (Ahn et al., 2007). Other studies have revealed that Internet shoppers seek updated information about products for stimulation and excitement; although they are satisfied with products they have already purchased (Sorce et al., 2005; Nicolaou & McKnight, 2006).

E-shopping usage has been heavily studied since the emergence of e-commerce in the 1990s. However, relatively insufficient attention has been paid to the effects of logistics on e-shopping behavior, despite the close relationship between them (Wang & Xiao, 2015). Delivery plays a vital role in e-commerce adoption. Final delivery, as the last leg and the most complicated segment of the logistics chain of the B2C delivery chain, is responsible for sending the package(s) at a particular timeslot to a specific place specified in advance, including a transfer of related packages to another destination upon a customer’s request, even at the last minute (Gevaers et al., 2014). Essentially, final delivery is the only link in the e-commerce supply chain that involves direct and face-to-face interaction with consumers. The quality of the final delivery service will shape the last impression of the consumer of the entire logistics service and the performance capabilities of the e-retailer (Esper et al., 2003; Boyer et al., 2009; Honeycomb, 2014).

People experience conformity pressures from other members of a social group. The actions of others have a powerful effect on a given member's behavior (Cialdini and Goldstein, 2004). Merely communicating a norm in writing can induce conformity (Darley and Latane, 1967; Von et al., 1999; Parks et al., 2001; Cohen, 2003). For instance, people diverge from other consumers' product choices to ensure that the group makes desirable inferences about their identities (Berger and Heath, 2007). Khalifa and Cheng (2002) conducted a cross-sectional survey study by distributing 220 sets of questionnaires. The results suggested that the perception of an individual’s behavioral control and exposure indirectly affects purchase intention. Given the growth of online review websites, marketing scholars have examined the demand consequences of online product ratings (Bickart & Schindler, 2001) and found limited empirical evidence on social influence in online ratings. A possible reason for the mixed evidence is that past research has overlooked the contingent nature of social influence effects in the web rating context. Insights into social influence effects in online product ratings may thus have high managerial relevance.

1.5 Research Hypotheses

Based on the review of relevant research discussed earlier, the following hypotheses were developed and are proposed for analysis in this study to directly address how these factors influence consumers’ purchase intention.

H1: Consumers’ needs for privacy negatively affect the intention to purchase online
H2: Perceived safety of online payment has a positive effect on the online purchase intention
H3: Trust positively affects purchase intention on the e-commerce platform
H4: Social influence positively affects online purchase intention
H5: Price is positively associated with purchase intention.
H6: Quality positively affects purchase intention

H7: Returning policy positively affects purchase intention for e-commerce
H8: Delivery positively affects online purchase intention

2. Research Methodology

The research employs a quantitative approach as it generates numerical data, is inexpensive, fast, and is a simple way to gather information from a more significant number of participants (Bryman and Bell, 2011).

Primary data was gathered from the target respondents—users of Bangladesh's Daraz.com.bd e-commerce platform—using survey questionnaires. The survey questionnaire was designed by using the "Wenjuan Xing" survey website. After constructing all the survey questions, a link was created for participants to access, complete, and submit the survey questions. The survey website link was then shared in Bangladeshi WeChat, Facebook, and WhatsApp groups, forums, and via e-mails and private messages to reach 302 targeted respondents who had shopped from the daraz.com.bd at least once. There were a total of 35 questions stated in the questionnaire which took three weeks to reach 302 responses from the targeted users. Submissions not meeting the criteria were disregarded. Certain respondents took less than 90 seconds to submit the survey; this indicated random submission without reading the survey questions thoroughly and was disregarded.

Secondary data was collected from different journals, articles, and books, that are relevant to the research topic and available in the library of Zhejiang Normal University (both paper-based and e-sources such as Science Direct, Google Scholar, Emerald Insight, etc.). Statistical tools SPSS and STATA are used to measure the performance of the data.

2.1 Sampling Design

2.1.1 Target Population

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. To process sampling, it's necessary to choose a small quantity of items from a larger group of elements. Then it's required to analyze the small group of items or people, the outcome of this calculation will assist in calculating the whole population or larger number (Smith & Albaum, 2013).

All adults of Bangladesh nationality (age > 18 years; younger people aren't allowed to open an account) were the target population for this study. Since the study aims to understand better the factors influencing the purchase intention of Bangladeshi consumers to do shopping from the online platform daraz.com.bd, the main focus was on those who purchased at least one thing from Daraz.com.bd.

2.1.2 Sampling Frame and Location

The sampling frame is a list of populations, directories, geography, maps, or other sources used to represent the overall population. Because of the limited time and distance between the researcher and the target population and because survey questionnaires were sent through social media, it was impossible to reach every person in the sampling frame. Therefore, non-probability sampling was selected for this research due to which there is no actual sampling frame. The sampling location is Dhaka City, the capital and the largest city in Bangladesh. The survey questionnaires were distributed to more than 302 target respondents by posting and sharing the questionnaire link through WeChat groups, e-mail, thematic forums, and Facebook, but only 210 people responded. Later on, the questionnaire link was forwarded one by one to people, and 361 responses were collected.

2.1.3 Sampling Technique and Sample Size

The sampling method determines the accuracy of a survey result. Non-probability sampling was selected for this research due to which there is no actual sampling frame.

The sample size chosen for this study was 302 - 302 Bangladeshi nationals above the age of 18 years who will participate in the survey. More than 300 survey questionnaires set were distributed among Bangladeshi people to collect the data. The pilot test was conducted before moving to the actual test. In a research project, a pilot study is one of the most critical stages to detect the actual problems and lack of research instruments and protocols before starting to do the research (Hassan et al., 2006). The pilot test ensures that all survey participants were able to understand the questionnaires and provide correct answers. To conduct a pilot test, the researchers posted a set of 20 survey questionnaires online. It was confirmed that there were no confusing questions, incorrect terms, or grammatical errors in the survey questions.

2.2 Research Instruments and Methods

This study utilizes quantitative methods to assist the author in conducting hypothesis tests and identifying the causality of specific events or circumstances. According to Oxford University Press (2001), using self-administered questionnaires has several advantages, including being reasonably inexpensive for gathering large amounts of data and convenient for participants to respond in their free time at home, allowing for more honest responses. To conduct this study, electronic questionnaires were designed and posted on the Internet and the survey link was shared with the participants through WhatsApp, e-mails, WeChat, Facebook, etc.

2.2.1 Questionnaire Design

Questionnaires are considered one of the most appropriate data-gathering tools to collect data from large samples; this method thus perfectly suits the aim of this study. Burgess (2001) stated that survey questionnaires should include different types of questions; for example, multiple choices versus single-choice responses, closed versus open-ended questions, ranking, and rating. The following types of questions were used in this research:

1. Open-ended questions to get socio-demographic information from the respondents
2. Closed-ended with two or multiple choices for respondents to choose from for a single answer
3. Rating response for the research: The Bipolar Likert scale is used to get responses from participants. The Likert scale was used to measure the behavior and attitude of the respondents. The selected scale has seven choices for the respondents to rate their views on specific questions.

This study includes 35 questions divided into two sections. The two sections of the questionnaire are designed in English and shared with Bangladeshi e-commerce users.

Section I:
There are 7 questions about the demographic information of respondents who participated in the survey. The first five questions are about the name, gender, age, education, and country of residence (control variables being gender, age, and education). The next two questions are for people who have done online shopping in general or from Daraz.com.bd. If participants never did any shopping online or any previous shopping on Daraz.com.bd, then their responses were not accepted. Among these seven questions, two questions are open-ended with a single response, five are closed-ended with only one answer.
Questions about gender, age, nationality, and education were used to build a socio-demographic profile to avoid collecting data from other nationalities. Hawkins (1992) asserted that age is generally regarded as a powerful consumer behavior predictor because the particular age would have an impact on his/her interests and ability to select the most comfortable environment from all the options. The research didn't accept any responses from respondents who were younger than 18 years old (who were unable to open accounts on Daraz.com.bd).

Section II:
The second section has 28 questions directly addressing the research. These questions concentrate on respondents' cognitive and trust indicators- privacy, payment and safety, price, trust, quality, customer service, social influence, returning policy, and purchase intention. These factors are used to understand the purchase intention of Bangladeshi consumers. To measure the participants' attitudes and apprehension towards online shopping from Daraz.com.bd, the seven-point bipolar Likert scale was applied as a rating scale (Table 1) in these 28 questions.

Table 1: Seven-Point Bipolar Likert Scale Rating Scales

	1	2	3	4	5	6	7
Question	Strongly Disagree	Disagree	Somehow Disagree	Neutral	Somehow Agree	Agree	Strongly Agree

2.2.2 Pilot Test

The purpose of the pilot test is to check the survey questionnaire's consistency and reliability to ensure that all the questions are accurate with wording and phrases. 20 sets of survey questionnaires were shared with Bangladeshi Daraz.com.bd users to conduct the pilot test. Following the pilot test and evaluation of the questionnaires' internal consistency, the survey questionnaires were distributed to the target population.

To check the internal consistency of questions, Cronbach's Alpha is commonly used by researchers. The range of Cronbach's Alpha Coefficient is from 0 to 1. The higher the Alpha coefficient scores, the more reliable internal consistency.

George and Mallery (2003) offered the following rules for the Alpha coefficient:

- Cronbach's Alpha > 0.9 "Excellent"
- Cronbach's Alpha > 0.8 "Good"
- Cronbach's Alpha > 0.7 "Acceptable"
- Cronbach's Alpha > 0.6 "Questionable"
- Cronbach's Alpha > 0.5 "Poor"
- Cronbach's Alpha < 0.5 "Unacceptable"

Table 2: Pilot Test

Variables	**Cronbach's Alpha Coeff.**
Privacy	0.665
Payment and Safety	0.851
Trust	0.777
Price	0.796
Quality	0.962
Customer Service	0.827
Delivery	0.893
Returning policy	0.714
Social Influence	0.823

Table 2 shows the reliability test results of the pilot test. Results demonstrate acceptable and good levels of reliability for all the factors presented in the pilot study.

2.3 Data Analysis Techniques

2.3.1 Descriptive Analysis

SPSS software and Microsoft Excel produced a frequency distribution, chart, and graph to represent the demographic profile of e-commerce consumers in Bangladesh.

2.3.2 Inferential Analysis

Factor Analysis (Structure Detection and Dimension Reduction Methods), Pearson Correlation, and Multiple Regression were executed in the study. The main purpose of factor analysis techniques is to reduce the number of variables and to recognize the structural connections between variables to classify variables. Pearson Correlation

is performed to measure the linear correlation between two variables. Multiple Regression analysis (in STATA) is then done to predict purchase intention and to figure out the most influential factors of the independent variable.

3. Data Analyses and Results

3.1 Socio-demographic Profile of Respondents

The survey questionnaires were distributed online and 361 responses were acquired from the targeted respondents. Fifty-nine participants' data had been deleted as they did not meet the requirements. So, the sample size of respondents became 302.

Table 3: Respondents' Gender

	Frequency	Percent
Male	211	69.87
Female	91	30.13
Total	302	100.00

Table 3 shows that male participants are much more than female participants implying Bangladeshi men use the internet and social media frequently and are more interested in completing survey questionnaires.

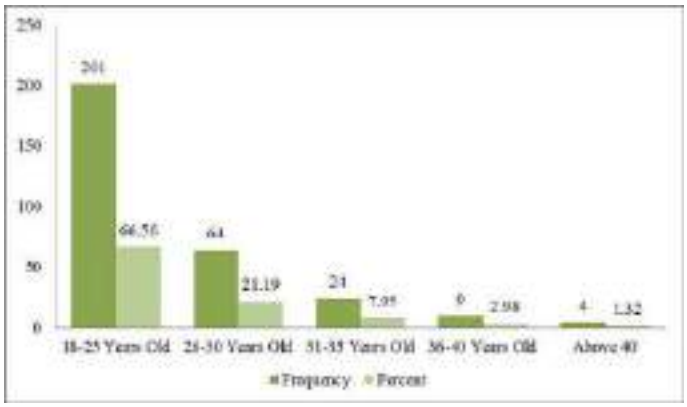


Figure 3: Respondents' Age Groups

Figure 3 demonstrates that the bulk of participants (201/302) are between the ages of 18 and 25. The 26–30 age group had the second-highest number of responders (64/302). This indicates that people in the 18–30 age range (87.75%) may be classified as a generation that is interested in the newest technology, uses gadgets and e-commerce technologies more frequently, and has the financial resources to buy technical items. Thus, marketing to a certain age range of individuals will be advantageous.

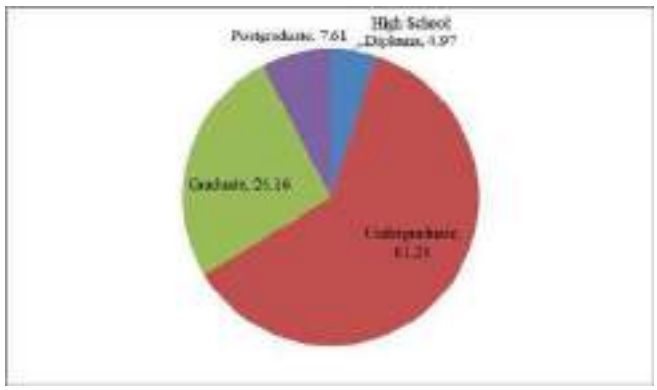


Figure 4: Respondents' Educational Levels

The majority of respondents who took part in this survey hold an undergraduate degree (figure 4). From this, it's clear that undergraduate and graduate people (264/302) should be targeted for marketing purposes.

3.2 Data Analysis

3.2.1 Reliability Measurement

Table 4 shows that privacy, trust, price, quality, customer service, delivery, returning policy, and social influence factors have Cronbach's Alpha reliability coefficient above 0.7. The lowest value in the Cronbach's Alpha test is for payment and safety (.635), and the level of internal consistency for it is questionable.

Table 4: Results of Reliability Statistics – Test on independent variables

Cronbach's Alpha	
Privacy	.705
Payment and Safety	.635
Trust	.740
Price	.737
Quality	.721
Customer Service	.705
Delivery	.739
Returning Policy	.746
Social Influence	.766

3.2.2 KMO and Bartlett's Test of Sphericity

KMO and Bartlett's Test of Sphericity measures how suited the data is for the Factor Analysis. KMO values of the test range from 0 to 1 and the world-over accepted index is over 0.6 for Factor Analysis; (Cerny & Kaiser, 1977). The result of Bartlett's Test of Sphericity shows the strength of the relationship among variables, and it indicates the compatibility and validity of the responses collected.

Table 5: Adequacy of each variable

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin	Measure of Sampling Adequacy	0.801
Bartlett's	Approx. Chi-Square	1907.296
Test of Sphericity	df	190
	Sig.	.000

The KMO test indicated a 0.801, which is a meritorious, excellent result, meaning that all the items within the model to measure dimensions fully capture the dimensions and are sufficient to support the hypotheses. The significance of Bartlett's Sphericity Test is below 0.05 with a result of 0.000 implying that the variables support the model fittingly.

3.2.3 Total Variance Explained

The Total Variance Explained supports the four dimensions of the research.

Table 6: Total Variance Explained after Dimension Reduction

Component	Initial Eigenvalues			Rotation Sums of Squared Loading		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.076	25.382	25.382	2.153	10.766	10.766
2	2.376	11.878	37.260	2.081	10.405	21.171
3	1.563	7.815	45.075	2.040	10.200	31.371
4	1.485	7.424	52.498	2.018	10.092	41.463
5	1.158	5.788	58.286	1.924	9.620	51.083
6	1.081	5.403	63.689	1.914	9.571	60.654
7	.977	4.883	68.572	1.584	7.918	68.572
8	.795	3.974	72.546			
9	.719	3.595	76.141			
10	.650	3.249	79.390			
11	.536	2.682	82.072			
12	.505	2.525	84.597			
13	.458	2.289	86.886			
14	.435	2.176	89.062			
15	.427	2.136	91.198			
16	.419	2.093	93.291			
17	.389	1.944	95.234			
18	.362	1.808	97.042			
19	.301	1.506	98.548			
20	.290	1.452	100.000			

Table 6 lists the eigenvalues for the reduced model associated with each linear component before and after extraction and rotation.

Extraction sums before rotation are marked in bold amongst all initial eigenvalues. Before extraction, 20 linear components were identified within the new data set, which is equal to the amount of the remaining independent variables in the adjusted model. All factors with eigenvalues greater than 0.9 are extracted, which leaves seven components for the revised model.

The rotation has the effect of optimizing the factor structure. Before rotation, factor 1 accounted for considerably more variance than the remaining six (25.382% compared to 11.878%, 7.815%, 7.424%, 5.788%, 5.403%, and 4.883%), although, after extraction, it accounts only 10.766% (compared to 10.405%, 10.200%, 10.092%, 9.620%, 9.571 and 7.918% respectively). Compared to the initial set of variables, the amount of justified data increased from 63.69% to 68.572%.

3.2.4 Rotated Component Matrix

The Rotated Component Matrix shows how many factors are to be analyzed. In this case, seven out of nine- social influence (SI), delivery (D), price (PR), returning policy (RP), privacy (P), quality (Q), and trust (T). It can be seen that the items are not interfering with each other. Therefore, the components can measure purchase intention well.

Table 7: Validity Test and Factors Loading

	Component						
	1	2	3	4	5	6	7
SI1	.762						
SI2	.832						
SI3	.754						
D1		.742					
D2		.758					
D3		.752					
PR1			.771				
PR2			.853				
PR3			.713				
RP1				.778			
RP2				.822			
RP3				.683			
P1					.787		
P2					.820		
P3					.738		
Q1						.738	
Q2						.810	
Q3						.622	
T1							.815
T2							.818

The factor analysis supports the seven factors model; all the factor loadings are above the acceptable level of 0.6 which means that the proposed model has good construct validity (Qian et al., 2018) and SPSS can distinguish the seven variables.

3.2.5 Pearson Correlation Coefficient

The correlation is defined by describing the degree of relationship between two variables or how two variables linearly co-relate with each other (Tiemann, 2010). In this study, Pearson correlation analysis was carried out to examine the relationship between independent variables.

Table 8: Pearson Correlation

		PAV	TAV	PRAV	SIAV	RPAV	QAV	DAV
PAV	Pearson Correlation	1						
TAV	Pearson Correlation	-.128*	1					
PRAV	Pearson Correlation	.008	.215	1				
SIAV	Pearson Correlation	.035	.209**	.259**	1			
RPAV	Pearson Correlation	-.026	.220**	.378**	.426**	1		
QAV	Pearson Correlation	-.239**	.435**	.259**	.275**	.320**	1	
DAV	Pearson Correlation	-.201**	.411**	.233**	.318**	.294**	.502**	1

** Correlation is significant at the 0.01 level (2-tailed)

Correlation coefficients (table 8) show that the independent variables have a moderate relationship. However, since none of the bivariate correlations of independent variables is more than 0.70 (Tabachnick & Fidell, 1996), all the variables meet the requirements for the regression analysis.

3.2.6 Linear Regression Analysis

Regression in the current study includes explanatory or independent variables- privacy, trust, price, social influence, returning policy, quality, and delivery- to predict the value of the dependent or response variable (purchase intention). According to Neri (2010), human behavior is inherently noisy and therefore it is not always possible to produce accurate predictions, but multiple regression allows researchers to identify a set of predictor variables that will altogether provide a useful estimate of a participant's possible score on a criterion variable. Multiple regression, compared to simple linear regression that only allows one dependent and one independent variable, allows for any number of independent variables – k independent variables to potentially be related to the dependent variable. The model in this study is as follows:

$$y = b_0 + b_1x_1 + b_2x_2 + \ldots + b_kx_k + e \quad (1)$$

where y represents the dependent variable (PI), x the independent variables ($x_1, x_2, \ldots x_k$), b is the Coefficient, and e the random errors.

VIF (Variance Inflation Factor) measures the impact of collinearity among the variables in a regression model, and the acceptance level is below 10.

According to Table 9, there exists significant relationships between the factors and the dependent variable.

Table 9: Regression Coefficients

	Coefficients	t	Sig.	VIF
Age	.041	.430	.668	1.443
Gender	.014	.089	.929	1.039
Education	.228	1.903	.058	1.437
Privacy	-.153	-2.735	.007	1.141
Trust	.160	2.620	.009	1.382
Price	.168	2.562	.011	1.226
Quality	-.038	-.504	.615	1.583
Delivery	.271	3.741	.000	1.544
Returning Policy	.230	3.312	.001	1.427
Social Influence	.365	5.387	.000	1.320

The Adjusted R square is 0.591 for the model, which means the linear regression explains 59.1% of the variance in the data which is very close to the acceptable minimum of 0.6. Because the coefficient values are below 0.29, privacy, trust, price, quality, delivery, and returning policy have a weaker but significant influence, while social influence with a value of 0.365 has a medium influence on purchase intention. After including all demographic variables, a significant effect of independent variables on the dependent variable still exists. The demographic variables are seen to be insignificant. Social influence is the most significant and the most influential in purchasing intention. VIF values prove that the seven factors significantly impact the dependent variable. The independent variables privacy, trust, price, quality, delivery, returning policy, and social influence are free from multicollinearity issues.

3.2.7 Regression Coefficient Interaction Test

In practice, the test of interaction effect measures which factor is the most significant regarding purchase intention whether the independent variables (seven) have an impact on one another, and if so, which factors are enhancing or weakening the other in influencing purchase intention (Dodge, 2003).

The effect of Privacy and Price (PxPR), Privacy and Quality (PxQ), delivery, and social influence (DxSI) have adverse interaction effects on the dependent variable, purchase intention, even though separately, all these factors affect the purchase intention positively. The interaction between Privacy and Social influence (PxSI), Quality and Social influence (QxSI) enhance one another's positive effect on purchase intention. The rest of the interaction terms do not have a significant effect on purchase intention among Bangladeshi consumers.

Table 10: Regression Coefficient Interaction Test

PI	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
Age	.0412863	.0883494	0.47	0.641	-.1325986	.2151712
Gender	.0136391	.1581288	0.09	0.931	-.2975821	.3248603
Edu	.2284175	.1219095	1.87	0.062	-.0115186	.4683537
Privacy	-.1529155	.0491097	-3.11	0.002	-.2495709	-.0562602
Trust	.1598992	.070682	2.26	0.024	.0207864	.299012
Price	.1680503	.0718578	2.34	0.020	.0266234	.3094771
Quality	-.0380081	.087875	-0.43	0.666	-.2109593	.1349431
Delivery	.2707588	.082298	3.29	0.001	.1087841	.4327336
RP	.2302971	.0672103	3.43	0.001	.0980173	.362577
Social I	.3649688	.0728905	5.01	0.000	.2215094	.5084283
PxT	-.0325198	.0409312	0.79	0.428	-0.480521	.1130918
PxPR	**-.0789367**	.0380202	-2.08	**0.039**	-.1537784	-.004095
PxQ	**-.1604922**	.0684271	-2.35	**0.020**	-.295189	-.0257953
PxD	.068345	.0669283	1.02	0.308	-.0634016	.2000915
PxRP	.0532691	.0423199	1.26	0.209	-.0300365	.1365747
PxSI	.0742652	.0377606	1.97	**0.050**	-.0000654	.1485959
TxPR	.0557525	.061193	0.91	0.363	-.0647043	.1762093
TxQ	-.086595	.0629179	-1.38	0.170	-.2104472	.0372572
TxD	.0133497	.0644928	0.21	0.836	-.1136026	.140302
TxRP	.093074	.0554936	1.68	0.095	-.0161636	.2023115
TxSI	-.0885264	.0660265	-1.34	0.181	-.2184978	.0414449
PRxQ	.040486	.0344727	1.17	0.241	-.0273725	.1083446
PRxD	.0790558	.0541867	1.46	0.146	-.0276092	.1857207
PRxRP	-.1071574	.0595113	-1.80	0.073	-.2243038	.009989
PRxSI	.0472087	.0661845	0.71	0.476	-.0830737	.1774911
QxD	.0384938	.0579558	0.66	0.507	-.0755905	.1525781
QxRP	-.0100205	.0672451	-0.15	0.882	-.1423907	.1223496
QxSI	**.1601852**	.0660489	2.43	**0.016**	.0301698	.2902005
DxRP	-.000521	.0653167	-0.01	0.994	-.129095	.1280531
DxSI	**-.1617298**	.0764954	-2.11	**0.035**	-.3123089	-.0111508
RPxSI	.0456391	.0432307	1.06	0.292	-.0394594	.1307375
_cons	2.020842	.2674862	7.55	0.000	1.494303	2.547381

3.3 Hypotheses Evaluation

H1: The regression analysis indicated the negative impact of privacy requirements on the dependent variable, purchase intention. Purchase intention will drop as privacy expectations rise. The interaction test results showed that privacy and price combined had a significant negative impact on purchase intention as well. Similarly, the interaction between privacy and quality has a combined significant negative impact on Bangladeshi e-commerce customers' inclination to make a transaction. As such, ***H1*** is supported.

H2: During the total variance test, the factor payment and safety items were extracted that are subject to the factor analysis. It was noted during secondary data collection that e-commerce consumers prefer to have cash on delivery instead of payment online. Besides that, the online payment system is very complicated and insecure in Bangladesh. Thus, ***H2*** is rejected by this study.

H3: The regression analysis clarified that the trust factor doesn't have a significant effect on the online purchase intention of Bangladeshi consumers. Therefore, ***H3*** is rejected by this study.

H_4: The findings from regression analysis proved this hypothesis to be true. Furthermore, privacy and social influence combined positively affect the online purchase intention of Bangladeshi consumers. Quality -social influence interaction term positively affects the purchase intention as well. Therefore, H_4 is supported.
H_5: It is proved from the regression analysis that the price positively and significantly influences the purchase intention of the e-commerce platform in Bangladesh. Thus, H_5 is also accepted through this study.
H_6: The regression analysis showed that quality has no significant impact on purchase intention among Bangladeshi online shoppers. However, the interaction term for quality and social influence positively affects the purchase intention. Thus H_6 can be accepted to an extent.
H_7: The study demonstrates that returning policy significantly and positively affects the dependent variable. If the e-commerce platform retains a returning policy, then consumers will be more comfortable buying from that platform. As a result, the purchase intention rises. H_7 is consequently supported.
H_8: The findings from regression analysis show that delivery positively influences the dependent variable purchase intention thus making H_8 acceptable.

4. Conclusion

This study provides sufficient evidence from a practical point of view that can be useful for the branding, marketing, and promotion of domestic e-commerce service providers in Bangladesh. The paper aimed to provide a scenario for the factors that determine the purchase intention of Bangladeshi nationals on the Daraz.com.bd e-commerce platform. Nine key factors were included to conduct the whole research study– privacy, payment, and safety, trust, price, quality, delivery, customer service, returning policy, and social influence. The results showed that privacy, trust, price, quality, delivery, returning policy and social influence had a statistically significant influence on purchase intention. Consumer purchase intent will rise if Daraz.com.bd gains more credibility, prices are lowered to more affordable and acceptable levels, delivery times are shortened, and return policies are made easier. Among all the variables, social influence appears to be the one that has the greatest impact on Bangladeshi consumers; as a result, online ratings and reviews are a developing form of interpersonal communication that is not only out of a company's control but also a significant influence on consumer purchasing decisions. The results may prove valuable for online retailers and marketers in Bangladesh and other emerging nations.

Although this research attempted to provide a considerable amount of both theoretical and practical contributions, future research could address certain limitations posed by the study. Firstly, this research adopted a random sampling technique. All the respondents of this study came via social media platforms. Hence, the sample may not reflect the entire population. Secondly, only nine factors were represented as independent variables and only seven of them had a significant influence on the dependent variable. Consequently, the existence of other factors that the research could not take into account cannot be ruled out. Those factors might have a significant impact on the purchase intention and including them in further studies may give different outcomes. Thirdly, this research focused on one e-commerce website Daraz.com.bd, the most popular platform in Bangladesh. The result may vary from site to site and product to product. Although the interaction effect between the elements was only looked at for further explanation, instead of giving answers, it just raised more questions, which might be a reasonable basis for another new research topic. Further research is desirable to address and overcome the mentioned limitations and shortcomings.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Ahammad , S.M., Satter, F., & Saifullah, M. (2007). Prospects of E-Commerce in Bangladesh*, J. Sci. technol*. (Dinajpur) Vol. 5: 74-80

Ahn, T., Ryu, S., & Han, I. (2007). The impact of web quality and playfulness on user acceptance of online retailing. *Information & Management*, Vol. 44, No. 3: 263–275

Alba, J., Lynch, J., Wietz, B., Janiszewski, C., Lutz, R., Sawyer, A., & Wood, S. (1997). Interactive home shopping: Consumer, retailer, and manufacturer incentives to participate in electronic marketplaces. *Journal of Marketing*, Vol. 61: 38-53

Arun, T. (2013). Determinants of customers' online purchase intention: an empirical study in India. *Journal of Indian Business Research*, Vol. 5, No. 1: 17-32

Asghar A.J., & Stephen, X.Z. (2013). E-commerce for SMEs: empirical insights from three countries. *Journal of Small Business and Enterprise Development*, Vol. 20, No. 4: 849-865

Barakat, S., & Sheikh, A. E. (2010). Trust and user acceptance of mobile advertising, in European Medtrnean and Middle Eastern Conference on Information 2010, Abu Dhabi, UAE

Benaroch, M., & Appari, A. (2011). Pricing e-service quality risk in financial services. *Electronic Commerce Research and Applications*, Vol. 10, No. 5: 534–544

Berger, J., & Chip, H. (2007). Where Consumers Diverge from Others: Identity-Signaling and Product Domains, *Journal of Consumer Research*, Vol. 34, No.2: 121-34

Bhattacherjee, A. (2001a). An empirical analysis of the antecedents of electronic commerce service continuance. *Decision Support Systems*, vol. 32, No. 2: 201–214

Bickart, Barbara & Robert M. Schindler (2001). Internet Forums as Influential Sources of Consumer Information. *Journal of Interactive Marketing*, Vol. 15, No. 3: 31-40

Boyer, K., Prudhomme, A. & Chung, W. (2009). The last mile challenge: evaluating the effects of customer density and delivery window patterns. *Journal of Business Logistics*, Vol. 30, No. 1: 185-201

Bryman, A. & Bell, E. (2011). *Business Research Methods*. 3rd edn. Oxford: Oxford University Press

Bucklin, L. P. (1972). *Competition and Evolution in the Distributive Trades*. Prentice-Hall, Englewood Cliffs, NJ

Burgess, F. T. (2001). *Guide to design questionnaires: A general introduction to the design of questionnaires for survey research*. http://iss.leeds.ac.uk/downloads/top2.pdf

Cerny, C.A., & Kaiser, H.F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research*, Vol. 12, No.1

Chawdhry, P., Masera, M. & Wilkens, M. (2002) Strategies for trust and confidence in B2C e-commerce. *Communications & Strategies*, Vol. 45: 81-111

Chew, K.W. (2007). Modified technology acceptance model as a predictor of online purchase behavior: a Malaysian perspective. Ph.D. thesis. Multimedia University, Cyberjaya

Churchill Jr., G.A., Surprenant, C.(1982). An investigation into the determinants of customer satisfaction. *J. Market. Res*. Vol. 19: 491–504

Cialdini, R. B., & Noah J. G. (2004). Social Influence: Compliance and Conformity. *Annual Review of Psychology*, Vol. 55: 591-621

Cohen, G. L. (2003). Party over Policy: The Dominating Impact of Group Influence on Political Beliefs. *Journal of Personality and Social Psychology*, Vol. 85, No.5: 808-822

Coughlan, A.T.E., Anderson, L., Stern, A., & El-Ansary. (2001). *Marketing Channels*. Prentice Hall, Upper Saddle River, NJ

Darley, J. M. & Bibb, L. (1967). Bystander Intervention in Emergencies: Diffusion of Responsibility. *Journal of Personality and Social Psychology*, Vol. 8, No. 4: 377-83

Dixit, N. & Dutta, S.K. (2010). Acceptance of E-banking among Adult Customers: An Empirical Investigation in India. *Journal of Internet Banking and Commerce*, Vol. 15, No.2: 1-17

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*: 307-319

Dodge, Y. (2003). *The Oxford Dictionary of Statistical Terms*. Oxford University Press. ISBN 0-19-920613-9

Esper, T.L., Jensen, T.D. & Burton, S. (2003). The Last Mile: an examination of effects of online retail delivery strategies on consumers. *Journal of Business Logistics*, Vol. 24 No. 2: 177-203

Fram, E.H. & Grady, D.B. (1995). Internet buyers: Will the Surfers become Buyers? *Direct Marketing*, Vol. 58, No. 6: 63-65

George, D., & Mallery, P., (2003). SPSS for WINDOWS step by step: A simple guide and reference. 11.0 update (4th ed.), Boston: Allyn & Baco

Gevaers, R., Van de Voorde, E. & Vanelslander, T. (2014). Cost modeling and simulation of last-mile characteristics in an innovative B2C supply chain environment with implications on urban areas and cities, *Procedia – Social and Behavioral Sciences*, Vol. 125: 398-411

Hasbullah, A.N., Osman, A., Abdullah, S., Salahuddin, N. S., Ramlee, F. N. & Soha, M. H. (2016). The Relationship of Attitude, Subjective Norm and Website Usability on Consumer Intention to Purchase Online: An Evidence of Malaysian Youth, *Procedia Economics & Finance*, Vol. 35: 493-502. https://doi.org/10.1016/S2212-5671(16)00061-7

Hassan, A.Z., Schattner, P., & Mazza D., (2006). Doing a pilot study: Why is it essential?, *Malaysian Family Physician*, 1 (2,3)

Hawkins, D.I., Roger, J.B., & Kenneth, A.C., (1992). *Consumer Behavior*, (5th ed.), Boston, United States: Homewood

Heilman, C. M., Bowman, D., & Wright, G. P. (2000). The evolution of brand preferences and choice behaviors of consumers new to a market. *Marketing Res*. Vol. 37, No. 2: 139–155

Hesson, M. & Alameed, H. (2007). Online security evaluation process for new e-services. *Business Process Management Journal*, Vol. 13, No. 2: 223 – 246

Holsapple, C.W. & Sasidharan, S. (2005). The dynamics of trust in online B2C e-commerce: a research model and agenda. *Information Systems and E-business Management*, 3, 4, 377-403

Honeycomb (2014). Last-mile delivery – the retail industry's next great challenge, available at: www.honeycomblt.com (accessed 15 February 2017)

Islam, M., Khan, M., Ramayah, T., & Hossain, M. (2004). The adoption of mobile commerce service among employed mobile phone users in Bangladesh: Self-efficacy as a moderator, *International Business Research,* Vol. 4

Jacoby, J., & Olson, J. C. (1977). Consumer response to price: An attitudinal information processing perspective. In Yoram Wind & Marshall Greenberg (Eds.), *Moving ahead in attitude research*. Chicago: American Marketing Association

Joseph, V. K. (2008). Factors that enhance customer trust in e-commerce Web sites: An examination of e-commerce success metrics using Internet audience rating. Ph.D. dissertation, Capella University, United States -- Minnesota

Jubayer, S. (2015). Acceptance of online shopping in Bangladesh: Consumer's perspective. *Journal of Business and Management*: Available: http://www.iosrjournals.org

Khalifa, M., & Cheng, S. (2004). *Adoption of mobile commerce: role of exposure*, in 35th Annual Hawaii International Conference on System Sciences (HICSS"02)

Kim, E., & Lee, B. (2009). E-service quality competition through personalization under consumer privacy concerns. *Electronic Commerce Research and Applications*, Vol. 8, No. 4: 182–190

Lichters, M., Müller, H., Sarstedt, M., & Vogt, B. (2016). How durable are compromised effects? *Journal of Business Research*, Vol. 69, No. 10: 4056–4064

Limayem, M., Khalifa, M. , & Frini, A. (2000). What makes consumers buy from the Internet? A longitudinal study of online shopping. IEEE Trans. *Systems, Man, and Cybernetics: Part A—Systems and Humans*, Vol. 30, No. 4: 421–432

Luarn, P. & Lin, H. (2004). Towards an understanding of behavioral intention to use mobile banking. *Computers in Human Behaviour*, Vol. 21, No. 6: 873-891

Malc, D., Mumel, D., & Pisnik, A. (2016). Exploring price fairness perceptions and their influence on consumer behavior. *Journal of Business Research*, Vol. 69, No. 9: 3693–3697

Miyazaki, A.D., & Fernandez, A. (2000). Internet Privacy and Security: An Examination of Online Retailer Disclosures. *Journal of Public Policy & Marketing*, Vol. 19, No. 1: 54-61

Molla, A., & Licker, P. S. (2005). E-Commerce adoption in developing countries: a model and instrument, *Information and Management*, Vol. 42, No. 6: 877-899

Neri, P. (2010). *How inherently noisy is human sensory processing?*, Psychon Bull Rev, Vol. 17, No. 6

Nicolaou, A. I., & McKnight, D. H. (2006). Perceived information quality in data exchanges: effects on risk, trust, and intention to use. *Information Systems Research*, Vol. 17, No. 4: 332–351.

Palvia, P. (2009). The role of trust in e-commerce relational exchange: A unified model. *Information & Management*, Vol. 46, No. 4: 213

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL: a multiple-item scale for assessing electronic service quality. *Journal of Service Research*, Vol. 7, No. 3: 213–233.

Parks, C. D., Lawrence J. S., & Susan R. B. (2001). Actions of Similar Others as Inducements to Cooperate in Social Dilemmas. *Personality and Social Psychology Bulletin*, Vol. 27, No. 3: 345-54

Petre, M., Minocha, S. & Roberts, D. (2006). Usability beyond the Web site: An empirically grounded e-commerce evaluation instrument for the total customer experience. *Behaviour & Information Technology*, Vol.25: 189-203

Qazi, M. M. (2014). Factors influencing consumers' attitude towards online shopping evidence from Dhaka City. *Journal of Business Studies*, Vol. 25, No.3: 161-47

Qian, D., Wang, L., & Zhu, L. (2018). The Effect of System Generated Cues On Microblog Rewarding Repost Behavior – A Source Credibility Perspective. *Journal of Electronic Commerce Research*, Vol 19, No 1

Rakibul M. H., Ali, M. A., & Mahfuz, M. A. (2015). An Empirical Investigation on the Adoption of E-Commerce in Bangladesh, *Asia Pacific Journal of Information Systems,* Vol. 25, No. 1

Salisbury, W. D., Pearson, R. A., Pearson, A. W. & Miller, D. W. (2001). Perceived security and World Wide Web purchase intention. *Industrial Management & Data Systems*, Vol. 101, No. 3-4: 165-176

Shaaban, Y. A., & Hillston, J. (2009). Cost-based admission control for Internet commerce QoS enhancement. *Electronic Commerce Research and Applications*, Vol. 8, No. 3: 142–159

Shanker, V., Smith, A. & Rangaswamy, A. (2000). Customer satisfaction and loyalty in online and offline environments. Working paper 02–2000, e-Business Research Center, Penn State University

Smith, M.S., & Albaum, S.G. (2013). *Basic Marketing Research: Building Your Survey*, Utah, United States of America: Qualtrics Labs, Inc.

Sorce, P., Perotti, V., & Widrick, S. (2005). Attitude and age differences in online buying. *International Journal of Retail and Distribution Management*, Vol. 33, No. 2: 122–132.

Sydow, J. (1998). Understanding the Constitution of Inter-organizational Trust In C. Lane & R. Bachmann, (Eds.), Trust within and between Organizations: Conceptual Issues and Empirical Applications: 31-63. Oxford: Oxford University.

Tabachnick, B.G., & Fidell, L.S., (1996). *Using multivariate statistics*, (3rd ed.), New York: HarperCollins

Tiemann, K.T., (2010). *Introductory Business Statistic*, Zurich, Switzerland: Jacobs Foundation

Tornatzky, L.G. & Fleischer, M. (1990). *The Process of Technological Innovation*, Leiington, MA: Leington Books

Von, B., Chris, U. D., & Anders, B. (1999). From Ought to Is: Moral Norms in Large-Scale Social Dilemmas, *Goteborg Psychological Reports*, Vol. 29, No. 3: 1-19

Wang, J. & Xiao, Z. (2015). Co-evolution between e-tailing and parcel express industry and its geographical imprints: the case of China, *Journal of Transport Geography*, Vol. 46: 20-34

Warshaw, P. R., & Davis, F. D. (1985). Disentangling behavioral intentions and behavioral expectations. *Journal of Experimental Social Psychology*, Vol. 21: 213–228

Yang, Z. & Jun, M. (2002). Consumer Perception of E-service Quality: From Internet Purchaser and Non-purchaser Perspectives. *Journal of Business Strategies*, Vol. 19, No. 1: 19-41

Ziethaml, V. A. (1982). Consumer response to the in-store price information environment. *Journal of Consumer Research*, Vol. 8: 357-369

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 74-94
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.540

Does Privatisation Improve Financial and Operating Performance of a Firm? The Case of Tanzania Breweries Ltd

Papias Daudi Njaala[1]

[1] Lecturer, Faculty of Accounting and Finance, Institute of Accountancy Arusha, Njiro Hill, P.O. Box 2798, Arusha, Tanzania. Phone: +255 784 436 286. E-mail: papiasnjaala@gmail.com and pnjaala@yahoo.co.uk

Abstract
Extant theoretical and empirical literature show that profitability, efficiency, capital expenditure, output and dividends improve (increase) after privatisation. However, previous studies showed a mixture of results on employment levels after privatisation: some showing increases and some showing decreases in employment levels after privatisation. Previous studies also showed that leverage levels decrease after privatisation. In this study the author reviewed some literature regarding privatisation initiatives carried out in various countries and their repercussions on financial and operating performance of firms being privatised. He then used the case of Tanzania Breweries Ltd and compared its pre- and post-privatisation performance levels to evaluate whether there was any post-privatisation improvement. The t-test Paired Two Sample for Means available in Data Analysis Tool of Ms Excel was used to calculate pre- and post-privatisation means (averages) and mean differences for selected performance metrics and also for hypotheses testing. The results show that profitability (in terms of return on sales, return on assets and return on equity), operating efficiency (in terms of sales efficiency and net income efficiency), capital expenditure (in terms of capital expenditure to sales), output (in terms of hectolitres produced and real sales), dividend payout (in terms of dividend to sales ratio and dividend per share) and earnings in terms of earnings per share improved (increased) significantly after privatisation. Capital expenditure in terms of capital expenditure to assets increased but there was no strong evidence to support that the increase was attributable to privatisation or it was just by chance. Financial leverage (in terms of debt to assets and debt to equity) and number of employees improved (decreased) significantly after privatisation.

Keywords: Privatisation, Financial Performance, Operating Performance, State-Owned-Enterprises, SOEs, Performance Metrics

1. Introduction

"If you want to know the end, look at the beginning."
(African Proverb)

1.1. Background of the Study

Since coming into power of Margaret Thatcher in United Kingdom in 1979 the wave of privatisation swept market, socialist and mixed economies. Normally state-owned enterprises (SOEs) face inefficiencies originating

from politicians' interference leading into excess employment, operating inefficiencies (Chen *et* al, 2021), low capital investment, low output, high operating costs and huge losses or unreasonably low profit levels, high gearing and low dividends (Čučković, *et al,* 2011). Due to inefficiencies (Čučković *et* al, 2011) and lack of profitability resulted from politicians' interference on SOEs, governments in both developed and developing countries embarked in privatisation programmes to heal unhealthy SOEs from their maladies (Čučković, *et* al, 2011; Redda, 2007; Bachiller, 2017 and Kisenge, 2013). The wave of privatisation started to sweep developed countries to the larger extent than developing countries but in 1990s we evidenced an important shift in both the industries being privatised and in the number of countries which participated in privatisation. For example, in 1990s and earlier 2000s we witnessed more privatisations in many sectors including highly regulated industries such as banking and telecommunications and electronic utilities (Čučković, *et* al, 2011) in both developed and developing countries, and privatisation programmes are clearly spreading throughout the developing economies. The percentage of privatisations in developing countries as a proportion of total global privatisations increased (Megginson *et al*, 2001).

Privatisation in this paper is taken as broadly defined as the deliberate sale by a government of SOEs or assets to private economic agents (Megginson *et al*, 2001). It is also defined as the sale of a state-owned firm to private sector (Cuervo *et al*, 2000). However, the sale of a state-owned firm can be wholly or partial in the sense that the government may sell all of its stake or a portion thereof.

Extant empirical studies show that privatisation of SOEs results into significant improvement in corporate performance (Chen, *et* al, 2021, Čučković, *et* al, 2011; Dewenter *et al*, 2001 and D'Souza, *et al*, 2005). However, there is a mixture of results on employment levels resulting from privatisation. Bortolotti, *et al* (2001) pointed out that privatisation improves significantly profitability, output, operating efficiency and capital investment spending whereas employment and leverage decline significantly as a result of privatisation.

Extant privatisation studies carried out in Tanzania focused on privatization process and asset valuation (Waigama, 2008), the role of privatisation in providing solid waste collection services (Kaare, 2002), performance of privatised (Mongula, 2002) and the impact of privatisation of a bank (Kisenge, 2013).

A case of Tanzania Breweries Ltd (TBL) was taken to assess performance improvement emanating from privatisation. Ratios were calculated and analysed from two sets of TBL's financial statements and their implications are explored. The first set covered the periods 1985-1992 and the second one covered 1994-2001. The year 1993 was excluded from the analysis because it was the year in which TBL was privatised. In this study the author examined financial and operating performance of TBL to illustrate whether privatisation of SOEs improves corporate performance. Corporate performance in the context of this paper focuses on corporate profitability, operating efficiency, capital investment, output improvement, gearing, payment of dividends to shareholders and earnings available to shareholders.

Profitability analysis presented and analysed includes the use of profitability ratios which are return to sales = net profit after tax/total sales revenue; return on assets = net profit after tax/total sales revenue; and return on equity = net profit after tax/total equity.

Operating performance is presented and analysed in terms of ratios namely sales efficiency = total sales revenue/total number of employees, and net income efficiency = net profit after tax/total number of employees. Capital investment spending ratios analysed and presented include capital expenditure to sales= capital expenditure/sales; and capital expenditure to total assets = capital expenditure/total assets.

Output improvement analysis includes analysis of sales in physical term = hectolitres of beer produced, and sales (in real terms) = nominal sales x (consumer price index$_{\text{Reference year}}$/consumer price index$_{\text{Base year}}$).

Analysis of gearing ratios includes analysis of debt to assets = total debt/total assets and debt to equity = total debt/total equity whereas dividend analysis includes dividend per share = total dividend paid/number of ordinary shares issued and dividend to sales = dividend/total sales revenue.

Earnings available to shareholders is analysed in terms of earnings per share = profit after tax/number of issued ordinary shares.

1.2. Reasons for Privatisation of SOEs

Čučković, *et al* (2011), Megginson *et al* (2001), Shirley (1992), Bachiller (2017), Bachiller (2012), Bartolotti (2001), Dewenter and Malatesta (2001), Estrin and Pelletier (2018), Megginson and Netter (2001), Balza et al (2013), Arocena and Oliveros (2012), Mongula (2002) and Chen *et al* (2021) are some of researchers who provided some arguments in support of privatisation programmes and policies being implemented by governments mostly since 1980's. Some of their reasons for embracing privatisation programmes are discussed here below:

1.2.1. Presence of insignificant Market Failure

Megginson *et al* (2001) pointed out that privatisation has positive impact and hence appealing in areas where market failure is noticeably insignificant, that is market is competitive or can become readily competitive. In the same vein they argue that privatisation is less appropriate for public goods and natural monopolies since competitive considerations are weaker in these respects.

1.2.2. Contracting Ability by Owners in Private Firms impacts the Efficiency

The government ownership of firms results in problems in defining the goals of the firm. They pointed out that while the shareholder-wealth-maximising model of corporate organisation is becoming increasingly dominant, in part because of the advantage of having a well-defined corporate goal; governments have many objectives other than profit or shareholder-wealth-maximisation (Čučković, *et al*, 2011; Megginson *et al*, 2001; and Shirley, 1992). Further, government objectives can change from one regime to the next hence affecting the SOEs. Megginson *et al* (2001) also pointed out that in a public enterprise, owners (citizens) are less able to influence managers to act in their interests which is not the case in a privately-owned enterprise.

1.2.3. The Cost-Benefits and Easy with which Government can intervene in Firm's Operations

Čučković, *et al* (2011) and Megginson *et al* (2001) pointed out that government can intervene in the operations of any firm being public or private; however, it is more costly for the government to intervene in a private firm than in a SOE. Thus, they argued, that to the extent that government intervention has greater costs than benefits, private ownership is preferred to public ownership.

1.2.4. Less-prosperous Firms Reliance on Government for Funding leading to "Soft" Budget Constraints

The government is unlikely to allow a large SOE to become bankrupt and as such the discipline enforced on private firms by capital markets and the threat of financial distress is less important for SOEs (Shirley, 1992; Megginson and Netter, 2001; Kouser *et al*, 2011).

1.2.5. Proceeds from Privatisation can impact Efficiency through its Effect on Government Fiscal Conditions

Privatisation in some cases has been used as a fiscal instrument to cover (reduce) fiscal deficit through selling SOEs (Megginson and Netter, 2001; Čučković, *et al*, 2011; Shirley, 1992). They pointed out that proceeds from privatisation of SOEs have helped reduce fiscal deficit in many countries. They also pointed out that in some instances proceeds from privatisation of SOEs are saved by governments instead of being spent.

1.2.6. Privatisation improves operational Efficiency

As a results of privatisation operational efficiency in terms of output per employee, sales per employee, net income per employee, and sales in real terms improves (Čučković, *et al*, 2011; Kouser *et al,* 2011; Arocena and Oliveros, 2012; Bachiller, 2012, Bachiller, 2017; Mongula, 2002; Estrin and Pelletier, 2018 and Balza *et al*, 2013).

1.2.7. Improvement of productivity

Most studies on productivity showed post-privatisation productivity improvement to differing extents (Chen *et al*, 2021; Mongula, 2002 and Kouser *et al* (2011).

1.2.8. Privatisation can help develop Factor, Product and Security Markets and Institutions

The privatisation has a role to play in development of factor and product markets and security markets (Čučković, *et al*, 2011; Megginson and Netter, 2001). Thus, to the extent that privatisation promotes competition, it can have important role to play in enhancement of efficiency; but at the same time the strength of markets prior to privatisation also has an impact on the success (or otherwise) on post-privatisation performance, Megginson and Netter (2001).

1.2.9. Profitability improvement

One of the main motives for privatisation is that empirical evidence showed that post-privatisation profitability improved significantly (Kouser *et al,* 2011; Čučković, *et al*, 2011; Bachiller, 2017; Bartolotti *et al*, 2001; Dewenter and Malatesta, 2001; Estrin and Pelletier, 2018; Megginson and Netter, 2001 and Balza *et al*, 2013).

1.3. The Aim of the Study

The aim of the study is to find the empirical evidence on whether privatisation results into improvement on financial and operating performance of a firm in Tanzania. Extant empirical literature shows that no similar study on post-privatisation financial and operating performance at micro/ firm level has been carried out in Tanzania. The rest of this paper is organised as follows: Section 2 provides the literature review, section 3 provides data and methodology used, section 4 presents and discusses research results (findings) and section 5 provides the concluding remarks and areas for further researches.

2. Literature Review

"However far a stream flows, it doesn't forget its origin."
(Nigerian, African Proverb)
"The child you sired hasn't sired you."
(Somalia, African Proverb)

In this section the researcher visits the work of previous researchers on privatisation and its effects to SOEs. Theoretical and empirical studies regarding the multi-national and multi-industry privatisation; case study and industry-specific privatisation; and empirical research in privatisation are visited.

2.1. Multi-national and multi-industry Research on Performance of privatised Firms

The effect of privatisation on financial and operating efficiency for multi-national and multi-industry has been researched by various writers including (Chen *et al*, 2021; Earle and Shpak, 2019; Al Hinai, 2016); Megginson and Netter (2001); and Dewenter and Malatesta (2001).

Chen, *et al* (2021) carried out a study on how ownership affects productivity of SOEs in China and found that on average privately owned firms are 53% more productive than SOEs, but the benefits of privatization take several years to fully materialize. They also found that the said productivity gap is smaller among larger firms and

economically more liberal times (later period of privatisation) and places (South and Coast China) than in economically less liberal times (beginning of privatisation) and places (North and Inland) and it is larger in consumer-facing and high-tech industries. In other words, they found that privatisation improved productivity level to greater extent in small and medium enterprises than in larger ones and in more economically liberal times and places than elsewhere. In the same vein they also found that productivity improvement was more noticed in sectors dealing with final goods and high-tech than "heavy" industries.

The existence of SOEs is associated with excess employment, excess budget spending for unnecessary subsidies, lack of profits or unreasonably low profits (Earle and Shpak, 2019; Al Hinai, 2016), lack of incentives for technological and skills improvements, low output and productivity levels, low wages (Earle and Shpak, 2019). However, regarding employment, Earle and Shpak (2019) found that SOEs are generally associated with excess employment for low-skilled workers. Al Hinai (2016) undertook a study on comparison between pre- and post-privatisation financial and operating performance of 61 Egyptian companies over a period of 16 years and a comparison between those 61 privatized SOEs and private companies over 16 years. The method of privatisation for the companies was initial public offerings (IPO). Findings of Al Hinai (2016) showed significant positive post-privatisation change in profitability, and operating efficiency and a negative impact on the leverage and employment level. The comparison of post-privatisation results to those of private firms revealed that there was significant increase in EBIT and ROE with no significance for ROS and ROA. For total debt to total equity ratio there was no significant improvement while employment level change was significant.

Balza *et al* (2013) explored the relationship between private sector participation, institutional reform, and performance of firms in electricity sector in 18 Latin American countries in the span of four decades. Their findings suggested that privatisation results into improvements in quality and efficiency rather than accessibility to electricity service. They also found that the quality and stability of regulatory institutions was strongly associated with accessibility to service regardless of the level of private sector participation.

Arocena *et al* (2012) undertook a study on post-privatisation effect on efficiency in Spain: comparing privatised firms and their counterparts before privatisation. Using data envelopment analysis (DEA) and regression analysis, they found that there were no significant differences in efficiency between the SOEs and privatised firms, the efficiency of private counterparts improved significantly and the efficiency of competitors during the same post-privatisation showed no significant improvement.

Arcas and Bachiller (2010) studied the role of organisational changes and contextual factors in affecting the operating performance of private European companies. Their findings show that smaller and non-regulated firms and private firms through public offer perform better than bigger, regulated, and privatised by private sale method. They also found that privatised Eastern European companies were less profitable than counterparts from other European countries. Their findings also suggest that organisational changes are more difficult to introduce in privatisation through private sale and in bigger and regulated companies. Arcas and Bachiller (2010) also suggest that less developed institutional context limit post-privatisation performance improvement.

Bachiller, (2012) undertook research on privatisation of 38 European firms and found that performance of utility firms improved significantly after privatisation. However, there was no sufficient evidence to conclude whether post-privatisation of firms in other sectors improved or not.

Dewenter and Malatesta (2001) found and documented from their study of privatisation effect of 63 companies privatised during the period from 1981 to 1993. They documented increases on profitability measured as return on sales. However, their study documented that profitability as measured by earnings before interest and taxes to sales declined insignificantly as a result of privatisation. With their sample they also documented that privately-owned companies are more profitable and efficient than SOEs.

Bartolotti, D'Souza, Fantini and Megginson (2001) carried out a study in 25 countries on 31 telecommunication firms privatised during the period from October 1981 to November 1998 and found that post-privatisation profitability, output, operating efficiency and capital investment spending increase significantly, whereas

employment and leverage decline significantly. Their results show that over two-thirds of all firms in the sample experienced a post-privatisation increase in operating income to sales of 74.1%, ROS by 70.4%, ROA by 66.7%. These increases are significant at 1%, 5% and 10% levels of significant. However, they found that 59.3% of the firms experienced insignificant increase in ROE.

2.2. Case Study and Industry-specific Privatisation Research

The effect of privatisation on financial and operating efficiency in the form of case study and industry-specific privatisation researches were carried out by various writers including Čučković, *et al* (2011), Branston (2000); Buckland and Frasser (2002); and Portelli and Narula (2004). These studies involved a single firm or a small number of firms in a single industry. The researchers here normally used econometrics to study the effect of privatisation of SOEs.

Čučković, *et al* (2011) investigated the impact of marketization and privatisation of the telecommunication (Croatian Telecom (HT)) and gas and oil industries (gas company INA) in Croatia in order to determine whether privatisation improves business efficiency, employment levels, investment, service quality, diversity and prices or not. They found that HT maximised net proceeds badly needed for the budget of the country and offered a good investment opportunity for domestic institutional investors, mainly the state and private pension funds, as well as small shareholders through the offer of substantial price discounts to former and new employees. This resulted into improved liquidity at Zagreb Stock Exchange as it contributed significantly to the general volume of transactions. The study also found that sales revenue initially remained stagnant amid increased competition, regulation, restructuring of the market and diversification of services (from 2004 to 2006). Later on, revenues from fixed telephony declined by 37%, revenues from mobile telephony increase by 17% and revenues from internet services increased by 184% (from 2006 to 2009). Subsequently (after 2009), HT's market share in internet services and mobile services started to decrease slightly due to increased competition resulting into a slight decline in sales revenue in these business segments. Čučković, *et al* (2011) also pointed out that HT's improved post-privatisation performance was associated with falling levels of employment by 31% (from 8,862 to 6,116 employees). However, HT's labour productivity (revenue per employee) improved by 56% as a result of HT's privatisation. The HT's productivity gains were mainly achieved through substantial reduction of labour and increase in sales revenue after privatisation. This substantial and dramatic drop in the number of employees was unpopular, and was often disputed and resisted by the trade unions. The new HT's management dealt with this dissatisfaction with a generous severance pay plan, and by providing training and in-house assistance for job search for laid-off workers. In contrast, HT Mobile (a separate entity within the T-HT Group), increased the number of employees by 3% in 2003-2009, but this did not alter the general downward trend in the number of employees in the company as a whole. The study (of Čučković, *et al* (2011)) also found that HT's earnings ratio, profit margin improved significantly initially but later they deteriorated due to world economic crisis, stringent competition and pressures related to regulations and fiscal policies. They also found that post-privatisation investment rate in infrastructure and other long-term capital assets increased.

Croatian privatisation of gas sub-sector commenced on 2002. Čučković, *et al* (2011) also found that after being privatized to Hungarian oil company MOL, the Croatian gas company INA's revenues almost doubled. However, the company could achieve higher revenue increases in case the tight price increase restrictions imposed by the Croatian Energy Regulatory agency (CENA) and central government were not there. Regarding post-privatisation level, INA maintained employment level at around 16,000 (from 2002 to 2008) until 2010 when the company announced restructuring and employment reduction by 9%. This suggests that there was a small influence on employment levels after privatisation. However, the maintenance of employment levels was due to a clause in the Privatisation Agreement with MOL which required INA not to lay workers off within a five-year period after privatisation. Čučković, *et al* (2011) also found that post-privatisation labour productivity improved even without layoffs. In this regard revenue per employee doubled in 2004 - 2008 from €118,999 to €225,950, declining only in 2009 to €170,265 per employee as a result of global economic crisis. Čučković, *et al* (2011) points out that INA together with its Italian partners made significant post-privatisation investments in the modernization of refineries in Rijeka and Sisak, especially in 2008 – 2009. This significant investment in long-term assets led to post-privatisation improvement of sales to long-term assets from 11% in 2007 to 20.2% in 2009. However, Čučković, *et al* (2011) found that the investment in long-term assets could be higher than that

level if MOL was initially given majority shares in INA and if the government did not impose price restrictions on oil and gas. The government price restrictions led to low profit levels necessitating the investments in long-term assets to be made from borrowed funds rather than re-invested funds from retained earnings leading to a steep surge in the debt/equity ratio. Earnings and earnings to net sales also fell in 2008 and recovered slightly in 2009 and more significantly in 2010 (for earnings) and significantly (for earnings to net sales) in 2009, Čučković, *et al* (2011). The initial INA's disappointing post-privatisation results were caused by factors such as government price restrictions, poor corporate governance (with management and supervisory board members appointed by government on political basis).

2.3. Other previous Empirical Findings on Privatisation

Other previous empirical findings on privatisation were documented by various researchers. They include (Earle and Shpak, 2019; Estrin and Pelletier (2018); Redda, 2007; etc.). Extant documented empirical evidence shows that privatisation alone does not automatically improve operating and financial performance of a privatised firm. Various authors have studied the conditions driving the performance of a firm after being privatised. They include Radić *et al* (2021), Earle and Shpak (2019), Estrin and Pelletier (2018), Čučković, *et al* (2011), Redda (2007) and Megginson, *et al* (2006).

According to Estrin and Pelletier (2018) and Čučković, *et al* (2011), Radić *et al* (2021), for privatisation to work (i.e., produce positive results) it should be associated with robust regulatory infrastructure and appropriate process of privatization. These include well-designed and sequenced reforms; the implementation of complementary policies; the creation of regulatory capacity; attention to poverty and social impacts; and strong public communication.

For post-privatisation financial and operating performance of a SOE to improve, firms should be subjected to competition (Earle and Shpak, 2019; and Estrin and Pelletier, 2018), good candidates be chosen (Radić *et* al, 2021), good privatisation process be used (Radić *et* al, 2021), business environment should be improved (Earle and Shpak, 2019) and quality and stable regulatory institutions should be put in place (Radić *et* al, 2021). They pointed out that privatisation that leads to private monopoly results into worse performance than that before privatisation (Earle and Shpak, 2019; and Estrin and Pelletier, 2018; Radić *et* al, 2021).

Čučković *et al* (2011) points out that privatization of monopolistic SOEs assisted the introduction competition by allowing the entry of new firms (through rules and regulation) to the telecommunication market that had previously been dominated by state monopoly. As a result of privatization, quantity and quality of services improved, transparency of consumers' rights for timely and correct information about services was enhanced, inland calls on fixed telephone lines prices (which were underpriced through subsidies) increased and foreign calls, internet access and other services prices (which were overpriced) decreased after privatisation. Post-privatisation prices reflect underlying operating costs, investment costs, competition level and benefits to consumers. Ultimate result of privatization led to both improved profitability to telecommunication service providers and improved customer satisfaction in Croatia.

According to Redda (2007) for a privatised firm's operating and financial performance to improve the following factors should exists: (a) which firms are privatized; there can be a positive (or negative) selection effect; (b) whether privatization is total or partial; evidence suggests that the former is more beneficial; (c) the regulatory framework, which in turn depends on the institutional and political environment; (d) the characteristics of the new owners; foreign ownership has been associated with superior post-privatization business performance, especially relative to "insider" ownership (privatization to managers and workers) and (e) effective competition. Redda (2007) pointed out that competition had been found to be critical in bringing about improvements in company performance because it is associated with lower costs, lower prices, and higher operating efficiency.

Bachiller (2017) applied a meta-analysis of 60 empirical studies of privatised firms. The aim was to evaluate whether different post-privatisation results stem from the method of privatisation and the level of development of a country in which privatised firm existed. She found that firms privatised using public offerings perform

better after privatisation than those privatised using other methods such as voucher privatisation and private sale. The study also refuted the common-place assumption that privatisation in developing countries does not improve financial performance.

Waigama (2008) studied implementation of privatisation process and valuation methodology of privatised SOEs in Tanzania in order to assist the Presidential Parastatal Sector Reform Commission (PSRC) in decision-making. The study traced five interrelated aspects of privatisation, namely strategy formulation, valuation method, valuation error, assessment of buyer of SOEs and post-privatisation developments. The study attempted to find out whether or not the five aspects proceeded in the way to attain the privatisation stated objectives. The study found that PSRC's privatisation strategy did not promote higher competition, higher prices and higher government revenue; valuation methodology applied by valuation consultants did not improve certainty in determination of reserve price, and valuation estimates were not good proxies of sale prices; wider ownership participation by people was not achieved and follow up on ownership changes and post-privatisation development was lacking (Waigama, 2008). The study also found that for privatisation process and valuation methodology to produce intended results the market system and its institutions should be well developed and function well. These were lacking in privatisation process and valuation methodology in Tanzania (Waigama, 2008).

Kaare (2002) studied the impact of privatisation of solid waste collection services in Dar es Salaam, Tanzania and found that the privatisation had minimal impact in refuse collection services to low-income households. Mongula (2002), carried out a qualitative study of privatised firms in Tanzania and found that post-privatisation performance for some firms improved while for some other firms did not improve. The firms with improved post-privatisation performance were Tanzania Breweries Ltd., Tanzania Distilleries, Darbrew Ltd., Tanzania Cables, Tanzania Cigarettes Co., Tanzania Portland Cement Co., Tanga and Mbeya Cement factories, National Bank of Commerce (1997) Ltd., ABB Tanelec (electrical equipment manufacturers), Morogoro Canvas, Sabuni (Foma) Detergents, Kibo Paper Industry, DAHACO and Cam and Metal Box and Mtibwa, Kilombero and TPC sugar factories. Post-privatisation improvement involved tax payments, increase in production, acquisition of new technology and managerial skills, and levels of salaries. The firms whose post-privatisation performance did not improve included Tanzania Shoe Company and Pollysacks Ltd, Ubungo Spinning (has been closed since March 2002), Burns and Blane, National Bicycle Company (NABICO), Tanganyika Dyeing and Weaving Mill (Sungura Textile), Tanzania Pharmaceuticals Co., HANDICO and Blankets and Textiles Manufacturers. Mongula (2002) provided some reasons for improvement (or otherwise) of the firms: privatisation process, history of the privatised firms before privatisation, post-privatisation governance and management and decision-making, financial constraints of post-privatisation owners, organised resistance by employees (related to post-privatisation salary levels and working environment/ standards). The study by Mongula (2002) involved multi-sector firms and was narrative in nature without the use of any data analysis tool. Thus, even for firms that portrayed post-privatisation improvements the study did not provide any evidence whether the improvement was significant or not.

Kisenge (2013) conducted a qualitative study on the impact of privatising the National Bank of Commerce (NBC) of Tanzania and found that the bank's post-privatisation improved in terms of the volume of loans provided, job creation, increase number of branches which brought services near citizen, new technologies which facilitate the use of bank services without being in the bank premises (for example the use ATM machine, internet banking), online payment services (such as *LUKU*, telephone credits and payroll processing service).

The hitherto studies conducted in Tanzania did not relate to financial and operating performance metrics and methodology used in the current study. This provided the gap that the author attempted to plug. Therefore, this study focuses to plug the gap by evaluating the effect of privatisation on financial and operating performance of Tanzania Breweries Ltd.

Post-privatised TBL is not a monopolist firm, it is regulated by Dar es Salaam Stock Exchange (DSE) and Registrar of Companies and other government regulatory institutions such as Fair Competition Commission (FCC), and good business environment therefore it is predicted that its post-privatisation results to reflect

improved financial and operating results. The empirical TBL's pre- and post-privatisation financial and operating results are presented and discussed in section 4.0 of this paper.

3. Data and Methodology

"If you do not have patience, you cannot make beer."
(Namibia, Ovambo tribe African Proverb)

3.1. Introduction

This section provides research design, data and data analysis and hypothesis tested.

3.2. Research Design

This study has used descriptive research design that is useful for a study involving both quantitative and qualitative approaches. The design provides descriptive data such as minimum values, maximum values, means, variances, standard deviation, correlation, t-statistics, p-values and critical values. In this study the descriptive research design has been used to describe the effect of privatisation on financial and operating performance of TBL, and test a variety of hypotheses on whether privatisation results into improvement of financial and operating performance. The study is confirmatory because it attempts to test hypotheses that privatisation improves financial and operating performance of SOEs as documented in previous studies. It is carried out to support or refute the hypotheses. Specifically, it tests the hypotheses that profitability, operating efficiency, capital expenditure, output, dividend payout and earnings per share of TBL improved (increased) and financial leverage and employment improved (decreased) after privatisation.

3.3. Data and Data Analysis

Data collected and used in the study were sales revenue, profit after tax, total assets, total equity, number of employees, capital expenditure, output (in hectolitres of beer produced), total debt, dividend paid, number of shares issued and earnings per share.

Data for the study were mainly collected from TBL Annual Reports from the year 1985 to 1992 (pre-privatisation period), that is year -8 to -1 and 1994 to 2001 (post-privatisation period), that is year +1 to +8. Some data were also obtained from the internet, for example from World Bank reports. Year of privatisation 1993, defined as Year 0 is excluded from calculating the pre- and post-privatisation means and mean differences.

Table 3.1 shows proxies used and analysed for profitability, operating efficiency, capital expenditure, output, financial leverage, employment level, dividend payout and earnings. Proxies for profitability are return on sales (ROS) ratio, return on assets (ROA) ratio and return on equity (ROE) ratio. Proxies for operating efficiency are sales efficiency (SALEFF) and net income efficiency (NIEFF). Capital expenditure to sales (CESA) and capital expenditure to assets (CETA) are used as proxies for capital expenditure. Proxies for output are units produced (in hectolitres) (PROD) and real sales (RESA). Financial leverage is proxied by debt to assets (TDTA) ratio and debt to equity (TDTE) ratio. The proxy for employment level is the number of employees (EMPL) whereas proxies for dividend payout are dividend to sales (DIVSAL) and dividend per share (DPS). Earnings are proxied by earning per share (EPS).

In order to test the predicted changes indicated in tables 3.1 and 3.2, the study used the t-test Paired Two Sample for Means available in Data Analysis Tool of Ms Excel. This was used to test whether mean differences between pre- and post-privatisation were zero.

Regarding real sales calculations, nominal sales (in TZS M) were adjusted for inflation by using the following formula, as also applied by Kenton (2022):

$$\text{Real Sales} = \text{Nominal Sales} \times \frac{\text{CPI}_{\text{Reference year}}}{}$$

$CPI_{Base\ year}$

Where:
Real Sales=Inflation-adjusted sales
$CPI_{Reference\ year}$ = A consumer price index for a reference year
$CPI_{Base\ year}$ = A consumer price index for a base year

After calculating means and differences of means for each variable, p-values are used to test whether the changes in financial and operating performance indicators are statistically significant. In other words, the test is carried out to determine whether the difference averages between pre- and post-privatisation samples are zero.

The t-test Paired Two Sample for Means data analysis was carried out using Microsoft Excel Data Analysis Tool. The tool is used because it is useful when: (i) testing two measurements on the same company or companies, (ii) two sample sizes are equal, (iii) sample sizes are small (i.e., less than 30 items), (iv) sample observations are not completely independent but their dependent in pairs, and (v) simple random sampling is used, Sancheti and Kapoor (2007). The technique is applicable, for example when a company or a government institutes a policy/ intervention to improve performance of a company or companies and an analysis is required to assess whether the policy/ intervention worked effectively. All the mentioned conditions for the use of the method/ technique were present for the case in hand, that is TBL.

Regarding hypothesis testing, null hypothesis was formulated as, H_0: There is no difference between pre- and post-privatisation performance indicator (difference of means) and alternative hypothesis was formulated as, H_A: There is an increase or decrease in post-privatisation performance indicator (difference of means). The hypotheses to be tested are shown in table 3.2. The aim is to reject the null hypothesis in case the post-privatisation improvement is statistically significant, that is if the p-value is less that significance level used. The significance level used in this case is 0.05.

3.4. Hypotheses Tested

This section presents all hypotheses tested in this study. Table 3.2 shows these hypotheses. Generally, the hypotheses test whether TBL's privatisation improved financial and operating performance. The hypotheses are presented here below:

3.4.1. Hypotheses on Profitability

(a) Privatisation had no effect on return on sales (ROS)
H_O: $ROS_{Pre} - ROS_{Post} = 0$
H_A: $ROS_{Pre} - ROS_{Post} < 0$

A null hypothesis (H_O) stated that the difference (change) between pre-privatisation ROS and post-privatisation ROS is zero. In other words, the null hypothesis stated that privatisation did not affect ROS. The alternative hypothesis (H_A) stated that privatisation improves (increases) ROS.

(b) Privatisation had no effect on return on assets (ROA)
H_O: $ROA_{Pre} - ROA_{Post} = 0$
H_A: $ROA_{Pre} - ROA_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation ROA and post-privatisation ROA is zero. In other words, the null hypothesis stated that privatisation did not affect ROA. The alternative hypothesis (H_A) stated that privatisation improves (increases) ROA.

(c) Privatisation had no effect on return on equity (ROE)
H_O: $ROE_{Pre} - ROE_{Post} = 0$

H_A: $ROE_{Pre} - ROE_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation ROE and post-privatisation ROE is zero. In other words, the null hypothesis stated that privatisation did not affect ROE. The alternative hypothesis (H_A) stated that privatisation results into improvement of ROE (increasing ROE).

3.4.2. Hypotheses on Operating Efficiency

(a) Privatisation had no effect on sales efficiency (SALEFF)
H_O: $SALEFF_{Pre} - SALEFF_{Post} = 0$
H_A: $SALEFF_{Pre} - SALEFF_{Post} < 0$
A null hypothesis (H_O) stated that the difference between pre-privatisation SALEFF and post-privatisation SALEFF is zero. In other words, null hypothesis stated that privatisation did not affect SALEFF. The alternative hypothesis (H_A) suggested that privatisation improves (increases) SALEFF.

(b) Privatisation had no effect on net income efficiency (NIEFF)
H_O: $NIEFF_{Pre} - NIEFF_{Post} = 0$
H_A: $NIEFF_{Pre} - NIEFF_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation NIEFF and post-privatisation NIEFF is zero. In other words, null hypothesis stated that privatisation did not affect NIEFF. The alternative hypothesis (H_A) suggested that privatisation improves (increases) NIEFF.

3.4.3. Hypotheses on Capital Expenditure

(a) Privatisation had no effect on capital expenditure to sales ratio (CESA)
H_O: $CESA_{Pre} - CESA_{Post} = 0$
H_A: $CESA_{Pre} - CESA_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation CESA and post-privatisation CESA is zero. This is to say, the null hypothesis stated that privatisation did not affect CESA. The alternative hypothesis (H_A) suggested that privatisation improves (increases) CESA.

(b) Privatisation had no effect on capital expenditure to assets (CETA) ratio
H_O: $CETA_{Pre} - CETA_{Post} = 0$
H_A: $CETA_{Pre} - CETA_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation CETA and post-privatisation CETA is zero. In other words, null hypothesis proposes that privatisation did not affect CETA. The alternative hypothesis (H_A) stated that privatisation improves (increases) CETA.

3.4.4. Hypotheses on Output

(a) Privatisation had no effect on units produced in hectolitres (PROD)
H_O: $PROD_{Pre} - PROD_{Post} = 0$
H_A: $PROD_{Pre} - PROD_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation PROD and post-privatisation PROD is zero. This is to say, null hypothesis stated that privatisation did not affect PROD. The alternative hypothesis (H_A) suggested that privatisation improves (increases) PROD.

(b) Privatisation had no effect on real sales (RESA)
H_O: $RESA_{Pre} - RESA_{Post} = 0$

H_A: $RESA_{Pre} - RESA_{Post} < 0$

Null hypothesis (H_O) proposes that the difference between pre-privatisation RESA and post-privatisation RESA is zero. In other words, null hypothesis proposes that privatisation did not affect RESA. Alternative hypothesis (H_A) suggested that privatisation improves (increases) sales in real terms (RESA).

3.4.5. Hypotheses on Financial Leverage

(a) Privatisation had no effect on debt to assets (TDTA) ratio
H_O: $TDTA_{Pre} - TDTA_{Post} = 0$
H_A: $TDTA_{Pre} - TDTA_{Post} > 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation TDTA and post-privatisation TDTA is zero. In other words, the null hypothesis stated that privatisation did not affect TDTA. The alternative hypothesis (H_A) predicted that privatisation improves (decreases) TDTA.

(b) Privatisation had no effect on debt-to-equity ratio (TDTE)
H_O: $TDTE_{Pre} - TDTE_{Post} = 0$
H_A: $TDTE_{Pre} - TDTE_{Post} > 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation TDTE and post-privatisation TDTE is zero. This is to say, the null hypothesis stated that privatisation did not affect TDTE. The alternative hypothesis (H_A) stated that privatisation improves (decreases) TDTE.

3.4.6. Hypothesis on Employment Level

(a) Privatisation had no effect on the number of employees (EMPL)
H_O: $EMPL_{Pre} - EMPL_{Post} = 0$
H_A: $EMPL_{Pre} - EMPL_{Post} > 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation EMPL and post-privatisation EMPL is zero. This null hypothesis said that privatisation did not affect the number of employees. The alternative hypothesis (H_A) said that privatisation resulted into decrease in the number of employees.

3.4.7. Hypotheses on Dividend Payout

(a) Privatisation had no effect on the dividend to sales ratio (DIVSAL)
H_O: $DIVSAL_{Pre} - DIVSAL_{Post} = 0$
H_A: $DIVSAL_{Pre} - DIVSAL_{Post} < 0$

A null hypothesis (H_O) indicated that the difference between pre-privatisation DIVSAL and post-privatisation DIVSAL was zero. In other words, the null hypothesis said that privatisation did not affect the DIVSAL. The alternative hypothesis (H_A) said that privatisation resulted into improvement (increase) of DIVSAL.

(b) Privatisation had no effect on the dividend per share (DPS)
H_O: $DPS_{Pre} - DPS_{Post} = 0$
H_A: $DPS_{Pre} - DPS_{Post} < 0$

A null hypothesis (H_O) said that the difference between pre-privatisation DPS and post-privatisation DPS was zero. The null hypothesis indicated that privatisation did not affect the DPS. The alternative hypothesis (H_A) stated that privatisation resulted into improvement (increase) of DPS.

3.4.8. Hypothesis on Earnings

(a) Privatisation had no effect on the earnings per share (EPS)

H_O: $EPS_{Pre} - EPS_{Post} = 0$

H_A: $EPS_{Pre} - EPS_{Post} < 0$

A null hypothesis (H_O) stated that the difference between pre-privatisation EPS and post-privatisation EPS was zero. The null hypothesis said that privatisation did not affect the EPS. The alternative hypothesis (H_A) said that privatisation resulted into improvement (increase) of EPS.

4. Research Results: TBL's Pre- versus Post-Privatisation Financial and Operating Performance

"The new moon cannot come until the other has gone"
(Bahunde or Hunde, Democratic Republic of Congo Proverb)

4.1. Introduction

The results of the study are presented and analysed in this section. As already mentioned in section 3.0 of this paper, *t*-test Paired Two Sample for Means was carried out to determine whether privatisation of TBL improved its financial and operating performance. Tables 3.1 and 3.2 indicate performance metrics used to assess the effect of privatisation. The metrics fall under the following categories: profitability, efficiency, capital expenditure, output, financial leverage, employment, dividend payout and earnings.

Table 3.1: Performance Metrics, Definitions and Predicted Changes

	Performance Metrics	Definitions	Predicted Change after Privatisation
1.	**Profitability**		
(i)	Return on Sales (ROS)	Profit after tax/Total sales revenue	Increase, i.e. $ROS_{Pre} < ROS_{Post}$
(ii)	Return on Assets (ROA)	Profit after tax/Total assets	Increase, i.e. $ROA_{Pre} < ROA_{Post}$
(iii)	Return on Equity (ROE)	Profit after tax/Total equity	Increase, i.e. $ROE_{Pre} < ROE_{Post}$
2.	**Operating Efficiency**		
(i)	Sales Efficiency (SALEFF)	Total sales revenue/Number of employees	Increase, i.e. $SALEFF_{Pre} < SALEFF_{Post}$
(ii)	Net Income Efficiency (NIEFF)	Profit after tax/Number of employees	Increase, i.e. $NIEFF_{Pre} < NIEFF_{Post}$
3.	**Capital Expenditure**		
(i)	Capital Expenditure to Sales (CESA)	Capital expenditure /Total sales revenue	Increase, i.e. $CESA_{Pre} < CESA_{Post}$
(ii)	Capital Expenditure to Assets (CETA)	Capital expenditure/Total assets	Increase, i.e. $CETA_{Pre} < CETA_{Post}$
4.	**Output**		
(i)	Units produced in hectolitres (PROD)	Total hectolitres of beer produced	Increase, i.e. $PROD_{Pre} < PROD_{Post}$
(ii)	Real Sales (RESA)	Nominal Sales x $\frac{CPI_{Reference\ year}}{CPI_{Base\ year}}$	Increase, i.e. $RESA_{Pre} < RESA_{Post}$
5.	**Financial Leverage**		
(i)	Debt to Assets (TDTA)	Total debt/Total assets	Decrease, i.e. $TDTA_{Pre} > TDTA_{Post}$
(ii)	Debt to Equity (TDTE)	Total debt/ Total equity	Decrease, i.e., $TDTE_{Pre} > TDTE_{Post}$
6.	**Employment**		
(i)	Number of Employees (EMPL)	Number of eemployees	Decrease, i.e. $EMPL_{Pre} > EMPL_{Post}$
7.	**Dividend Payout**		
(i)	Dividends to Sales (DIVSAL)	Dividends/Total sales revenue	Increase, i.e., $DIVSAL_{Pre} < DIVSAL_{Post}$
(ii)	Dividend Per Share (DPS)	Dividends/ No. of issued ordinary shares	Increase, i.e., $DPS_{Pre} < DPS_{Post}$
8.	**Earnings**		
(i)	Earnings per share (EPS)	Profit (Loss) after tax/No. of issued ordinary shares	Increase, i.e., $EPS_{Pre} < EPS_{Post}$

Source: Author's formulation

Key for table 3.1 above:

ROS_{Pre}	stands for return on sales before privatisation
ROS_{Post}	stands for return on sales after privatisation
ROA_{Pre}	stands for return on assets before privatisation
ROA_{Post}	stands for return on assets after privatisation
ROE_{Pre}	stands for return on equity before privatisation
ROE_{Post}	stands for return on equity after privatisation
$SALEFF_{Pre}$	stands for sales efficiency before privatization
$SALEFF_{Post}$	stands for sales efficiency after privatization
$NIEFF_{Pre}$	stands for net income efficiency before privatization
$NIEFF_{Post}$	stands for net income efficiency after privatization
$CESA_{Pre}$	stands for capital expenditure to sales before privatisation
$CESA_{Post}$	stands for capital expenditure to sales after privatization
$CETA_{Pre}$	stands for capital expenditure to assets before privatisation
$CETA_{Post}$	stands for capital expenditure to assets after privatisation
$PROD_{Pre}$	stands for production output (in hectolitres) before privatisation
$PROD_{Post}$	stands for production output (in hectolitres) after privatisation
$RESA_{Pre}$	stands for real sales before privatisation
$RESA_{Post}$	stands for real sales after privatisation
$TDTA_{Pre}$	stands for total debt to assets before privatization
$TDTA_{Post}$	stands for total debt to assets after privatization
$TDTE_{Pre}$	stands for total debt to equity before privatization
$TDTE_{Post}$	stands for total debt to equity after privatization
$EMPL_{Pre}$	stands for number of employees before privatisation
$EMPL_{Post}$	stands for number of employees after privatisation
$DIVSAL_{Pre}$	stands for dividend to sales before privatization
$DIVSAL_{Post}$	stands for dividend to sales after privatization
DPS_{Pre}	stands for dividend per share before privatization
DPS_{Post}	stands for dividend per share after privatization
EPS_{Pre}	stands for earnings per share

Table 3.2: Predicted Change and Hypotheses tested

	Performance Metrics	Predicted Change after Privatisation	Difference	Hypotheses tested
1.	**Profitability**			
	Return on Sales (ROS)	Increase, i.e., $ROS_{Pre} < ROS_{Post}$	$ROS_{Pre} - ROS_{Post}$	H_O: Difference = 0 H_A: Difference > 0
	Return on Assets (ROA)	Increase, i.e., $ROA_{Pre} < ROA_{Post}$	$ROA_{Pre} - ROA_{Post}$	H_O: Difference = 0 H_A: Difference > 0
	Return on Equity (ROE)	Increase, i.e., $ROE_{Pre} < ROE_{Post}$	$ROE_{Pre} - ROE_{Post}$	H_O: Difference = 0 H_A: Difference > 0
2.	**Operating Efficiency**			
	Sales Efficiency (SALEFF)	Increase, i.e., $SALEFF_{Pre} < SALEFF_{Post}$	$SALEFF_{Pre} - SALEFF_{Post}$	H_O: Difference = 0 H_A: Difference > 0
	Net Income Efficiency (NIEFF)	Increase, i.e., $NIEFF_{Pre} < NIEFF_{Post}$	$NIEFF_{Pre} - NIEFF_{Post}$	H_O: Difference = 0 H_A: Difference > 0
3.	**Capital Expenditure**			
	Capital Expenditure to Sales (CESA)	Increase, i.e., $CESA_{Pre} < CESA_{Post}$	$CESA_{Pre} - CESA_{Post}$	H_O: Difference = 0 H_A: Difference > 0
	Capital Expenditure to Assets (CETA)	Increase, i.e., $CETA_{Pre} < CETA_{POst}$	$CETA_{Pre} - CETA_{Post}$	H_O: Difference = 0 H_A: Difference > 0
4.	**Output**			
	Units produced in hectolitres (PROD)	Increase, i.e., $PROD_{Pre} < PROD_{Post}$	$PROD_{Pre} - PROD_{Post}$	H_O: Difference = 0 H_A: Difference > 0
	Real Sales (RESA)	Increase, i.e., $RESA_{Pre} < RESA_{Post}$	$RESA_{Pre} - RESA_{Post}$	H_O: Difference = 0 H_A: Difference > 0
5.	**Financial Leverage**			
	Debt to Assets (TDTA)	Decrease, i.e., $TDTA_{Pre} > TDTA_{Post}$	$TDTA_{Pre} - TDTA_{Post}$	H_O: Difference = 0 H_A: Difference < 0
	Debt to Equity (TDTE)	Decrease, i.e., $DTE_{Pre} > DTE_{Post}$	$TDTE_{Pre} - TDTE_{Post}$	H_O: Difference = 0 H_A: Difference < 0
6.	**Employment**			
	Number of Employees (EMPL)	Decrease, i.e. $EMPL_{Pre} > EMPL_{Post}$	$EMPL_{Pre} - EMPL_{Post}$	H_O: Difference = 0 H_A: Difference < 0
7.	**Dividend Payout**			
	Dividends to Sales (DIVSAL)	Increase, i.e., $DIVSAL_{Post} < DIVSAL_{Post}$	$DIVSAL_{Pre} - DIVSAL_{Post}$	H_O: Difference = 0 H_A: Difference > 0
	Dividend per Share (DPS)	Increase, i.e., $DPS_{Pre} < DPS_{Post}$	$DPS_{Pre} - DPS_{Post}$	H_O: Difference = 0 H_A: Difference > 0
8.	**Earnings**			
	Earnings per share (EPS)	Increase, i.e.	$EPS_{Pre} - EPS_{Post}$	H_O: Difference = 0

		$EPS_{Pre} < EPS_{Post}$		H_A: Difference > 0

Source: Author's formulation

Profitability metrics used are ROS, ROA and ROE. Efficiency metrics used are sales efficiency and net income efficiency. The capital expenditure metrics are capital expenditure to sales and capital expenditure to assets whereas output metrics gauged are units produced (in hectolitres) and real sales. The author gauged debt to assets and debt to equity as financial leverage metrics and number of employees as employment metrics. Dividends are measured in terms of dividend to sales and dividend per share whereas earnings are measured in terms of earnings per share.

4.2. Change in Profitability after Privatisation

Tables 4.1 and 4.2 show annual performance metrics for eight years prior to privatisation and eight years after privatisation of TBL. The minimum pre-privatisation ROS stood at -223.06% whereas the minimum post-privatisation ROS was -4.31%. The maximum pre-privatisation ROS was 5.85% whereas the maximum post privatisation ROS was 28.51%. The average pre-privatisation ROS was -118.80% and the average post-privatisation ROS stood at 15.05% (refer to table 4.2). With *t*-stat of -3.995847748, t-critical value (one-tail) of 1.894578605 and p-value (one-tail) of 0.002608712 (which is less than significance level of 0.05) (refer to table 4.2), null hypothesis is rejected. This means that difference between the pre-privatisation average ROS and the post-privatisation average ROS (increase) is statistically significant. In other words, privatisation of TBL had significant positive impact on return on sales.

Table 4.1: TBL's Pre- and Post-Privatisation Financial and Operating Performance Metrics

Performance Metrics	1985	1986	1987	1988	1989	1990	1991	1992	1994	1995	1996	1997	1998	1999	2000	2001
Profitability																
ROS (%)	-223.06	-238.87	-161.04	-211.19	-1.24	-78.3	5.85	-42.54	-4.31	12.88	13.49	11.97	14.6	18.62	28.5	24.65
ROA (%)	-21.27	-18.72	-17.26	-23.55	-0.24	-14.59	1.41	-7.69	-3.99	21.73	30.38	20.99	22.56	25.32	31.33	27.23
ROE (%)	-42.72	-40.14	-33.73	(43.90)	-0.4	-22.83	2.24	-11.6	-5.54	30.2	43.13	39.71	44.83	47.79	46.19	35.03
Operating Efficiency																
SALEFF (TZS M)	0.3924590	0.3369713 5	0.5478991 6	0.604225 352	1.149076 517	1.1628622 72	1.713624 67	1.91206 896	11.19034 74	25.16926 3	59.24048 33	73.073587 39	76.63857 80	91.116173 1	82.063636 3	87.65801 527
NIEFF (TZS M)	-0.875409 84	-0.8049113	-0.8823529 4	-1.2760 563	-0.014248 02	-0.9104898 6	0.100257 06	-0.81344 827	-0.482625 48	3.242989 47	7.992145 01	8.7495400 79	11.19124 4	16.966590 7	23.393181 8	21.61068 702
Capital Expenditure																
CESA (TZS M)	166.6666 66	162.34817 8	107.87321 06	113.9860 14	61.01033 295	47.419497 13	54.50045 00	74.9323 7151	27.70589 65	21.27741 43	9.112328 26	9.4580014 03	8.760973 766	15.2125	5.3958494 8	3.689738 052
CETA (TZS M)	15.89134 93	12.726118 7	11.564178 45	12.71120 354	11.89080 331	8.8350113 01	13.17736 67	13.5474 405	25.61403 50	26.37799 71	9.035369 77	16.577101 88	13.53550 1	16.129397 7	5.9297960 8	0.795444 708
Output																
PROD (Hectolitres)	520,545	531,127	530,475	529,955	495,355	435,347	469,523	453,548	575,000	875,000	1,221,307	1,450,000	1,500,000	1,535,700	1,551,00	1,545,000
RESA (TZS M)	39.7882800	54.364700	111.8832000	160.960800	411.286200	385.798060	729.9270	739.7030	6,495.0903	17,072.3112	33,873.8565	44,609.5398	52,677,3350	58,584.000	56,014.3404	62,434.1584
Financial Leverage																
TDTA (%)	79.24	0	0	45.49	40.83	24.4	21.25	17.72	17.14	0	9.27	15.45	10.96	8.21	8.05	10.75
TDTE (%)	159.17	0	0	84.79	67.84	38.18	33.63	26.73	23.83	0	13.16	29.24	21.77	15.50	11.87	13.84
Employment																
EMPL	3,050	3,665	3,570	3,550	3,790	3,899	3,890	2,900	2,590	2,375	1,655	1,522	1,519	1,317	1,320	1,310
Dividend																
DIVSAL (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.36	8.31	11.34	14.95	16.77	19.762010 27	21.98516 093
DPS (TZS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.37	37.72	58.36	73.75	85.27	90.729629 05	107.0005 239
Earnings																

EPS (TZS)	-12.36	-13.65	-14.58	-20.97	-0.25	-16.43	1.81	-10.92	-5.79	35.65	61.22	61.64	72.05	94.71	130.8757428	119.99

Source: TBL's Annual Reports and calculations therefrom

Table 4.2: TBL's Descriptive Statistics

	Performance Metrics	Minimum		Maximum		Mean		STDEV for Mean difference	Variance		Pearson Correlation	t Stat	P(T<=t) one-tail	P(T<=t) two-tail	t Critical one-tail	t Critical two-tail
		Pre	Post	Pre	Post	Pre	Post		Pre	Post						
1	**Profitability**															
(i)	ROS (in %)	-223.06	-4.31	5.85	28.51	-118.80	15.05	98.23821	10345.6	96.8211752	0.732309724	-3.995848	0.002608712	0.005217424	1.894578613	2.364624325
(ii)	ROA (in %)	-23.55	-3.99	1.41	31.33	-12.74	21.94	20.51820	90.1918	124.613009	0.479190516	-9.219744	0.000018227	0.000036453	1.894578613	2.364624325
(iii)	ROE (in %)	-43.90	-5.54	2.24	47.79	-24.13	35.17	35.31687	357.355	305.778910	0.520637947	-9.392346	0.000016146	0.000032293	1.894578613	2.364624325
2	**Efficiency**															
(i)	SALEFF (in TZS M)	0.33697135	11.1903474	1.912068897	91.11617312	0.977398 41	63.26876052	38.03666	0.3650767	882.62970	0.772171346	-6.024493	0.000264596	0.000529193	1.894578613	2.364624325
(ii)	NIEFF (in TZS M)	-1.27605634	-0.4826254	0.100257069	23.39318182	-0.684582 44	11.58296911	8.597570	0.22468	72.175607 4	0.432440716	-4.179636	0.002069564	0.004139127	1.894578613	2.364624325
3	**Capital Expenditure**															
(i)	CESA (in %)	47.42	3.69	166.67	27.71	98.59	100.61	55.15433	2222.4252	68.3390124	0.747751777	5.886878	0.000303739	0.000607478	1.894578613	2.364624325
(ii)	CETA (in %)	8.84	0.80	15.89	26.38	12.54	14.25	6.338218	3.9738889	80.447267 5	0.163568856	-0.544491	0.301504061 3	0.603008122 5	1.894578613	2.364624325
4	**Output**															
(i)	PROD (in Hectolitres)	435,347	575,000	531,127	1,551,000	495,734.38	1,281,626	478,308	1.48E+09	135,832,000,000	-0.623227527	-5.646297	0.000388735 2	0.000777470	1.894578613	2.364624325
(ii)	RESA (in TZS M)	39.79	6,495.09	739.70	62,434.16	329.21	41,470.08	25,464.27	81,980.13	422,225,251.77	0.832195486	-5.729260	0.000356739	0.000713 48	1.894578613	2.364624325
5	**Financial Leverage**															
(i)	TDTA (%)	0.00	0.00	79.24	17.14	28.62	9.98	20.66337	689.353	27.104167 09	0.821400 91	2.376797	0.024556444	0.049112888	1.894578613	2.364624325
(ii)	TDTE (%)	0.00	0.00	159.17	29.24	51.29	16.15	40.72436	2768.80	79.409970 13	0.756347036	2.149144	0.034350194	0.068700388	1.894578613	2.364624325
6	**Employment**															
(i)	EMPL	2,900	1,310	3,899	2,590	3,539	1,701	1,041	140,029	251,054	-0.320765715	7.270817	8.34514E-05	0.000166903	1.894578613	2.364624325
7	**Dividend Payout**															
(i)	DIVSAL (in %)	0.00	0.00	0.00	21.99	-.00	12.56	8.16	0.00	52.63	No correl	-4.896386	0.000880183	0.001760367	1.894578613	2.364624325
(ii)	DPS (in TZS)	0.00	0.00	0.00	107.00	-.00	59.15	39.70	0.00	1,377.87	No correl	-4.507154	0.001387228	0.002774456	1.894578613	2.364624325
8	**Earnings**															
(i)	EPS (in TZS)	-20.97	-5.79	1.81	130.88	-10.92	71.29	52.50	61.44	1982.29	0.40	-5.54	0.000436008 4	0.000872017	1.894578613	2.364624325

Source: Author's calculations

Table 4.2 indicates that the pre-privatisation minimum ROA was -23.55% while the post-privatisation minimum ROA was -3.99%. Table 4.2 also indicates that the pre-privatisation maximum ROA was 1.41% whereas the post-privatisation maximum ROA was 31.33%. Table 4.2 shows that the average pre-privatisation ROA stood at -12.74% and the average post-privatisation ROA was 21.94%. The *t*-stat of -9.219744, t-critical value (one-tail) of 1.89457861 and the p-value (one-tail) of 0.000018227 (which is less than significance level of 0.05) (refer to table 4.2) provide strong evidence to reject the null hypothesis. This means that the difference between the average ROA prior to privatisation and the average ROA after privatisation (increase) is statistically significant. In other words, privatisation of TBL had significant positive effect on return on assets.

Table 4.2 indicates that the pre-privatisation minimum ROE was -43.90% and the post-privatisation minimum ROE was -5.54%. Table 4.2 also indicates that the pre-privatisation maximum ROE was 2.24% whereas the

post-privatisation maximum ROE was 47.79%. Table 4.2 shows that the average pre-privatisation ROE stood at -24.13% while the average post-privatisation ROE was 35.17%. Table 4.2 also shows the *t*-statistic of -9.392346, t-critical value (one-tail) of 1.89457861 and the p-value (one-tail) of 0.000016146 (which is less than the significance level of 0.05). These results provide strong evidence that TBL privatisation resulted into significant improvement (increase) in ROE. Therefore, null hypothesis is rejected on this basis because there is strong evidence to do so.

4.3. Change in Operating Efficiency after Privatisation

The minimum pre-privatisation sales per employee (SALEFF) was TZS 336,971.35 whereas the minimum post-privatisation SALEFF was TZS 11,190,347.49 (refer to Table 4.2). Table 4.2 also indicates that the pre-privatisation maximum SALEFF was TZS 1,912,068.97 whereas the post-privatisation maximum SALEFF was TZS 91,116,173.12. The pre-privatisation average SALEFF was TZS 977,398.41 whereas the post-privatisation average SALEFF was TZS 63,268,760.52 (refer to Table 4.2). With *t*-statistic of -6.024493, t-critical value (one-tail) of 1.89457861 and p-value (one-tail) of 0.000264596 (which is less than significance level of 0.05), there is strong evidence that difference between average SALEFF after privatisation is higher than that before privatisation. The null hypothesis is rejected. TBL privatisation resulted into significant improvement of sales efficiency.

Table 4.2 indicates that the pre-privatisation minimum net income per employee (NIEFF) was TZS -1,276,056.34 and the post-privatisation minimum NIEFF was TZS -482,625.48. The pre-privatisation maximum NIEFF was TZS 100,257.07 and post-privatisation maximum NIEFF was TZS 23,393,181.82 (Table 4.2). The average pre-privatisation NIEFF was TZS -684,582.44 while the average post-privatisation NIEFF was TZS 11,582,969.11 (Table 4.2). Table 4.2 also shows that *t*-statistic of -4.179636, t-critical value (one-tail) of 1.89457861 and p-value (one-tail) was 0.002069564 (which is less than significance level of 0.05). These statistics provide strong evidence to reject the null hypothesis. This means that the difference between average NIEFF before privatisation and average NIEFF after privatisation is statistically significant. Privatisation of TBL had significant positive effect on net income efficiency.

4.4. Change in Capital Expenditure after Privatisation

The minimum pre-privatisation capital expenditure to sales (CESA) was 47.42% whereas the minimum post-privatisation CESA was 3.69% (refer to Table 4.2). Table 4.2 also shows that the pre-privatisation maximum CESA was 166.67% while the post-privatisation maximum CESA was 27.71%. The pre-privatisation average CESA was 98.59% whereas the post-privatisation average CESA was 100.61% (refer to Table 4.2). The *t*-statistic of 5.8868780, t-critical value (one-tail) of 1.89457861 and the p-value (one-tail) of 0.000303739 (which is less than significance level of 0.05) provide strong evidence that the difference between average post-privatisation CESA is higher than the average pre-privatisation CESA. Thus, null hypothesis is rejected. TBL privatisation resulted into significant improvement (increase) of capital expenditure.

The minimum pre-privatisation capital expenditure to assets (CETA) was 8.84% whereas the minimum post-privatisation CETA was 0.80% (refer to Table 4.2). Table 4.2 also shows that the pre-privatisation maximum CETA was 15.89% whereas the post-privatisation maximum CETA was 26.38%. The pre-privatisation average CETA was 12.54% whereas the post-privatisation average CETA was 14.25% (refer to Table 4.2). The *t*-statistic of -0.544491, t-critical value (on-tail) of 1.89457861 and the p-value (one-tail) of 0.3015040613 is higher than the significance level of 0.05. These statistics provide weak evidence that an increase in average CETA resulted from TBL's privatisation. Null hypothesis is not rejected on this basis.

4.5. Change in Output after Privatisation

Table 4.2 indicates that the pre-privatisation minimum units produced (in hectolitres) (PROD) was 435,347 hectolitres whereas the post-privatisation minimum PROD was 575,000 hectolitres. The pre-privatisation maximum PROD was 531,127 hectolitres whereas post-privatisation maximum PROD was 1,551,000 hectolitres (refer to Table 4.2). The average pre-privatisation PROD was 495,734.38 hectolitres while the average post-

privatisation PROD was 1,281,626 hectolitres (refer to Table 4.2). Table 4.2 shows that *t*-statistic was -5.646297, t-critical value (one tail) was 1.89457861 and p-value (one-tail) was 0.0003887352 (which is less than the significance level of 0.05). These statistics provide strong evidence that the difference between average PROD before privatisation and average PROD after privatisation (increase) is statistically significant Thus, null hypothesis is rejected because there is strong evidence to do so. In other words, privatisation of TBL had significant improvement on production.

The minimum pre-privatisation real sales revenue (RESA) was TZS 39,788,280 whereas the minimum post-privatisation RESA was TZS 6,495,090,300 (refer to Table 4.2). Table 4.2 also shows that pre-privatisation maximum RESA was TZS 739,703,000 while post-privatisation maximum RESA was TZS 62,434,158,400. The pre-privatisation average RESA was TZS 329,213,905 whereas the post-privatisation average RESA was TZS 41,470,078,950 (Table 4.2). The *t*-statistic of -5.729260, t-critical value (one tail) of 1.89457861 and p-value (one-tail) of 0.000356739 (which is less than significance level of 0.05) provide strong evidence that sales in real terms improved (increased) significantly after privatisation. Thus, null hypothesis is rejected.

4.6. Change in Financial Leverage after Privatisation

Table 4.2 indicates that the pre-privatisation minimum debt to assets (TDTA) ratio was 0.00% and the post-privatisation minimum TDTA was 0.00%. The pre-privatisation maximum TDTA was 79.24% and the post-privatisation maximum TDTA was 17.14% (see table 4.2). The average pre-privatisation TDTA was 28.62% and the average post-privatisation TDTA was 9.98% (see table 4.2). Table 4.2 shows that the *t*-statistic was 2.376797, t-critical value (one tail) was 1.89457861 and p-value (one-tail) was 0.024556444 (i.e., less than the significance level of 0.05). The statistics show strong evidence that privatisation resulted to significant improvement (decline) in debt to asset ratio. Therefore, null hypothesis is rejected on this basis.

Table 4.2 indicates that the pre-privatisation minimum debt to equity (TDTE) ratio was 0.00% and the post-privatisation minimum TDTE was 0.00%. The pre-privatisation maximum TDTE was 159.17% and the post-privatisation maximum TDTE was 29.24% (see table 4.2). The average pre-privatisation TDTE was 51.29% and the average post-privatisation TDTE was 16.15% (see table 4.2). With *t*-statistic of 2.149144, t-critical value (one tail) of 1.89457861 and p-value (one-tail) of 0.034350194 (which is less than the significance level of 0.05), there is strong evidence to show that privatisation of TBL resulted into statistically significant improvement (decline) in debt-to-equity ratio. Thus, null hypothesis is rejected.

4.7. Change in Level of Employment after Privatisation

The minimum pre-privatisation employment level (in terms of number of employees) (EMPL) was 2,900 employees whereas the minimum post-privatisation EMPL was 1,310 employees (refer to table 4.2). Table 4.2 also shows that the pre-privatisation maximum EMPL was 3,899 employees and the post-privatisation maximum EMPL was 2,590 employees. The pre-privatisation average EMPL was 3,539 employees and the post-privatisation average EMPL was 1,701 employees (refer to table 4.2). With *t*-statistic of 7.270817, t-critical value (one tail) of 1.89457861 and p-value (one-tail) of 0.0000834514354 (i.e., less than the significance level of 0.05), there is strong evidence that employment level declined significantly after TBL's privatisation move. The null hypothesis that the change in EMPL is zero is rejected on this basis.

4.8. Change in Dividend Payout after Privatisation

Table 4.2 indicates that the pre-privatisation minimum dividend to sales (DIVSAL) ratio was 0.00% and the post-privatisation minimum DIVSAL was 0.00%. The pre-privatisation maximum DIVSAL was 0.00% and the post-privatisation maximum DIVSAL was 21.99% (refer table 4.2). The average pre-privatisation DIVSAL was 0.00% and the average post-privatisation DIVSAL was 12.56% (see table 4.2). Table 4.2 also shows that *t*-

statistic was -4.896386, t-critical value (one tail) was 1.89457861 and p-value (one-tail) was 0.000880183 (i.e., less than the significance level of 0.05). The data show that privatisation of TBL resulted into statistically significant increase in dividend to sales ratio. Therefore, the null hypothesis is rejected.

Table 4.2 indicates that the pre-privatisation minimum dividend per share (DPS) was TZS 0.00 and the post-privatisation minimum DPS was TZS 0.00. The pre-privatisation maximum DPS was TZS 0.00 and the post-privatisation maximum DPS was TZS 107.00 (refer table 4.2). The average pre-privatisation DPS was TZS 0.00 and the average post-privatisation DPS was 59.15 (see table 4.2). With *t*-statistic of -4.507154, t-critical value (one tail) of 1.89457861 and p-value (one-tail) of 0.001387228 (which is less than the significance level of 0.05), there is strong evidence to indicate that privatisation of TBL resulted into statistically significant improvement (increase) in dividend per share paid to shareholders. Thus, null hypothesis is rejected.

4.9. Change in Earnings after Privatisation

The minimum pre-privatisation earnings per share (EPS) was TZS -20.97 and the minimum post-privatisation EPS was TZS -5.79 (see to table 4.2). Table 4.2 also shows that the pre-privatisation maximum EPS was TZS 1.81 and the post-privatisation maximum EPS was TZS 130.88. The pre-privatisation average EPS was -10.92 and the post-privatisation average EPS was TZS 71.29 (see table 4.2). Table 4.2 also shows that *t*-statistic was -5.54, t-critical value (one tail) was 1.89457861 and p-value (one-tail) was 0.0004360084 (which is less than the significance level of 0.05). These statistics show that there is strong evidence that EPS improved (increased) significantly after TBL's privatisation. Therefore, null hypothesis that a change in EPS is zero is rejected.

Tables 4.1 and 4.2 generally indicate that there was post-privatisation improvement for all performance metrics except capital expenditure to asset ratio (CETA).

5. Concluding Remarks and Areas for further Researches

Extant theoretical and empirical evidence generally supports the common-place belief that SOEs are less efficient and less profitable than similar privately-owned firms. The author carried out the t-test Paired Two Sample for Means data analysis (using Microsoft Excel Data Analysis Tool). The results from the TBL case study showed that financial and operating performance metrics improved after privatisation. The financial and operating performance metrics that showed statistically significant improvement are return on sales (ROS), return on assets (ROA), return on equity (ROE), sales efficiency (SALEFF), net income efficiency (NIEFF), capital expenditure to sales (CESA), units produced (in hectolitres) (PROD), real sales (RESA), debt to assets (TDTA), debts to equity (TDTE), employment levels (in terms of number of employees) (EMPL), dividend to sales (DIVSAL), dividend per share (DPS) and earnings per share (EPS). However, results did not provide sufficient evidence to show that privatisation improved capital expenditure (in terms of capital expenditure to assets) (CETA) ratio. Thus, CETA might have improved by chance, not as a result of privatisation.

The current study did not explore multi-factor model(s) which affect corporate performance of a privatised firm. It is suggested that further studies be carried out to explore the effect of a simultaneous combination of multi-factors on corporate performance. The multi-factor model(s) to be studied may include macro-economic conditions like economic cycle, that is, whether economy is in recession, expansion or boom), exchange rates trends, interest rates trends, availability of foreign exchange and the like and their effect on post-privatisation financial and operating performance. The current study also did not make an attempt to study the effect of privatisation to consumers. In view of these gaps, it is suggested that further studies be carried out on the effect of privatisation to consumers in Tanzania.

The study also did not embark on the effect of reforms (other than privatisation) on the financial and operating performance of SOEs in Tanzania. Those non-privatisation reforms include reduction on barriers to trade, fiscal measures, etc. In view of this, it is suggested that further studies be carried out on "substitutes" for privatisation for financial and operating performance improvement in Tanzania.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Al Hinai, Mansour Talib (2016), The Impact of Privatization on Company Performance: The Case of Egypt, PhD Thesis, University of Birmingham.

Arcas, Maria-Jose and Patricia Bachiller (2010), "Operating Performance of Privatized Firms in Europe: Organizational and Environmental Factors", *International Journal of Public Administration*, Vol. 33, No. 10, pp 487-498.

Arocena, Pablo and Oliveros, Diana, (2012), "The efficiency of state-owned and privatized firms: Does ownership make a difference?", *Elsevier*, Vol. 140, Issue No. 1, pp 457-465.

Bachiller, Patricia (2012), "The Impact of Privatization on Economic Performance in European Companies", *Journal des Économistes et Études Humaines,* Vol. 18, No. 1.

Bachiller, Patricia (2017), "A Meta-Analysis of the Impact of Privatization on Firm Performance", *Management Decision*, Vol. 55, No. 1, pp 178-202.

Balza, Lenin H., Raul Alberto Jimenez Mori, Jorge Enrique Mercado Díaz (2013), "Privatisation, institutional reform, and performance in the Latin American electricity sector", Technical Note No. IDB-TN-599, Inter-American Development Bank.

Bartolotti, B., J. D'Souza, M. Fantini and W.L. Megginson (2001) "Sources of Performance Improvement in Privatised Firms: A Clinical Study of the Global Telecommunications Industry", *Social Science Research Network Electronic Paper Collection*.

Buckland, R. and P. Fraser (2002), "The Scale and Patterns of Abnormal Returns to Equity Investment in UK Electricity Distribution", *The Global Finance Journal*, Vol. 13, No. 1. pp 39-62.

Chen, Yuyu; Mitsuru, Igami; Masayuki, Sawada and Mo Xiao (2021), "Privatization and productivity in China", *The RAND Journal of Economics*, Vol. 52, No. 4, pp 884-916.

Čučković, Nevenka; Krešimir, Jurlin and Valentina Vučković (2011), "The Privatisation of Public Utilities in Croatia: As Assessment of the Major Gains and Pains", *LSEE Papers on South Eastern Europe*, Issue 3.

D'Souza J., W. L. Megginson and R. Nash (2005), "Effects of Institutional and Firm-specific Characteristics on post-privatization Performance: Evidence from Developed Countries, *Journal of Corporate Finance*, Vol. 11, No. 5, pp. 747-766.

Dewenter, K. and P. H., Malatesta (2001), "State-owned and Private-owned Firms: An empirical Analysis of Profitability, Leverage and Labour Intensity, *American Economic Review*, Vol. 91. No. 1, pp. 320-334.

Earle, John S. and Solomiya Shpak (2019), "Impact of privatization on employment and earnings", *IZA World of Labor,* 93v2.

Estrin, Saul and Adeline Pelletier (2018), "Privatization in Developing Countries: What Are the Lessons of Recent Experience?", *The World Bank Research Observer*, Vol. 33, No. 1, pp 65-102.

Kaare, Summa (2002), "The Role of Privatisation in Providing the Urban Poor Access to Social Services: The Case of Solid Waste Collection in Dar es Salaam, Tanzania", Research on Poverty Alleviation (REPOA), Research Report No. 02.2.

Kabelwa, G. (2002), "South African FDI into East Africa: The Case of Tanzania", Economic and Social Research Foundation (ESRF), a paper prepared for the Globalization and East Africa Project and delivered as Paper 3 to the Project's Seminar in Oct. 30, 2002.

Kenton, Will (2022), "Base-Year Analysis: What it Means, How it Works.

Kisenge, Frank Fredrick (2013), The Impact of privatizing Banking Industry in Tanzania: A Case Study of National Bank of Commerce. A Master Dissertation Mzumbe University.

Kouser, Rehana; Toseef Azid and Karamat Ali (2011), "Reasons for Privatization and Consequent Role of Government: Comprehensive Study Based on Early Evidence", *International Journal of Contemporary Business Studies*, Vol. 2, No. 10, pp 35-52.

Megginson W. L., and J. M. Netter (2001), "From State to Market: A Survey of Empirical Studies on Privatization", *Journal of Economic Literature*, Vol. 39, No. 2, pp. 321-389.

Mongula, Benedict (2002), "Performance of Privatised Firms in Tanzania", *Business Management Review*, Vol. 8, Issue No. 2, pp 81-107.

Muganda, A. (2004), "Tanzania's Economic Reforms-and Lessons Learned: A Case Study from Reducing Poverty, Sustaining Growth-What Works, What Doesn't, and Why a Global Exchange for Scaling Up Success: Scaling Up Poverty Reduction. A Global Learning Process and Conference Shanghai May 22-25, 2004.

Portelli, B. and R. Narula (2004), "Foreign Direct Investment through Acquisitions and Implications for technological Upgrading: Case Evidence from Tanzania", *MERIT-Infonomics Research Memorandum Series*.

Radić, Mislav; Davide Ravasi and Kamal Munir (2021), "Privatization: Implications of a Shift from State to Private Ownership", *Journal of Management*, Vol. 47, No. 6, pp 1596-1629

Redda, Bereket Mehari (2007), Post-privatisation Changes in Management Control, Firm Activities and Performance: The Case of Eritrea-based firms, PhD. Thesis, University of Groningen

Sancheti, D.C and V.K. Kapoor (2007), Statistics [Theory, Methods & Application], 7th Thoroughly Revised Edition, Sultan Chand & Sons, New Delhi

Shirley, Mary M. (1992), "The What, Why, and How of Privatization: A World Bank Perspective", *Fordham Law Review*, Vol. 60, No. 6, pp 23-36.

Waigama, Samwel M. S. (2008), "Privatization Process and Asset Valuation: A Case Study of Tanzania", Doctoral Thesis in Building and Real Estate Economics, School of Architecture and the Built Environment, Royal Institute of Technology.

World Bank (2023), World Development Indicators: Employment, Governance and Policy, Governmental Statistics, Infrastructure, Public Health, Social for Tanzania

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 95-108
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.541

Human Capital and Institutional Ownership Roles on Profit Sustainability in Banking

Endang Etty Merawati[2], Syahril Djaddang[1], Ari Kristanto[1], Stella Natasha[2]

[1] Master of Accounting, Graduate School of Universitas Pancasila
[2] Master of Management, Graduate School of Universitas Pancasila

Correspondence: Endang Etty Merawati, Master of Management, Graduate School of Universitas Pancasila,Indonesia. Email: endang.wda@ gmail.com. Tel: 0816785485;
SyahrirDjaddang, Master of Accounting Graduate School of Universitas Pancasila Email: syahril @univpancasila.ac.id; Tel: 085925035219

Abstract
Applying the principles of Good Corporate Governance is a major factor in building a solid and reliable corporate fundamentals to achieve sustainable corporate profitability. The aim of this research is to examine the influence of CSR and Independent Commissioners on Profitability which is moderated by Value Added Human Capital and Institutional Ownership. This study uses a quantitative method, where the data source used secondary data taken from the Indonesia Stock Exchange. The contribution of this research is the higher the proportion of independent commissioners, the more independent commissioners will carry out optimal supervision of operational activities. The board of independent commissioners greatly determines the company's success in achieving goals and improving the company's financial performance so that the company's ROA has increased. VAHC can weaken Komi's effect on ROA and is not significant. In principle, appropriate human capital activities can motivate Komi to achieve profitability. Institutional ownership affects company performance because institutional ownership can encourage more optimal supervision and monitoring mechanisms can guarantee shareholder prosperity, so institutional ownership will encourage managers to show good performance in front of shareholders. Institutional Ownership Contribution in moderating the influence of the Committee on ROA.

Keywords: Human Capital, Institutional Ownership, Corporate Social Responsibility, Independent Commissioner, Profitability

1. Introduction

1.1 Introduce the problem

During the turmoil of economic uncertainty after the COVID-19 pandemic, banks as institutions that organise "fundraising" must maintain a sustainable business. Adequate profitability ratios can support banks to survive and have broad opportunities to realise sustainable business development. One of the corporate strategies that supports

the implementation of business sustainability is the implementation of Corporate Social Responsibility (CSR) based on the triple bottom line concept. POJK no 51/POJK.03/2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers and Public Companies, which requires the entire Financial Services Sector to apply the principles of sustainable finance, submit a Sustainable Finance Action Plan and serve as a starting point for market deepening for sustainable project financing.

Triple Bottom Line (TBL) concept emphasises that in running a business, companies do not only concern on profits but also contribute to society (people) and play an active role in protecting the environment (planet). From the point of view of the public interest, banking needs to foster its image and trust, both in the eyes of workers or consumers and the public as whole. In addition, banks need to support environmental preservation programs and avoid negative impacts that may occur, such as floods, land fires, and climate change. Otoritas Jasa Keuangan, (2022) states that the financial sector can act as a catalyst to accelerate the implementation of economic activities that positively impact the environment in building a more resilient economy.

The implementation of CSR as part of the banking development strategy is a fundamental step in realising sustainable profitability in the long term. Based on Kristanto & Merawati, (2022), the average profitability proxied by Return on Assets (ROA) at banks listed on the Indonesia Stock Exchange experienced a sharp decline during the COVID-19 pandemic. In 2017, banking financial performance was 1,450. (10%), in 2018, it rose to 12,673 (83%). In 2019, at the start of the COVID-19 pandemic, the banking Return on assets (ROA) value fell to 1,212 (8%) from 2018, and in 2020, the development of banking Return on assets (ROA) fell again to -0,082 (-1%). During pandemic covid 19, Government had issued Government Regulation number 1; year 2020 regarding: National Financial Policy and Financial System Stability, as a covid 19 treatment and prevention against national economic threat and financial stability system. In addition, Financial Service Authority Dewan Komisioner & Otoritas Jasa Keuangan, (2021), regarding counter cyclical policy as a stimulus on national economic to mitigate banking risk against the impact of covid 19.

Applying the principles of Good Corporate Governance is a major factor in building solid, healthy and reliable corporate fundamentals to achieve sustainable corporate profitability. An Independent Commissioner in the board structure will strengthen the oversight system of operational activities so that the organisation's long-term sustainability goals are achieved. Following the Corporate Law, Independent Commissioners and other members of the Board of Commissioners are appointed and dismissed by the General Meeting of Shareholders. Based on POJK no 33 of 2014, it is stated that the number of Independent Commissioners must be at least 30% of the total number of members of the Board of Commissioners. According to Independent commissioners, which have greatly influenced a company’s management performance, as a moderating variable in testing earnings management and debt policies on financial distress, which are rarely used in previous studies (Ramadhan & Firmansyah, 2022). In implementing GCG, the institutional ownership structure is essential in independently supporting operational activities' oversight. Wardhana & Tandelilin, (2011) stated that institutional ownership is essential in minimising agency conflicts between shareholders and managers, when the ownership is in significant, controlling shareholder will harm firm value due to expropriation of controlling shareholder. Institutional investors are considered capable of optimising management performance by monitoring every decision taken by management.

Another critical factor that can affect Return on Assets is Value Added Human Capital. In the banking sector, the role of human resources is crucial, especially in serving customer needs. Therefore, banking is a sub-sector that has the highest Intellectual Capital. Employees in the banking sector are more homogeneous than in other sectors, so through a combination of knowledge, expertise and innovation, each employee is encouraged to improve their individual abilities order to complete the duties. (Kristanto & Merawati, 2022) The results of show that Value Added Human Capital can moderate the effect of Corporate Social Responsibility on profitability. In line with the description above, this study will examine the influence of CSR and Independent Commissioners on Profitability, which will be moderated by Value Added Human Capital and Institutional Ownership. A study has been carried out in a few countries by examining board independence and firm performance. The results showed a mixed association between proportions of independent directors and firm performance. Although the companies comprised the highest number of independent directors, it would not assure to enhance firm performance (Fuzi et al., 2016).

1.2 Importance of The Problem

1.2.1 To mitigate pandemic covid 19 impact on banking sector, Government had issued Government Regulation number 1; year 2020 regarding: National Financial Policy and Financial System Stability. However, profitability ratio of banking institutions listed in a BEI, shows a tendency to decrease from 2017 until 2021.

1.2.2 CSR is mandatory by United Nation Organization and had been written in an international agreement, named Principles of Green Banking, which include managing environment, social risk and governance, human resources development. In regard to this, banking institution is required to perform and report the implementation of CSR periodically, at least once a year. Based on the GRI model of reporting, CSR banking score in the period of 2016 until 2021 is increasing around 1-1,5% every year, while profitability is decreasing 1% in 2017, 7% in 2018,11% in 2019 (pandemic covid 19), 23% in 2020 (Kristanto & Merawati, 2022).

1.2.3 Banking institution listed in BEI, in average, had fulfilled the requirement of Independent Commissioner. As profitability ratio was decreasing during 2017 until 2021, it seems that Independent Commissioner as a supervision body, had faced a constraint in monitoring the profitability in banking sector. This is against GCG principle, that mentioned the importance of Independent Commissioner function in supervising the operational activity of the firm. I In addition, research by (Ramadhan & Firmansyah, 2022), mentioned that Independent Commissioner has a negative and significant effect on earnings management.

1.3 Relevan scholarship

1.3.1. Stakeholder Theory

The definition of stakeholders in theory in (Widarti et al., 2022) is: "identifiable groups or individuals who can influence the achievement of organisational goals or who are influenced by the achievement of organisational goals". Stakeholder theory states that a company is not an entity that only operates for its own interests, but must provide benefits to its stakeholders (shareholders, creditors, consumers, suppliers, government, society, analysts and other parties) in (Widarti et al., 2022). On the ethical side, all stakeholders have the right to be treated fairly by the organisation, and managers must manage the organisation for the benefit of stakeholders (Permatasari et al., 2019).

1.3.2. Agency Theory

Smulowitz et al., (2019) described agency theory as the relationship between the owner of economic resources (principal) and the manager (agent) who manages the use and control of company resources. According to Kumalasari & Sudarma, (2013) this agency relationship results in two problems: (a) information asymmetry, where management generally has more information about the actual financial position and operating position of the entity than the owner(principal) and (b) conflicts of interest due to difference objective, where management does not always act in the owners' interests. Overcoming or reducing agency problems creates agency costs that both the principal and the agent will bear.

1.3.3 Independent Commissioner

According to the Indonesian General Guidelines for Corporate Governance (Komite Nasional Kebijakan Governansi, 2021), it is stated that the Board of Commissioners is a supervisory body that plays a role in providing advice and supervision as well as making certain decisions. According to POJK no 33 of 2014, if the Board of Commissioners consists of more than 2 (two) members of the Board of Commissioners, the number of Independent Commissioners must be at least 30% (thirty per cent) of the total number of members of the Board of Commissioners. Independent Commissioners must meet the requirements as follows: not a person who works or has the authority and responsibility to plan, lead, control, or supervise the activities of the Issuer or Public Company within the last 6 (six) months, except for reappointment as Independent Commissioner of the Issuer or Public Company in the period next; does not have shares either directly or indirectly in the Issuer or Public Company; has no affiliation with the Issuer or Public Company, members of the Board of Commissioners,

members of the Board of Directors, or significant shareholder of the Issuer or Public Company; and has no direct or indirect business relationship with the business activities of the Issuer or Public Company.

1.3.4. Triple Bottom Line

The Triple Bottom Line was popularised by John Elkington in 1997 through his book "Cannibals with Forks, the Triple Bottom Line of 21st Century Business". According to Elkington the concept of the Triple Bottom Line consistent of profit, environmental and social factors. Then, the researchers popularised their findings as 3P (Profit, Planet, People). This paradigm describes that the company's focus in the future is to achieved business sustainability. For this, management need to consider three factors that is profit (economic benefits), Planet (environment), and People (community) and the construction includes the nature of Green Accounting, the Green Accounting Conceptual Framework, the Green Accounting Principles and the Green Accounting Report model (Lako, 2018).

TBL is defined as an accounting framework for measuring and reporting company performance in which there are economic, social and environmental parameters. Triple Bottom Line is also used to reveal the whole series of values, problems, and processes that the company must complete to minimise the impact caused by the company's operations and create economic, social, and environmental values. We also find that the extent of overall TBL reporting is higher for Japanese firms, with environmental disclosure being the key driver. This result could be attributed to the differences in national cultures, the regulatory environment, and other institutional factors between the United States and Japan (Ho & Taylor, 2007).

1.3.5 Corporate Social Responsibility

According to (Widarti et al., 2022), Corporate Social Responsibility can be said to be a continuous commitment from the business community to behave ethically and contribute to economic development while improving the quality of life of employees and their families, as well as the local community and the broader community in general interactions with stakeholders based on the principles of volunteerism and partnership. Witjaksono & Djaddang, (2018) Corporate Social Responsibility significantly affects SOE earnings quality. However, audit committee does not moderate the effect of CSR on earnings quality. One of the most commonly used CSR disclosure indicator GRI G4, which consists of 91 CSR indicators. According to Cahyani Prastuti & Budiasih, (2019), the measurement of CSR disclosure is formulated as follows:

$$CSRDI = \sum Xij / n$$

Where:

CSRDI = *Corporate Social Responsibility Disclosure Index* ($0 \leq CSRDI \leq 1$).

$\sum X_{ij}$ = number of items disclosed, score one if disclosed, score 0 if not disclosed

n = Maximum number of CSRDI disclosure items (91 items)

1.3.6 Return on Assets (ROA)

Return on Assets (ROA) is one of the profitability ratios. This ratio is often seen in financial statement analysis because it can show the company's success in generating profits. Return on Assets is a ratio that describes a bank's efficiency in generating profits or the results show that profitability is proven to be positive and significant on the timeliness of report of financial. Mappadang et al., (2021) using a ROA proxy. ROA can measure a company's ability to generate profits in the past to be projected in the future. The assets include all of the company's assets, obtained from its capital or from foreign capital that the company has converted into company assets that are used for the company's survival. The greater the ROA of a company, the greater the level of profit achieved by the company and the better the company's position in terms of asset use. Return On Assets can be formulated as follows:

$$ROA = \frac{\text{Profit After Tax}}{\text{Total Assets}}$$

1.3.7 Human Capital Value Added (HCVA)

The HCVA metric measures employees' profit contribution once costs have been removed. This metric can be embedded in the profit and loss statement and monitored, managed and reported by month, by division and compared to previous years. The HCVA looks at the human impact on revenue by numbers and by visuals. Value Added Human Capital The second relationship is VA and HC. Baskoro et al., (2020) Human Capital shows how much VA is created by one rupiah spent on employees. The relationship between VA and HC shows the ability to create HC value in a company. Assuming the relationship between VA and HC shows the ability to create HC value in a company.

1.3.8 Institutional Ownership

Institutional ownership is the amount of a company's available stock owned by mutual or pension funds, insurance companies, investment firms, private foundations, endowments or other large entities that manage funds on behalf of others. Yajie Bai, Leilei He, (2023) This study provides empirical support for the performance of common institutional ownership participating in corporate governance and optimizing investment decisions.

1.4 Hypothesis Development

1.4.1 The influence of CSR on ROA

CSR activities are a company's strategies to attract public inteest in the related companies. This CSR disclosure is closely related to building the desired image of a company, in the prespective of public or consumers. The assumption is that consumers will prefer products produced by companies with a good image. A good image is obtained from the company's profound concern for the community. The higher the public interest on the company, the higher will be the company's sales revenue, and this will enhanced the company's profitability to rise. Marchyta & Anastasia, (2021) in her research, proves that corporate social responsibility has a positive influence on financial performance.

H_1: Corporate Social Responsibility has a significant effect on ROA

1.4.2. Influence of Independent Commissioners on ROA

Following the Corporate Law, the duties of an Independent Commissioner as a member of the Board of Commissioners are to supervise and provide advice to the Board of Directors, if necessary. The Independent Commissioner's function is to oversee the performance quality of the Board of Directors in carrying out operational activities, including achieving profitability and financial reporting levels. This supervision will encourage the Board of Directors always to focus and be careful in carrying out their duties, especially to realise the corporate strategic plan, which include increasing the profitability ratio Thus, the more significant the proportion of independent commissioners in the membership of the Board of Commissioners, the greater the potential for increased profitability that can be achieved. Research Roswaty, (2023) there is a significant simultaneous effect of the Independent Board of Commissioners and Managerial Ownership variables on Return on Assets., the research hypothesis is:

H2 = Independent Commissioners has a significant effect on ROA.

1.4.3 The effect of VAHC in moderating CSR on ROA

Value Added Human Capital is an effort to increase the competence and professionalism of human resources within the corporate environment. The HR competency improvement is carried out in line with the business strategy to achieve corporate plans. In line with this, CSR is one of the factors in the business strategy to support business reputation to achieve the targeted level of profitability. Appropriate competency improvement will motivate human resources to realise a reliable CSR program to maintain the business reputation. Thus, the greater the VAHC is expected to be able to encourage human resources to carry out CSR programs so that the level of company profitability is realised. This statement aligns with research conducted by (Kristanto & Merawati, 2022),

which stated that Value Added Human Capital could moderate the effect of Corporate Social Responsibility and Ownership on profitability (Return on Assets). The hypothesis in this study is:

H3: Value Added Human Capital can moderate the effect of Corporate Social Responsibility on profitability (Return on Assets).

1.4.4 Effect of VAHC in moderating of Independent Commissioners on ROA

Value-added Human Capital is an effort to increase the competence and professionalism of human resources within the corporate environment. This competency improvement is carried out at each level of the organisation, including the highest management level, especially the Independent Commissioner. This statement also aligns with OJK regulations, which require the Board of Directors and Board of Commissioners to submit a continuing education program for a certain period. Competency improvement programs for independent commissioners need to be adapted to their functions and duties to support the oversight of operational activities. Intellectual Capital berpengaruh terhadap kinerja keuangan (Baskoro et al., 2020). Thus, VAHC is expected to be able to moderate Komi towards increased profitability. The hypothesis in this study:

H4: Value Added Human Capital can moderate the influence of Independent Commissioners on profitability (Return on Assets).

1.4.5 Effect of institutional ownership in moderating CSR on ROA

Institutional ownership is the proportion of company share ownership by non-bank institutional investors such as insurance companies, pension funds, and other large institutions that manage funds on behalf of other people. This statement will encourage shareholders of an institution to increase supervision and tight control of the institution (Michael C. Jensen And William H. Meckling, 1976). Oversight of the institution will cover essential aspects in implementing the company's strategy, including, among others, the CSR program and achieving the target level of profitability. Thus, the greater the number and portion of institutional shareholding, the greater the effect of CSR on the potential for increasing profitability in the related companies. The hypothesis in this study is:

H5: Institutional ownership can moderate the effect of CSR on ROA

1.4.6 Effect of institutional ownership in moderating Komi on ROA

Institutional ownership is the proportion of company share ownership by non-bank institutional investors such as insurance companies, pension funds, and other large institutions that manage funds on behalf of other people. According to Pursuant to the objective of this study, its theoretical positioning of this study is based on agency theory (Rashid, 2018), institutional ownership is vital in minimising agency conflicts between managers and investors, because they are interested in achieving related company profits. This statement will encourage institutional investors to increase supervision and control over these companies (Michael C. Jensen And William H. Meckling, 1976). In addition, institutional investors will also monitor the internal oversight mechanism carried out by the independent commissioner. Effective independent commissioner oversight will support institutional investors' interests in monitoring the achievement of companies' profitability. Thus, the greater the number and portion of institutional shareholding, the greater will be the influence of Independent Commissioners on the potential for increasing profitability in related companies.

H6: Institutional ownership can moderate Komi's influence on ROA

2. Method

The research is an extension of a study conducted by (Kristanto & Merawati, 2022), with using independent commissioner as a variable independent and institutional ownership as one of the moderating variable. The study uses a quantitative method, where the dependent variable is profitability, and independent variable consist of corporate social responsibility and independent commissioner, while moderating variables were institutional ownership and value added human capita. This research used secondary data taken from the Indonesia Stock Exchange. The population of this research is 46 banking institutions listed in the BEI. The operational variable is describe, as follows:

Table 1: Operational Variable Description

No	Variable name	Measurement	Reference	Scale
1.	Dependent variable: Profitability	ROA = Profit After Tax x 100% Total Asset	Rosiana & Mahardhika, (2021)	Ratio
2.	Independent Variable: Corporate Social Responsibility (CSR)	CSRij = $\sum X_{ij}$ / Nj Keterangan : CSR_{ij} = Corporate Social Responsibility Company Index j $\sum X_{ij}$ = The total number or score obtained by each dummy variable company: 1 = if item I is disclosed; 0 = if the item I is not disclosed Nj = Total CSR disclosure criteria for companies	Ayem, Rohana (2019)	Ratio
	Independent Commissioner	Independent Commissioner = Number of Independent Commissioner / Number of members of the board of commissioners	Amelia, Hernawati (2016)	Ratio
3	Moderating Variables: Institutional Ownership	Number of institutional party shares/ Number of outstanding shares	Wiranatha, Nugrahanti (2013)	Ratio
4	Moderating Variable: *Value Added Human capital*	VAHU = VA/HC Where: VA: *Output-Input, where output is total income and input is selling expenses and total operating expenses other than employee expenses* HC: *Human Capital* (total salary and wages, benefits, bonuses, training, business travel expenses)	Astri Rosiana (2020)	Ratio

Source: Data processed by the author (2022)

2.1 Participant Chararacteristic and Sampling Criteria

This research uses purposive sampling technics by setting specific considerations or criteria. The number of research samples were 276 companies, in which data was taken from 46 Banks listed in BEI multiplied by the six-year research period. The purposive sampling technics criteria is as follows:

Table 2: Sampling Research Criteria

No	Sampling Reseach Criteria	Number
1.	The banking industry is listed on the Indonesia Stock Exchange	47 Company
2.	The banking industry does not issue complete annual financial reports for 2016-2021	01 Company
Total Companies used in the study		46 Company
The sample in the research is 46 companies x 6 years of research		276 Company

Source: Data processed by the author (2023)

2.2 Measures and Covariates

The data collection method used in this research is the documentation study method. Data were obtained from financial reports, annual reports, research journals, books and internet sites related to this research. This research uses secondary data or data not obtained directly from the source. Data obtained from the company's financial reports and annual reports on the official website of the Indonesia Stock Exchange (www.idx.co.id) and the respective official websites

2.3 Research Design

2.3.1 Inner Model

Testing the structural model aims to identify the relationship between exogenous and endogenous variables in a study. The Inner Model test, according to (Musyaffi et al., 2022), is;

1) R Square for endogenous variables: R Square value is the coefficient of determination in an endogenous construct. The R-squared value also explains the variation from exogenous to endogenous variables.
2) Prediction Relevance (Q Square) Q Square is performed to determine the ability of a prediction through a blindfolding procedure. The Q Square value < 0 means that the exogenous latent construct is suitable as an explanatory variable capable of predicting existing constructs.

2.3.2 Full Model Testing

Complete Model testing uses the Structural Equation Model method using the WARP PLS 7.0 application. The Structural Equation Model is a statistical methodology that takes a confirmatory approach to analysing structural theories of several phenomena. The term "Structural Equation Model" conveys two critical aspects: the causal process under study is represented by a series of structural equations, and structural relationships can be modelled pictorially to enable a more precise conceptualisation of the studied theory.

ROA = e + β1 CSR +β2Komi + β3CSR*VAHC + β4Komi*VAHC + β5CSR*KIns + βkomi*kIns + ϵt

Dimana:

ROA = Return on Assets

CSR = Corporate Social Responsibility,

Komi = Komisaris Independen,

VAHC = Value Added Human Capital,

KIns = Institutional Ownership

3. Result

3.1 Statistical and data analysis

Statistic Descriptive:

Table 3: Descriptive Statistical Data

	N	MIN	MAX	MEDIAN	MODES
KINS (M1)	276	-0.258	6.607	-174	-0.258
CSR (X1)	276	-0.554	1.764	-0.554	-0.554
KOMI (X2)	276	-3.207	1.811	-0.100	-0.419
VAHC (M2)	276	-3.567	2.649	0.107	-3.567
ROA (Y)	276	-3.549	1.480	0.227	-3.549

Descriptive statistics about research variables illustrate that:

1. The N value for each variable is 276, indicating that each variable has 276 valid data.
2. Corporate Social Responsibility (CSR) is an independent variable, where the minimum value of Corporate Social Responsibility (CSR) is -0.554, a maximum of 1,764, and an average of 0.554; companies that implement CSR will show better performance and increased profits and growth.

3. Independent Commissioners (Komi) are independent variables with a minimum value of -3.207, a maximum of 1,811 and a median of 0.100. Independent Commissioners and other members of the board of commissioners carry out the oversight function of the operational activities carried out by the Board of Directors. With a more significant number of independent commissioners, the company's internal control level will be better.
4. Value Added Human Capital (VAHC) in this study is used as a moderating variable with a minimum value of -3,567, a maximum of 2,649, and an average of 0.107. Negative Value Added Human Capital (VAHC) indicates that the company's Interest Income and Interest Expenses are less than the sum of salaries and benefits, general and administrative expenses.
5. Institutional ownership in this study is used as a moderating variable with a minimum value of -0.258, a maximum of 6.607 and a median of -1740. Companies whose shares are owned by institutional parties tend to be more active in supervising the company's operational activities.
6. ROA is the dependent variable with a minimum value of -3.549, a maximum of 1480 and an average of 0.227. The excellent the ROA value, the better the company's performance because the rate of Return on investment is getting bigger. This value reflects the company's Return on all assets (or funding) provided to the company

3.2 Hypothesis test

Hypothesis testing aims to test the truth of the hypothesis that has been proposed. The influence of each variable will be seen in the coefficient values and P values in the Full Model test.

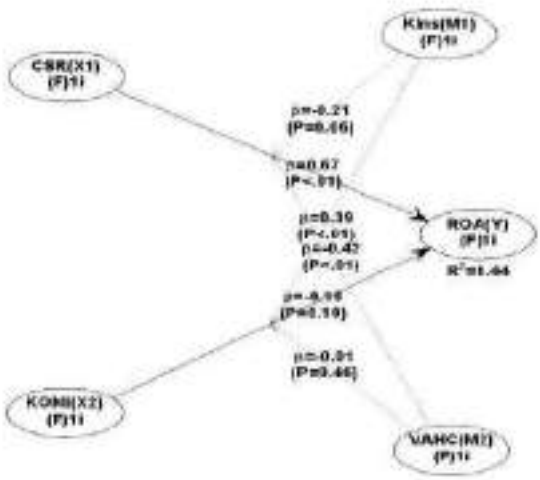


Figure 1: Full Model Test

Figure1 shows the causal relationship between variables: CSR and KOMI are independent variables, VAHC and KIns are moderator variables, and ROA is the dependent variable. From the results of the full model output in Figure 1, the equation for this study is:

ROA = e + β1 CSR +β2Komi + β3CSR*VAHC + β4Komi*VAHC + β5CSR*KIns + βkomi*kIns + ϵt

ROA_= e+0,67CSR-0.18Komi-0.42 CSR*VAHC-0,01 Komi*VAHC-0.21CSR*KIns+0.39Komi*KIns+ ϵt

Where:

ROA = Return on Assets
CSR = Corporate Social Responsibility,
Komi = Independen Commissioner
VAHC = Value Added Human Capital,
Kins = Institutional Ownership

From the equation above, it can be concluded that:

- Each increase in CSR (Corporate Social Responsibility) by 1 unit, the ROA index will increase by 0.67.

- For each Komi (Independent Commissioner) increase by 1 unit, the R0A index will decrease by 0.18.
- For every increase in VAHC interaction with CSR by 1 unit, the ROA index will decrease by 0.42.
- For every increase in the interaction of IO to CSR by 1 unit, the ROA index will decrease by 021
- For every increase in VAHC interaction with IC by 1 unit, the ROA index will decrease by 0.01
- For every increase in the interaction between IO and IC by 1 unit, the ROA index will increase by 0.39.

Table 4: Result of Hypothesis Test

PATH	COEFFICIENT	P-VALUE	REMARKS
CSR→ROA	0,67	<0,01	SIGNIFICANT
Komi→ROA	-0,18	0,10	SIGNIFICANT
VAHC*CSR→ROA	-0,42	<0,01	SIGNIFICANT
VAHC*Komi→ROA	-0,01	0.46	NOT SIGNIFICANT
KIins*CSR→ ROA	-0.21	0,06	SIGNIFICANT
Kins* Komi→ROA	0.39	<0,01	SIGNIFICANT

4. Discussion

4.1 The Effect of CSR on ROA

The contribution of CSR (Corporate Social Responsibility) is 0.67 to ROA (Return on Assets) with a P value of <0.01, indicating that if CSR increases by one unit, the ROA value will also increase by 0.67 units, and the correlation is significant on alpha = 5% so that Ha is accepted. The higher or lower the CSR value will significantly affect ROA. The implemented CSR program is part of the corporate strategic plan, thereby supporting increased profitability. The results of this study align with research conducted by (Kristanto & Merawati, 2022) which states that corporate social responsibility significantly influences Return on Assets (profitability).

4.2 Komi Influence on ROA

Komi's contribution (Independent Commissioner) is -0.18 to ROA (Return on Assets) with a P value of 0.10, indicating that if the proportion of independent commissioners increases by one unit, the ROA value will decrease by 0.18 units. The relationship is significant at alpha= 10%, so Ha is accepted. This aligns with (Nuryatun & Mulyani, 2021), which states that independent commissioners significantly influence profitability. Moreover, the higher the proportion of independent commissioners, the more independent commissioners will carry out optimal supervision of operational activities. The independent board of commissioners greatly determines the company's success in achieving its goals and improving its financial performance so that its ROA has increased. This research is in line with (Agatha et al., 2020), who state that the independent board of commissioners has a significant positive effect on company performance (ROA). In this case, the competence, professionalism and experience of Independent Commissioners need to be adapted to the company's line of business. In addition, as chairman of the audit committee, the Independent Commissioner must be supported by adequate and professional members of the audit committee in their field. Thus, increased independent commissioners will support achieving the expected profitability level. On the other hand, if the competence and experience of the Independent Commissioners and audit committee members are insufficient, there may be a significant decrease in profitability.

The results of this study are not in line with the research of (Febiyanti & Hersugondo, 2022), which states that independent commissioners do not have a significant relationship with ROA. The company's leadership structure is only filled by people interested in the company who are subjectively selected without considering their abilities because most company ownership is centralised.

4.3 The effect of VAHC in moderating CSR on ROA

The contribution of VAHC (Value Added Human Capital) in moderating the influence of CSR on ROA is -0.42, which shows that VAHC can weaken the relationship between CSR and ROA. Meanwhile, a P value of <0.01 indicates a significant relatedness level, so Ha is accepted. The VAHC can significantly weaken the influence of CSR on ROA. In principle, the implementation of human capital can motivate CSR towards achieving profitability, but if activities are carried out excessively and cause inefficiencies, it will weaken the level of achievement of ROA. This research contrasts with (Kristanto & Merawati, 2022) research, which states that Value Added Human Capital can moderate the effect of Corporate Social Responsibility and Ownership on profitability (Return on Assets).

4.4 Effect of VAHC in moderating Komi on ROA

The contribution of VAHC (Added Human Capital) in moderating Komi's influence on ROA is -0.01, indicating that VAHC can weaken the relationship between Komi and ROA, while a P value of 0.46 indicates an insignificant level of linkage, so Ha is rejected. The VAHC can weaken Komi's influence on ROA and is not significant. In principle, appropriate human capital activities can motivate Komi to achieve profitability. However, suppose human capital activities against the Committee are carried out inadequately, and the competence of the independent commissioners is not in accordance with their duties. In that case, the implementation of supervision of operational activities can be disrupted and weaken the level of achievement of ROA.

4.5 The influence of KIns in moderating CSR on ROA

The contribution of KIns (Institutional Ownership) in moderating the influence of CSR on ROA is -0.21, indicating that KIns can weaken the relationship between CSR and ROA. The P value of 0.06 indicates a significant level of relevance at 10% alpha so that Ha is accepted. Furthermore, the KIns can weaken the effect of CSR on ROA and is significant. This statement aligns with (Agatha et al., 2020), which states that institutional ownership does not affect profitability and while institutional ownership has no effect on financial performance. The percentage of shares owned by institutions affects the company's performance as a proxy for Return on Equity (ROE). However, if institutional ownership is relatively low compared to the number of outstanding shares, the support for achieving profitability will be weak. In theory, institutional ownership affects company performance because institutional ownership can encourage more optimal supervision and monitoring mechanisms can guarantee shareholder prosperity, so institutional ownership will encourage managers to show good performance in front of shareholders with this institutional ownership, there will be an assumption that the institutional owner will pay more attention to the management of the company so that it will have a positive influence on the company's financial performance (Sofiana et al., 2019).

4.6 KIns influence in moderating Komi on ROA.

The contribution of Institutional Ownership in moderating Komi's influence on ROA is 0.39, indicating that KIns can strengthen the relationship between Komi and ROA. Meanwhile, a P value of <0.01 indicates a significant relatedness level, so Ha is accepted. These results indicate that agency share ownership has a moderating effect on Komi's profitability. Share ownership by agencies can encourage increased supervision in company management and limit behaviour that is detrimental to shareholders so that it has a positive impact on profitability. This result is in line with the research of Fina Wardah Fitriyah, Anis Wulandari, (2023), which states that the effect of commissions and KIns on profitability is significant and institutional ownership have an influence on firm value.

5. Conclusion

5.1 The Effect of CSR on ROA

The higher or lower the CSR value will significantly affect ROA. This result is because the implemented CSR program is part of the corporate strategic plan, supporting the increasein profitability.

5.2 Committee Influence on ROA

The higher the proportion of independent commissioners, the more independent commissioners will carry out optimal supervision of operational activities. The board of independent commissioners greatly determines the company's success in achieving goals and improving the company's financial performance so that the company's ROA has increased. In this case, the competence, professionalism and experience of Independent Commissioners need to be adapted to the company's line of business. In addition, as chairman of the audit committee, the Independent Commissioner must be supported by adequate and professional members of the audit committee in their field. Thus, increased independent commissioners will support achieving the expected profitability level. On the other hand, if the competence and experience of the Independent Commissioners and audit committee members are insufficient, there may be a significant decrease in profitability. The company's leadership structure is only filled by people interested in the company who are subjectively selected without considering their abilities because most company ownership is centralised.

5.3 The effect of VAHC in moderating CSR on ROA

VAHC can significantly weaken the effect of CSR on ROA. In principle, the implementation of human capital can motivate CSR towards achieving profitability, but if activities are carried out excessively and cause inefficiencies, it will weaken the level of achievement of ROA.

5.4 Effect of VAHC in moderating Komi on ROA

VAHC can weaken Komi's effect on ROA and is not significant. In principle, appropriate human capital activities can motivate Komi to achieve profitability. However, suppose human capital activities against the Committee are carried out inadequately and the competence of the independent commissioners is not in accordance with their duties. In that case, the implementation of supervision of operational activities can be disrupted and weaken the level of achievement of ROA.

5.5 The influence of KIns in moderating CSR on ROA

Institutional ownership can weaken the effect of CSR on ROA and is significant. This result means that the percentage of shares owned by institutions affects the company's performance as a proxy for Return on Equity (ROE). However, if institutional ownership is relatively low compared to the number of outstanding shares, the support for achieving profitability will be weak.

Institutional ownership affects company performance because institutional ownership can encourage more optimal supervision and monitoring mechanisms can guarantee shareholder prosperity, so institutional ownership will encourage managers to show good performance in front of shareholders.

5.6 KIns influence in moderating the Committee on ROA.

Institutional Ownership Contribution in moderating the influence of the Committee on ROA. These results indicate that agency share ownership has a moderating effect on Komi's profitability. Ownership of shares by agencies can encourage increased supervision in managing the company and limit behaviour that is detrimental to shareholders so that it has a positive impact on profitability.

6. Suggestions and Recommendations on Research Results

6.1 Suggested/recommended for future research to expand research samples other than the banking industry listed on the IDX, such as the non-bank financial industry, Shari'ah financial industry, and other financial services industries.

6.2 The influence of VAHC in moderating Komi on ROA - VAHC (Value Added Human Capital) in moderating Komi's influence on ROA needs to be re-examined in the banking industry by adding 5-10 years of observation as it relates to long-term investments and HR assets in the banking industry.

References

Agatha, B. R., Nurlaela, S., & Samrotun, Y. C. (2020). Kepemilikan Manajerial, Institusional, Dewan Komisaris Independen, Komite Audit dan Kinerja Keuangan Perusahaan Food and Beverage. (Managerial Ownership, Institutional Ownership, Independent Commissioners, Audit Committee and Financial Performance of Food and Beverages Companies) *E-Jurnal Akuntansi*, *30*(7), 1811. https://doi.org/10.24843/eja.2020.v30.i07.p15

Baskoro, P. A., Suratno, S., & Djaddang, S. (2020). Peran intellectual capital terhadap market to book value dan return on assets dengan research and development sebagai pemoderasi (Intellectual Capital Role on Market to Book Value and Return on Asset with Reseach and Development as a Moderator). *Journal of Business and Banking*, *9*(2), 297. https://doi.org/10.14414/jbb.v9i2.2049

Cahyani Prastuti, M., & Budiasih, I. G. A. N. (2019). Pengaruh Corporate Social Responsibility dan Intellectual Capital Pada Kinerja Keuangan (The Effect of Corporate Social Responsibility and Intellectual Capital on Financial Performance).. *E-Jurnal Akuntansi*, *27*, 1365. https://doi.org/10.24843/eja.2019.v27.i02.p20

Dewan Komisioner, & Otoritas Jasa Keuangan. (2021). *POJK 17 - 03 - 2021 perubahan dari No 11 2020*. OJK. https://ojk.go.id/id/regulasi/Pages/Peraturan-OJK-tentang-Perubahan-Kedua-Atas-POJK-Nomor-11-POJK.03-2020-.aspx (OJK Rule on Board of Directors and Board of Commissioners of Public Companies)

Febiyanti, E., & Hersugondo, H. (2022). Corporate Governance Dan Profitabilitas Perusahaan Publik Di Indonesia. (Corporate Governance and Profitability in Indonesian Public Company) *Jurnal Manajemen Dan Keuangan*, *11*(1), 112–133. https://doi.org/10.33059/jmk.v11i1.5125

Fina Wardah Fitriyah, Anis Wulandari, Y. S. (2023). The Effect of Company Size, Investment Opportunity, Profitability, and Good Corporate Governance on Company Value. *PETA*, *8*(2), 160–171. https://journal.stieken.ac.id/index.php/peta/article/view/734/704

Fuzi, S. F. S., Halim, S. A. A., & Julizaerma, M. K. (2016). Board Independence and Firm Performance. *Procedia Economics and Finance*, *37*(16), 460–465. https://doi.org/10.1016/s2212-5671(16)30152-6

Ho, L. C. J., & Taylor, M. E. (2007). An empirical analysis of triple bottom-line reporting and its determinants: Evidence from the United States and Japan. *Journal of International Financial Management and Accounting*, *18*(2), 123–150. https://doi.org/10.1111/j.1467-646X.2007.01010.x

Komite Nasional Kebijakan Governansi. (2021). Pedoman Umum Governansi Korporat Indonesia (PUGKI) 2021. In *Komite Nasional Kebijakan Governansi* (General Guideline of Corporate Governance in Indonesia) (p. 37). https://knkg.or.id/wp-content/uploads/2022/06/PUGKI-2021-LORES.pdf

Kristanto, A., & Merawati, E. E. (2022). Determinan Profitabilitas Berkelanjutan Pada Industri Perbankan Dengan Value Added Human Capital Sebagai Pemoderasi (Sustainable Profitability Determinant on banking industry with Value Added Human Capital as a Moderation) . *BULLET : Jurnal Multidisiplin Ilmu*, *1*(6), 1102–1111. https://journal.mediapublikasi.id/index.php/bullet.

Kumalasari, K. P., & Sudarma, M. (2013). A Critical Perspective towards Agency Theory. *Jurnal Akuntansi Multiparadigma*, *4*. https://doi.org/10.18202/jamal.2013.08.7197

Lako, A. (2018). Conceptual Framework of Green Accounting. *Accounting*, *May*, 60–66.

Mappadang, A., Wijaya, A. M., & Mappadang, L. J. (2021). Financial performance, company size on the timeliness of financial reporting. *Annals of Management and Organization Research*, *2*(4), 225–235. https://doi.org/10.35912/amor.v2i4.975

Marchyta, N. K., & Anastasia, N. (2021). *Journal of Applied Business Administration* PERAN INTELLECTUAL CAPITAL DALAM PENGARUH CORPORATE SOCIAL (Role of Intellectual Capital, in Effecting of CSR toward Financial Performance) *Jurnal Ekonomi Dan Bisnis*, *Maret*, 10–16. https://jurnal.polibatam.ac.id

Michael C. JENSEN and William H. MECKLING*. (1976). THEORY OF THE FIRM: MANAGERIAL BEHAVIOR, AGENCY COSTS AND OWNERSHIP STRUCTURE. *Journal of Financial Economics* ., *3*, 305–360. https://doi.org/Modern Library, New York, 1937) p. 700.

Musyaffi, A. M., Johari, R. J., Rosnidah, I., Respati, D. K., Wolor, C. W., & Yusuf, M. (2022). Understanding Digital Banking Adoption During Post-Coronavirus Pandemic: An Integration of Technology Readiness and Technology Acceptance Model. *TEM Journal*, *11*(2), 683–694. https://doi.org/10.18421/TEM112-23

Nuryatun, N., & Mulyani, S. D. (2021). The Role Of Independent Commissioners In Moderating The Effect Of Transfer Pricing, Capital Intensity And Profitability Towards Tax Aggressivity. *Indonesian Management and Accounting Research*, *19*(2), 181–204. https://doi.org/10.25105/imar.v19i2.7561

Otoritas Jasa Keuangan. (2022). Taksonomi Hijau Indonesia (Indonesian Green Taxonomy) *Otoritas Jasa Keuangan*, *Edition 1*.(2022), 52.

https://www.ojk.go.id/keuanganberkelanjutan/Uploads/Content/Regulasi/Regulasi_22012011321251.pdf

Permatasari, M. P., Luh, N., & Setyastrini, P. (2019). Pengungkapan Tanggung Jawab Sosial Perusahaan Ditinjau Dari Teori Legitimasi dan Teori Stakeholder (Firm Disclosure on Corporate Social Responsibility in the prespective of Legitimation Theory and Stakeholders Theory. *Jurnal Akuntansi Dan Perpajakan*, *5*(1), 1–03. http://jurnal.unmer.ac.id/index.php/ap

Ramadhan, M. A., & Firmansyah, A. (2022). The Supervision Role of Independent Commissioner in Decreasing Risk From Earnings Management and Debt Policy. *Accounting Analysis Journal*, *11*(1), 31–43. https://doi.org/10.15294/aaj.v11i1.58178

Rashid, A. (2018). Board independence and firm performance: Evidence from Bangladesh. *Future Business Journal*, *4*(1), 34–49. https://doi.org/10.1016/j.fbj.2017.11.003

Roswaty. (2023). Analysis of Influence of Independent and Board of Commissioners Managerial Ownership of Return on Assets (ROA) at PT. Adaro Energy Tbk, Period 2016-2020. *Islamic Banking : Jurnal Pemikiran Dan Pengembangan Perbankan Syariah*, *9*(1), 107–124. https://doi.org/10.36908/isbank.v9i1.861

Sofiana, Y., Sukoco, A., & Suyono, J. (2019). The Influence Of Managerial Ownership, Institutional Ownership, And Dividend Policy On The Financial Performance Of Construction And Building Companies Listed On The Indonesia Stock Exchange 2013-2017. *IJEBD (International Journal Of Entrepreneurship And Business Development)*, *3*(1), 86–95. https://doi.org/10.29138/ijebd.v3i1.953

Wardhana, L. I., & Tandelilin, E. (2011). Institutional Ownership and Agency Conflict Controlling Mechanism. *Journal of Indonesian Economy and Business*, *26*(3), 389–406. https://www.neliti.com/publications/72661/institutional-ownership-and-agency-conflict-controlling-mechanism

Widarti, R. A., Merawati, E. E., Djaddang, S., & Ahmar, N. (2022). How Gender Diversity Influence Corporate Sustainability Performance: a Literature Review. *Accounting Research Journal of Sutaatmadja (ACCRUALS*, *06*, 84–95. https://doi.org/doi.org/10.35310/accruals.v6i02.921%0Ahttps://ojs.stiesa.ac.id/index.php/accruals/index

Witjaksono, R. B., & Djaddang, S. (2018). Valuasi Kesadaran Lingkungan, Corporate Social Responsibility terhadap Kualitas Laba dengan Moderasi Komite Audit. *Jurnal Ekonomi Dan Bisnis*, *21*(1), 97–114. www.ejournal.uksw.edu/jeb

Yajie Bai, Leilei He, T. Z. (2023). Common institutional ownership and investment efficiency: Empirical evidence from China. *Borsa _ Istanbul Review*, *23*(5), 1067–1077. https://doi.org/10.1016/j.bir.2023.05.006

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 109-127
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.542

Sohar Industrial Clusters: Navigating Policy Implementation Barriers

Abdullah Khamis Al Mukhaini[1], Figen Yesilada[2]

[1] Adar Engineering Consultants P.O Box 27 Postal Code 416, Jalan Bani Bu Ali Sultanate of Oman Email: Abdullahalmukhaini@yahoo.com
[2] Department of Business Administration, Cyprus International University, Nicosia, North Cyprus, Turkey Email: fyesilada@ciu.edu.tr
ORCID ID: 0000-0002-1407-9915

Abstract
The present study investigates the challenges encountered in the execution of cluster-based policies in Sohar Industrial Area, Sultanate of Oman, with a focus on the role of stakeholders. The research employs a qualitative research approach, consisting of 33 semi-structured interviews conducted with key stakeholders. The findings of the study reveal that government institutions play a critical role in facilitating cluster-based policies through policy formulation, infrastructure provision, coordination, stakeholder engagement, and sector-specific initiatives. Participant firms contribute to cluster development through collaboration and support for SMEs, and alignment with government initiatives. The study highlights the significance of customizing cluster-based policies to address the requirements and concerns of various stakeholder groups, which can be accomplished by nurturing collaboration, establishing transparent facilitators and incentives, cultivating supportive institutions, creating a favorable legal framework, and fostering an investment-friendly environment. The study is a significant contribution to the academic discipline by offering valuable insights into the development of clusters and the effective engagement of stakeholders. The results of the study have the potential to guide policymakers, government institutions, and industry leaders in their efforts to promote economic growth and establish a conductive environment for cluster-based policies in the Sohar Industrial Area.

Keywords: Clusters, Cluster Initiative, Cluster-Based Policy, Economic Growth, SMEs, Stakeholder Engagement

1. Introduction

In the contemporary era of globalization, nations are diligently striving to establish their competitive edge in the international arena. Governments and policymakers are actively seeking strategies to enhance their nation's competitive position. Ketels and Memedovic (2008) emphasize the significance of a robust business environment that fosters both growth and innovation, beyond the reliance on comparative advantage derived from local input factors or natural resources. Porter's competitiveness diamond is a well-established framework that posits the advantages of businesses being in proximity to one another, referred to as "clusters."

The cluster concept, which has been significantly inspired by Michael Porter's influential article, "The Competitive Advantage of Nations" (Porter, 1990), has gained widespread recognition and is frequently discussed in global policy discourse (Garanti et al., 2014). It has attracted scholarly interest, particularly due to the emergence of various economic sectors and the integration of regional economies into the global economy (Fundeanu and Badele, 2014). Regional clusters can be defined as collections of organizations and entities that are geographically proximate to each other and engaged in similar industries or sectors (Garanti et al. 2014). Porter (1998) suggested that the presence of industrial clusters has a positive impact on productivity, innovation, and competitiveness. The notion was well-received by scholars and policymakers, leading many studies exploring the factors contributing to the success of regional industrial clusters.

The cluster concept has been widely adopted in both developed and emerging economies, leading to the implementation of competitiveness policies. Many countries are striving to replicate successful examples such as Silicon Valley. However, for regional industrial clusters to thrive, the business microenvironment must be adequately prepared. According to Ketels and Memedovic (2008), this entails understanding the present state of enterprises, the achievements of established clusters, and any existing regulations about clusters. The regional industrial cluster represents a form of organized competition and collaboration among geographically proximate businesses. These clusters can emerge either spontaneously or as the outcome of deliberate government policy initiatives (Porter, 1998). The main goal of these clusters is to boost the performance of individual enterprises by promoting improvements in productivity and facilitating the transfer of knowledge and experience. Through this collaborative framework, the participating businesses are strategically positioned to use common resources, expertise, and synergies, resulting in the enhancement of their performances. As a result, these specific collaborations have a significant impact on enhancing the competitiveness and productivity of individual enterprises, as well as enhancing the overall economic performance of the region in which they are situated.

Porter (2003) and Singh & Evans (2009) argue that countries endowed with abundant resources should strategically utilize regional clusters as a means to effectively harness their inherent skills and expertise. Oman, a country rich in resources, encounters a distinct challenge in this domain. During the period from 1998 to 2004, the country efficiently developed its industrial infrastructure, encompassing ports, industrial complexes, and supportive infrastructure, also known as "hardware," in key regions such as Sohar, Duqm, and Salalah. Nevertheless, the rapid progress in infrastructure development has surpassed the efforts to cultivate essential complementary components, commonly referred to as the "software." The term "software" in this context alludes to the collective human skills, expertise, and collaborative networks that are necessary for the efficient functioning and utilization of the clusters. In essence, whereas Oman swiftly established the physical infrastructure for regional clusters, the development of the human and collaborative aspects necessary for a successful cluster policy has turned out to be a more gradual and complex process.

Despite the potential benefits associated with clustering the existing body of academic literature highlights a gap in the implementation of the cluster concept within policy-making processes (Porter, 1998; Delgado et al., M., 2014; Wolman & Hincapie, 2015; Wilson, 2019; Wilson et al., 2022;).

The policy framework of Oman's 2040 manufacturing program seeks to enhance industrial growth in three key regions, namely Sohar, Salalah, and Duqm. The policy emphasizes the potential of developing an export-oriented cluster centered around the healthcare products industry, alongside other emerging knowledge-driven clusters. The objective of this study is to address the existing gap in the literature by examining the challenges associated with the adoption of a cluster-based policy in the Sohar Industrial Area, Oman, encompassing both the Sohar Free Zone, a privately-owned enterprise, and the Sohar Industrial City, a publicly-owned organization under the ownership of Madayn. The study also seeks to provide policymakers with valuable insights into the effective design and implementation of cluster-based policies that foster development and economic growth.

2. Literature Review

Recent academic discussions highlight the importance of cluster policies in facilitating regional development. Given the worldwide concerns about economic inequalities among regions, it is imperative to get a comprehensive

understanding of cluster theory and its practical implications. Barca (2008) argues in favor of adopting a place-based strategy for economic development, emphasizing the importance of acknowledging and taking into account the distinct attributes inherent to each specific geographic area.

According to Schmiedeberg (2010), there is a growing emphasis in governance systems on integrating cluster policies into their economic frameworks. Sölvell et al. (2003) classified governance styles into three categories, namely formal institutions, informal networks, and hybrid models that incorporate elements of both. Simultaneously, scholars underscore the significance of trust, cooperation, and flexibility of cluster governance. Considering this information, it is evident that those responsible for managing clusters have the potential to improve their development by identifying key competitive factors and fostering collaboration.

A significant contribution to the cluster theory is the Associative Governance Model proposed by Ebbekink and Lagendijk (2013). This model offers significant insights into the factors that influence the formation and growth of regional clusters. The model highlights four key elements: effective governance strategies, a flexible network infrastructure, supportive institutional structures, and measurable performance indicators. The Associative Governance Model is a place-based governance model that provides a fundamental framework for the utilization of cluster-based policies. The model highlights the importance of collaborative governance, emphasizing the values of trust, transparency, and accountability among all involved parties. To implement this methodology effectively, cluster-based policies seek to integrate various stakeholders, fostering innovation and stimulating growth within industries or regions. At the core of this model lies the vitality of collaboration and coordination, particularly among public and private entities, to achieve sustainable development. One fundamental concept embedded in this model is referred to as "cluster-policy leverage." The proposed model emphasizes the importance of establishing a strong connection between the formulation of cluster policies and the utilization of locally-based "strategic intelligence." This approach is essential for policymakers and practitioners who seek to facilitate the development of sustainable clusters. The framework is an innovative paradigm, for intelligence generation and policy formation.

The cornerstone of the model is based on active involvement with the cluster universe, resulting in strategic actions during the process of policy formulation, ultimately leading to the strengthening of clusters. The actors involved in both cluster entities and policy-making institutions must possess the necessary skills and expertise to play a central role in the process of strengthening the cluster. In the context of this paradigm, “civic entrepreneurs” play a crucial role (Ebbekink and Lagendijk, 2013). A "civic entrepreneur" refers to a visionary leader who bridges boundaries and possesses the ability to establish connections among various stakeholders, potentially acting in the realm that lies between the public and private domains (Andersson et al., 2004). They engage stakeholders in a continuous “unifying” dialogue, mediating conflicting interests and facilitating the resolution of internal conflicts and mistrust among stakeholders (Lundequist & Power, 2002; Andersson et al., 2004; Crone, 2009).

Ebbekink and Lagendijk (2013) caution against a limited focus on the economic and geographical aspects. The authors propose a broader framework for governance, which highlights the significance of clusters as interconnected networks of many participants. The inclusion of a governance perspective enhances the findings of Sölvell et al. (2003), emphasizing the importance of flexible organizational frameworks that are capable of effectively responding to the dynamic characteristics of clusters. Organizations can effectively walk the path toward sustained regional growth by matching their cluster strategies with established real-world paradigms, recognizing the distinctive attributes of their respective regions, and developing strong governance structures.

Spruijt et al. (2014) examined the various roles assumed by scientists in the context of providing advice to policymakers. The researchers also identified key themes that emerged from their study. Nevertheless, a noticeable disparity exists between the theoretical frameworks deliberated in academia and the practical verification that supports these concepts in real-world application.

3. Cluster Studies Contextualized in Oman

According to Peter de Valk (2015), Oman's economic development is mainly reliant on its natural resources and is characterized by a significant number of low-skilled migrant labor in its workforce. This indicates the presence of a factor-driven economy. The importance of diversification is emphasized by Al Alawi and Mishra (2016), who highlight the need for a strategic shift. They emphasize the significance of infrastructure, human capital, and collaboration in the development of strong clusters. Several studies into the economic environment of Oman highlight specific concerns. In their study, Chatterji et al. (2014) present an analysis of conventional economic growth models, highlighting the significance of entrepreneurial clusters, such as Silicon Valley, in promoting job creation and economic growth. In addition, Kumar and Al Maqbali (2015) conducted a study on the operational challenges faced by SMEs in Sohar Industrial Port, which is an important hub for investment in Oman. Despite the employment and investment opportunities that the port holds, there is a considerable gap in the literature about the challenges faced by SMEs in this important region of Oman.

Gavrish (2017) provides an in-depth assessment of the industrial collaboration existing in the Sohar Port & Freezone. This research emphasizes an important finding: for sustainable practices like industrial synergy to prosper, it is imperative to effectively integrate them with the local institutional mechanisms. In addition to assessing technical feasibility, achieving success is contingent on successfully interacting with the socio-institutional environments.

In the case of Oman, the utilization of these clusters not only serves as a means of diversifying the economy but also as a method to enhance economic resilience and sustainability. The roadmap for accomplishing this objective involves understanding and leveraging both established and prospective industrial clusters, a task that requires thorough investigation, as demonstrated by the extensive and diverse body of research on industrial clusters in Oman, including areas such as entrepreneurship, logistics, and tourism (Belwal & Belwal, 2010; Taderera & Al Balushi, 2018; Ba-Awain, & Daud, 2018; Asad Ullah et al., 2022).

Swailes, Al Said, and Al Fahdi (2012) shed light on the significant challenges confronting Oman's localization policies, particularly regarding the perceived employability of locals and the prevailing preference for a foreign workforce. Within the broader academic debate around Oman's cluster-based initiatives, this study highlights a critical barrier: the effective integration and prioritization of local talent within clusters while avoiding the influence of prevalent biases and labor preferences.

Sarrayrih and Sriram (2015) examined the evolution of e-government and emphasized its significance in contemporary governance by enabling citizen accessibility to services. While some countries have successfully implemented e-government frameworks, there are still others, including Oman, that are still in the process of improving their approach. The researchers specifically explore the distinct problems that Oman confronts in this phase. Through the utilization of secondary data, the researchers assess the current level of acceptance of e-government in Oman and propose a customized model for its full implementation.

Taderera and Al Balushi (2018) focused on the infrastructural challenges, particularly on ports, airports, and roads. The achievement of a harmonious integration with key stakeholders remains challenging, despite the implementation of e-government initiatives by Oman's Customs and Excise Department. It also highlights a broader concern which is the complexity of the implementation of multidimensional policies such as cluster policy, especially considering the existing operational constraints.

Al-Makhmari, Al Yaqoopi, and Slimi (2021) shed light on the challenges faced in non-oil sectors regarding the exportation of domestic products, attributing these difficulties to the presence of burdensome government regulations and complex import-export procedures. Addressing these barriers is crucial for Oman to unlock its potential to reach global markets and attract both local and international investors.

Al Alawi & Mishra (2016) emphasize Oman's strengths, including its political stability and resilient oil sector. They also highlight areas of improvement in the private sector and tourism infrastructure as potential strategies to

expand and diversify revenue sources. Belwal & Belwal (2010) highlight tourism as an emerging sector with substantial potential for growth, particularly in the context of a post-oil economy.

Entrepreneurial clusters have also gained attention as game-changers. Chatterji et al. (2014), argue that utilizing these clusters as a means to stimulate regional economic growth, referencing successful examples such as Silicon Valley.

JICA (2010) recommends a shift in Oman's focus, from hard infrastructure to the development of soft, knowledge-based businesses. By integrating Oman's geographical advantages with innovative industrial efforts, there exists the possibility of cultivating clusters similar to those observed in the oil drilling industry in Nizwa.

Oman stands at a crossroads of several opportunities. Despite the existence of ongoing obstacles, the country's strategic geographical location, coupled with insights derived from regional studies and commitment to strategic interventions, can pave the way for building a diverse and sustainable economy. Embracing a holistic approach that takes into account infrastructure, stakeholder integration, and the promotion of new clusters is essential for steering Oman towards sustainable growth in the foreseeable future.

4. Research Methodology

The purpose of the study is to gain a deeper understanding of the challenges and complexity associated with the implementation of cluster-based policies in the Sohar Industrial Area in Oman. The research methodology employed in this study focused on the collecting of qualitative data, which is a methodical approach that is well-suited for extracting valuable insights. One-to-one semi-structured interviews were made with 33 participants identified using purposive sampling from policymakers, business executives, civic entrepreneurs, academics, collaboration institutions, and nonprofit organizations[1]. The guiding questions were: What are the challenges facing the implementation of cluster-based policies in the Sohar Industrial Area? How can these challenges be surpassed? How can stakeholders help solve problems when implementing a cluster-based policy? What are the ways to improve stakeholder involvement in the implementation of a cluster-based policy? What are the main barriers to stakeholder collaboration in the implementation of a cluster-based policy, and how can they be overcome?

The interviews conducted in this study provided a platform for participants to openly express their experiences, fostering an environment of candid communication. The flexible nature of these interviews allowed the conversation to organically navigate towards relevant topics, ensuring that the dialogue remained focused and meaningful. This approach not only facilitated a deeper understanding of the participants' perspectives but also promoted mutual discovery between the interviewer and interviewee, as highlighted by Neuman (2006). By encouraging open sharing, flexibility, and mutual exploration, these interviews served as a valuable tool for gaining insightful and nuanced insights from the participants. Ethical considerations and permissions were diligently obtained to protect participants' rights and confidentiality. Each session was audio-recorded, and subsequent transcriptions formed the crux of the data analysis phase. Data was analyzed using content analysis methodology. Each transcript was thoroughly reviewed to identify and categorize common points. Each category was further analyzed to extract the themes, which were then cross-referenced with previous study findings. To enhance the external validity, findings were triangulated by interviewing various key participants, including city planners, regional economic developers, and government officials. This comprehensive process provided a thorough understanding of the Sohar Industrial Area cluster initiatives, rooted in empirical evidence and contextualized within Oman's broader economic and cultural framework.

5. Findings & Discussion

Content analysis revealed five major themes for challenges in implementing the cluster-based policy in the Sohar Industrial Area and five related strategies.

[1] Profile of the interviewees is presented in the Appendix

5.1. Challenges Encountered in the Implementation of the Cluster-based Policy

Six challenges were extracted; economic factors, infrastructure and logistics, government, and policy, market and competition, collaboration and awareness.

5.1.1. Economic Factors

Several interview responses (Respondents 1, 4, 9, 20) emphasized the pivotal role of economic factors in the implementation challenges faced by cluster-based policies in Oman. The dominance of the oil sector and the market contraction due to the COVID-19 pandemic pose significant hurdles to diversifying the economy through cluster development. Some examples quoted from the responses of interviewees are as follows:

> "*Oman is still an oil-driven economy*." (Respondent 1)
> "*Well, you see, we are a small market in comparison to the region we are in. If you want to establish export, you have to have a market for it. We do have the raw materials for some industries, but other countries have the infrastructure already there to maybe import raw materials and do the industry somewhere else. If we want to encourage the industries, we have to give incentives*". (Respondent 9)
> "*COVID* comes *in, everything falls apart. We have lost quite a lot of businesses, unfortunately, because of COVID". respondent 4, "the COVID-19 or Corona, which has affected all companies*". (Respondent 20)

These obstacles echo earlier research, such as Oman Vision 2040, emphasizing the imperative of economic diversification and reducing reliance on oil revenue.

Additionally, Benea-Popușoi and Rusu (2021) contribute valuable insights, indicating that a dense concentration of firms doesn't automatically translate into robust collaboration networks. The economic challenges highlighted by the interviewees encompass Oman's small oil-dependent market, lack of clear policies for cluster development, uncertain government stances on natural gas pricing and renewable energy, high energy tariffs and land costs impacting industry competitiveness, market shrinkage due to COVID-19, difficulties in attracting investments and developing support industries, weak government commitment to cluster policies, fluctuations in raw material prices and export-import regulations, limited budget for cluster promotion, challenges in securing long-term investment returns, financial constraints for industrial investment from Oman Devlopment Bank (ODB), reliance on government's strategic planning, and the manufacturing industry's heavy dependence on low-wage expatriate labor.

5.1.2. Infrastructure and Logistics

Cluster development relies heavily on robust infrastructure and logistics, as highlighted by various speakers (Respondent 3, 16, 24). The challenges related to inadequate infrastructure, utilities, connectivity, and supply chain support pose significant barriers to cluster establishment and growth. Fowling illustrates some samples of responses recorded during interviews:

> *"If we had to do this kind of a cluster, we need to be ready. Our infrastructure has to be ready. Our procedure has to be ready. So we could accommodate those investors and accommodate those clusters".* (Respondent 3)
> *"If I want to make a cluster, I think the challenges will be to provide for this kind of companies a supply chain to provide all the products that they need."* (Respondent 16)
> *"I think one of the difficulties which we are facing to collaborate in the industrial area, at least in the food sector, is a lack of information in one place. Secondly, the industrial area still is not completed".* (Respondent 24)

These issues resonate with studies, including Porter's cluster theory, underscoring the pivotal role of strong infrastructure and logistics networks in successful cluster initiatives.

Specific challenges cited in the sample encompass insufficient infrastructure and utility services in the Sohar Industrial Area, lack of clarity on tariffs and procedures, the necessity for seamless connectivity and robust logistics, difficulties in securing energy supply and skilled talent, limited availability of downstream industries, lack of regulations and coordination among government ministries, challenges in relocating existing industries and expanding clusters, absence of organization and clear clustering systems in the industrial area, space constraints impeding cluster expansion, absence of modern automated supply chains to support clusters, logistics constraints hindering business development, lack of industrial disposals and necessary services, and incomplete infrastructure. These challenges highlight the pressing need for comprehensive solutions in infrastructure and logistics to foster successful cluster development initiatives.

5.1.3. Government and Policy

Government policies are pivotal in cluster development, a point emphasized by several interviewees. Challenges such as the absence of clear policies, weak stakeholder commitment, fragmented regulations, and coordination issues between ministries hinder the implementation of cluster-based strategies. Some of the stakeholders' views are as follows:

> *"The boundaries for the decision to develop clusters is not properly charted, it's not properly illustrated, that's why the role is really important I'm not saying it's not important, it's important but because there is no developed written policy that's why we still go back and forth it's will take a long time to be clear on that. There is a trend towards a cluster but what are the enablers it's not written anywhere".* (Respondent 2)
>
> *"What we have seen in the past three, four decades, unfortunately, has become a gap between the government and the organizations". (Respondent 5)*
>
> *"The main thing is in the previous, before OPAZ, two years ago, there were a lot of entities looking for organizing, and regulating all the investments in the free zone and the port or in the small clusters and different regions in Oman".* (Respondent 6)
>
> *"Governmental process and the way that is to do the investment, it needs to be reviewed".* (Respondent 17)
>
> *"The government was reluctant to provide these services".* (Respondent 27)
>
> *"The cluster policy starts with focus on attracting major strategic players in specific industries and this project will develop a value chain in the surrounding region. Unfortunately, this is not the case in Oman. We have industrial facilities but not specialized in a specific field".* (Respondent 33)

These difficulties align with existing studies stressing the necessity of supportive government policies and effective coordination mechanisms for successful cluster development, as outlined by Schmiedeberg (2010).

Respondents cited obstacles like the lack of established cluster-based policies, insufficient long-term policy efforts from stakeholders, absence of shared visions among stakeholders, fragmented regulations and fees, absence of a centralized investor support channel, weak local policy coordination to tackle competition, difficulties in processing cluster plans and expansions, lack of clear legal frameworks enforcing clustering, fluctuating border customs requirements, government commitment needed to maintain utility rates, necessity for smart incentives for utilizing free trade agreements, absence of incentives for cluster formation between Sohar industrial city and the Sohar free zone, and regulatory challenges in government regulations and requirements.

These challenges echo Wilson's (2019) discussions on cluster policy resilience and align with Burfitt & MacNeill's (2008) concerns about shared visions and governance structures in cluster policy.

5.1.4. Market and Competition

Understanding market dynamics and competition is crucial for cluster development, a sentiment emphasized by various speakers. Challenges such as the competitiveness of Omani products, intense competition from imports, and the necessity for incentives and protection for local clusters align with prior research highlighting the significance of market-oriented policies, competitive advantages, and supportive measures for local industries, as discussed in works like; Porter (2007), Ketels (2013). Quoted samples of various interviewees' concerns are as follows:

> *"We have lost quite a lot of businesses, unfortunately, because of COVID. So, the challenges that we had, let's say pre-COVID, is more of energy and more of the land itself. So, the energy tariff was high, the land cost was also going high, but of course, it comes COVID, and when it comes COVID, you know, market has shrunk".* (Respondent 4)
> *"To develop the national economy and also to increase the local value added to the country. This is not possible without the so-called policies of import law".* (Respondent 10)
> *"Ministry of Commerce & Industry need to organize some of the laws and legislations that allow to compete internally and internationally".* (Respondent 12)
> *"The companies in Oman are relying on their own efforts…… We are asking to have a monitoring to import of products that can be made in Oman".* (Respondent 15)

Specific challenges outlined include the struggle of Omani products to compete, the overwhelming regional competition in the local market, the need for incentives to boost export-oriented products, policy coordination weaknesses in facing competition, difficulties in safeguarding local clusters from regional rivals, and the requirement for laws and legislations to back local manufacturers. Vicente (2014) addresses the skepticism surrounding cluster policies, a skepticism likely rooted in challenges like intense regional competition and the necessity to shield local clusters, issues highlighted in the current study.

5.1.5. Collaboration and Awareness

Collaboration and awareness among stakeholders are fundamental for the success of clusters, as highlighted by various speakers. The interviewed stakeholders revealed acceptable amount of understanding on challenges facing cluster-based policy in Sohar Industrial Area. Some of their responses are as follows:

> *"Madayn should take an initiative to have at least three to four times meeting the investor with the main authorized person over there. Madayn is the excellent platform, honestly speaking. Madayn or the public establishment for industrial sector not from now since long time".* (Respondent 7)
> *"Let's take an example of such collaboration in Sohar, some time ago there was an entity established called 'jusoor Sohar', it's an arm for social development of three companies, by doing that they are forming an entity which is strong. It is a reputational strength for them and they share the cost of that entity but when it comes to the benefit the three of them get the same benefit of any project that they fund".* (Respondent 9)
> *"The main challenge is probably the administration of the cluster. I think the government should take initiative in terms of increasing the relationship between the industries within Sohar industrial estate of the free zone".* (Respondent 21)

Challenges such as difficulties in enhancing collaboration among manufacturing industries, lack of awareness, skills, and mindset to support virtual collaboration platforms, companies opting for individual promotion channels, limited cooperation between the government, private sector, and research institutions, and hesitancy to utilize shared facilities and limited dialogue between policymakers and manufacturers are obstacles that resonate with studies emphasizing the importance of effective collaboration, knowledge sharing, and stakeholder engagement for cluster development, as discussed in works like Ucler (2017).

These challenges underscore the crucial need for improved collaboration strategies and increased awareness and communication among stakeholders to foster successful cluster initiatives.

In sum, the outlined challenges are well-documented in academic discourse, emphasizing their widespread nature. Yet, certain unique aspects, such as dependence on oil and COVID-19's repercussions, cast a distinct shade on the challenges in the Sohar Industrial Area. As cluster strategies advance, reconciling these specific hurdles with wider academic insights can foster more tailored and effective policy strategies.

5.2. Stakeholder Contributions to Surpass the Challenges

The second main question asked during the interviews was about the stakeholders' contributions in overcoming the challenges faced in the implementation of a cluster-based policy in the Sohar Industrial Area. Content analysis of the data revealed nineteen subthemes, which were further categorized into five themes: government support and policy changes, stakeholder collaboration and communication, stakeholder involvement, infrastructure and resource allocation, and cluster formation and coordination (Table 1).

Table 1: Themes Extracted Regarding the Strategies to Surpass the Challenges

	THEMES EXTRACTED				
SUBTHEMES	Government Support and Policy Changes:	Stakeholder Collaboration and Communication:	External Stakeholder Engagement and Involvement:	Infrastructure and Resource Allocation	Cluster Formation and Coordination:
	All government and public services leaders need to open their doors for all investments.	Businessmen and investors deserve a higher level of appreciation and must be considered stakeholders.	Support and cooperation from external stakeholders are important for successful implementation.	Shared vision is critical to align the strategy for labor market and higher education.	Clusters will naturally form, but intervention and support are required for faster progress.
	Policy makers must change their minds and mentality to support investors.	Continuous follow-up from the cabinet is needed for effective policy implementation.	Commitments from the Ministry of Health are needed for the pharmaceutical industry.	Small participant firms rely heavily on coordination from Madayn, the landlord.	Manufacturing firms will participate and contribute to cluster formation when they perceive the benefits.
	Government intervention is required to encourage large establishments to provide opportunities for SMEs.	Participants within a cluster need to agree on standards and align around proper governance.	Cooperation is needed through the Ministry of Agriculture and the Port Authority for the food cluster.	Access to port facilities, storage, and silos are crucial for the food cluster's success.	Dedicated teams within organizations can communicate requirements with other stakeholders.
	Government representation and support from relevant ministries are crucial for strategic cluster formation.	Stakeholders should form committees for collective approaches, sharing knowledge and experience	The government, customs, and relevant ministries should intervene and support strategic food cluster formation.		Polymer Park at Sohar Industrial City can facilitate the formation of a plastic cluster.

5.2.1. Government Support and Policy Changes

Several respondents emphasized the vital role of government support and policy adjustments in implementing successful cluster-based strategies which is also highlighted by Power and Lundmark (2013). Respondents also mentioned that governments should support strategic industry clusters through the implementation of customized policies, which aligns with the recommendations put forth by Brenner and Schlump (2011). Another significant recommendation addressed to the creation of a conducive investment climate and the fostering of collaboration between stakeholders and the government, which aligns with Kline and Moretti's (2014) broader perspective on "place-based" strategies. Stakeholders' support, government interventions, off-taker agreements, and customized education curricula were also cited as critical strategies to overcome the challenges of implementing a clustered-based policy. These suggestions underline the shared understanding among stakeholders and scholars regarding the essential components for effective cluster-based policies, emphasizing the need for government support, industry collaboration, and strategic alignment for successful cluster development.

5.2.2. Stakeholder Collaboration and Communication

The importance of effective collaboration and communication in policy implementation is widely recognized. The respondents' reference of migrating from rigid interventions to more flexible, 'soft' approaches echoes the findings of Warwick's (2013) research. The government's role, highlighted by the respondents, is seen as a facilitator fostering collaboration and alignment, which is a concept supported by O'leary and Vij (2012). Bommert (2010)

and Cooke (2002) in their study suggested collective troubleshooting, emphasizing the need for shared problem-solving among stakeholders. Yu et al.'s (2014) empirical findings underscore the instrumental role of government-led coordination, emphasizing the essential nature of effective communication and collaboration in policy enactment. Stakeholders stress cooperation, regular dialogues, committee formations, mutual support among companies, networking opportunities, and open communication channels as important factors to overcome challenges. This emphasis resonates with academic insights, emphasizing trust, knowledge dissemination, and relationship-building for cluster prosperity. The focus on community engagement and awareness campaigns underlines the importance of structured, government-supported teamwork for successful clustering strategies.

5.2.3. Stakeholder Engagement and Involvement

Stakeholder involvement emerges as a central theme in discussions, emphasized by the respondents, who stress accountability and a shared vision for prosperous cluster development. Respondent 22 emphasizes private sector leadership and contributions from research institutions, while Respondent 25 highlights logistics and infrastructure, underlining stakeholders' key role in resource allocation. These viewpoints align seamlessly with Porter (1998), which emphasizes collaboration and stakeholder engagement for successful cluster outcomes. Stakeholder involvement is summarized through key points, including acknowledging responsibility, fostering private sector engagement, nurturing leadership, and encouraging research institution contributions.

These insights underscore the importance of stakeholder involvement in cluster resilience and expansion. The proposition to involve research institutions emphasizes academia-industry collaboration for innovation within clusters. Additionally, the establishment of dedicated departments, troubleshooting units, and provision of incentives and infrastructure services highlights the need for continuous support mechanisms to sustain stakeholder involvement and facilitate cluster evolution.

5.2.4. Infrastructure and Resource Allocation

The cluster-based policy implies resource allocation and intensive public expenditure on supportive infrastructure. The stakeholders' responses point out the importance of public investment in supportive infrastructure and resource allocation based on a comprehensive strategic plan. Respondent 14 claims that a shared vision is critical to aligning the strategy for the labor market and higher education.

> *"The labor market is not ready for these sectors, and this requires a kind of comprehensive strategic plan between the labor market and higher education so that the next generation is ready and capable of these industries."* (Respondent 14)
> Additionally, Participant 22 argues *"We need to work hard to improve our industries. Now this will require investment. Investors will not come and people even inside Oman, will not invest in industry because they will say it's high risk. We need to have a full system, an ecosystem to support to develop".* (Respondent 22*)*
> *Respondent 16 suggests that small participant firms rely heavily on coordination from Madayn, the landlord to allocate supportive infrastructure and resources. For instance, Participant 24 states "access to port facilities, storage, and silos is crucial for the food cluster's success.*

Most respondents emphasize the importance of infrastructure and resource allocation for the implementation of cluster-based policies."

5.2.5. Cluster Formation and Coordination

The concept of funding and ownership in cluster development highlights the vital role of sponsors who recognize the potential in clusters, drawing in stakeholders and fostering collaboration. Sponsors advocate for clusters, translating their support into concrete strategies such as establishing autonomous organizations or joint ventures for efficient cluster management and utilizing local resources.

Collaborative initiatives between significant stakeholders, integration of experienced firms into cluster development, and the establishment of independent bodies also play a crucial role. This approach resonates with the emphasis on committed leadership expressed by Respondent 28 and is consistent with Warwick's (2013) conclusions on governments transitioning to a more collaborative and guiding role.

Furthermore, the importance of native resources highlighted by Respondent 32 mirrors regional governmental policies in other contexts, emphasizing the significance of tailored approaches. The overarching theme emphasizes the power of collaboration, aligning strategies with cluster life-cycle stages, and capitalizing on local resources, underscoring the complex interplay of local contexts and stakeholder insights in shaping successful cluster initiatives.

5.3. Barriers That Impede Stakeholder Collaboration

Regarding the barriers hindering stakeholder collaboration during cluster-based policy implementation, six themes were extracted; Lack of Supportive Environment, Stakeholder Communication, Government Role and Initiatives, Barriers to Collaboration, Trust and Incentives, and Shared Vision and Cluster Development.

These themes encapsulate recurring suggestions and insights from stakeholders, providing a comprehensive overview of challenges hindering stakeholder collaboration in cluster policy implementation.

5.3.1. Lack of Supportive Environment

Stakeholders express profound concerns regarding the challenging environment hindering robust investor engagement. They point out the ambiguousness of procedures, lack of transparency in licensing and tariffs, and inconsistent government support, all of which impede the holistic development of clusters.

> Respondent 1 *explained "Still the policymakers have not thought of the cluster as the possible way forward for developing the manufacturing sector in Oman. The thought has not been embraced. So, in my humble opinion, there is no policy framework for the development of clusters in Oman".*

These concerns confirm Engel's (2015) study, emphasizing the significant role institutions play in fostering innovation. Leonidou et al.'s (2020) research further underlines the importance of stakeholder engagement, highlighting the need for synergestic relationships to ensure thriving innovation ecosystems. Additionally, Foray's (2014) concept of "Smart Specialisation," focusing on regional collaboration and government facilitation, aligns with the collaborative approach emphasized by stakeholders. These insights emphasize the necessity of a stakeholder-centric approach, clear governmental policies, and consistent collaboration, offering strategies to address the concerns raised by stakeholders in the cluster development process.

5.3.2. Lack of Stakeholder Collaboration and Communication

Stakeholder collaboration challenges are multifaceted, encompassing issues like fragmented business landscapes, unpredictable demand, and the need for expertise and discernment in partnerships. Interviewees emphasize the complexities involved, highlighting the importance of institutionalizing collaboration through dedicated teams or departments for effective communication and problem-solving.

> Respondent 11 argues that *"Cluster is within our shareholders' mandates. So, it's not about getting the mandate from external stakeholders, With the shareholders and top management, we can go ahead and establish any new cluster based on the needs of the markets… We have a stakeholders mapping matrix and we define who is the strongest and the top important stakeholders and the other type of levels in the stakeholders mapping".*

These observations align with Leonidou et al.'s (2020) examination of the synergetic relationship between stakeholders and entrepreneurs and Kasabov and Sundaram's (2013) emphasis on balancing diverse stakeholder voices.

Fjørtoft et al. (2020) advocate for shared understanding, echoing the speakers' call for an integrated approach, while Spitzeck & Hansen (2010) and Lee et al. (2015) emphasize the essential nature of genuine stakeholder involvement in cluster initiatives. Together, these insights provide a comprehensive perspective on the pivotal role of stakeholder collaboration in cluster policies, acknowledging the complexities involved and emphasizing the need for strategic approaches.

5.3.3. Government Role and Initiatives

Stakeholders' responses underline the crucial government role, emphasizing the need for leveraging Oman's strategic assets, providing stability during financial uncertainties, and fostering collaboration. Respondents highlight the government's instrumental position in maximizing strategic location, tapping into export opportunities, and maintaining beneficial relationships with neighboring nations.

> Respondent 7 claims that*; "The government of Oman should take advantage of this location of Oman for exporting the goods. Oman has an excellent relationship with the neighboring countries and Omani products are well accepted by the consumers of those countries. If it is an Omani product they blindly say it is equivalent to any international product so it has got more value-added as far as because the standard of Oman is much higher".*
> *"The government has a big role. The Ministry of Commerce should take the initiative and start raising the flag and communicating with those entities so that we can create a proper and clear communication channel, and collaboration among all these entities whatever initiative is coming from the private sector, unless the government... they are ready to take that initiative and escalate it,...".* (Respondent 17)

These statements are consistent with the findings of Yu et al.'s (2014) study on local government policies in China shaping pharmaceutical clusters and Warwick's (2013) emphasis on systematic structures in industrial policy. The study mirrors the complexities of collaboration discussed by O'leary and Vij (2012), emphasizing the nuanced nature of "collaboration". Together, these insights emphasize the government's crucial role in guiding collaborations, addressing challenges, and optimizing regional strengths in cluster-based policies.

5.3.4. Lack of Trust and Shared Interests

Stakeholders identify barriers to collaboration, including reluctance to share knowledge, conflicting interests, geographical distance, and lack of awareness about cluster benefits. Interviewees highlight these challenges, reiterating Porter's (1998) emphasis on trust-building and shared vision to overcome such barriers. Respondents explain this as;

> *"Okay, for collaboration between companies and Sohar, some of the companies do not like to share their systems with other companies. They have their safety system, they have their quality system, they have their operation system. They are hesitating to share that because it's like it's unique for them and they like to keep it for themselves".* (Respondent 13)
> *"Companies rely on their resources; we tell them to focus on business and let Madayn do the work for them. For example, now we are working to help them use the iCloud that is available and can access any device that is in the factory, the office, or the head office and it will save energy consumption and the investment in the servers and the networks. This is one of the types of interconnections that we are doing now".* (Respondent 25)

Benea-Popuşoi and Rusu's (2021) study on the apparel cluster in Moldova reinforces these challenges, attributing hesitancy to a lack of relational capital. Kasabov and Sundaram (2013) align with our findings, emphasizing the

complexities of harmonizing diverse stakeholder interests. Foray's (2014) concept of "Smart Specialisation" aligns with our research focus on understanding cluster benefits. Bommert's (2010) advocacy for collaborative innovation resonates with our emphasis on broader collaboration.

In summary, trust, shared objectives, and robust relational capital are crucial for successful cluster collaborations, transcending geographical proximity. Recognizing and navigating these complexities are vital for nurturing effective collaborative ecosystems within clusters.

5.3.5. Lack of Trust in Government Incentives

Stakeholders express their concerns about trust in government incentives during oil price fluctuations and emphasize the need for collaboration with industrial areas, port authorities, and customs for export-oriented companies. Neumark & Simpson (2015) stress the importance of infrastructure investment that aligns with the need for economic support in struggling zones. One of the experts on cluster initiatives in Oman argues that:

> *"Governments cannot impose directly on companies, it's not about individuals to be honest. The market is very harsh. Individuals can create and can strive hard to create the level of required incentives, but it's collective work. ....it will need support from the cabinet*". (Respondent 2)

Power and Lundmark (2013) highlight workplaces as hubs for knowledge exchange, supporting Participant 20 who emphasized collaboration within clusters. Warwick (2013) underscores strategic alignment and transparency, echoing concerns raised by Participant 19 about trust. Brenner and Schlump (2011) suggest tailoring policies to cluster life cycles, in line with Speaker (20)'s proactive engagement approach. These sources collectively underline the importance of trust, collaboration, and adaptability in cluster-based policies amid economic uncertainties.

5.3.6. Lack of Shared Vision

Speakers (28) and (29) emphasize the importance of fostering a shared vision, addressing cluster ecosystem gaps, and prioritizing collaboration over competition. The findings underscore the need for transparent communication channels and well-defined government initiatives in cluster-based policies, aligning with Warwick's (2013) emphasis on the government's coordinating role. Dominique Foray's (2014) "Smart Specialisation" highlights regional teamwork, akin to the research's focus on stakeholder collaboration. The following quote reflects the perspective of a representative from Madayn regarding the perception of cluster facilitators on the development of a cluster initiative within an IT park in Oman:

> "*Companies* collaborate. First of all, it comes by default. It's like an inherited relationship. We've seen a lot of companies coming *here because they're doing business together. So once you have one, a middle tier company, then some small SMEs also start coming…"* (Respondent 29).

Edquist's (2010) "systems of innovation" approach aligns with the research's call for supportive policy structures. Van der Have and Rubalcaba's (2016) Social Innovation (SI) stresses community-based collaboration, resonating with the research's emphasis on local development. Parrilli et al.'s(2016) integrated approach aligns with the research's global collaborative strategy. Johnson et al (2018) and Leonidou et al.'s (2020) insights underline stakeholder management's importance.

Kasabov and Sundaram's (2013) focus on stakeholder management is in line with our research findings, emphasizing stakeholder understanding. Spitzeck & Hansen (2010) and Laur's (2015) insights underscore the importance of effective communication channels in successful cluster-based policies, supporting our findings on stakeholder collaboration and shared vision. Together, these sources enrich our research findings, emphasizing the significance of these elements for successful cluster initiatives.

6. Conclusion

The main findings of the research have highlighted the significance of cluster-based policies, and stakeholder involvement in cluster development. The research has provided insights into the current state of cluster development, the impact of cluster-based policies on economic growth and competitiveness, and the role of stakeholders in policy implementation. The findings emphasize the importance of stakeholder collaboration, government support, and tailored policies in leveraging cluster-based policies to drive economic growth and create a conducive environment for cluster development.

To encapsulate, our research into the challenges of cluster-based policy implementation in the Sohar Industrial Area illuminates significant hurdles that stakeholders encounter, including economic barriers, infrastructure inadequacies, regulatory concerns, and cultural factors. These insights dovetail with existing academic literature, with works such as Wilson (2019), Burfitt & MacNeill (2008), Eigenhüller et al. (2015), Leonidou et al. (2020), Laur (2015), Kasabov & Sundaram (2013), Johnson et al. (2018), Veleva (2021), Russell & Smorodinskaya (2018), Wolfe and Gertler (2013), Uyarra et al. (2017), Trippl et al. (2015), and Galvin (2019) pinpointing common challenges in cluster development worldwide. Yet, the unique socio-economic dynamics of Oman, like its oil dependence and the implications of the COVID-19 pandemic, further contextualize these challenges. Findings arising from our study and echoed in the scholarly domain highlight the critical role of stakeholder engagement, agile regulatory environments, and a proactive, investment-centric mindset. Contemporary research from diverse regions, such as the insights from Karvonen et al. (2022), corroborates these findings, emphasizing the universal importance of collaboration, multilayered governance, and strategic direction. In essence, the successful advancement of cluster-based policies in the Sohar Industrial Area requires a harmonized approach informed by both stakeholder insights and broader academic discourse.

7. Limitations and Future Research

The scarcity of literature on cluster-based policy in Oman presents a significant challenge for this research study. The existing development-related works on Oman reviewed here show a lack of both qualitative and quantitative research on the issue in Oman, and further research is needed to fill this gap. Enright (2003) notes that the absence of a consistent, cross-national statistical base is a particular shortcoming for the cluster research domain. While this study is limited by the focus on Oman and the lack of detailed technical aspects of policy formulation and implementation, it is not unique in having limitations.

Firstly, the findings of this study are only applicable to Oman and other states or regions with similar contextual factors, cultural, economic, political, and social characteristics similar to Arabian Peninsula neighboring countries, or geographically specific areas that include clusters within different regions in Oman. Moreover, the study only covers major industries and omits numerous smaller but still important industries, as well as supporting and related industries within the cluster. Secondly, the sample used in this study did not represent the overall industry.

To address these limitations, future studies could broaden the focus to cluster-based policies in general within oil-based economies and conduct more quantitative research to identify spontaneous clusters in Oman. Additionally, future research could approach politicians and economists to better understand cluster-based policies and practices in oil-based economies. It would also be interesting to study the influence of cluster-based policy on Sohar and the surrounding areas and examine cooperation and collaboration efforts across county and state lines, such as those taking place between various cluster actors and stakeholders with the support of both state governments.

The present study has outlined several avenues for future research and has shed light on potential gaps and constraints in the existing knowledge. These implications encompass a variety of areas, such as delving deeper into the hurdles and obstacles faced by stakeholders engaged in cluster development. This exploration would specifically focus on challenges related to coordination, infrastructure development, and engaging stakeholders effectively. Additionally, there is a need for research into the long-term viability and expansibility of cluster initiatives, taking into account the ever-changing market dynamics and the evolving needs of the industries they encompass.

Furthermore, a thorough examination of the impact of digital technologies and innovation on cluster development is warranted. This analysis should include an exploration of integrating Industry 4.0 technologies and understanding how they influence the competitiveness of clusters. Evaluating the effectiveness of policies rooted in cluster development is also crucial, with a focus on promoting inclusive and sustainable economic growth. This evaluation should encompass not only economic factors but also social and environmental dimensions.

Drawing from these implications and identified gaps, specific recommendations for future research have been formulated. Firstly, conducting in-depth case studies of successful cluster initiatives across diverse industries and regions can provide valuable insights into the critical factors that contribute to their success and best practices that can be replicated elsewhere. Additionally, investigating the role of social networks and collaboration platforms in facilitating stakeholder engagement and knowledge sharing within clusters can offer new perspectives on effective communication and cooperation within these setups.

Moreover, there is a need to explore how cluster-based policies impact job creation, skills development, and the overall well-being of local communities. This comprehensive analysis would provide a holistic understanding of the societal implications of cluster initiatives. Furthermore, examining different governance models, including associative governance, and their support in cluster development and policy implementation is vital. Lastly, exploring the role of cluster initiatives in promoting sustainable development, including the integration of circular economy principles and green technologies, can offer valuable insights into environmentally friendly practices within clusters. These specific research recommendations aim to bridge the gaps in our current understanding of cluster development and pave the way for more informed and effective policies in the future.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Al Alawi, G. N., & Mishra, A. (2016). Developing Factors within an Industries Cluster in Oman as a Regional Development. In 2016 2nd International Conference on Industrial Engineering, Applications and Manufacturing (ICIEAM) (pp. 1-5). IEEE. doi: 10.1109/ICIEAM.2016.7605468

Al-Makhmari, A. K. M., Al Yaqoopi, H. H., & Slimi, Z. (2021). A Study on Attracting Local and International Investments and Improving an Integrated Logistics System Allows Local Products to Reach Global Markets. European Journal of Business and Management Research, 6(4), 215-229.

Ba-Awain, A. M., & Daud, D. (2018). Oman as a future logistics hub: A conceptual study. International Journal of Economics, Commerce and Management, 6(4), 141-148.

Barca, F. (2008). An agenda for a reformed cohesion policy a place-based approach to meeting European Union challenges and expectations (No. EERI_RP_2008_06). Economics and Econometrics Research Institute (EERI), Brussels.

Benea-Popuşoi, E., & Rusu, E. (2021). Clusters as an Environment of Competitive Collaboration. A Case Study on the Emerging Apparel Economic Cluster in the Republic of Moldova. In Proceedings of the Fourteenth International Conference on Management Science and Engineering Management: Volume 2 (pp. 742-754). Springer International Publishing.

Burfitt, A., & MacNeill, S. (2008). The challenges of pursuing cluster policy in the congested state. International journal of urban and regional research, 32(2), 492-505.Innovation policy and the economy, 14(1), 129-166.

Chatterji, A., Glaeser, E., & Kerr, W. (2014). Clusters of entrepreneurship and innovation. Innovation policy and the economy, 14(1), 129-166.

Delgado, M., Porter, M. E., & Stern, S. (2016). Defining clusters of related industries. Journal of Economic Geography, 16(1), 1-38.

Ebbekink, M., & Lagendijk, A. (2013). What's next in researching cluster policy: Place-based governance for effective cluster policy. European Planning Studies, 21(5), 735-753.

Edquist, C. (2010). Systems of innovation perspectives and challenges. African Journal of Science, Technology, Innovation and Development, 2(3), 14-45.
Eigenhüller, L., Rigby, D., & Mina, A. (2015). Cooperation in innovation clusters: The paradox of diversity. Journal of Business Research, 68(11), 2453-2463.
Enright, M. J. (2003). Regional industrial clusters: What we know and what we should know. In Innovation Clusters and Interregional Competition (pp. 99-129). Springer.
Foray, D. (2014). Smart specialisation: Opportunities and challenges for regional innovation policy.
Fundeanu, D. D., & Badele, C. S. (2014). The impact of regional innovative clusters on competitiveness. Procedia-Social and Behavioral Sciences, 124, 405-414.
Galvin, P. (2019). Local government, multilevel governance, and cluster-based innovation policy: Economic cluster strategies in Canada's city regions. Canadian Public Administration, 62(1), 122-150.
Garanti, Z., Zvirbule-Berzina, A., & Yesilada, T. (2014). Cluster concept in policy planning documents: The cases of Latvia and Northern Cyprus. Business: Theory and Practice, 15(2), 129-139.
JICA. (2010). Study on master plan for industrial development master plan for Oman Industrial Development. Available at: https://openjicareport.jica.go.jp/pdf/11989464.pdf
Johnson, M., Redlbacher, F., & Schaltegger, S. (2018). Stakeholder engagement for corporate sustainability: A comparative analysis of B2C and B2B companies. Corporate Social Responsibility and Environmental Management, 25(4), 659-673.
Karvonen, V., Karvonen, M., Kässi, T., & Ahonen, A. (2022). Finland´ s innovation policy was cluster driven between 2006-2015. In ISPIM Conference Proceedings (pp. 1-19). The International Society for Professional Innovation Management (ISPIM).
Kasabov, E., & Sundaram, U. (2013). A stakeholder approach to branding clusters: Pointers to a research agenda. Regional Studies, 47(4), 530-543.
Ketels, C. H., & Memedovic, O. (2008). From clusters to cluster-based economic development. International Journal of Technological Learning, Innovation and Development, 1(3), 375-392.
Laur, I. (2015). Cluster initiatives as intermediaries: a study of their management and stakeholders (Doctoral dissertation, Linköping University Electronic Press).
Lehmann, E. E., & Menter, M. (2018). Public cluster policy and performance. The Journal of Technology Transfer, 43(3), 558-592.
Leonidou, E., Christofi, M., Vrontis, D., & Thrassou, A. (2020). An integrative framework of stakeholder engagement for innovation management and entrepreneurship development. Journal of Business Research, 119, 245-258.
Martin, R., & Sunley, P. (2003). Deconstructing clusters: chaotic concept or policy panacea?. Journal of Economic Geography, 3, 5–35.
Neuman, W. L. (2006) Social Research Methods: Qualitative and Quantitative Approaches 6th Edition, Pearson International Edition, USA
Neumark, D., & Simpson, H. (2015). Place-based policies. In Handbook of regional and urban economics (Vol. 5, pp. 1197-1287). Elsevier.
Newman, C., & Page, J. M. (2017). Industrial clusters: The case for special economic zones in Africa (No 2017/15). WIDER Working Paper.
O'leary, R., & Vij, N. (2012). Collaborative public management: Where have we been and where are we going?. The American review of public administration, 42(5), 507-522.
Oman Vision 2040. Retrieved from [https://www.vision2040.gov.om/en/home] (https://www.vision2040.gov.om/en/home)
Peter de Valk. (2015, January). Development of Manufacturing Industries of Oman Preparing for the Future, 2015. Retrieved from https://www.researchgate.net/publication/: https://www.researchgate.net/publication/286882604_Development_of_Manufacturing_Industries_of_Oman_Preparing_for_the_Future_2015
Pilinkienė, V., & Kardokaitė, V. (2008). Tendencies of Business Cluster Development. Economics & Management, 13, 623-629.
Porter, M. E. (1990). The competitive advantage of nations. Harvard Business Review, 68(2), 73-93.
Porter, M. E. (1998). Clusters and the new economics of competition. Harvard Business Review, 76(6), 77-90.
Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. Economic Development Quarterly, 14(1), 15-34.
Porter, M. E. (2003). Competitiveness and economic development of Gulf and Middle Eastern countries. Middle East Petrotech 2003, 1-23.
Porter, M. E. (2003). The Economic Performance of Regions. Regional Studies, 37(6/7), 549-578.
PR, B. K., Kumar M, D., & Al Maqbali, L. (2015). Challenges of small scale entrepreneurs in Sohar Port: Anyone there to listen? International Postgraduate Business Journal, 7(1), 37-63.
Pulles, N., & Schiele, H. (2013). Social capital determinants of preferential resource allocation in regional clusters. Management Revue, 24(2), 96-113.

Russell, M. G., & Smorodinskaya, N. V. (2018). Leveraging complexity for ecosystemic innovation. Technological Forecasting and Social Change, 136, 114-131.
Sarrayrih, M. A., & Sriram, B. (2015). Major challenges in developing a successful e-government: A review on the Sultanate of Oman. Journal of King Saud University-Computer and Information Sciences, 27(2), 230-235.
Schmiedeberg, C. (2010). Evaluation of cluster policy: a methodological overview. Evaluation, 16(4), 389-412.
Singh, I., & Evans, J. (2009). Natural resource-based sustainable development using a cluster approach. In Mining, society, and a sustainable world (pp. 183-201). Berlin, Heidelberg: Springer Berlin Heidelberg.
Sölvell, Ö., Lindqvist, G., & Ketels, C. (2003). The Cluster Initiative Greenbook. Ivory Tower AB.
Spitzeck, H., & Hansen, E. G. (2010). Stakeholder governance: how stakeholders influence corporate decision making. Corporate Governance: The international journal of business in society, 10(4), 378-391.
Spruijt, P., Knol, A. B., Vasileiadou, E., Devilee, J., Lebret, E., & Petersen, A. C. (2014). Roles of scientists as policy advisers on complex issues: A literature review. Environmental Science & Policy, 40, 16-25.
Swailes, S., Al Said, L. G., & Al Fahdi, S. (2012). Localisation policy in Oman: a psychological contracting interpretation. International Journal of Public Sector Management, 25(5), 357-372.
Taderera, F., & Al Balushi, M. S. (2018). Analysing Oman supply chain practices versus global best practices. Global Journal of Business Disciplines, 2(1), 86-106.
Trippl, M., Sinozic, T., & Lawton Smith, H. (2015). The role of universities in regional development: Conceptual models and policy institutions in the UK, Sweden and Austria. European Planning Studies, 23(9), 1722-1740.
Ullah, A., Salah El Din, M., & Ossama, H. (2022). Logistics Clusters Development in Oman. International Journal of Economics, Commerce and Management, 10(5), 1-15.
Uyarra, E., & Ramlogan, R. (2017). Cluster policy in an evolutionary world? Rationales, instruments and policy learning. In The Life Cycle of Clusters (pp. 35-55). Edward Elgar Publishing.
Van der Have, R. P., & Rubalcaba, L. (2016). Social innovation research: An emerging area of innovation studies?. Research Policy, 45(9), 1923-1935.
Veleva, V. (2021). The role of entrepreneurs in advancing sustainable lifestyles: Challenges, impacts, and future opportunities. Journal of Cleaner Production, 283, 124658.
Power, D., & Lundmark, M. (2013). Working through knowledge pools: labour market dynamics, the transference of knowledge and ideas, and industrial clusters. In Clusters in Urban and Regional Development (pp. 55-74). Routledge.
Vicente, J. (2014). 'Don't Throw the Baby Out with the Bath Water': Network Failures and Policy Challenges for Cluster Long Run Dynamics. Available at SSRN 2509293.
Warwick, K. (2013). Beyond industrial policy: emerging issues and new trends. OECD Science, Technology and Industrial Policy Papers, 2, 2013.
Wilson, J. R. (2019). Cluster policy resilience: new challenges for a mature policy. International Journal of Business Environment, 10(4), 371-382.
Wilson, J., Wise, E., & Smith, M. (2022). Evidencing the benefits of cluster policies: towards a generalised framework of effects. Policy Sciences, 55(2), 369-391.
Wolfe, D. A., & Gertler, M. S. (2013). Clusters from the inside and out: local dynamics and global linkages. In Clusters in Urban and Regional Development (pp. 101-123). Routledge.

APPENDIX: Profile of the Interviewees

Role Category	Respondent Number	Organization	Experience Profile
Policy Maker	1.	MoCIIP	Oman 2040 Manufacturing Policy preparation Team Member
	2.	MoCIIP	Member of Nazdhir Program
	3.	MoCIIP	Oman 2040 Manufacturing Policy Preparation Team Member
	4.	MoCIIP	Oman 2040 Manufacturing Policy Preparation Team Member
Research Institution	5.	Advance Business Consultant	Advisor to Several Government Cluster Initiatives
	6.	Innovation Academy	Active team Member to several cluster initiatives committees
	7.	Sohar University	Member of Intaj Sohar Initiative in collaboration with several public and private entities
Collaboration Institutions	8.	Oman manufacturing Association OMFA	OMFA Executive Committee Member
	9.	OCCI Oman	Represent OCCI in several committees
	10.	OCCI Sohar	Responsible for sorting out several challenges facing industrial companies in Sohar
	11.	OCCI Sohar	Representative for OCCI Sohar branch
Cluster Initiatives	12.	Ladayn Plastic Cluster	Ladayn Plastic Cluster Supervisor at OQ
	13.	Ladayn Plastic Cluster	Ladayn Plastic Cluster Team Member
	14.	Ladayn Plastic Cluster	Ladayn Plastic Cluster Member
	15.	Shuwaymiyah Mineral Cluster	Member of Mineral Cluster initiative Member of Jsoor Social Responsibility fund that represents an initiative for the collaborative fund for several major industrial organizations in Sohar
Regulator - Facilitator	16.	OPAZ	Member for OPAZ strategic team
	17.	Sohar Port Free Zone Co.	Member of Sohar Port strategic team
	18.	Sohar Industrial City	Madayn Representative to Cluster initiative
	19.	Madayn	Madayn Representative to Cluster initiative
	20.	Madayn	Senior Management Level
	21.	Madayn	Representative to Cluster initiative
Civic Entrepreneur	22.	Bin Salman Group	One of OMFA Founders
	23.	Overseas Consultancy	Worked for Madayn at the senior Level
	24.	Project Manager	Researcher on Oman SMEs Collaboration, Worked for Madayn Worked for Sohar Port Company
	25.	Business Developer	Worked for Madayn at the senior Level
Participant Firms	26.	Food Industry firm in Sohar	

	27.	Shumookh Investment and Services	Investment Arm for Madayn with other Pension funds focusing on Services within Industrial Cities.
	28.	Firm in Sohar	HR Manager
	29.	Firm in Sohar	Owner of Manufacturing Firm
	30.	Firm in Sohar	Manager Assistant
	31.	Firm in Sohar	External Affairs Manager
	32.	Firm in Sohar	External Affairs Manager
	33.	Firm in Sohar	Owner of Manufacturing Firm

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 128-139
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.543

The Impact of Regulatory Changes on the Effectiveness to Earn Positive Margin for their Investors

Sanja Petrinić Turković[1]

[1] Croatian National Bank, Croatia, Zagreb

Correspondence: Sanja Petrinić Turković. Vrbani 24, 10000 Zagreb, Croatia. Tel: 00385 98 311 637
E-mail: sanja.turkovic@hnb.hr

Abstract
It is often forgotten that banks are private companies and that shareholders and investors expect certain return on their investments. Banks are also highly leveraged companies increasingly dependent on the investors especially in long-term debt. On the other hand, during the period of "low-for-long" interest rates, we have witnessed that Return on Capital for major listed European banks was constantly falling. Average use to stand on 2.28% in 2002 and has fallen by 2021 to 1.87%[1]. In majority of listed European banks that was much lower than their Cost of Capital (4.4% in 2002 fallen to 2.8% in 2021) which is usually taken as the benchmark for investors' minimum expectations in terms of return on their investment. In line with the Modigliani–Miller theorem that has in recent research proven to be valid for the banks[2], this research had ignored the capital structure and used as key variables Cost of Capital and Return on Capital, both not sensitive to the capital structure of an entity. Every new regulatory requirement although strengthening the resilience also increases cost of compliance and possibly further reduces the positive margins banks are earning to their shareholders and investors. It is therefore a legitimate question will the shareholders and investors keep investing in banks capital if the Return on Capital will not cover Cost of the same Capital. Especially now that new investment opportunities arise and competition on the market for non-core banking services like payment services, digital services, etc. further intensifies. The research presented in this paper analysed the data for 53 European listed banks and based on the fixed effect model applied to the panel data concluded that regulatory changes do effect banks effectiveness to earn that positive margin for their investors and shareholders. It has also been concluded that traditional banks which are dominantly financed through deposits and oriented to extending loans are more resilient to regulatory changes. This paper contributes to the literature on factors influencing the Cost of Capital and Return on Capital for banks, but does so by analysing the influence of different regulatory changes and key business model variables on the differential of Return on Capital and Cost of Capital. In a brother sense, this paper is also consistent with the conclusions of the literature on "low risk anomaly" proving that "traditional" less risky banks, from their business model perspective, tend to outperform their counterparts.

Keywords: Banking Regulation, Cost of Capital, Return on Capital

[1] Data on 53 listed European banks retrieved by author from Bloomberg
[2] Dick-Nielsen, Gyntelber, Thimsen: "The Cost of Capital for Banks: Evidence from Analyst Earnings Forecasts", 2022

1. Introduction

In the period of "low-for-long" we have witnessed that European banking system had constantly been reducing its profitability measured by Return on Capital (further RoC[3]). Average use to stand on 2.28% in 2002 and has fallen by 2021 to 1.87%[4]. Although, the profitability has improved after pandemic. Other measures interested for investors were also declining (for example Price to Book ratio). Investors have at the same time lowered their expectations measured mostly by Cost of Capital (further CoC [5]) which have on average fallen from 4.4% in 2002 to 2.8% in 2021. If the expectation of profitability expressed by CoC is on average always higher than the realised RoC it is a legitimate question why do investors still invest in the banking system that is not fulfilling their minimum expectation. The same phenomenon has been pointed out by Andrea Enria, Chair of the Supervisory Board of the ECB, in its speech at the 26th Annual Financials CEO Conference organised by Bank of America Merrill Lynch.[6] Nevertheless, the evidence shows that the difference between the RoC and CoC is narrowing down as well. This paper tries to determine if the regulatory changes influenced any of those trends in the "low-for-long" period, and whether that influence was different for the subset of traditional banks financed dominantly by deposits and extending loans from those deposits.

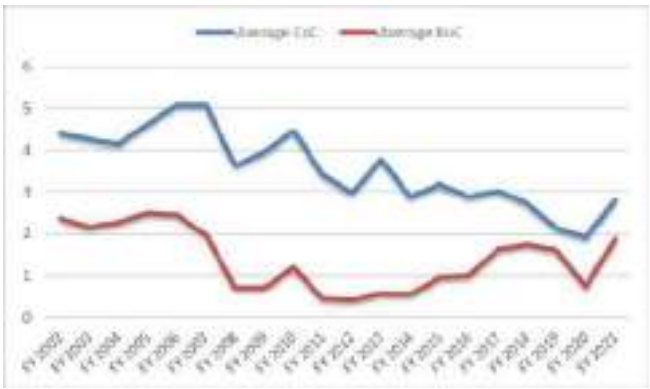


Figure 1: Average Cost of Capital and average Return on Capital for listed European banks

First challenge was to determine which regulatory changes to take on board because they are different in scope and impact. Some influence valuation (for example introduction of the International Accounting Standard 39 in 2005, and replaced by International Financial Reporting Standard 9 in 2018), other introduce new operational costs (for example introduction of the regulatory requirements for managing anti-money laundering, or consumer protection which require increased cost of compliance by 2008 and 2016), and finally all of them foster resilience of the bank (particularly the modification of the regulatory requirements for the calculation of the prudential requirements). It is therefore to be expected that their impact on banks and the banks' performance indicators will not be the same, but at the same time all of them do have important role to play and should not be overlooked.

Further to that, it is interesting to see if all banks reacted in the same way. Therefore, the first step was to explore literature on bank business model. All current approaches for the classification of banks into different business model include at least one category of traditional banks. Traditional banks are usually defined as the ones that are dominantly financed through taking deposits from the public and issuing loans. This is also the basic definition European legislation is using in defining a bank (i.e., credit institution).

This paper try to determine if there is a relationship between performance indicators of European banks and significant regulatory changes in the European banking regulatory framework and if that relationship is weaker for the business model of a traditional bank.

[3] Return on Capital expresses return in units of total capital employed (equity and long-term debt)
[4] Data on 53 listed European banks retrieved by author from Bloomberg
[5] Banks use a combination of debt and equity to finance their business thus we have used the cost of capital derived from the weighted average cost of capital (WACC).
[6] https://www.bankingsupervision.europa.eu/press/speeches/date/2021/html/ssm.sp210922~df2b18acb9.en.html

This paper contributes to the literature on factors influencing the CoC and RoC for banks, but does so by analysing the influence of regulatory changes, key business model variables and capital adequacy ratio on the differential of RoC and CoC exploring if the realised RoC cover the calculated overall CoC.

2. Literature overview

There is plenty of literature discussing the factors influencing bank's profitability (namely RoE and RoC) and the factors influencing their expected rate of return on capital investment (namely CoE and CoC) but present literature rarely discusses the interplay between the RoC and CoC and the factors influencing both. Among the factors influencing RoC or CoC the impact regulatory changes can have on either of them is scarcely addressed. The most similar work is the paper published by Anna Kovner and Peter Van Tassel (2018[7]) which focused their work on the fact that since the passage of the Dodd-Frank Act, the value-weighted CAPM[8] cost of capital for banks has averaged 10.5 percent and declined by more than 4 percent on a within-firm basis relative to financial crisis highs. They have concluded that the decrease was much greater for the largest banks subject to new regulation than for other banks and firms. However, their work was dominantly focused on only one key regulatory change and proving an empirical relationship between bank-level CAPM cost of capital estimates and bank lending supply. Most of the research that do analyse the impact of regulatory change on RoC or CoC emphasize only on the regulatory changes that increase bank's capital requirements (mostly implementation of Basel I, II or III).

Some of the key research questions explored in the present literature and the relevant conclusions this paper contributes to are presented in the Table 1.

Table 1: Overview of the literature and relevant conclusions

Relevant research question	Literature	Relevant conclusions
Is the Modigliani-Miller (1958) framework relevant for banks?	Hart and Moore, 1995 Diamond and Rajan, 2001 Holmstrom and Tirole, 1997 Miles et al., 2012 Diamond, 1984 Dick-Nielsen, Gyntelber, Thimsen, 2022	– emphasizes the disciplinary role of debt on managers – capital should have a positive effect on performance – investors adjust their return expectations for banks in accordance with the MM conservation of risk principle
What are the factors influencing banks' profitability (RoC)?	Ayadi,De Groen, 2014 Roengpitya et al, 2014 De Bandt, Camara, Pessarossi, 2014 Berger,1995 Chronopoulos, McMillan, Wilson, 2015	– retail-funded commercial banks are the most profitable measured in terms of RoE – there is positive impact of an increase in capital ratios on the ROE – bank size is found to have a non-linear relationship with profitability

[7] "Evaluating Regulatory Reform: Banks' Cost of Capital and Lending", Anna Kovner Peter Van Tassel, Staff Report No. 854, June 2018 Revised in July 2020

[8] CAPM is a model for pricing an individual security or portfolio based on its relation to expected return and systematic risk (beta)

What are the factors influencing investors' expectations (CoC)?	Mehran and Thakor, 2011 Belkhir, Naceur Chami, Semet, 2019 Baker, Wurgler, 2015 Kovner, Van Tassel, 2018	– acquirers pay more for targets with a higher capital ratio – documenting a negative empirical impact of additional capital on the cost of equity – largest banks are most affected by post-crisis regulations and have experienced a significant decline in their CoC because of it

Further, this research builds on the research concentrated on different **methods to calculate CoC**. Models to calculate CoC can be roughly divided into ex-post models that are based on historical data and ex-ante which are based on the projections of income in the future and the probability of maintaining income as a source of equity in the future periods.

One of the most common **ex-post models** for the calculation of CoC is CAPM model. This model is described in many early works (Sharpe, 1964; Lintner, 1965 and Mossin, 1966). Although often criticized CAPM model is still the model used by the Federal Reserve System (Barnes and Lopez, 2006), and by the significant number of European banks (Altavilla et al., 2021). In theory, there are other ex-post models. The model developed by Zimmer and McCauley (1991) is based on the realised RoE. Besides one-factor models there are multy-factor models like the model developed by Fama and French (1993) which includes not only market indicators but also the indicator of the size, and indicator of market and book value of the firm.

There are also **ex-ante** models that calculate CoC based on the projections of income and dividend policies. One of the first models of such sort have been developed by Pastor et al. (2008). Maccario et al (2002) have developed model based on discounting of dividend which is adjusted for inflation. Even larger step was taken by Ohlson and Juettner-Nauroth (2005) which do not project dividends but base their model on the projection of income per share. Gebhardt (2001.) expected values of CoE base on the projections of RoE.

When deciding which model to use for this work the most useful information was found in the work of Altavilla et al. (2021) because they have calculated the CoC for 50 European banks using several of the models previously mentioned (CAPM, Fama-French, and two other multifactor models). They have proven that the value calculated by the CAPM is the lowest, and that statement is proven true independent on the size of the bank or the period of calculation. Based on the survey evidence published in that paper the largest group of respondents (41%) use some calibration of the standard Capital Asset Pricing Model (CAPM) to project their required rate of return. Based on the same survey the model-based approaches are favoured by listed banks, because they can make use of their stock price data to calculate their required rate of return. Thus, it was decided to use CAPM which is not only the widely used by investors but also producing the lowest result. By taking the lowest estimate of the CoC the argument of RoC not covering even the lowest estimated CoC is more compelling. Based on the analyses of the published works due to the fact that this paper concentrates on the 53 largest listed European banks the method used for the approximation of the CoC is decided to be Weighted Average Cost of Capital (WACC) as calculated by Bloomberg. The method uses two components of the CoC: Cost of Equity (CoE) and the Cost of Debt. Where the Cost of Equity is calculated by using the CAPM model.

When it comes to the business model literature the reference could be found in Roengpitya et al. (2014) which have based on the balance sheet data of 222 internationally active banks using the Ward algorithm (Ward, 1963) managed to identify three basic business models: a retail-funded commercial bank, a wholesale-funded commercial bank and a capital markets-oriented bank. They have used predefined variables on asset and liability side (share of loans, traded securities, deposits and wholesale debt, as well as the interbank activity of the firm). According to Roengpitya et al. (2014) retail-funded commercial banks are the most profitable measured in terms of RoE of 12.49%, with the CoE of 12%. While wholesale-funded commercial banks had RoE of 5.81%, and CoE of 3%. On the European market similar business model analyses have been performed by Ayadi and de Groen (2014) which have classified European banks into four business models: large investment-oriented banks, banks

with a heavy reliance on interbank funding and lending, retail-oriented banks with relatively non-traditional funding sources and retail-oriented banks which rely primarily on customer deposits. The sample included 147 large banking groups of the European Economic Area including their subsidiary outside EEA. They have also used Ward algorithm based on the six basic indicators (loans, trading portfolio, liabilities, deposits, issued debt, derivative exposure). Ayadi and de Groen also concluded that the two retail-oriented banking models were the most profitable. Diversified retail model has realised RoE of 9.54%, and focused retail model realised RoE of 6.74%. The major difference between those two retail models is that diversified model takes advantage of the diversified sources and become internationally active. Focused retail model was predominantly financed from retail deposits with share over 60%.

3. Major regulatory changes and their impact on listed European banks

In this paper, several major regulatory changes for European banks have been identified with potentially significant influence on the dependant variable:

- 2005 – Implementation of International Accounting Standard 39 (further IAS 39) in the EU – by adopting Regulation (EC) No 1606/2002 in 2002, EU established a stable platform of international accounting standards. However, certain important provisions in IAS 39 were at that time still subject of unfinished discussions between the IASB, the European Central Bank, prudential supervisors and the banking industry. These provisions related to the option to fair value all financial assets and liabilities and to hedge accounting. Since each of these provisions concern areas which were completely autonomous, distinct and separate from the rest of the standard, in order to respect the date of 1 January 2005 for the implementation of the IASs, EU decided to introduce IAS 39 with the exception of these provisions. Introduction of the valuation methods for the majority of the banking assets had a major influence on the European banks and their business decisions.
- 2008 – Introduction of the requirements for Anti Money Laundering (further AML) – by adopting Directive 2005/60/EC on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing in 2005 with the implementation in 2008 EU introduced more specific and detailed provisions relating to the identification of the customer and of any beneficial owner and the verification of their identity. That regulation established detailed rules for customer due diligence, including enhanced customer due diligence for high-risk customers or business relationships, such as appropriate procedures to determine whether a person is a politically exposed person, and certain additional, more detailed requirements, such as the existence of compliance management procedures and policies. In order to comply with those requirements banks had to establish processes, provide resources and education, which have raised costs prior to the year of the implementation and possibly affected basic performance indicators.
- 2010 - Regulatory response on the financial crisis - EU has adopted Directive 2009/111/EC by which it implements the Basel standard from 28 October 1998, on both the eligibility criteria and limits to inclusion of certain types of hybrid capital instruments in original own funds of credit institutions. It also included macro-prudential elements and strengthened liquidity requirements.
- 2013 – Implementation of the Basel III framework in the EU – by adopting Regulation (EU) No 575/2013 EU has for the first time harmonised in a directly implemented Regulation the basic prudential requirements applied to banks – framing these requirements as a Regulation have ensured that those requirements were directly applicable, and thus prevented diverging national requirements as a result of the transposition of requirements in a form of directive. Since this Regulation have entail that all banks in the EU follow the same rules it has also reduced regulatory complexity and firms' compliance costs, especially for institutions operating on a cross-border basis, and contribute to eliminating competitive distortions. All this should have positive effect on the basic performance indicators. In the same year, the Council Regulation (EU) No 1024/2013 was adopted conferring specific tasks on the European Central Bank as a first pillar in the creation of the Banking union in the EU. In the same year, IFRS 13 becomes effective in the EU.
- 2016 – Introducing more stringent rules for mortgage credits – by adopting Directive 2014/17/EU on credit agreements for consumers relating to residential immovable property this regulation aimed to develop a more transparent, efficient and competitive internal market, through consistent, flexible and fair credit agreements relating to immovable property, while promoting sustainable lending and borrowing and financial inclusion, and hence providing a high level of consumer protection. The provisions on processes, valuation and

consumer protection issues put additional burden on the banks that provide such loans and prior to the implementation have raised costs and possibly impacted basic performance indicators.

- 2018 – EU has implemented International Financial Reporting Standard 9 (IFRS9) – replacing the majority of the IAS 39 – by adopting Regulation (EU) 2016/2067 EU has addressed concerns that arose from accounting issues during the previous financial crisis. In particular, IFRS 9 replaced the so-called "incurred loss concept" introduced by IAS 39, by forward-looking model for the recognition of expected losses on financial assets. Based on the EBA Report[9] implementation of IFRS 9 have increased the provisions to 9% on simple average (and up to 15% for the 75th percentile of banks), and thus impacted performance indicators.

Regulatory framework has been changing rapidly and banks are constantly increasing compliance costs but also their resilience. Most of the regulatory requirements have increased the resilience of the banking system to the economic shocks (accounting standards, Basel framework) but some have been predominantly designed to addressed general goods issues (AML, consumer protection, etc.) contributing to increased compliance cost but also the resilience to conduct and operational risk. Therefore, it is important to analyse the impact of all of those regulatory changes on the banks' performance indicators, having in mind that banks rely on investors, which pay attention to those indicators.

4. Data and methods

For analysis, the datasets retrieved from Bloomberg is used. The data for each of the 53 European listed banks have been further validated in the published annual financial statements and public disclosures of the banks in the sample. The main advantage of these dataset is that the data is required by law to be published by listed companies and it is verifiable in audited financial statements. The data on CoC is calculated by Bloomberg in a comprehensive and transparent way and is widely used by banks themselves and market investors as an important indicator guiding their expectations and choice of investments.

Since the research deals with the panel data combining cross-sectional and time-series data, Hausman's (1978) specification test was performed in order to test whether the characteristics of individual banks are correlated with independent variables used in the model. Since the Hausman's test showed that individual characteristics have effect on the independent variable (P-value is 0.003), fixed effect model was used. In order to control for heteroskedasticity and not allowing variance of the residual term, or error term, in a regression model to vary widely the robust as an alternative to least squares regression was used.

5. Descriptive results and time series analysis

The sample included 53 European listed banks because it was decided that the basis for the calculation of the CoC is CAPM based on the quoted shares. The time series span for twenty years from 2002 to 2021 characterised "low-for-long" period. The data was retrieved from Bloomberg and checked in the published annual financial statements and publicly disclosed data for the banks in the sample. Some of the banks were not listed in some of the years in the sample. The missing values are considered missing and not replaced, so the variables are calculated based only on available data.

In the process of choosing the dependent variable for performance CoC was firstly analysed, but since it is only partly addressing banks′ performance mainly driven by the sentiments of the market in a given year and also highly influenced by the economic cycle it was decided that a hybrid variable will be constructed as a difference of the realised RoC and expected return measured through CoC. This hybrid variable if positive show that a bank is realising more than the investors expect it to, and vice versa. The most common investor's perception is that if RoC is higher than CoC, management is creating value, and if RoC is less than CoC, management is destroying value. Although, as shown in Figure 2, the median of such hybrid variable for the sample is negative, but it is

[9] https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2087449/bb4d7ed3-58de-4f66-861e-45024201b8e6/Report%20on%20IFRS%209%20impact%20and%20implementation.pdf?retry=1

slowly rising and the distribution show that some banks even in the "low-for-long" period have managed to produce return that was higher than the investors' expectations.

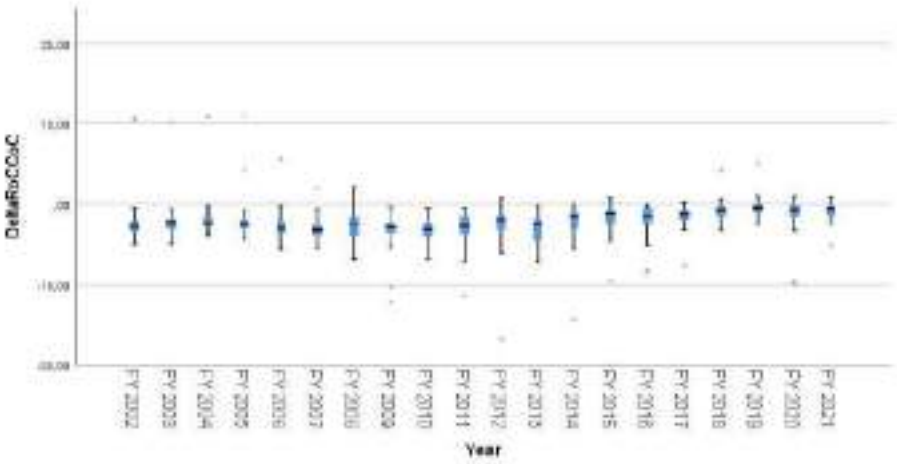


Figure 2: Distribution of the difference between RoC and CoC (Delta RoCCoC) for the European listed banks: 2002-2021

In order to emphasise the possible impact on traditional banks relying on deposits as the source and providing loans as a basic activity as opposed to the rest of the banks, the sample was divided in two basic business models: traditional and other banks. The sampling was based on the two indicators: the share of deposits in the total liabilities (further: DepP), and the share of loans in total assets (further: LoansToTotalAssets). The method used was a hierarchical cluster analysis. In order to decide which clusters should be combined in a hierarchical cluster analysis a measure of dissimilarity between sets of observations is required. In most methods of hierarchical clustering, this is achieved by use of an appropriate distance such as the Euclidean distance, between single observations of the data set, and a linkage criterion, which specifies the dissimilarity of sets as a function of the pairwise distances of observations in the sets. The method used in this paper is widely used Ward's minimum variance criterion that minimizes the total within-cluster variance. To implement this method, for every year of observations at each step the pair of clusters that leads to minimum increase in total within-cluster variance after merging is merged. The measurement method applied is squared Euclidean distance. Finally, banks have been categorised in Traditional if they have been included in Cluster 1 (Traditional) in the year of observation and if in that year the data on the basic indicators is available. Based on the performed cluster analysis all other banks have been distributed to Cluster 2 (Other banks) as shown in Figure 3.

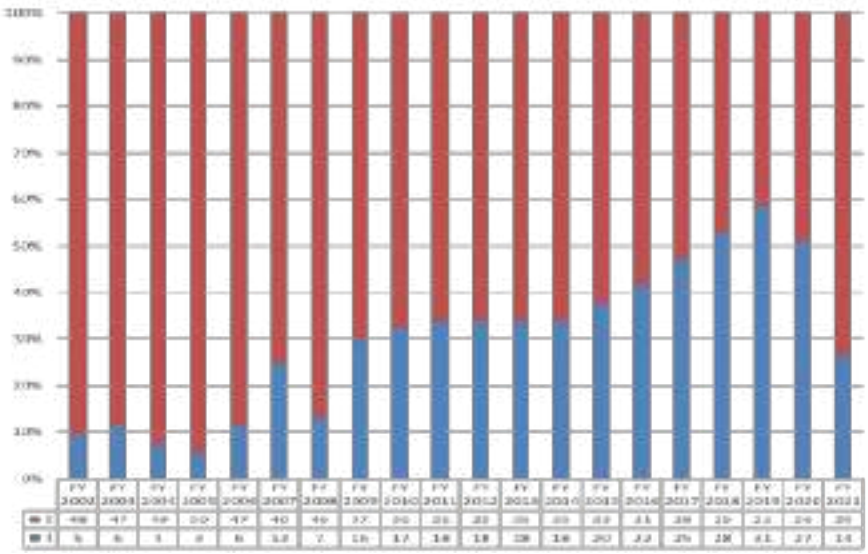


Figure 3: Clustering of European listed banks in Cluster 1 (Traditional), and Cluster 2 (Other banks): 2002-2021

In the cluster of Traditional banks minimum of the ratio DepP was 38,27%, and maximum was as high as 93,52% with the Mean of 63,71%. When it comes to the ratio of LoansToTotalAssets minimum was 0%, and maximum was 88,38% with the Mean of 61,05%. This was in line with the initial idea to define as Traditional banks with high DepP and high LoansToTotalAssets ratios.

Those two clusters have performed quite differently over the period in question as shown in Figure 4.

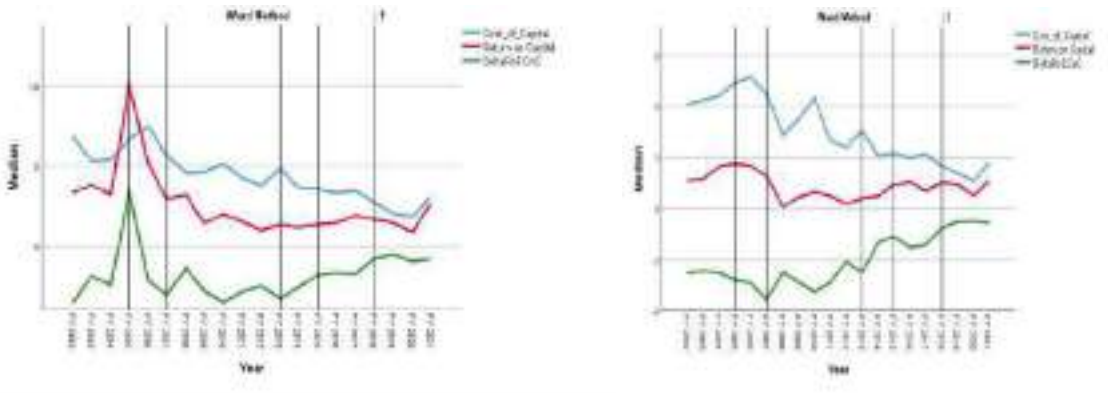
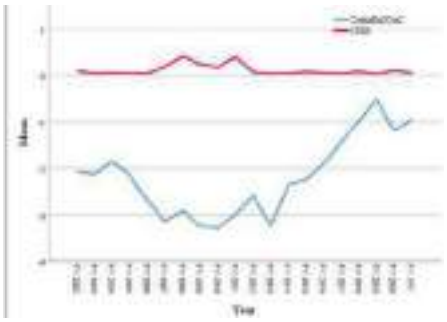


Figure 4: Performance indicators for European listed banks: 2002-2021

By looking at the Figure 4, it is easy to see the trend of the median values of the CoC, RoC and the difference between the two for those two distinct samples (Ward 1 – Traditional, Ward 2 – Other banks) and it is evident that the difference was narrowing down. It is also evident, as the works on "low risk anomaly" have concluded, that traditional banks are outperforming their peers by earning higher RoC, and median of the difference between RoC and CoC has been positive at least ones in the analysed period. Nevertheless, it is also evident that the difference between RoC and CoC was in majority of cases still negative although the difference was getting smaller by the end of the "low-for-long" period. The realised RoC and measured CoC had converged.

The correlation between the dependent variable (DeltaRoCCoC) with the Composite indicator of systemic stress (CISS) withdrawn from the ECB Statistical Data Warehouse was also tested. Since the literature has already established that profits are pro-cyclical the indicator CISS which is computed for the Euro Area as a whole is used to control for the macroeconomic conditions as it is considered representative indicator for the systemic risk on the market on which the banks in the sample operate. It includes 15 raw, mainly market-based financial stress measures that are split equally into five categories, namely the financial intermediary's sector, money markets, equity markets, bond markets and foreign exchange markets.

It is important to say that the data does not show that the difference between RoC and CoC was significantly impacted by the macroeconomic situation. In order to provide evidence, the correlation measured by Pearson Correlation Coefficient was calculated and it showed week negative relationship between those two variables with a degree of statistical significance of 0,429 as shown in a Figure 5.



Correlation test		DeltaRoCCoC
CISS	Pearson Correlation	-0,187
	Sig. (2-tailed)	0,429
	N	20

Figure 5: Correlation of dependent variable DeltaRoCCoC and CISS

Finally, since slight linear relationship between the dependent variable (DeltaRoCCoC) and the independent variables representing business model (LoansToTotalAssets and DepP) was detected as shown in Figure 6 further analysis through fixed effect model has been conducted.

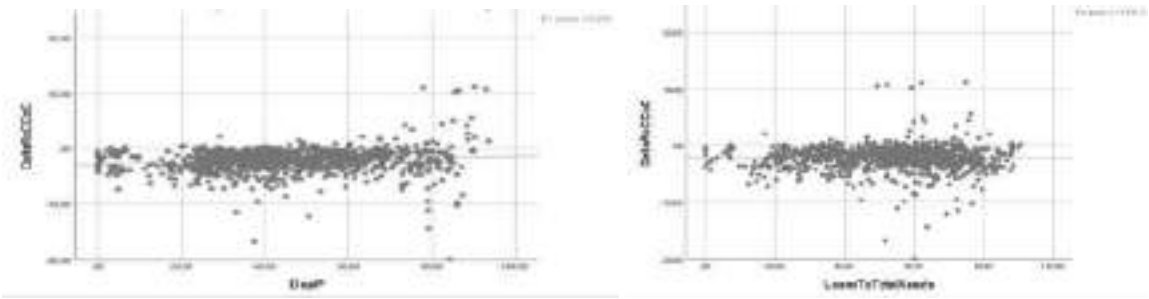


Figure 6: Relationship between dependent (DeltaRoCCoC) and independent variables (DepP, LoansToTotalAssets)

The final step was the creation of the independent variable for the regulatory change. (RegulChangeAvAdjCISS). Since all of the banks in question were impacted by the change in regulation, instead of using widely used method Difference in differences which requires data measured from a treatment group and a control group, the indicator which was constructed through the following steps, is used:

1. for each observation year the average of DeltaRoCCoC for the whole sample of banks is calculated and to account for the influence on dependent variable by any systemic risk so calculated negative average per year was slightly corrected upwards by the Composite indicator of systemic stress (CISS) that takes the value between 0,0222 in the years of low stress up to 0,4298 in the years of high systemic stress
2. for each period between two regulatory changes the average of the so calculated adjusted annual averages of DeltaRoCCoC is calculated
3. the impact of regulatory change in period t_1 is then calculated as the difference between those averages of adjusted annual averages between period t_1 and period t_{-0}, and it was calculated for each period between previously detected regulatory changes.

So constructed variable showed the impact between periods in which significant regulatory change has occurred. Figure 7 shows the relationship in mean terms of the dependent variable DeltaRoCCoC and the so constructed independent variable reflecting the regulatory change (RegulChangeAvAdjCISS).

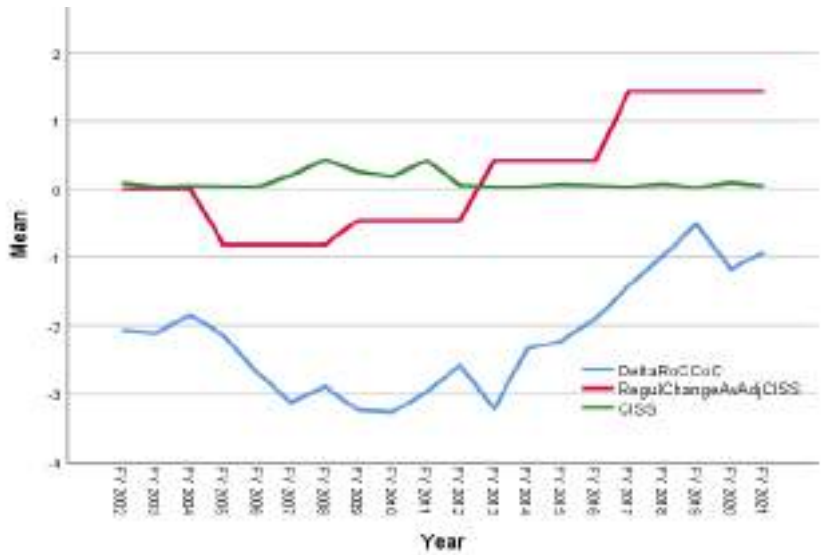


Figure 7: Trend of variables (DeltaRoCCoC, RegulChangeAvAdjCISS, CISS), through the years

By applying fixed effect model on total population (53 listed European banks) with DeltaRoCCoC as dependent variable, and RegulChangeAvAdjCISS, DepP and LoansToTotalAssets as independent variables model showed

significance for the variable of regulatory change. In order to eliminate the possibility that model might mistakenly attribute the effect of some potentially important variables identified in the literature, variables of size and capital adequacy were added to the linear regression model. The log of total assets (ln(Total Assets)) is included to reflect the effect of bank size on profitability, and the log of total capital ratio (ln(Total Capital Ratio) is included to capture the potential effect of increased capital requirement on the cost of capital. Log transformation for variables of Total Assets and Total Capital Ratio which exhibit right skewness was used. Thus, it was concluded that regulatory change measured through so constructed variable influence the effectiveness of the use of capital measured through the difference between RoC and CoC (as shown through results of the model in Table 2).

Table 2: Regression results of fixed effects for the European listed banks

DeltaRoCCoC	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
DepP	0.031	.018	1.73	.089	-.005	.067	*
LoansToTotalAssets	0.006	.021	0.28	.779	-.037	.049	
RegulChangeAvAdjCISS	0.589	.202	2.91	.005	.183	.995	***
ln_TotalAssets	-0.45	.455	-0.99	.327	-1.363	.463	
ln_TotalCapitalRatio	1.049	.651	1.61	.113	-.259	2.357	
Constant	-1.235	4.96	-0.25	.804	-11.197	8.728	

In order to show if effectiveness of the use of capital of the traditional banks is more resilient to the regulatory changes, the same fixed effect model was implemented on the two subsets with the results as shown in Table 3:

Table 3: Estimation of fixed effects for two subsets of European listed banks

Subset of Traditional banks						
DeltaRoCCoC	Coefficient	std. err.	t	P>t	[95% conf.	interval]
DepP	0.074	0.049	1.510	0.140	-0.026	0.174
LoansToTotalAssets	-0.019	0.056	-0.330	0.741	-0.133	0.095
RegulChangeAvAdjCISS	0.578	0.420	1.380	0.178	-0.277	1.433
ln_TotalAssets	-0.723	0.987	-0.730	0.469	-2.734	1.287
ln_TotalCapitalRatio	0.103	1.669	0.060	0.951	-3.296	3.503
_cons	2.877	10.650	0.270	0.789	-18.816	24.570
Other banks						
DepP	0.023	0.014	1.700	0.096	-0.004	0.051
LoansToTotalAssets	0.022	0.020	1.100	0.276	-0.018	0.061
RegulChangeAvAdjCISS	0.547	0.144	3.800	0.000	0.257	0.837
ln_TotalAssets	0.052	0.227	0.230	0.819	-0.406	0.511
ln_TotalCapitalRatio	1.156	0.400	2.890	0.006	0.350	1.961
_cons	-8.076	3.142	-2.570	0.014	-14.409	-1.743

6. Conclusions

In the time of "low for long" interest rates that have now come to an end, banks′ return has been narrowing down. Regulatory changes, mostly to overcome some vulnerabilities identified in the periods of economic stress, that have been introduced have increased banks′ resilience but have also increased their cost of compliance, thus putting further pressure on their return. Lower return has, been accompanied by the lowering investors' expectations expressed by CoC. In line with the widely researched concept of the "low risk anomaly" banks that finance their business by taking deposits and are primarily oriented to extending loans (traditional banks), thus considered less risky, have outperformed their peers, not just by managing to yield higher returns, but also exhibit that the difference of the realised return and the expected return is more resilient to regulatory changes.

There have been many attempts to model the impact of regulatory changes on banks′ performance indicators but due to the intensity and the verity of the regulatory changes enforced on the banking sector they have mostly concentrated on the increasing requirements regarding capital adequacy. This paper has tried to take a more comprehensive view by addressing all of the major regulatory changes that are impacting European banks. The paper focuses not just on RoC or CoC but their difference trying to capture whether realised return is sufficient to cover expected return from the investor's perspective.

The results of this paper show that regulatory changes have statistically significant positive impact on the difference of the return on total capital (including long term debt) banks are realising and the expected return measured through the cost of capital the investors are expecting them to realise. But when the group of banks that are predominantly financed by deposits and use those funds to extend loans (the basic feature of, in this paper, created subset called "traditional banks") have been singled out that positive relationship between the regulatory change and the measure of bank performance indicators disappear showing that their effectiveness to achieve positive difference between Return on Capital (RoC) and Cost of Capital (CoC) and thus incentivise their investors to invest in them is not significantly affected by constant regulatory changes.

Author Contributions: This article was written by a single author.

Funding: This research received no external funding.

Conflicts of Interest: The author declare no conflict of interest.

Informed Consent Statement/Ethics approval: Not applicable.

Data Availability Statement: The data was retrieved from Bloomberg.

References

Adrian, T., E. Friedman, and T. Muir, The cost of capital of the financial sector. Federal Reserve, Bank of New York Staff Report, 2015

Altavilla Carlo, Bochmann Paul, De Ryck Jeroen, Dumitru Ana-Maria, Grodzicki Maciej, Kick Heinrich, Melo Fernandes Cecilia, Mosthaf Jonas, O'Donnell Charles, Palligkinis Spyros; Measuring the cost of equity of euro area banks, ECB Occasional Paper Series No. 254; 2021

Ayadi Rym, De Groen Willem Pieter; Banking Business Models Monitor 2014 Europe Centre for European Policy Studies Brussels and International Observatory on Financial Services Cooperatives, HEC Montréal, 2014

Baker, M. and J. Wurgler, Do strict capital requirements raise the cost of capital? Bank regulation, capital structure, and the low-risk anomaly, American Economic Review: Papers & Proceedings 105 (5), 315–320. 2015

Barnes, M. L., and Lopez, J.A. "Alternative measures of the Federal Reserve Banks' cost of equity capital", Journal of Banking & Finance, Vol. 30, No 6, pp. 1687-1711., 2006

Claus, J., and Thomas, J. "Equity premia as low as three percent? Evidence from analysts' earnings forecasts for domestic and international stock markets", Journal of Finance, Vol. 56, No 5, pp. 1629-1666.; 2001

Commission Regulation (EC) No 2086/2004 of 19 November 2004 amending Regulation (EC) No 1725/2003 on the adoption of certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council as regards the insertion of IAS 39

Dick-Nielsen, J., J. Gyntelberg, and C. Thimsen, The cost of capital for banks. Working Paper, 2019

Dick-Nielsen, J., J. Gyntelberg, and C. Thimsen, The Cost of Capital for Banks: Evidence from Analyst Earnings Forecasts, The Journal of Finance, Vol.77, No 5, pp. 2577-2611, 2022

Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC

Directive 2005/60/EC of the European Parliament and of the Council of 26 October 2005 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing

Directive 2014/17/EU of the European Parliament and of the Council of 4 February 2014 on credit agreements for consumers relating to residential immovable property and amending Directives 2008/48/EC and 2013/36/EU and Regulation (EU) No 1093/2010

Everitt, B. S.; Skrondal, A., The Cambridge Dictionary of Statistics, Cambridge University Press, 2010

Fama, E. F., and French, K. R. ,"The Cross-Section of Expected Stock Returns", Journal of Finance, Vol. 47, No 2, pp. 427-465., 1992

Farnè Matteo, Vouldis Angelos, ECB Working Paper br. 2070. - Business models of the banks in the euro area, 2017

Gebhardt, W.R., Lee, C.C., and Swaminathan, B. "Toward an implied cost of capital", Journal of Accounting Research, Vol. 39, No 1, pp. 135-176; 2001

Hausman, J. A., Specification tests in econometrics, Econometrica 46: 1251–1271. 1978

Hair, J. F., Black, W. C., Babin, B. J. i Anderson, R. E., Multivariate Data Analysis. 7., New York: Pearson, 2010

Hunt, M. S. Competition in the major home appliance industry, 1960–1970. Unpublished Ph.D. dissertation, Harvard University,1972

Kovner Anna, Van Tassel Peter, Evaluating Regulatory Reform: Banks' Cost of Capital and Lending, FRB of New York Staff Report No. 854, 2018

Lintner, J., "The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets", The Review of Economics and Statistics, Vol. 47, No 1, pp. 13-37, 1965

Maccario, Aurelio and Sironi, Andrea and Zazzara, Cristiano, "Is Banks' Cost of Equity Capital Different Across Countries? Evidence from the G10 Countries Major Banks SDA Bocconi Research Division Working Paper No.02-77, 2002

McCauley Robert N., Zimmer Steven A., "Cost of Capital for Industry and Banks", Business Economics, Palgrave Macmillan Journals, Vol. 26, No. 2, pp. 14-18, 1991

Miller, M. i Modigliani, F., Dividend policy, growth, and the valuation of shares. Journal of Business, Vol. 34 (4), str. 411-433. 1961

Mossin, J., "Equilibrium in a capital asset market", Econometrica, Vol. 34, No 4, pp. 768-783., 1966

Ohlson, J.A., and Juettner-Nauroth, B. E. "Expected EPS and EPS growth as determinants of value", Review of Accounting Studies, Vol. 10, pp. 349-365., 2005

Pastor, L., Sinha, M., and Swaminathan, B., "Estimating the Intertemporal Risk–Return Tradeoff Using the Implied Cost of Capital", Journal of Finance, Vol. 63, No 6, pp. 2859-2897, 2008

R. Edward Freeman, Strategic Management: A Stakeholder Approach, 1984

Roengpitya Rungporn, Tarashev Nikola and Tsatsaronis Kostas, Bank business models, BIS Quarterly Review, 2014

Sharpe, W. F. "Capital asset prices: A theory of market equilibrium under conditions of risk", Journal of Finance, Vol. 19, No 3, pp. 425-442., 1964

Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012

Ward, J. H., Jr.; "Hierarchical Grouping to Optimize an Objective Function", Journal of the American Statistical Association, 58, 236–244., 1963

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 140-159
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.544

Conceptualizing E-commerce Strategy as a Tool for Internationalization Performance

Joy D.M. Alokpo[1], James M. Kilika[2]

[1] Department of Business Administration, School of Business, Kenyatta University, Kenya
[2] Department of Business Administration, School of Business, Kenyatta University. Kenya

Correspondence: James M. Kilika. E-mail: jmkilika@gmail.com

Abstract
We are currently living in an extremely volatile business environment emanating from accelerated changes in technology. This condition compels firms' Top managements to strategically think so as to adapt to such environmental shifts. In consequence, strategies built towards their internationalization goal are essential for their subsistence. They include e-commerce strategies and relevant dynamic capabilities. Being thus enlightened, the study endeavors to conceptualize E-commerce strategy as a tool for Internationalization Performance. However, a stumbling block was identified. It pertained to the lack of clear and exhaustive definitions of the main constructs, and to the scantiness and inadequacy of theories essential to their underpinning. The study also includes a comprehensive conceptual review touching the subjects of E-commerce strategy, Firm's Dynamic Capabilities, and Internationalization Performance and furthermore included relevant empirical studies. The major constructs were grounded on theories like UTAUT, the theory of flow, the institutional theory, the resourced-based view and the Uppsala model. As a result of this extensive study, a case for a new theoretical framework was presented, designed and thoroughly explained. Future studies should concentrate on offering thorough definitions of e-commerce strategy and internationalization performance. Additionally, it is vital such research be conducted in a variety of contexts.

Keywords: E-commerce Strategy, Firm's Dynamic Capabilities, Internationalization Performance

1. Introduction

Today's turbulent business environment, characterized by uncertainty and inability to predict the future, is extremely challenging (Suikki, 2007). This forces organizations to be more flexible as they try to continuously adapt to their environment (Tajpour, Hosseini & Moghaddm, 2018). In turn it requires the top management to strategically think in order to carry out their duty, implying they have to look for alternative ways or business models able to create value for their customers (Abraham, 2005). These rapid changes in the environment also push the management to look at their firms' dynamic capabilities as they have to deal with the industries hyper competitiveness (D'Aveni & Gunther, 1994). These dynamic capabilities are the (inimitable) capacity firms have to shape, re-shape, configure and reconfigure the firms' asset base so as to respond to changing technologies and

markets (Augier & Teece, 2007). Especially in the globally oriented economy we are in, organizations need globally oriented dynamic capabilities in order to integrate resources and market- based views of the firm to enhance understanding of a firm's power in international business relationship (Griffith & Harvey, 2001).

For companies to have effective dynamic capabilities they need an innovation strategy focused at developing and introducing innovative new products or services able to lead the market (Zahra and Das, 1993; Li & Atuahene-Gima, 2001; Zhou, 2006; Naranjo-Valencia et al., 2011). One modern way to innovate in the business environment is to embrace E-commerce. E-commerce is "the electronic exchange of information, goods, services, and payments and the creation and maintenance of web-based relations" (Fruhling & Digman, 2000). It provides the possibilities to reach out to customers all over the globe (Business Sweden, 2017). Thus adoption or investment in e-commerce can be considered a viable strategic option for companies whose markets have traditionally been restricted at the domestic level and need to expand to foreign markets.

Adoption of E-commerce has been one of the key drivers towards globalization. For organizations operating at a domestic level, adoption of e-commerce can open avenues for the organizations to offer their products to a wider scope of the market beyond their national borders. Thus for firms mostly in the category of SMEs, while E-commerce may usher in competition at the domestic front from foreign firms, it also offers opportunities for venturing into global markets where they can avail their innovations. Thus E-commerce can be adopted as strategy towards internationalization of domestic firms.

Even though this might appear as a viable approach for internationalization of domestic companies, the literature in strategic management needs to undertake steps towards integration of the knowledge on e-commerce into the main literature on strategic management. On the one hand while e-commerce has been discussed within the context of Management Information System it has on the other hand been given scanty attention in Strategic Management. In scouting through the literature however, the literature in E-commerce shows richness in potential to not only influence the phenomenon of internationalization (Olsson, 2014; Siri & Renneby, 2014; Luo, Zhao & Du, 2005), international performance but also other relevant constructs, specifically constructs considered suitable for understanding and explaining firm strategic behavior such as dynamic capability (Jia & Min, 2007).

This also raises implications on the theoretical perspective to integrating e-commerce as it will require scholars to appreciate the role played by theories underpinning strategic management, such as Resource- Based View, Dynamic Capability theories on one hand while on the other theories touching on globalization and adoption of IT like the Uppsala Model, the Network theory of Internationalization, UTAUT and the theory of Flow.

1.1 Problem statement

Even though calls are emerging for firms to consider adoption of e-commerce as a viable strategic option for guiding internationalization (Olsson, 2014; Sayyah & Nilsson, 2017), it is observed, these calls face a number of issues strategic management needs to respond to.

An issue has been identified pertaining to the partial inadequacy of the theories in supporting the internationalization performance and e-commerce as contructs. For example, the resource-based view (RBV) shows the ability of valuable, unique, and inimitable firm-specific resources (Barney, 1991) to influence firm performance and shape the firm’s internationalization quest. However, the applicability of RBV to E-Commerce Corporations is limited since resources for these corporations are not only created within the firm but also around the network of internet-based embedded relationships (Singh & Kundu, 2002). The Uppsala model on the other hand ignores the fact the e-commerce is borderless and can penetrate any country despite the psychic distance. So Resource based View and the Uppsala model only partially helps in understanding the relationship between e-commerce and Internationalization performance.

Secondly a review of the extant literature highlights conceptualization issues pertaining to the construct of E-commerce strategy. After the study of various articles, there seems to be no existing definition of the construct. Instead authors have subdivided the construct into smaller strategies in order to explain what it is (e.g. Karagozoglu

& Lindell, 2004). There is also a lack of an exhaustive list of operational indicators suitable to match the highly turbulent nature of the technological environment as well as the changing nature of customers demand. The same has been found with attempts to operationalize the construct of international performance.

Thirdly, the phenomena explaining international performance as a result of employed tactics has not received enough attention in studies. While a number of studies have been done in different contexts to study the direct relationship between strategies and internationalization performance, the attempts have been limited in their conceptual rigor, therein ignoring the phenomenon brought about by the applied strategies, raising implications for both intermediate states and the conditioning responses of the contexts of application of these strategies. And there is lack of studies focusing on this phenomenon. Furthermore, few journals focus on the internationalization performance as a construct but we can find a lot of studies touching on the internationalization-performance relationship instead. Therefore it is crucial for researches to be done on the relationship between E-commerce strategy and internationalization performance and there be a clear definition of what internationalization performance is.

In view of the above issues there is need for scholarship to address the earlier cited call, so as to provide relevant models able to offer direction for practice and empirical work. This is why the paper aims at Conceptualizing E-commerce Strategy as a tool for internationalization Performance. In recognition of this prevailing situation, the paper seeks to address the theoretical and conceptualization issues in an attempt to enrich the existing literature in the multiple disciplines supporting the key constructs used in the study while conceptualizing adoption of E-commerce strategy as a tool for enhancing internationalization performance. Hence, the objectives of the paper are to review the extant theoretical and empirical literature on E-commerce Strategy, internationalization strategy and the macro environment of the home country; to identify emerging issues calling for a theoretical model linking the constructs; and to propose a theoretical framework suitable to guide the research.

The paper is significant to researchers and scholars as it uses a comprehensive array of theories capable of underpinning the constructs better. There has been lack of previously identified theories able to help in understanding e-commerce strategy and internationalization performance and the current study presents with a lead towards appropriate theories. It will also help to understand how international business and strategic management can be integrated. In the study, e-commerce will be studied as a strategic construct allowing companies to excel in their performance in foreign countries. As the area of e-commerce strategy, firm's dynamic capabilities and internationalization performance of domestic companies has not been touched before, this will bring new knowledge enabling future research, lectures and studies. It will be of help to managers as they will be able to consider the use e-commerce strategy as a way to improve internationalization performance

2. Conceptual review Key constructs

2.1 E-commerce strategy

E-commerce is the most known form of electronic technology applied to businesses and the impact of the construct on competitive strategy formulation is seen as fundamental (Lanckriet and Heene, 1999). E-Commerce often is defined narrowly to refer to using the Internet to market and sell goods and services (Barkley, Markley & Lamie, 2007). However, it is much broader and includes "the electronic exchange of information, goods, services, and payments and the creation and maintenance of web-based relations" (Fruhling & Digman, 2000). The electronic commerce framework is composed first of Infrastructure including hardware, software, databases and communications, secondly of Services providing the ability to find and present information including the search for trading partners, negotiation and agreements (Nanehkaran, 2013). The last component is named Products and Structures and it incorporates forecasts and direct provision of goods, services and trade-related information to customers and business partners, cooperation and sharing of information within and outside the organization and organizing of environment of electronic marketplace and chain of supply and support (Nanehkaran, 2013). Nanehkaran (2013) also identifies the main components of e-commerce encompassing communication systems, data management systems and security.

According to Veronika King (2009), an E-Commerce Strategy establishes the procedures and capabilities necessary for commercial transactions through data connections. An E-Commerce Strategy allows a firm to strive for a strategic target and an advance to the business rivals (King, 2009). An E-commerce strategy through the improvement of transaction, information and operation functions of the supply chain reduces transaction costs and through the logistic and promotion function reduces production costs (Henderson, Dooley, & Akridge, 2000).

In our review of the relevant literature we observe a scarcity of consolidated literature on the focus and dimensions of the construct of e-commerce strategy. We respond to this by consolidating information gathered from previous experiences of companies possessing online shopping /marketing services and secondly by summarizing the components of E-commerce strategy from the extant literature.

First in terms of facts obtained from online shopping services, we considered gathering information about the services they provide and strategies they use. We found aspects of E-commerce and classified them into categories: products access strategies, products information access strategies, company's contact and information, social media strategy, payment methods, online payment security, corporate social responsibility and legal requirements. The product access strategies include delivery options and prices and shipping destinations, a search engine, a store locator and an online shopping bag, account creation, and Apps (on google play and app store). They have product information access strategies like catalogues based on gender and the variety of the products, very visible promotional messages, Frequently Asked Questions, a newsletter. The company's contact and information comprises of their story, a Contact us link, a leave feedback button. The social media strategy encompasses google+, Facebook, twitter, Instagram, Pinterest and YouTube and a blog. Payment methods incorporate visa, visa electron, masterpass, master card, PayPal, Klarna, Maestro, America Express, Dorothy Perkins card, gift cards, and they allow purchase on credit and offer discount for students. As part of Online payment security we find: Verified trusted, verified by Visa and have Master Card secure code. For Corporate Social responsibility we have a modern slavery act, a Fashion Footprint. When it comes to the legal requirements of both parties, they have clearly stated terms & conditions, privacy & cookie policy, and an Accessibility policy.

In considering the features of the e-commerce strategy embraced by leading online marketing organizations, we are able to consolidate a number of components constituting the e-commerce strategy. From this information we classified the components of e-commerce strategy into product-based strategy, knowledge-based strategy, social media strategy and are care-based strategy.

The product based strategy facilitates the access of the customers to products and product information like catalogues based on gender and the variety of the products, delivery options and prices and shipping destinations, a search engine, very visible promotional messages, a store locator, an online shopping bag, Apps (on google play and app store),and an account creation. It is also has an emphasis on providing payment methods like visa, visa electron, masterpass, master card, PayPal, Klarna, Maestro, America Express, Dorothy Perkins card, gift cards and they allow purchase on credit and offer discount for students.

The knowledge-based strategy provides platforms allowing the access of customers to all the information they need to build trust like information about the company including their story, Frequently Asked Questions, a Contact us link, a newsletter, a leave feedback button.

The Social media strategy uses several social media like google+, Facebook, twitter, Instagram, Pinterest and YouTube and a blog. They permits the company to use social media to be able to reach out to customers.

The Care-based strategy emphasizes more on security of the customer and corporate social responsibility. The company for this strategy has clearly stated terms & conditions, privacy & cookie policy, a modern slavery act, a Fashion Footprint and an Accessibility policy. They are big on online payment security as they have been Verified trusted, verified by Visa and have Master Card secure code.

Secondly we considered evidence available from extant literature. We identified the contribution arising from the work of Karagozoglu & Lindell (2004). They divide the e-commerce strategies into three categories including customer base expansion strategy, customer service strategy and purchasing Management strategy.

The e-commerce strategy associated with customer base expansion entails operating a Website to provide product information, building brands and advertising, and selling products online (Sekhar, 2001).

The customer service strategy has been presented as an e-commerce strategy constituting a supplementary measure to the strategy of accessing new customers (Pitera, 1999). Features for customer service include, for example, providing thorough product information, implementing a question and answer data base, designing an easily navigated Web site, making it simple and secure to order online, warranty information, and clearly stated return policies and procedures (Korper and Ellis, 2001; Schneider and Perry, 2000).

The purchasing Management allows SMEs to utilize e-commerce to reduce their purchasing costs. E-commerce allows for a low transaction cost environment where search, price and terms negotiation, payment and settlement related costs decrease significantly (Kambil, 1995). Furthermore, in the e-commerce context, the inequality of information advantage by the suppliers, where the purchasing company is a victim to the suppliers' premium pricing resulting from a lack of knowledge of the competition's products and prices decreases (Straub and Klein, 2001).

In combining elements from practice and those from extant literature and based on the diversity of information from ICT, E-commerce we consolidate the various categories of strategies into: expansion strategy, online customer services strategy and purchase management.

The Expansion strategy is used when a firm wants to become significant by widening the extent of one of the business operations in the viewpoint of client gatherings, client capacities and innovation choices, either separately or together (McKay, 2010). It includes a website, online branding and advertising, online sales, providing product information, social media, Apps, account creation, delivery and shipping services, promotions, a newsletter, variety of pricing policies. This strategy allows the company to reach out to customers outside the home country through the use of social media and a website. It also provides information and options for foreigners to shop from a platform outside their country of origin and get the product delivered at their door step. The company builds a bigger customer base from different countries capable of facilitating the internationalization of operations of the company.

The Customer service strategy include: Frequently Asked Questions, a Contact us link, a leave feedback button , After sales services, Chats, Security features, user friendliness of the Website, Online warranty information, Stated return policies and procedures, terms & conditions, privacy & cookie policy, Accessibility policy, corporate social responsibility. The strategy basically allows customers' retention. It permits the company and the customers to build a relationship on trust and it impacts the decision of the customer to, in the future, transact with the same company or move to another one. Customers' fidelity is achieved using this strategy. So after the company's base broadens, customers acquired from different countries become faithful and this is important for the internationalization performance of the company.

The third strategy is purchasing management done through an online platform. It includes E-procurement, Supplier search, asymmetry of supplier's information, and Inventory management system. This strategy allows the company to have access to several suppliers outside the country. The company's will then compare costs of acquiring raw materials from a broader supplier base and reduce the cost of purchase. This will improve the organization's international performance.

When an e-commerce strategy is adopted by SMEs or domestic firms it allows them to reach new markets without making a foreign direct investment able to increase the cost of the market entry. Furthermore, e-commerce strategies increase the adaptability of the company to the conditions in a foreign market since it boosts the resource base of the company. They therefore give the company the ability to acquire various capabilities, allowing them

to respond to the changing conditions of the foreign market. E-commerce also allows the organization to gain new and innovative forms of competitive advantages necessary to the achievement of their objectives. E-commerce strategy allows the company to better reach, acquire, enlarge, interact with, satisfy and keep a customer and supplier base capable of reflecting on the companies' internationalization performance. E-commerce strategy will highly be impacted the by the environment in the home country of the company because the environment will determine whether the strategies will work or not and whether the business will be profitable since it will determine the competitive edge the company will get since the environment can either be favorable to the business or unfavorable.

Firms in themselves generally have strategic resources, such as physical, human, organizational and financial resources, but they access other resources through cooperative relations with other firms and some from research and technology institutions (Fensterseifer, 2009). Resources are strategic when they have the ability to be used as a basis for generating capabilities and competencies able to underpin the competitive advantage and sustainability over time (Fensterseifer, 2009). Capabilities are a pack of resources taking shape as firm's routines while Competencies are capabilities the firm performs better at than other capabilities, strategy wise (Fensterseifer, 2009). Competencies are subdivided into two: Core competencies, capabilities enabling the firm to perform very well and distinctive competencies enabling a competitive advantage (Fensterseifer, 2009). There may also be country specific value attribution to a firm's resources: the country's macroeconomic conditions, communication, transport and technological infrastructure, legal system, government policies and regulations, natural resources, geographic location, market characteristics and image, and they are a basis for competitive advantage (Fensterseifer, 2009). These are the concepts Fensterseifer(2009) derived from his research. Fahy (2002) affirms Fensterseifer's position on the matter by confirming the multinationals as having access a larger and more diverse resource pool than home based firms. The ability to access resources from other countries, however, in our framework, is considered a firm's capability and hence it is treated at the firm level.

2.2 Firm's Dynamic Capabilities

According to the Business Dictionary (2019) a capability is the measure of the ability of an entity (department, organization, person, system) to achieve their objectives, especially in relation to the overall mission. However these capabilities need to vary in order to cope with the changes in the environment, hence the important of Dynamic capabilities.

Dynamic capabilities are defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece, Pisano & Shuen, 1997). They reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions (Leonard-Barton, 1992). Helfat, Finkelstein, Mitchell, Peteraf, Singh (2007) define dynamic capabilities as "the capacity of an organization to purposefully extend, create, or modify the resource base." The foundational organizational and strategic practices used by managers to modify their resource base, add and subtract resources, combine and recombine them, and create new value-creating strategies are known as dynamic capabilities(Grant, 1996; Pisano, 1994). As such, they are the drivers behind the creation, evolution, and recombination of other resources into new sources of competitive advantage (Henderson and Cockbur, 1994; Teece et al., 1997).

Penrose (1959), Teece (1982), and Wernerfelt (1984) partially developed the notion of competitive advantage as requiring both the exploitation of existing internal and external firm-specific capabilities and developing new ones. However, only recently have researchers begun to focus on the specifics of how some organizations first develop firm-specific capabilities and how they renew competences to respond to shifts in the business environment (Teece, Pisano & Shuen, 1997).

Firm's dynamic capabilities are important in this study because the environment keeps changing and technologies are being updated frequently. An e-commerce would have to change the way it operates to be able to adapt to the changes in the environment in order to be effective in helping the firm to internationalize. The changes in the

environment could be economic, political, social, cultural, natural, legal and technological in this case, hence the firm would have to adapt by constantly changing their way of operating.

Some dynamic capabilities integrate resources (Teece, Pisano & Shuen, 1997). As an illustration, consider how managers mix their diverse skill sets and functional backgrounds to produce products and services able to generate revenue (e.g., Clark and Fujimoto, 1991; Dougherty, 1992; Helfat and Raubitschek, 2000). Other dynamic capabilities focus on reconfiguration of resources within firms (Teece, Pisano & Shuen, 1997). Transfer processes including routines for replication and brokering (e.g., Hansen, 1999; Hargadon and Sutton, 1997; Szulanski, 1996) are used by managers to copy, transfer, and recombine resources, especially knowledge-based ones, within the firm. Other dynamic capabilities are concerned with the acquisition and release of resources. These routines create new knowledge within the company through managers and others are especially important in sectors like the oil, optical disk, and pharmaceutical industries where cutting-edge knowledge is crucial for successful strategy and performance. (e.g., Helfat, 1997; Henderson and Cockbur, 1994; Rosenkopf & Nerkar, 1999). They also include alliance and acquisition routines, bringing new resources into the firm from external sources (e.g., Capron, Dussauge, and Mitchell, 1998; Gulati, 1999; Lane and Lubatkin, 1998; Powell, Koput, and Smith- Doerr, 1996).

Dynamic capabilities can be divided into three classes according to (Breznik & Lahovnik, 2015), sensing capability, seizing capability and reconfiguring capability. Sensing capability means firms need to continuously scan their environments in order to identify opportunities and search for opportunities continually open up, inside and outside the firm's boundaries. It consists of recognizing opportunities and anticipating competitive threats. Seizing capability is when opportunities are sensed, they then need to be seized and their value and potential have to be recognized. Secondly, seizing capability means selecting the 'right' technology or recognizing the target customers. Marketing capabilities are also part of it. A company's marketing team's combined body of knowledge and skill able to be used to produce outcomes capable of satisfying customers is referred to as its marketing capability. (Bush, Vorhies & Orr, 2011). They focus on market-related needs of a business, helping firms to offer superior added value and to better adapt to changing market conditions (Vorhies, 1998). They include pricing, product development, channel management, marketing communication, selling, market information management, marketing planning, and marketing implementation (Vorhies and Morgan, 2005). Finally, Vorhies and Morgan(2005) discuss reconfiguring capability implying, after opportunities are recognized and taken advantage of, they must be reconfigured. Or they mean the ability to recombine and reconfigure the resource base to address changes and opportunities in the firm's environment.

Absorptive capabilities can to certain extent be added to reconfiguring capabilities as it deals mostly with knowledge. It is "a set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability pertaining to knowledge creation and utilization, which enhances a firm's ability to gain and sustain a competitive advantage" (Zahra and George, 2002). In fact these authors suggest the acquisition, assimilation, transformation and exploitation capabilities can be combined, built upon each other to bring about a dynamic organizational capability" (Lawer, 2010). Also, the capacity of a firm to perceive the value of new, external information, and how they are incorporated and implemented towards commercial ends are crucial to the firm's innovative capabilities and they are a form of absorptive capacity (Cohen & Levinthal, 1990). This is important for firm as it will help them identify new technologies able to improve their business including new e-commerce strategies.

Dynamic capabilities are important to the e-commerce sector. In order to survive E-commerce companies must adapt to the ICT innovations and their novel business structures by renovating their current capabilities instead of insisting on them (Jia & Min, 2017). These businesses employ e-commerce innovation to create dynamic capabilities. The dynamic capabilities of e-commerce enterprises' transformation are formed by its two fundamental capabilities—technological and commercial—combined with organizational practices. (Wheeler, 2002).

One important study in understanding dynamic capabilities in relation to internationalization is Van den Broek, J. 2014. They looked at Dynamic capabilities and internationalization as a theoretical framework. The study was conducted among employees of ARCADIS in the Dutch rail market. It was exploratory in nature and used survey

and in-depth (semi-structured) interviews. There identified three dynamic capabilities comprising of sensing capability (Market scanning capabilities, Networking capabilities), Seizing capability(Marketing capabilities, Business model mindset) and Reconfiguring capability(Culture , Knowledge management). They found the company studied had a false sense of being market orientated, the railing department felt they do not have the skills and knowledge to translate opportunities into (profitable) projects, International expansion was fairly good, there was no clear knowledge management strategy, there was no extensive use of databases but a dense network seems to be present. They also found routines involving managing networks and using networks to their fullest potential were missing. Not a single department felt their manager supports risky projects in order to be able to expand internationally and no department has processes for analyzing market information. The business model mindset was average for most departments and the employees were very internally focused. The study had a decreased validity of the framework, the internal validity of the study was limited and there was no triangulation.

2.3 Internationalization Performance

The Business Dictionary (2019) defines performance as the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost, and speed. Performance represents the efficacy and efficiency of an enterprise applying resources in the past, it also presents prospective influence to modify the past wrong business activity and point out the future direction of resource allocation and long-term competitiveness to help enterprises understand the strategies and execution achieving the preset objectives (Li, Cao & Liu, 2017).

According to Crina, (2010) the expansion of a company's operations outside of its home country is known as internationalization and is a process wherein a company becomes more involved in intricate operations outside of its original country. Internationalization offers access to new market, capital, valuable production processes, development of core competencies, Corporate risk management, launching of new products, networking, knowledge transfer (Strategy Train, 2009). And the understanding of performance and internationalization helps us to better grasp the concept of internationalization performance. It focuses on measuring the performance of an organization linked to the international operations of a certain company.

In past researches Internationalization Performance concentrated on the export activity and export performance of firms (Shoman, 1998). For example López Rodríguez and García Rodríguez (2005) in their study measured internationalization performance as the ratio of export sales to total sales. However those studies rarely mentioned about the performance on other internationalization activities, such as direct foreign investment (Shoman, 1998). In contrast to those studies Delios and Beamish (2001) thought internationalization performance of firms should be interpreted using measures from several points of view. Masaaki, Srini and Preet (2002) thought it should be measured through financial performance and production performance. Knight and Cavusgil (2004), in their study divided them into financial performance and strategic performance in this study. Financial performance referred to international performance observed through financial statements, like the growth of oversea sales revenue, the pre-tax profit standard, and the growth of oversea return on investment. Strategic performance was about an organization presenting the international performance after a longer period of time. It includes changes of target market share, enhancement of oversea customer satisfaction, and performance of major products.

But generally, Internationalization performance can be measured using both financial and non-financial indicators (Yoon & Kim, 2009). Financial performance is usually measured using profitability, sales growth, market share, ROI, or EVA (Li et al., 2011; Yoon and Kim, 2009). In the study of (Won Jeong, 2016). The financial performance of internationalization was assessed using market share, sales growth, and profitability (Knight & Cavusgil, 2004) and Non-financial performance variables were assessed using financial performance satisfaction and strategic performance (Cavusgil & Zou, 1994; Keh et al., 2007).

In summary internationalization performance can be evaluated using financial measures including the growth of oversea sales revenue, the pre-tax profit standard, and the growth of oversea return on investment, and the economic value added. The non-financial measures also include strategic performance measured. They are comprised of international target market share, enhancement of oversea customer satisfaction, brand positioning, internal stakeholders' satisfaction.

And a study done by So Won Jeong, (2016), focused on the types of foreign networks and internationalization performance of Korean SMEs is very instrumental in measuring internationalization performance. The specific aim of the study was to investigate the different ways various network types influence internationalization outcomes such as financial performance, financial performance satisfaction, and strategic performance. International performance was measured by three variables including financial performance, financial performance satisfaction, and strategic performance. A quantitative survey method, a survey questionnaire and a multiple regression analysis were used as a methodology. He found a positive relationship of networks with clients and strategic performance, the business network with clients had a positive impact on financial performance, Business networks with clients positively influenced financial performance satisfaction. He also found Business relationships with acquaintances from trade shows and fairs did not influence financial performance satisfaction, while strategic performance was positively changed only by business networks with clients. The study did not underpin the constructs using some theories. However the study done by Hee Jin Mun, (2018) used RBV to talk about technology and the relation to internationalization performance.

2.4 The Home Country Macro environment

An important question scholars in international business address is the set of factors accounting for success by firms in foreign markets. We regard this to be an important point of consideration for SMEs and other domestic firms intend to ride on the platform of e-commerce strategy to venture into foreign markets. One of the environments to be examined is the macroenvironment of the home country as it currently exists and influences the success of domestic firms which are internationalizing. In the era of digital technology, the technological environment is expected to play a critical role in contributing to the success of firms.

According to Porter (1990), for a nation to be competitive, the industries need to innovate and upgrade. The pressure they face against world's best competitors, and the demands of a strong domestic market helps them to gain competitive advantage and acquire a lot of benefits. They also argues, competitive advantage is made and sustained by a highly localized process and the differences in national values, cultures, economic structures, institutions and histories, among countries, all contribute to competitive success. Meaning, the conditions in the home country clearly determines the strength of a company in the international market as the high competition at home allows them to gain the ability to sustain their competitive advantage against other international competitors. Also, the individuals in a country, their skills, abilities, motivation, commitment, effort, the type of education they choose and their work emplacement are important in the achievement of a nation's competitive advantage (Porter, 1990).

According to the Business dictionary (2019) the macro environment refers to the major external and uncontrollable factors impacting an organization's decision making, and influencing the firm's performance and strategies. It is comprised of economic factors; demographics; legal, political, and social conditions; technological changes; and natural forces. In other words it can be defined as the aggregate of variables beyond the control of an organization, requiring an analysis to adapt corporate and marketing strategy to the changes in the business environments (Sammut-Bonnici, 2017). The macro economic factors influence more intensely a c multinational or globalized company, hence impacts the activities (Birnleitner, 2013).

Political factors are country specific and can include the political regime, the type of government, political party system, the stability of the current government policy measures, the stability of the policy measures taken, the fees, the attitude towards foreign investors and to investment, economic regulation, and legislation on environmental protection (Pîndiche & Ionita, 2013). Pertaining to the Regulatory Environment, the differences in the regulatory environments among nations either facilitate or constrain their economic activity and it determines the extent or the lack of regulatory support for international technology entrepreneurship (Kiss & Danis, 2008). Enabling policies such as trade and telecoms liberalization are likely to have the biggest impact on e-commerce, by making ICTs and Internet access more affordable to firms and consumers, and increasing pressure on firms to adopt e-commerce to compete (Gibbs, Kraemer and Dedrick, 2002).

According to Pondicherry University Economic conditions, economic policies and the economic system are the important external factors constituting the economic environment of a business and the nature of the economy, the stage of development of the economy, economic resources, the level of income, the distribution of income and assets are among the very important determinants of business strategies. As for Economic factors, the concern is the allocation of resources in society and commerce. These include the GDP branch structure of the national economy development level of each branch, budget deficit, the impact of recession price developments, taxation, economic development, population, development and distribution income social groups, trade balance, forex anciar situation, interest rates, loan applications development inflation and employment of labor (Pîndiche & Ionita, 2013).

The technological activities of global firms are usually based in their home countries, and the innovation environment of the home country specifically supports technological development .An innovative environment is characterized by availability of sophisticated national institutions involved in research and development, availability of high quality universities involved in research, availability of highly quality skilled manpower, networking opportunities with similar high technology entrepreneurs, and availability of high quality knowledge based workers. And also the digital divide between countries may limit the potential value of B2B e-commerce (Gibbs, Kraemer and Dedrick, 2002).

According to the Oxford study laboratory, the technological environment includes inventions, changes in information and mobile technologies, innovations in internet and e-commerce, government expenditures on research. According to the consulting internet portal PESTLE ANALYSIS, factors of the technological environment include automation, research and development and the amount of technological awareness a market possesses. According to Business Environment, a textbook published by Elsevier, the technological environment includes Information technologies – intranet, extranet and internet; Digital electronics – digital television, mobile phones (WAP da 3G); New synthetic materials – synthetic medicines, celluloid, polymers; Renewable energy resources – wind, solar, tidal energy; and Biotechnologies – cloning, genetically modified foods, human genetic maps. According to the Newman dictionary while discussing the technological environment, issues to consider include intellectual property rights, internet and communication infrastructure, government or industry spending on R & D, technology incentives and the rate of technological change.

For the socio-cultural environment it is important to consider the buying and consumption habits of the people, their language, beliefs and values, customs and traditions, tastes and preferences, education are all factors impacting business (Pondicherry University, n.d.). B2C diffusion seems to be altered by variables specific to the national and local environment, such as consumer preferences, retail structure, and local language and cultural factors (Gibbs, Kraemer and Dedrick, 2002).

Demographic factors such as size of the population, population growth rate, age composition, life expectancy, family size, spatial dispersal, occupational status, employment pattern etc, indeniably change the demand for goods and services (Pondicherry University, n.d.).

Geographical and ecological factors, such as natural resource endowments, weather and climatic conditions, topographical factors, locational aspects in the global context, port facilities, etc., are all relevant to business (Pondicherry University. n.d.)

2.5 Review of relevant theories

In order to understand the concepts in a deeper way it is rather important to know the theories underpinning them. They give us a greater perspective and basis for a better understanding of the different constructs. The E-commerce strategy theories were represented by the unified theory of acceptance and use of technology. Internationalization performance construct was studied using the traditional Uppsala Model and the resource based view. Institutional theory and also the Resource Based View.

2.5.1 The Unified Theory of Acceptance and Use of Technology

UTAUT is a dominant popular technology adoption theory, explaining most of the variance in adoption behavior (Dwivedi et al, 2010; Venkatesh et al, 2003). It is important in understanding e-commerce strategy. The UTAUT states the four core constructs: performance expectancy, effort expectancy, social influence and facilitating conditions, directly determinants of behavioural intention and ultimately behavior; these constructs are in turn moderated by gender, age, experience, and voluntariness of use (Venkatesh et al., 2003). It also has an extended form, UTAUT-2. It added Hedonic motivation (HM), Price-value (PV) and Habit (HB) as new variables. UTAUT has been employed mostly in technology adoption and diffusion research as a theoretical lens by researchers conducting empirical studies of user intention and behavior (Williams, Rana & Dwivedi, 2015).

This theory is important in understanding how customers interact with technology and the main benefit they desire to reap from the interaction. It showcases the importance and need of using the right e-commerce strategies to meet customer's expectations. Performance expectancy for example allows a greater understanding of how firms can meet consumers' goals when they visit e-commerce websites for online shopping. Effort expectancy is important in understanding how to design and choose e-commerce strategies, enabling an easy interaction or simpler user interface between the users and the system itself (Venkatesh et al., 2003). On the other side, social influences have an impact on how much customers believe they must adopt the new system due to intense external pressure(Venkatesh et al., 2003), and it is the main factor in the intention to use prepayment metering systems (Rodriguez and Trujillo, 2014). This allows e-commerce companies to design strategies geared towards impacting the view of the society on how important the services they offer are. Facilitating condition refers to what extent people trust the organisation to offer technical support for the systems (Venkatesh et al., 2003), and it has an impact on usage intention (Lin and Anol, 2008). It greatly changed whether a customer will decide stay with the company or not, it builds trust between the company and the customers. It allows companies to design e-commerce strategies geared towards protecting the customer and therefore build a long lasting relationship with them.

2.5.2 Theory of Flow

Flow research and theory had their origin in a desire to understand this phenomenon of intrinsically motivated, or autotelic, activity: activity rewarding in and of itself, quite apart from the end product or any extrinsic good resulting from the activity (Nakamura, J., & Csikszentmihalyi,2009).

Being "in flow" is the way some interviewees in the study about the concept of flow described the subjective experience of engaging just-manageable challenges by tackling a series of goals, continuously processing feedback about progress, and adjusting action based on this feedback (Nakamura, J., & Csikszentmihalyi,2009). This theory also applies in the e-commerce experience and will help in understanding e-commerce strategy.

In order to create a delightful experience in e-commerce, several researchers make reference to Csikzentmihalyi's (1975) the theory of Flow. Trevino and Webster (1992) defined flow as representing the measure a person perceives a sense of grasp over his interaction with technology, the person sees his attention focused on the interaction, the person's curiosity is stirred during the interaction and whether the person finds the interaction captivating. So the aim is to create an interface able to boost user attention and make the user feel in control and devoid of distractions from other non-related tasks or distractions due to poor usability. Nel et al. (1999) evaluated twenty e-commerce sites. The writers came to the following conclusion saying the reason informational sites experience more traffic is because they are easier to maintain than transactional ones.

2.5.3 The resource based view

This theory not only explains dynamic capabilities but also internationalization performance. Barney (1991) argued sustained competitive advantage is derived from the resources and capabilities a firm controls, which are valuable, rare, imperfectly imitable, and not substitutable. These resources and capabilities can be viewed as bundles of tangible and intangible assets, including a firm's management skills, the organizational processes and routines, and the information and knowledge it controls.

D'Aveni, (1994) together with other researchers argue, because of today's highly volatile and dynamic environment, it is hard or even impossible to achieve and sustainable competitive advantage at the organizational level by using resources. In fact, resources usually spread out easily in the same industry (Brown & Eisenhardt, 1998). The only benefits a business may anticipate are a succession of transient ones because resources are easily copied, replaced, or rendered obsolete (MacMillan, 1989;D'Aveni, 1994).

Touching on technological environment and internationalization performance, Resource based View scholars (Barney, 1991;Wernerfelt, 1984) states, rich technological resources facilitate firms' differentiation from overseas competitors and jump-start their motivation for internationalization, boosting their internationalization performance (Kim and Hemmert, 2016; López Rodríguez and García Rodríguez, 2005; Tseng et al., 2007). Despite literature showing how the relationship between technological resources and internationalization performance is positive (Dhanaraj &Beamish, 2003; López Rodríguez & García Rodríguez, 2005; Tseng et al., 2007), a number of studies revealed technological resources have a non-significant impact on internationalization performance and may even lead to a withdrawal from internationalization (Deng et al., 2014; Denicolai et al., 2014; Lefebvre et al., 1998). Because international applicability of resources influences the global strategies, firms can establish based on their own resources (Anand & Delios, 1997, 2002; Brouthers et al., 2008; Cuervo-Cazurra et al., 2007; Madhok, 1997) and therefore impact performance (Barney, 1991; Newbert, 2008), and the location boundness of technological resources will probably be vital to internationalization performance.

2.5.4 Institutional theory

For institutionalists, regularized organizational behaviors are the product of ideas, values, and beliefs originating in the institutional context (Meyer & Rowan, 1977; Meyer, Scott, & Deal, 1983). Firms must then take care of institutional expectations to survive, even though these expectations may have little to do with the idea of performance accomplishment (D'Aunno, Sutton, & Price, 1991; Scott, 1987). Institutional theories means, to survive and adapt organizations must stay in alignment with changing industry norms and shared logics (Endress, 2013). Firms should therefore adopt a fast follower strategy, assumed to be directly connected to longterm survival (Lewin & Volberda, 1999).The theory is therefore significant in understanding the dynamic capabilities of a firm. There exists three types of institutionalists. The sociological institutionalists in the sociology of organizations (Powell and DiMaggio 1991) who tend to focus on largely cultural and ideational causes. Historical institutionalists who typically focus on determinants at the state or macropolitical level (Pierson and Skocpol 2002). Political institutionalists who typically situate their claims at the state or macro-political level and argue the process of formation of states, political systems, and political party systems strongly influence political processes and outcomes (Amenta, 2005).

2.5.5. The Uppsala Model

The original Uppsala model was based on inductive studies of Swedish multinational companies which were found to start their internationalization on markets close to the home market in psychic distance terms and gradually entering markets further away (Vahlne & Johanson, 2013). In the study they found the companies will go through an establishment chain where companies will start by exporting, then formalize their entries through deals with intermediaries, next they would replace their agent with their own sales organization and finally they will begin to manufacture.

They also found another pattern whereby internationalization would start with foreign markets closer to the domestic market in term of psychic distance, then they would gradually enter other markets further away in psychic distance terms (Johanson & Wiedersheim-Paul, 1975; Vahlne & Wiedersheim-Paul, 1973 The model also states firms change by learning from their experience of operations and through the commitment decisions they make to strengthen their position in the foreign market.

This model is very important to e-commerce strategies as it allows companies to choose the right strategies to be used depending on the psychic distance between the home and host countries. It is also vital in determining the best and effective way, a company will be able to make the products reach the customers. Additionally, it offers a

progressive approach to entering the market, also applicable to how e-commerce strategies can be gradually employed when approaching a new market. The theory is important in understanding the internationalization of companies, and is therefore necessary in also understanding the internationalization performance construct.

2.6. The case for a Theoretical model

E-commerce and internationalization are modern and extremely relevant constructs in our current society, which has turned to technology and the internet to attain goals they could not previously achieve. Yet these constructs have not been studied extensively. This study on e-commerce strategy and internationalization performance is therefore relevant and can potentially help in the future. And this study would like to bring about a new comprehensive theoretical review covering a number of deficiencies observed in previous studies. This is supported by the extensive conceptual, theoretical, and empirical review done to better identify the gaps which have not been addressed. There are several points emerging as issues from the reviewed literature to support a case for the development of a new model putting into consideration E-commerce strategy, firm's dynamic capabilities, technological environment, and internationalization performance.

One of the issues arising from the conceptual review is the abundance of views several authors had on each construct. This allows a greater understanding and provides different angles from which the constructs can be analyzed. However, it might not be possible or wise to get an integral definition combining each and every view since the studies have been done in several contexts, and the approaches are different. It will therefore be crucial to choose the conceptualizations to merge, the ones not to use, the ones which may seem to be repetitive or overlap. One example will be the variety of indicators the conceptual and empirical literatures propose in order to operationalize the various constructs (Karagozoglu & Lindell, 2004; LaBarre, Haugen and Noe (2001); Srini and Preet (2002); Knight & Cavusgil; 2004; Teece, Pisano & Shuen, 1997; Breznik & Lahovnik, 2015; Oxford Learning Lab. (n.d.); Anon, 2019). The various indicators previously used were determined according to the study objectives and the contexts. It is imperative therefore to identify indicators relevant to the current study, and these indicators can easily connect the various constructs and comprehensively measure them.

A part from the diversity in the use of indicators there is a clear lack of proper conceptualization of E-commerce strategy and internationalization performance (Karagozoglu & Lindell, 2004; Shoman, 1998; Rodríguez and Rodríguez 2005). They have lacked a proper definition. Although this did not touch on the way internationalization performance was measured, it has influenced the way E-commerce strategy is supposed to be measured. One could not directly identify the strategies proposed by the authors to the real strategies used on our day to day websites. The current study is more specific by proposing indicators corresponding to the strategies in previous researches but are relevant to the current websites we have. Hence the need for a new theoretical model to be relevant and easily understandable by the users of these indicators.

Some of the studies examining E-commerce strategy have used e-commerce itself as a strategy, not really focusing on the various sub-strategies necessary to understand the different dimensions from which e-commerce strategy can be viewed. (Barkley, Markley & Lamie, 2007). The most ignored one has been the purchasing management while the main focus has been on online sales. As per internationalization performance, there has been in a certain variety of the studies encountered a focus on export activities (Li, Cao & Lui, 2017; Shoman, 1998; López Rodríguez and García Rodríguez, 2005), limiting the lenses one can measure the construct from. This new model assures a more comprehensive definition of E-commerce strategy and internationalization.

In terms of the empirical reviews we realized most studies focused on specific industries. Some study focused on the pharmaceutical industry (Mun, 2018), SMEs (Mashahadi, Ahmad & Mohamad, 2016; Jeong, 2016; Pinho, 2011), Transnational corporations with export-oriented manufacturing (Li, Cao & Lui, 2017). Other studies only considered the technological environment in the home country will ignoring the importance of the broader Macro environment (Mun, 2018). The focus of this study is on domestic enterprises, meaning those founded in their native country and then internationalized, whether gradually or all at once. The study is not particular regarding the setting in which it will be conducted. The indicators used to define the different construct will have to take into consideration these factors and close the gaps they have generated.

3. The proposed Theoretical model

A careful study of the conceptual, theoretical and empirical literature has allowed the author to derive the most suitable indicators capable of measuring the different constructs of the study. The independent variable identified is e-commerce strategy, a recent and interesting phenomenon impacting businesses in general. We desire to depict through this framework e-commerce relationship with internationalization performance of firms. The mediating variable was dynamic capabilities of the firm and the Macro environment was the moderating variable.

3.1 E-commerce strategy and internationalization performance

E-commerce has become an undeniable contributor to the advancement of the internationalization of firms in general since it does not compel them to physically move to the host country in order to interact with the citizens who are potential customers. This study purport to explore how an e-commerce strategy can influence the internationalization performance of firms.

The propositions come from the fact the e-commerce strategy adopted by a certain company is one of the main factors determining whether a firm will perform greatly or fail to meet the goals set for the international market and specifically the firm's performance. It is also imperative for the firms embracing e-commerce to engage in strategies relevant and more effective for them, hence emphasizing the importance of the choice of e-commerce strategy in determining the level and kind of performance a company will generate out of the business in the international arena. Necmi Karagozoglu & Martin Lindell, (2004) studied Electronic commerce strategy, operations, and performance in small and medium-sized enterprises. They found three e-commerce strategy. Depending on the type of strategy some of them can allow firms to reach out to many countries whether they are close to the home country (expansion strategy). Another set allows the customers to get the information required, to communicate with company's agents, be confident they can get the right product or return it when it does meet the standards and hence build trust in the online firm and it also provides an easy avenue to market the firm's products (online customer services strategy). The last set helps the firm to get a wide variety of suppliers (Purchase management).

On the face value, the overall e-commerce strategy therefore should lead to a positive performance of the firm engaging in international business. However the choice of strategy at a given moment can either make or break a company's impact on the market hence also the performance. From this we can deduce:

Proposition1-a: The General E-commerce strategy of a firm has a positive impact on the internationalization performance.

Proposition 1-b: The choice of the e-commerce strategy can impact positively or negatively the internationalization performance.

3.2 Firm's Dynamic Capabilities

Dynamic capabilities are very crucial for every organization since the environment we live in is not static and keep changing. A company which relies especially on e-commerce has contact with customers from several countries and will be obliged to adapt to the changing need of the customers and the changes in technology in order to gain competitive advantage over competitors. It therefore needs resources and competences enabling it to cope with these changes and hence the need for dynamic capabilities. According to Teece, Pisano & Shuen, (1997) Dynamic capabilities are "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". In this study it has been measured using Van den Broek, J. (2014), it looked at Dynamic capabilities and internationalization. Dynamic capabilities have been operationalized using Sensing capability comprised of Market scanning capabilities and Networking capabilities , Seizing capability comprised of Marketing capabilities and Business model mindset and Reconfiguring capability comprised of Culture and Knowledge management.

Arguably dynamic capabilities cannot be ignored while evaluating the relationship between e-commerce strategy and internationalization performance. If the company is not flexible in coming up with relevant strategies capable

of meeting the current or even future need of the customers in the various countries it will not be able to perform effectively. Dynamic capabilities allows them to identify new opportunities, take hold of those opportunities an then change the organization culture and get the appropriate knowledge enabling them to be relevant. So without dynamic capabilities there is a chance an e-commerce strategy may not be able to achieve the perceived goals and will not therefore have a positive impact on the internationalization performance of a firm. The adoption of dynamic capabilities coupled with the changes in the environment may also influence the type of strategies chosen by a firm at a certain moment because some strategies might be totally irrelevant to the company at this precise moment. In this regard we propose the following.

Proposition 2-a: A firm's dynamic capabilities mediates the relationship between the general e-commerce strategy and the internationalization performance.

Proposition 2-b: A firm's dynamic capabilities impacts the choice of the e-commerce strategy

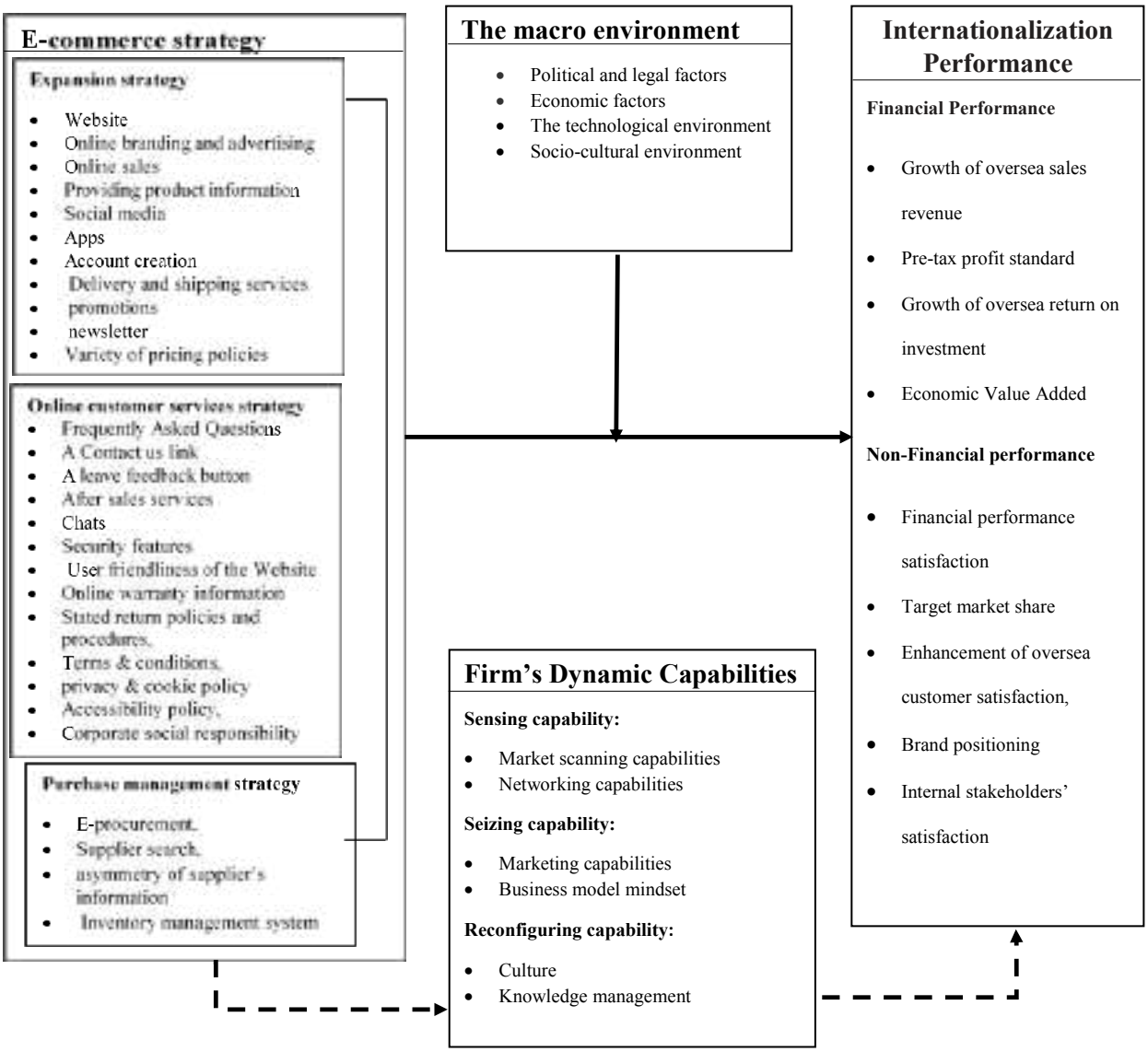


Figure 3.1. Theoretical Framework

3.3 The home country Macro-environment.

The macro environment refers to the major external and uncontrollable factors impacting an organization's decision making, and influencing the performance and strategies (Business dictionary, 2019). It is the sum total of

variables an organization is not able to control. It encompasses factors like the economic factors; demographics; legal, political, and social conditions, technological changes; and natural forces, (Sammut-Bonnici, 2017).

Benson Mbithi et al (2017) studied Macro environment as the moderating variable between Strategy and Performance. They found four factors of the macro environment namely the Political environment encompassing government influence on tax policies, or government involvement in trading agreements and are entwined with Legal factors such as national employment laws, international, trade regulations and restrictions, monopolies and mergers' rules, and consumer protection. The Economic factors include economic growth rates, levels of employment and unemployment, costs of raw materials, interest rates and monetary policies, exchange rates and inflation rates. Demographics, age distribution, population growth rates, level of education, wealth and social class distribution, living conditions, and lifestyle are sociocultural influences. Last but not least, there are the technological elements, which include spending on research, developing new materials, and developing new manufacturing, distribution, and logistics techniques. They also include advances in information and mobile technologies, internet and e-commerce, and the rate at which new innovations and developments are made.

The macro environment can either helps or weaken the relationship between e-commerce strategy and internationalization performance. For example, lack of a good relationship with other countries or separate political ideologies, or war might limit the trade between them and will therefore limit their performance. The differences in currency may give the same results. A good technological environment fueled by research and development can allow the strategies to work better and increase access to foreign markets. Also, people's culture determine whether they accept to move from the way things have always been done to a more technological oriented environment. It is also determined by how much the country is changed by natural disaster. Demographic factors and geographical and ecological factors also alter the relationship.

We can also comfortably argue, the conditions of the macro environment will determine the choice of strategy utilized to achieve competitive advantage and therefore help in improving the performance of the organization. Hence the following propositions

Proposition 3-a: The Macro environment the moderates the relationship between a firm's general e-commerce strategy and the internationalization performance.

Proposition 3-b: The Macro environment limits the choice of e-commerce strategies able to be used by a firm.

4. Conclusion

Considering the changing and evolutionary technological environment we are in, it is imperative we study the impact of technology on commerce. And for this reason, the present study had the purpose of reviewing, the extant theoretical, conceptual and empirical literature on E-commerce Strategy, Dynamic Capabilities and Internationalization Performance of domestic firms with a view of identifying gaps in knowledge and proposing a theoretical framework suitable to guide the research.

Very few researches focused on understanding E-commerce Strategy, Internationalization Performance and even the Home Country Macro Environment. Consequently, there is a lack of definition of E-commerce Strategy and Internationalization Performance. Besides, although there were clear indicators on how to measure Internationalization performance, there were no direct indicators on how to measure E-commerce Strategy. Moreover, there were very few theories to specifically underpin E-commerce Strategy and Internationalization Performance.

The study identified relevant indicators, important in measuring the various constructs. For instance, the study done by Necmi and Martin responds to the lack of clear indicators on how to measure E-commerce Strategy. Their study helped identify various relevant corresponding indicators. The solution to the insufficiency of theories to specifically underpin E-commerce Strategy and Internationalization Performance was found in the UTAUT and the Theory of flow. The Resource Based View helped in understanding firms' dynamic capabilities, internationalization performance and the home country's macro environment. The contingency theory, Strategic

theory and institutional theory allowed us to also have a broader understanding of the importance of a firm's dynamic capabilities.

Using the literature review, the study proposed a conceptual framework and explained how each construct influences the other, or the relationship between E-commerce Strategy and Internationalization Performance, not in isolation but in the light of Firms' dynamic capability as a mediator and the Home Country Macro Environment as a moderator.

For future research, we suggest researchers focus on getting a clear and exhaustive definition of E-commerce Strategy and Internationalization Performance. We also advise research be done on identifying the right indicators to describe and operationalize E-commerce Strategy as a construct. Researchers may consider doing more work on E-commerce Strategy or Internationalization Performance. Numerous industries can be studied, especially those important to Kenya's economy, like industrial companies, internet retail, and the arts and crafts sector. Particularly SMEs should be studied because the E-commerce phenomenon is most beneficial to them.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Augier, M., Teece, D.J. (2007). Dynamic capabilities and multinational enterprise: Penrosean insights and omissions. *Management International Review*. 47(2):175–192.

Barkley, D. L., Markley, D. M., & Lamie, D. R. (2007). E-Commerce as a Business Strategy: Lessons Learned from Case Studies of Rural and Small Town Businesses. UCED Working Papers (pp 112895).

Barnes-Vieyra, P., & Claycomb, C. (2001). Business-to-business E-commerce: models and managerial decisions. *Business Horizons*. doi:10.1016/s0007- 6813(01)80030-6

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*. doi:10.1177/014920639101700108

Breznik, L., & Lahovnik, M. (2015). Dynamic capabilities and competitive advantage: Findings from case study. *Management*, 21(Special Issue):167-185.

Bush, V.D., Vorhies, D.W. and Orr, L.M. (2011) .Improving customer-focused marketing capabilities and firm financial performance via marketing exploration and exploitation. *Journal of Academy Marketing Science,* 39(5):.736–756.

BusinessDictionary. (2019). Business Dictionary. Retrieved May 21, 2019, from www.BusinessDictionary.com: http://www.businessdictionary.com/definition/performance.html

BusinessDictionary. (2019). What is technological environment? definition and meaning. Retrieved May 21, 2019, from Business Dictionary: http://www.businessdictionary.com/definition/technological-environment.html

Business Sweden. (2017). International sustainable Business sustainability Report for The Financial Year 2017.

Capron , L., Dussauge, P., & Mitchell , W. (1998). Resource redeployment following horizontal acquisitions in Europe and North America, 1988-1992.*Strategic Management Journal*. doi:10.1002/(sici)1097-0266(199807)19:7<631::aid-smj963>3.0.co;2-9.

Cavusgil, S., & Zou, S. (1994). Marketing strategy – performance relationship: an investigation of the empirical link in export market ventures. *Journal of Marketing*, 58:1-21.

Chetty, S., & Campbell-Hunt, C. (2004). A Strategic Approach to Internationalization: A Traditional Versus a "Born-Global" Approach. *Journal of International Marketing*. doi:10.1509/jimk.12.1.57.25651

Clark, K., & Fujimoto, T. (1991). Product Development Performance: Strategy, Organization and Management in the World Auto Industries. Harvard Buiness School Press.

Corbitt, B. (2000). Developing intraorganizational electronic commerce strategy: an ethnographic study. *Journal of Information Technology*, 15(2):119-130.

Delios, A., & Beamish , P. W. (2001). Survival and Profitability: The Roles of Experience and Intangible Assets in Foreign Subsidiary Performance. *The Academy of Management Journal*, 44(5):1028-1038.

Dima, S. C. (2010).From International Trade to Firm Internationalization. *European Journal of Interdisciplinary Studies*, 3.

Dougherty, D. (1992). A practice-centered model of organizational renewal through product innovation. *Strategic Management Journal*. doi:10.1002/smj.4250131007

Evans, J. R., & King, , E. V. (1999). Business-to-business marketing and the world wide web: Planning, managing, and assessing websites. *Industrial Marketing Management*, 28(4):343–358.

FAHY, J. (2022). A resource-based analysis of sustainable competitive advantage in a global environment. *International Business Review*, 11:57-78.

Fensterseifer, J. E. (2009). St (FAHY, 2022)strategic Resources and Sustainability of Competitive Advantages in Industrial Clusters: Towards a General Analytical Framework. *Encontro Da ANPAD*, 19-23.

Fruhling, A. L., & Digman, L. A. (2000). The impact of electronic commerce on business-level strategies. *Journal of Electronic Commerce Research*, 1(1).

Griffith, D. A., & Harvey, M. G. (2001). A Resource Perspective of Global Dynamic Capabilities. 32(3):597–606.

Griffith, D., & Palmer, W. J. (1999). Leveraging the web for corporate success. *Business Horizons,* 42(1): 3-10.

Gulati, R. (1999). Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal*.doi:10.1002/(sici)1097-0266(199905)20:5<397::aid-smj35>3.0.co;2-k.

User SurveysiSurvevs-1998. GVU's WWW User Surveys. Retrieved September 28, 2023, from https://www.cc.gatech.edu/gvu/user_surveys/User_Survey_Home.html

Hansen, T. M. (1999, March). The search-transfer problem: the role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 82-111.

Hargadon, A., & Sutton, I. R. (1997). Technology Brokering And Innovation In A Product Development Firm. *Administrative Science Quarterly*, 42(4): 716-749.

Helfat, C., & Raubitschek, S. R. (2000). Product sequencing: co-evolution of knowledge, capabilities and products. *Strategic Management Journal*, 21(10-11), 961-979.

Helfat, E. C. (1997). Know-how and asset complementarity and dynamic capability accumulation: the case of r&d. *Strategic Management Journal*.doi:10.1002/(sici)1097-0266(199705)18:5<339::aid-smj883>3.0.co;2-7

Helfat, E. C., & Peteraf, A. M. (2009). Understanding dynamic capabilities: progress along a developmental path. . *Strategic Organization*. doi:10.1177/1476127008100133

Helfat, E. C., Finkelstein, S., Mitchell, W., Peteraf, A. M., & Singh, G. S. (2007).) Dynamic Capabilities: Understanding Strategic Maiden. *MA: Blackwell*.

Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal,* (15): 63-84.

Henderson, J., Dooley, F., & Akridge, J. (2000). Adoption of e-commerce strategies for Agribusiness firms. *American agricultural economics association annual meeting.*

Heredero, C. d., & Corces, J. M. (2015). The internationalization of Spanish SMEs from the theory of dynamic capabilities: A new management structure proposal that relates the creation of competitive advantage with the key factors that drive the process. *Market Economics and Business Journal*, 46(3): 169-186.

Jan Johanson & Jan-Erik Vahlne(1977). The Internationalization Process of the Firm—A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies,* 8(1): 23–32

Jan Johanson & Jan-Erik Vahlne(2006). Commitment and opportunity development in the internationalization process: A note on the Uppsala internationalization process model. *Management International Review,* 46(2):165–178

Jeong, S. W. (2016). Types of foreign networks and internationalization performance of Korean SMEs. *Multinational Business Review*. doi:10.1108/mbr-08-2015-0039

Johanson, J. and Wiedersheim-Paul, F. (1975) The Internationalization of the Firm—Four Swedish Cases. *The Journal of Management Studies*. doi10.1111/j.1467- 6486.1975.tb00514.x

Kambil .A. (1995). Electronic commerce: implications of the Internet for business practice and strategy. *Business Economics*, 30 (1995): 27-33

Keh, H.T., Nguyen, T.T.M. and Ng, H.P. (2007), "The effects of entrepreneurial orientation and marketing information on the performance of SMEs". *Journal of Business Venturing*,22(4):592–611.

Knight, G.A. and Cavusgil, S.T. (2004).Innovation, organizational capabilities, and the born global firm. *Journal of International Business Studies,* 35(4):124–141.

LaBarre, J. E., Haugen, S., & Noe, J. J. (2001). A case study analysis of e-commerce strategies for retail businesses. IACIS .

Lane, P. J., & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal*. doi:10.1002/(sici)1097- 0266(199805)19:5<461::aid-smj953>3.0.co;2-l.

Leonard-Barton, D. (1992). 'Core capabilities and core rigidities: A paradox in managing new product development', Strategic Management Journal, 13, Summer Special Issue,111-125

Li, H. and Atuahene-Gima, K. (2001), "Product innovation strategy and the performance of new technology ventures in China", Academy of Management Journal, 44 (6),1123-1134.

Lu, J.W. and Beamish, P.W. (2001) The Internationalization and Performance of SMEs. Strategic Management Journal, 22, 565-586. doi:10.1002/smj.184

Luo, Y., Hongxin Zhao, J., & Du, J. (2005). The internationalization speed of e-commerce companies: an empirical analysis. *International Marketing Review*. doi:10.1108/02651330510630294

Mashahadi, F., Ahmad, N. H., & Mohamad, O. (2016). Strategic innovation ambidexterity and the internationalization performance of small and medium enterprises. *World Journal of Entrepreneurship, Management and Sustainable Development.* doi:10.1108/wjemsd-09-2015-0036.

Mamoun Benmamoun, Nitish Singh, Kevin Lehnert, Sang Bong Lee.(2018). Internationalization of e-commerce corporations (ECCs): Advanced vs emerging markets ECCs. *Multinational Business Review*.doi:10.1108/MBR-02-2018-0010

Melin, L. (1992). Internationalization as a strategy process. *Strategic Management Journal*. doi:10.1002/smj.4250130908

Meskhia, I., & Shaburishvili, S. (2015). Basics of researche of the technological environment of business. administracja Zarzadzanie, 107.

Mudalige, D., Ismail, N. A., & Malek, M. M. (2017). (2017). Application of theory of dynamic capabilities to explicate Internationalization of smes in sri lankaI. *PBJ* , 8(2): 1-18.

Mun, H. J. (2018). The home country boundness of technological resources and internationalization performance. *Management Decision*. doi:10.1108/md-05-2017-0496

Nel, D., van Niekerk, R., Berhon, J.-P. and Davies, T. (1999).Going with the Flow: Web Sites and Customer Involvement. *Internet Research:* Electronic Networkine Atmlications and Policv.

Nag, R., Hambrick, D. C.& Chen, M. J. (2007). What is strategic management, really? Inductive derivation of a consensus definition of the field. *Strategic Management Journal*,28: 935–955.

Nakamura, J., & Csikszentmihalyi, M. (2009). The concept of flow. In Snyder, C. R., & Lopez, S. J. (Ed.). Oxford handbook of positive psychology. Oxford University Press, 89-105.

Nanehkaran, Y. A. (2013). An Introduction to Electronic Commerce. *International Journal Of Scientific & Technology Research,* 2(4):190-193.

Naranjo-Valencia, J.C., Jiménez-Jiménez, D. and Sanz-Valle, R. (2011). Innovation or imitation? The role of organizational culture. *Management Decision*, 49(1):55-72.

Karagozoglu, N., Lindell, M. (2004).Electronic commerce strategy, operations, and performance in small and medium-sized enterprises. *Journal of Small Business and Enterprise Development*. doi:10.1108/14626000410551555

Newbert, S.L. (2007) Empirical Research on Resource Based View of the Firm: An Assessment and Suggestions for Future Research. *Strategic Management Journal*, 28: 121-146.

Singh N.,& Kundu, S.(2002). Explaining the Growth of E-Commerce Corporations (ECCs): An Extension and Application of the Eclectic Paradigm. *Journal of International Business Studies*, 33(4):679–697

Olsson, E.-K. (2014). Crisis Communication in Public Organisations: Dimensions of Crisis Communication Revisited. *Journal of Contingencies and Crisis Management*.doi:10.1111/1468-5973.12047

Patton M. A., & Jøsang A., (2004). Technologies for Trust in Electronic Commerce. *Electronic Commerce Research* , 4(1–2): 9–21.

Powell WW, Koput KW, Smith-Doerr L. 1996. Interorganizational collaboration and the locus of innovation. *Administrative Science Quarterly*, 41(1): 116-145.

McDougall, P.P., Shane S.,& Oviatt B.M.,(1994). Explaining the formation of international new ventures: The limits of theories from international business research. *Journal of Business Venturing,* 9(6): 469-487.

Protogerou, A.; caloghirou, Y.; Lioukas, S (2012) . Dynamic capabilities and their indirect impact on firm performance. *Industrial and Corporate Change,* 21 (3):615-647

Grant, R.M., (2006). Toward A Knowledge-Based Theory of the Firm. *Strategic Management Journal* 17(2):109-122

Rodríguez, L. J., & Rodríguez, G.R. M., (2005). Technology and export behaviour: A resource based view approach. *International Business Review*. doi:10.1016/j.ibusrev.2005.07.002

Rosen, A. (2000). The Commerce: A Survival Guide for Business Managers. (AMA Publications)

Rosenkopf, L., & Nerkar, A. (1999). Beyond Local Search: Boundary-Spanning, Exploration, and Impact in the Optical Disk Industry. *Strategic Management Journal,* 22(4):287-306.

Ruppel, Underwood-Queen, & Harrington. (2003). e-Commerce: The Roles of Trust, Security, and Type of e-Commerce Involvement. *E-Service Journal*. doi:10.2979/esj.2003.2.2.25

Sekhar, S.C. (2001).E-commerce and two popular business level typologies: a comparative analysis. *Global Competitiveness,* 9 (1):525-43.

Schneider, G. P., & Perry , J. T. (2000). Electronic Commerce: Excellence in information systems. *Management Information Systems series* , 7:408.

Shoman, A. (1998). Export performance: a conceptualization and empirical assesment. *Journal of International Marketing*, 6(3): 59-81.

Shahhoseini M. A.,& Ramezani K.(2015).Mediating Effect of Ambidexterity on Marketing Capability and Innovation Capability,in The Proceedings of the International Conference. *Marketing-from Information to Decision*, 80

Suikki, R. (2007). Process renewal driven by disruptive technologies. *International Journal of Business Innovation and Research*. doi:10.1504/ijbir.2007.012112

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal*. doi:10.1002/smj.4250171105

Tajpour, M., Hosseini, E., & Moghaddm, A. (2018). The Effect of Managers Strategic Thinking on Opportunity Exploitation. *Scholedge International Journal of Multidisciplinary & Allied Studies*. doi:10.19085/journal.sijmas050602

Teece DJ, Pisano G, Shuen A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal,* 18(7): 509-533.

Teece, D. J. (1982, March). Towards an economic theory of the multiproduct firm. *Journal of Economic Behavior & Organization*, 3(1):39-63.

Tiessen, James H. & Wright, Richard W. & Turner, Ian, 2001. A model of e-commerce use by internationalizing SMEs. *Journal of International Management*, 7(3):211-233.

Trevino, L.K. and Webster, .I. (1992). Flow in computer mediated communication .*Communication Research*, 19:539-573.

Vorhies, D.W. (1998). An investigation of the factors leading to the development of marketing capabilities and organizational effectiveness. *Journal of Strategic Marketing*, 6(5):3–24

Vorhies, D. W., & Morgan, N. A. (2005). Benchmarking marketing capabilities for sustainable competitive advantage. *Journal of Marketing,* 69:80–94.

Powell, W. W., Koput K.W., & Smith-Doerr L. (1996). Inter-organizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology. *Administrative Science Quarterly*, 41(1):116-145.

Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organizational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management,* 7(4):303–313.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2):171– 180. doi:10.1002/smj.4250050207

Wheeler, C.(2002).NEBIC: A Dynamic Capabilities Theory for Assessing Net. Yoon, K. C. and Kim, Y. L. (2009). A study of the business performance and degree of globalization of Korean venture enterprises. *International Business Journal,* 20 (2): 29-63.

Zahra, S. A. and George, G. (2002) .Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2): 185-203.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 160-176
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.545

Industrial Targeting in Indonesia: An Empirical Approach for Growth Diagnostics

Muhammad Arditya Rindimajangga[1]

[1] University of Nottingham. Phone: +6281286888119. Email: muhammadarditya@gmail.com

Abstract
Historical experiences underline the positive impact of industrial policies on economies across the development spectrum, sparking extensive debates within the realm of industrial policy. Nevertheless, there has been a scarcity of research delving into the methodology for judiciously selecting sectors for targeted industrial policies, a void that this study endeavors to fill. This study adopts a multi-dimensional approach, employing Indonesia as a case study and incorporating diverse development scenarios to facilitate informed decision-making for governments in sector selection. The conceptual framework and empirical insights presented herein contribute significantly to the literature on industrial targeting.

Keywords: Industrial Targeting, Industrialization, Industrial Policy, Promotional Strategies, Binding Constraint

1. Background

Indonesia embarked on a swift industrialization journey following a significant political transition and economic reforms in 1966-67, orchestrated by President Soeharto (Aswicahyono et al., 2011). The primary objective was to replace strategic imports such as cement, steel, and fertilizers with locally produced goods, emphasizing job creation and the development of raw material industries. Additionally, the Soeharto administration focused on fostering labor-intensive sectors like textiles and food processing to boost exports. Consequently, there was a substantial shift in terms of value-added and employment from agriculture to industry.

This industrial policy of import substitution and export orientation underwent changes after Indonesia was hit by the Asian financial crisis in 1997. In response, the government swiftly implemented strategies for recovery, including consolidation, restructuring, and revitalization of the national industry. Indonesia adopted an export-led recovery approach to overcome the crisis (Jacob, 2004). However, this reform inadvertently impacted the industrialization trajectory. In the early 2000s, the country shifted its focus towards exporting raw commodities, such as wood, and later, coal and palm oil. The absence of a coherent industrial policy led to a peak in manufacturing contributions in the early 2000s. The share of industry-based exports in traded sectors dwindled, while natural resources-based exports continued to gain strength until recently.

Dasgupta and Singh (2006) refer to this phenomenon as "premature deindustrialization," where a decline in the manufacturing share occurs at a lower level of income per capita. Under these circumstances, a country may face developmental challenges and risk falling into the middle-income trap, failing to advance technologically in their manufactured goods and missing the opportunity to join the ranks of high-income nations (Atolia et al., 2018).

Historical experiences from Japan, South Korea, and Taiwan from the 1960s to the 1990s suggest that targeted industrial policies can stimulate structural transformation and foster economic development. Economic imperfections, distortions, and market failures often justify the need for industrial policy interventions (Liu, 2019; Krugman 1983). Such policies can enhance investment efficiency and support industries with untapped potential. Salazar-Xirinachs et al. (2014) argue that countries at all development stages can implement targeted industrial policies for purposes including economic development, job creation, poverty reduction, technological advancement, integration into global value chains, provision of clean energy, and promoting a green economy.

Indonesia's weak industrialization performance can be attributed to various factors, including inadequate infrastructure and logistics, unreliable energy supply, and an unfavorable industrial credit environment (Puspitawati, 2021). It is essential to recognize that each sector faces unique challenges or opportunities. For instance, Indonesia's non-metal mineral sector cannot compete in international markets without reliable electricity, and the food and beverage sector rely on adequate freshwater facilities. Sector-specific obstacles hinder development, and a pro-industrial policy aims to address critical inputs and eliminate barriers according to each sector's specific needs.

With limited fiscal resources, the Indonesian government must prioritize and address issues in industries that have the most significant short- and long-term economic impact (Hausmann and Rodrik, 2006). This selective approach may perpetuate the status quo, as underdeveloped but high-potential sectors struggle to gain a foothold in the economy.

Rather than relying solely on market mechanisms, governments can proactively assess market potential and economic opportunities, identify high-impact industries, and engage with leading investors and industry associations. After identifying these high-potential industries, the next step is to analyze and address the most pressing constraints hindering their development. These binding constraints are those whose resolution would yield the most significant growth gains. While not all problems are binding, for example, water shortage affects all sectors but may be a binding constraint for agriculture due to its high water usage intensity compared to other industries.

It is crucial to emphasize that targeting specific industries does not imply neglecting non-targeted sectors. The government should foster an environment conducive to the growth of all sectors. However, given limited resources, it makes sense to prioritize the most promising sectors that can deliver the greatest positive economic impact.

The remainder of this paper is organized into four sections. Section 2 briefly explains the methodology to select the industries and their binding consraints. Section 3 describes the result of high-potential industry shortlist and the bottlenecks that have to deal with. A final section summarises the chapter with possible extensions and next steps for further research in this area.

2. Methodology

The methodology follows a similar concept from Malalgoda et. al (2018) work in Sri Lanka with some differences. This study sucessfully implement the possible extension gap of that work In Sri Lanka. First extension is related to data exploration and extended years of coverage. Study in Sri Lanka only use one or two-year data while this case for Indonesia utilize five-year dataset. Moreover, this study also utilized more sources of data such as input output (IO) table and national business survey. Moreover, this study can fill the methodological gap arising from

previous work. As outlined in the next few sections, this study calibrates the weightages of different development scenarios.

In general, the study will be divided into two stages. The first stage is to determine the list of industries and the second stage is to examine the development promotion strategies required to improve the sector's performance. Conceptual framework of the methodology is presented below in Figure 1.

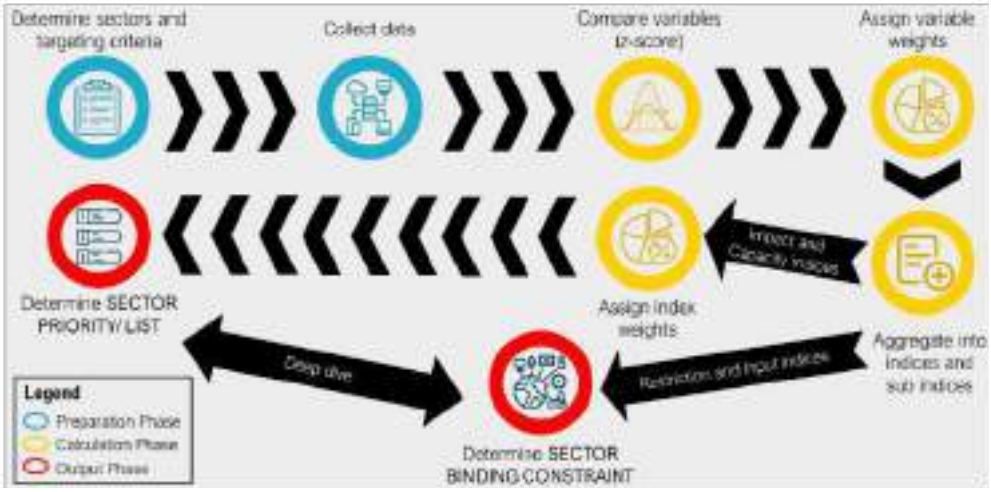


Figure 1: Conceptual Framework

2.1 Sector and Targeting Criteria

This study uses 2-digit International Standard Industrial Classification (ISIC) Revision 3.1 as the main classification reference of industry with total of 59 sectors including serivces (ISIC code 01 until 93). The reason is that the 2-digit level provides the most consistent availability of data for value-added, trade, jobs, and so on. Although 4-digit level of ISIC will give more granular and detailed description of a sector, the data availability for different economic indicators remains scarce.

The targeting criteria will be divided into impact and current capacity category. The idea is to select the sector based on how big the potential benefits are and time needed to develop the sectors based on current competitiveness. There are four criteria included to evaluate the impact: Job, Market Size, Investment, and Multiplier. These four objectives are used interchangeably for the government's intention when supporting industries. Similarly, Job Specialization and Trade Frontier will be included to calculate the current capacity index. Each of these considerations will have subindices and subsequent variables (see Appendix A for further details). These indices consider the sectors' potential benefits to the economy with their attractiveness, current competitiveness and the ability for Indonesia to develop the sectors.

2.1.1 Impact Criteria

Job Impact. To gauge the potential employment benefits across sectors, the Job Impact Index for the Indonesian economy comprises three subindices: Job Creation, Job Quality, and Job Inclusion, encompassing a total of eight variables. The Job Creation subindex assesses a sector's capacity to generate employment and utilizes the jobs per value-added metric. The Job Quality subindex considers variables such as the sector's mean wage rate. Both job creation and job quality incorporate comparative data from Malaysia and the United States for a comprehensive assessment. Meanwhile, the Job Inclusion subindex evaluates the potential for job creation among women and in regions beyond the Western area. This aspect is pivotal in addressing regional inequality and fostering greater inclusivity.

Market Size Potential. Moving on to the Market Size Potential Index, it comprises two subindices: Domestic Market Size and World Market Size, incorporating a total of five variables. Firstly, it is imperative to identify sectors with substantial domestic demand, particularly those capable of substituting imports and conserving foreign reserves. This assessment relies on three key variables: nominal import value (in log USD), import intensity (comparing Indonesian per capita import to global imports per capita), and the growth in imports for Indonesia over the past five years. To gauge the global market opportunity for a particular sector, the World Market Size subindex considers nominal trade figures and the growth in world trade over the last five years.

Investment Attractiveness. The Investor attractiveness index was calculated using 3 subindices: Investment intensity, realization, and sentiment. These 3 subindices consist of 6 variables. The investment intensity subindex measures the ratio of both foreign and domestic investment against GDP. Similarly, the investment growth subindex captures the ongoing growth trend of investment in sectors over certain period of time. Lastly, the investor confidence subindex consists of one variable only, which is the business tendency index, to see the perception from foreign investors to invest in Indonesia.

Multiplier Effect. The multiplier effect in Indonesia index indirectly estimates how sophisticated the economy and linkages to other products and sectors in Indonesia. The multiplier effect index consists of sophistication and linkages potential subindex. The former comprises only one variable, the product complexity index (PCI) from (Hidalgo et al., 2009). This variable analyzes export patterns to ascertain the level of diversity and sophistication in the productive knowledge needed for product manufacturing. For example, only few countries can produce the most complex products such as sophisticated machinery, electronics and chemicals, compared to the least complex products like raw materials and simple agricultural products that nearly all countries can produce. Furthermore, specialized machinery is said to be complex as it requires a range of know-how in manufacturing, including the coordination of a range of highly skilled individuals' know-how. The latter subindex consists of opportunity gain, from Hausmann et al. (2014) and Input-Output multiplier variable. Opportunity gain measures the sector's similarity to new sectors which are non-existent in Indonesia. Sectors with high opportunity gain score could carry precious new linkages for further diversification while IO multiplier calculates current products interlinkages. In other words, opportunity gain sees the future linkages whereas IO multiplier estimates the existing linkages in Indonesian economy.

2.1.2 Current Capacity Criteria

Current capacity index is brought to assess the current competitiveness of the sector given the context of Indonesian economy. It consists of two subindices: Job Specialization and Export Frontier, which altogether consist of 3 variables. The former is to calculate a sector's employment competitiveness in Indonesia and it is composed of one variable, the employment intensity. It will compare the Indonesia's employment in a sector against the sector's employment included in ILO database. The bigger the figure shows that Indonesia has high labour quantity and quality in that particular sector. It is important to notice that the calculation of the employment intensity is similar to Revealed Comparative Advantage (RCA) that has been popular in trade area.

Meanwhile, the export frontier subindex will measure the Indonesia's export competitiveness in sectors. First, it is important to see which sectors have been enjoying high export competitiveness for various reasons. This can be using RCA as basic calculation for comparative advantage concept. Another aspect to consider is how close the country's know-how to export related products with similar capability. This prediction can be calculated using the Product Space Density index (Klinger and Hausmann, 2007) or commonly called the distance index. This variable uses patterns in country exports to predict the next products may be potential for export extensification. For instance, countries exporting textile fibres tend to also export shirt and underwear. Those countries are also expected to have latent capability in manufacturing other types of garments that are not yet exported. This implies that countries can utilize the similar kind of capability to produce both products. In other words, distance index can be seen as a risk level of entering new sectors, where closer distance indicates similar relatedness to current knowhow and inputs to enter production of the new sectors and, hence reducing risk.

2.1.3 Binding Constraint

The selected sectors will be curated into the sector's promotion strategies. The development involves the availability of regulatory restrictions and binding constraints in inputs. Barriers in regulations will be calculated by foreign investment restrictions. The final part assesses the binding constraints in inputs required by a sector. It comprises two types of inputs: eight groups of hard input (such as road, electricity, and water) and four groups of soft input (such as skilled workers and trade & border administration). The assessment of binding constraints has two parts: input competitiveness (the input's relative cost or performance) against countries in Asia and sector requirements (the demand for the inputs). This approach suggests that different sectors do not consume all inputs equally.

First, the author also estimated each hard and soft input competitiveness in Indonesia. To do this, the author used data from World Economic Forum, the World Bank and others to compare Indonesia's performance against peer countries in Asia[1]. All inputs performance considers the cost, quality, and access as long as the data provides. For instance, data from the World Bank revealed that Indonesia's electricity price stands at a competitive 10.8 USD cents per kWh, which is lower than the average among its peer nations. However, when evaluating electricity in Indonesia, two critical factors emerged: access and quality. Electricity access in Indonesia extends to 93% of the population, and the quality accounts for 95% of the total electricity output, both figures falling below the peer average. To standardize these values, the z-score formula was employed, yielding a z-score of 0.15 for Indonesia's electricity input. This score situates Indonesia within the third quintile, denoting a "moderate competitive" standing in the electricity input.

The subsequent stage involves computing the input usage intensity for each sector, utilizing data from the Indonesian and U.S. Input-Output tables, weighted at 80% and 20%, respectively. The primary reason to include the USA is to determine what the input requirement looks like for a sector in Indonesia if Indonesia moves toward high-income country. Additionally, input requirement will be calculated towards its sector intensity compared to average electricity use in all sectors. For example, it appears that the food and beverage sector in Indonesia consume electricity lower than other sectors (about 0.2 times of the sector's total electricity input), while textile consumes more. We replicate this method for The USA Input-Output table and apply the weighting accordingly.

The third step is determining a binding constraint for the sectors by combining z-score of input competitiveness with input intensity of sector. Thus, sectors for which the required inputs are competitive in Indonesia can be targeted for investment and capability or knowhow from abroad, whereas in the sectors for which required inputs are not competitive the enhancement of required inputs is necessary before supporting those sectors for investment and knowhow[2].

2.2 Data Source and Collection

In this targeting study encompassing 12 subindices, the author diligently curated data sources to provide quantitative evidence for each targeting question. Whenever possible, multiple data sources were harnessed to offer a comprehensive perspective within each index and subindex. Take, for example, the Job Quality subindex, which incorporates three variables: (i) average wage in Indonesia, (ii) average wage in Malaysia, and (iii) average wage in the United States. This amalgamation of variables facilitates the estimation of the potential for quality job within each sector.

The datasets utilized predominantly spanned the period from 2015 to 2019 (please refer to Appendix A for an exhaustive list of data sources employed)[3]. A substantial volume of data was gleaned from surveys conducted by

[1] Competition within Asian countries was chosen given the fact that most offshoring and reshoring opportunities are coming to Asia, despite some incentives from developed nations to keep the production in their home (UNESCAP, 2022)
[2] It is important to emphasize that there's no necessity for these inputs to undergo enhancement uniformly across the entire nation to bolster investment attractiveness. Essentially, input improvements can be tailored in specific location(s) where the targeted sectors may thrive
[3] Note that the study does not include the COVID-19 pandemic and its subsequent recovery period to see how the sector dynamics look like in normal condition

the Indonesian National Statistics Office (BPS), including the Labor Force Survey and Input-Output Table. Additionally, external data sources such as Trademap for trade data and Harvard Atlas for product space configuration enriched the dataset. It is worth noting, however, that this data may not precisely capture sectors currently in their nascent or less competitive stages in Indonesia—a significant concern for a study focused on structural transformation into emerging sectors. Consequently, data from Malaysia was also collected for comparison due to its regional proximity and comparable development phase. Furthermore, data from high-income countries like the USA was deemed essential to assess sector performance within the context of a high-income economy, essentially serving as a benchmark or frontier for these sectors when national income per capita rises. Care was taken to meticulously attribute the origins of each data source throughout the study.

Datasets exhibited variances in sector specificity and coverage, with some being highly aggregated and others detailing specific products or activities. The preference was inclined toward disaggregated data, which could be flexibly re-aggregated using suitable concordance schemes when required. Furthermore, an emphasis was placed on datasets with broad sector coverage, as some were limited to traded sectors like mining and manufacturing. Consequently, substantial effort was dedicated to unearthing datasets encompassing service activities and services trade, even if it meant relying on proxies such as food and accommodations services to represent the tourism sector. Given the diverse sources of data, concordance tables translating between different product and industry classifications (e.g., HS Code for trade, SIC Code for the US industry) were essential to align with the ISIC Revision 3.1 classification. Additionally, considerations were made for the volatility of variables in growth terms, which could introduce outliers due to low baseline effects. To mitigate this, the author chose to smooth growth rates by aggregating similar sectors into divisions. This approach ensured a more robust and reliable analysis of the data.

2.3 Estimation

One widely adopted approach involves the transformation of variables into rankings or percentiles, facilitating comparisons across different units. For instance, it allows us to identify which sector attracts the highest foreign investment in Indonesia (measured in millions of USD) or which sector exhibits the most substantial economic linkages, often assessed through multipliers. However, rankings or percentiles have their limitations, primarily failing to elucidate the extent of variation among sectors. While rankings can pinpoint the sector with the highest foreign investment, they do not reveal how this magnitude compares to the overall average. Moreover, it is essential to employ a measurement that is robust to outliers, ensuring that unusually low or high values in one sector do not unduly influence the scores of other sectors.

One measurement that effectively addresses these requirements is the standard score, commonly referred to as the "z-score." The concept behind the z-score is to gauge the relative performance of a particular sector in comparison to all other sectors. While it entails some complexity beyond a simple ranking, its calculation and interpretation are relatively straightforward. A higher (lower) z-score above zero signifies stronger (weaker) performance relative to the average. Notably, the z-score fully captures the variation of the variable and exhibits lower sensitivity to outliers, thanks to its reliance on the standard deviation. It is worth noting that the z-score lacks a finite scale, theoretically ranging from negative to positive infinity. However, under the assumption of a normal distribution, approximately 95.4% of its values fall within the range of -2 to 2.7, providing a practical context for interpretation.

For each gathered variable, a z-score was computed to assess the sector's performance relative to other sectors within the economy:

$$z - score = \frac{x - \mu}{\sigma}$$

where where x symbolizes the value of a particular sector's variable (indicating the sector's performance), μ signifies the mean value of the variables across all sectors (representing the average performance), and σ denotes the standard deviation of the variables across all sectors (reflecting the extent of variation within sectors). It is important to note that, in numerous cases, variables with extensive magnitudes, such as the import volume of sectors (which can range from tens of thousands to millions of USD), are first transformed logarithmically for

more meaningful analysis. When the z-score is equal to zero, it indicates that the sector's value precisely aligns with the average value. Conversely, a z-score of one signifies that the sector's value surpasses the average by one standard deviation. Furthermore, using presumption that the variable values conform to a normal distribution, the z-scores can be equally divided into five quintiles. These are:

i. **very low** (lower than -0.85)
ii. **low** (between -0.85 and -0.25)
iii. **average** (between -0.25 and 0.25)
iv. **high** (between 0.25 and 0.85), and
v. **very high** (higher than 0.85)

2.4 Index and Variable Weighting

Following the standardization process into z-scores, these variables were amalgamated into subindices, which, in turn, were assembled into indices in alignment with the stipulated sector targeting criteria. The computation of aggregate impact index scores ensued through a weighted summation of the z-scores of these indices. Notably, the weights assigned to subindices and variables typically ranged from 10% to 50%, contingent on the economic significance of each objective.

This weighted summation approach served a dual purpose. First, it accounted for the varying degrees of importance attached to different subindices within the team's rationale for each index. For instance, in the assessment of job impact, the team's primary focus was on job creation rather than job quality. Consequently, subindices related to Indonesian job creation received higher weightings compared to those covering job quality. Second, it accommodates the disparity in the number of representative variables within each subindex. For instance, when evaluating the domestic market potential of each sector, this was appraised using three variables (Indonesia's current import levels, import intensity, and import growth) whereas several subindices relied on a single variable for measurement.

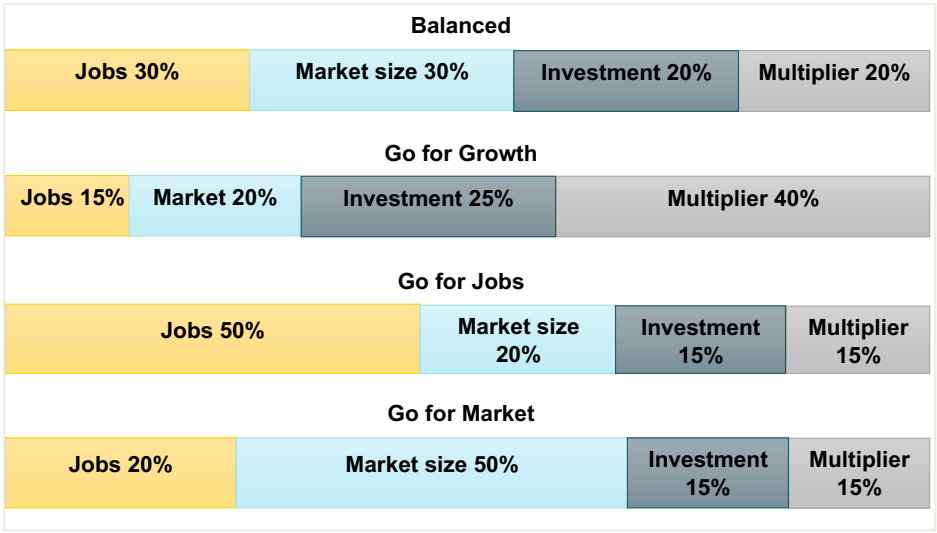


Figure 2: Weighting Scenario

For the sake of the study, preliminary analysis will use “balanced” approach where the development priority is merely equal across impact criteria. To assess other possibilities, there will be different scenarios in weighting to involve possibilities when the priority impact changes (Figure 2). For example, more weighting will be allocated for market size potential criteria if the Indonesian government wants to focus on market expansion. This implies that the sector chosen for targeting may be different if the development criteria is adjusted.

2.5 Sector Promotion Strategies

In this section, the analysis proceeded with the aim of determining the suitable promotional strategies for the identified priority sectors using the decision tree based on current capacity/ knowhow and input competitiveness. Figure 3 shows how the decision tree is created for promotional strategies for high-priority sectors. First, the study prepares the available regulatory restrictions that hold industries back from thriving.

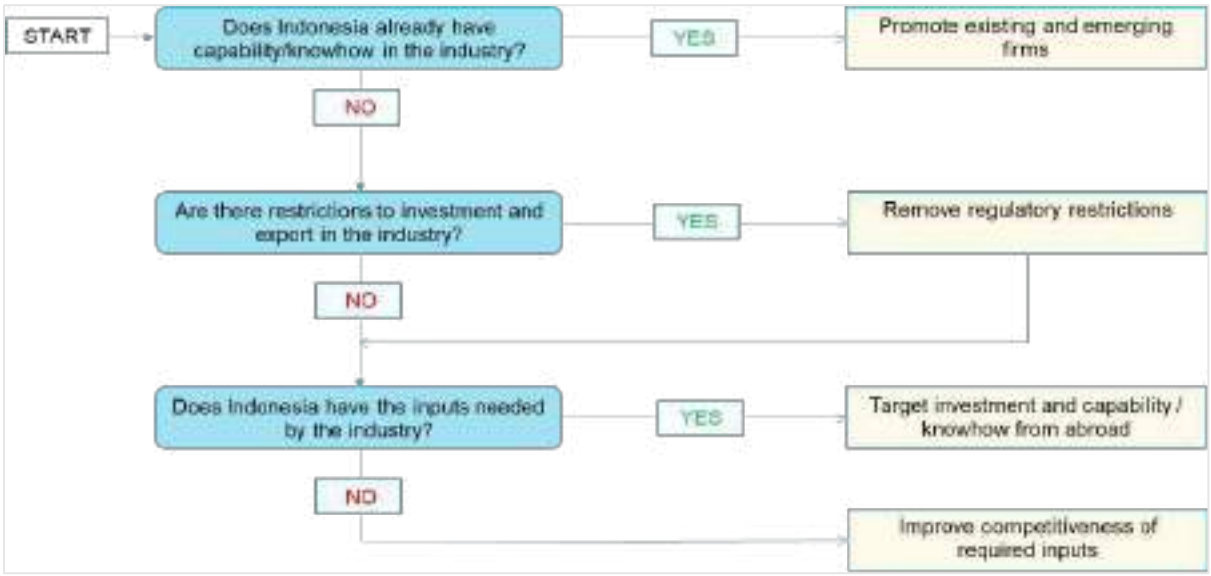


Figure 3: Decision Tree of Sector Development Strategy

Current capacity index will be combined with impact index in order to create matrix that separates the prioritized sectors whether they require short-term or long-term strategy. The short-term strategy is the promotion of existing and emerging firms as well as the removal of regulatory restrictions. This will apply for sectors that have high potential impact index and high current capacity index. The practical approach for promotion of existing firms is to encourage big firms to expand their production facilities and/or engage in joint ventures. Policmakers can also remove trade and investment restrictions that hinder the development in the sectors. For example, the garment sector has more than average performance in terms of both impact and current capacity in Indonesia, and thus it fits for sector promotion.

Then, the long-term strategy considered is by targeting of investment & know-how from abroad and improving competitiveness of required inputs. Long-term strategy appears when the high-priority sectors have high potential impact index but low current capacity index. It is important to highlight that the availability of competitive input will be applied first if the prioritized sectors have no competitive inputs required for them to operate efficiently. For this, the author uses binding constraint through the estimation of input competitiveness and intensity required for each sector.

To embrace short and long-term strategy, Indonesia needs to remove regulatory restrictions in the sectors. Restrictions can be related to trade, services, foreign investment, and so on. In addition, not each sector requires the same restrictions removal as some sectors may be more restrictive than the others for various reasons. For example, mining sector is closed to foreign equity ownership while electronics sector is more welcomed to foreign investment as electronics is heavily linked to global value chain (GVC).

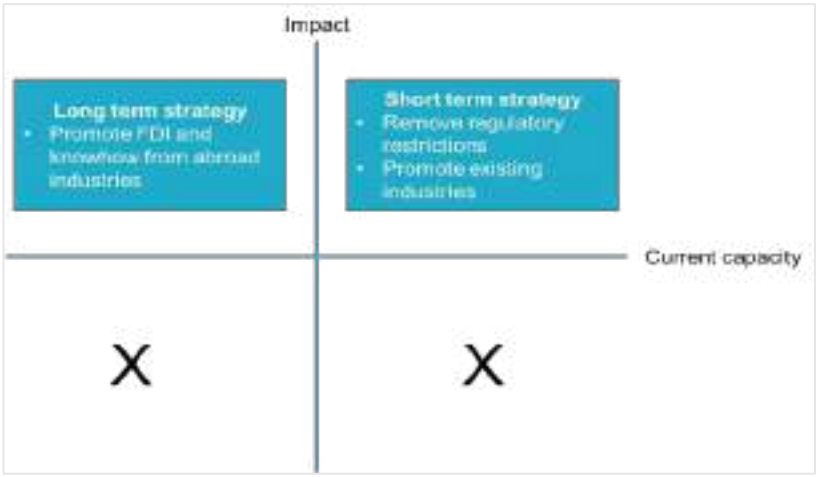


Figure 4: Mapping of Impact and Current Capacity Index

At this point, our attention is directed solely toward high-priority sectors for which we possess an extensive array of descriptive data, comprising data points from over 32 variables. These sectors are the focal point for the development of a customized promotional strategy. Subsequently, the following section will present the outcomes of this analysis.

3. Result

With the data collection and methodology outlined, this section proceeds to explain the targeting outcomes derived from the analysis: consolidated index of impact and current capacity criteria. To enhance the result, sensitivity analysis of different scenarios is applied to see the whether the results are different when impact criteria moving away from baseline results. Lastly, development strategies are presented to see the optimal promotion mechanism for prioritized sectors regarding the restriction removal and improving binding input.

3.1 Targeting Result

3.1.1 Baseline

As described above, the sectors were ranked based on the impact z-score using "balanced" development approach, which is a weighted z-score of the "Job Impact," "Market Size Potential", "Investment Attractiveness", and "Multiplier Effect" indices. Table 1 below grey covers the sectors with the high range or better impact (weighted z-score > 0.25):

Of which top seven sectors above, manufacturing sectors dominate the highest priority sectors execpt for electricity & gas sector. Another interesting fact from the table above is apart from electricity and gas, all of them are categorized as high-tech manufacturing sector. This notion implies that Indonesia will have to target to these sectors for its future industrial policy.

Table 1: Impact Index Score for Top Priority Sectors

Rank	ISIC 3.1	Description	Impact Criteria (Z-Score)				
			Overall	**Job Impact**	**Market Size**	**Investment**	**Multiplier**
1	29	Machinery and equipment	**0.54**	-0.12	0.93	-0.36	1.70
2	34	Motor vehicles	**0.38**	-0.34	0.52	-0.46	1.80

3	40	Electricity and gas	**0.37**	-0.09	-0.24	1.54	0.25
4	24	Chemicals	**0.33**	0.00	0.59	0.05	0.68
5	30	Computers	**0.29**	-0.04	0.31	-0.59	1.50
6	33	Medical & precision instruments	**0.25**	-0.14	0.51	-0.98	1.61

Moving on to each impact criteria, revealing result shows that those prioritized sectors are expected not to have much on employment, particularly for absorbtion. Nonetheless, these sectors provide more quality jobs in terms of salary for their workers. The biggest strength of these high-priority sectors is due to market size and multiplier effect. Those products within the selected sectors are in high-demand, globally and in Indonesia, due to various emerging trends. For example, demand for motor vehicle products will rise due to electric vehicle penetration and increase in per capita income worldwide. For multipler effects, these high-impact sectors are associated with the production of complex and high linkage products that require multiple inputs (and suppliers), advanced technology production process, and abundant skilled workers. Construction machine (HS 1992 code: 8457), which is categorized in machinery and equipment sector, for instance has product complexity index (PCI) of 2.22 in 2019. Making such product requires complex process that only few countries can produce. If Indonesia can enter to produce it, growth effect will be huge as it includes a series of highly specialized process division that create high value-added along the value chain.

3.1.2 Sensitivity Analysis

As the development target may prioritize one aspect over another, the author tries to check whether the result in baseline holds. For example, the Indonesian government may want to secure employment first rather focusing on multiplier effect. This notion will target some sector with high job creation. Table 2 below grey covers the top 6 sectors for each scenario.

Table 2: Top Priority Sectors under Different Scenario

Rank	**Scenario (Z-Score)**			
	Balanced	**Go for Growth**	**Go for Jobs**	**Go for Market**
1	Machinery and equipment **(0.54)**	Machinery and equipment **(0.76)**	Garments **(0.39)**	Machinery and equipment **(0.64)**
2	Motor vehicles **(0.38)**	Motor vehicles **(0.66)**	Refined petroleum **(0.35)**	Refined petroleum **(0.46)**
3	Electricity and gas **(0.37)**	Computers **(0.51)**	Machinery and equipment **(0.33)**	Chemicals **(0.4)**
4	Chemicals **(0.33)**	Medical and precision instruments **(0.48)**	Tourism **(0.25)**	Motor vehicles **(0.4)**
5	Computers **(0.29)**	Electricity and gas **(0.42)**	Chemicals **(0.23)**	Leather and footwear **(0.38)**
6	Medical & precision instruments **(0.25)**	Chemicals **(0.4)**	Government **(0.22)**	Garments **(0.35)**

Table 2 above indicates that the list of sectors in baseline result is consistent under different scenarios, particularly for chemical as well as machinery and equipment industry. Both sectors will be the safest option for targeting in any circumstance. These scenarios also imply that the manufacturing and some service sub-sectors are the priority for the future industry targeting in Indonesia. The situation is consistent with the structural transformation needed for Indonesia to move toward knowledge-based sectors to avoid middle-income trap.

3.2 Sector Promotional Strategies Result

3.2.1 Time-Bound

The list of priority sectors in Table 2 includes activities that have potential to provide job opportunity, promote greater market size, attract investment, and induce multiplier effect. However, these sectors alone do not provide the complete context to determine whether they are viable for short-term pursuit or necessitate strategic, long-term actions. In cases where these sectors are challenging to pursue due to limited current capacity in Indonesia, yet they hold substantial potential for impact and give significant contribution to structural transformation, they can be categorized as "innovative" sectors. These are the sectors that Indonesia can only attain if substantial changes are enacted in the long run to create an investment climate that encourages innovation. Meanwhile, the expanded roster of priority sectors includes those situated in the top-right quadrant, denoting both high current capacity and significant impact potential. This inclusion seeks to strike a balance between short-term strategic gains and long-term transformation. The rationale behind this approach is to secure some low-hanging fruit as a safe buffer while Indonesia continues its journey towards a comprehensive structural transformation.

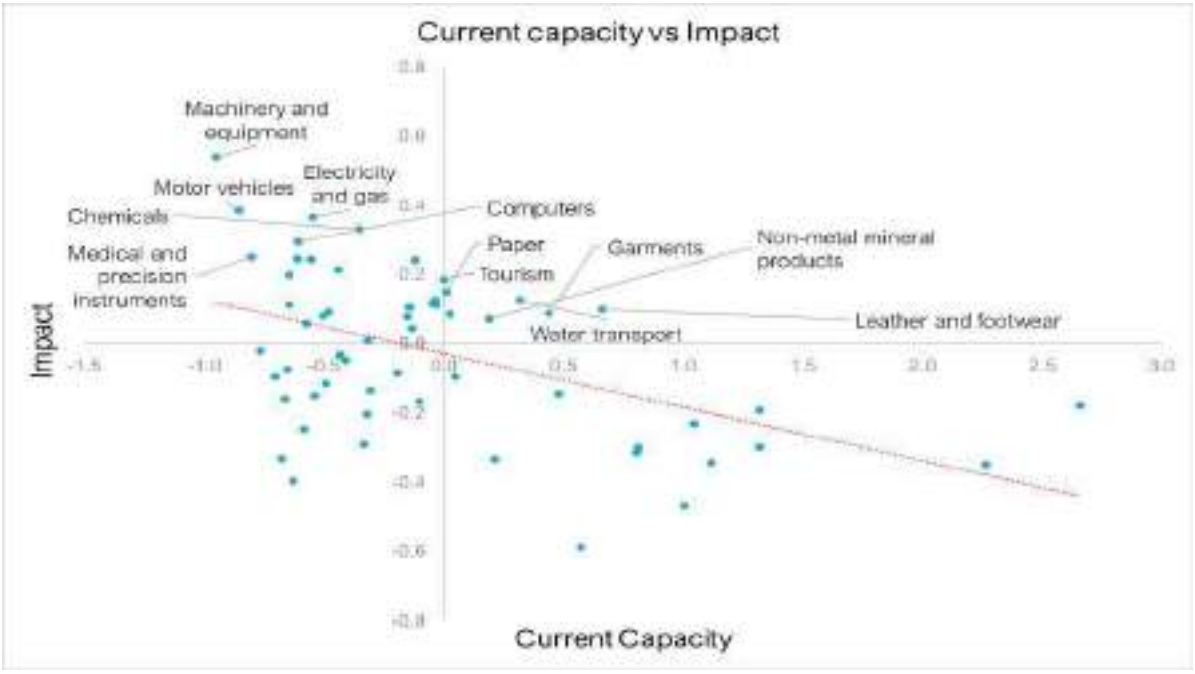


Figure 5: Impact and Current Capacity Index, by Sector

The stark difference appears in Figure 5 above. All high impact sectors are in top-left quadrant, meaning that these sectors have little presence in Indonesia at the moment. This indicates that Indonesia will have to acquire fresh business expertise for these sectors from external sources, potentially through avenues like foreign direct investment (FDI) and technology transfer. On the other hand, several sectors such as garments and tourism provide “quick fix” for the government to continue maintaining these stong existing industries. The loss or decline in these sectors will strongly harm the Indonesian economy. To keep these industries afloat, the government has to remove regulatory restrictions and promote their business sustainability.

Thus, the complete priority sectors will be high impact sectors plus all sectors in the top right quadrant of figure 5. These sectors are closely linked to substantial positive economic impacts and might be the most accessible to promote, leveraging existing export capacities and labor strengths. These are:

1. Machinery and equipment
2. Motor vehicle

3. Electricity and gas
4. Chemicals
5. Computers
6. Medical and precision instrument
7. Tourism
8. Paper
9. Garments
10. Water transport
11. Non-metal mineral products
12. Leather and footwear

First six sectors need long-term and consistent improvement to make the knowhow from abroad feasible while the remaining ones need short-term promotion to maintain the existing presence in Indonesia. The priority sectors majority consist of manufacturing subsectors and a bit of services. The result confirms that Indonesia should gradually move towards more complex manufacturing sector to reverse the persistent deindustrialization.

3.2.2 Regulatory Restriction

This study will limit the restrictions only for FDI restrictions index from OECD database[4]. The figure 6 below shows that Indonesia has relatively less restrictions in the form of foreign equity restrictions except for electricity and gas as well as water transport. However, restriction to FDI in Indonesia lies on the regulations to allow foreign workers and other things as government procurement, business licensing process, and other operational restrictions.

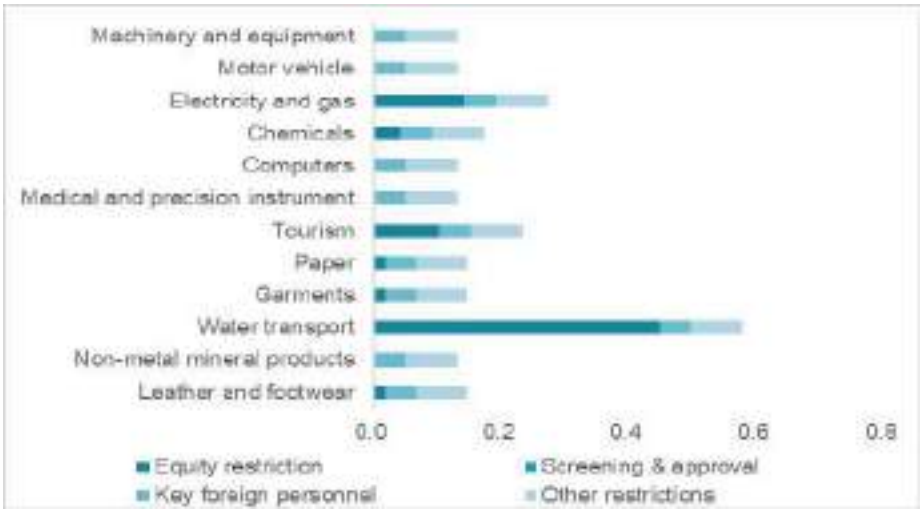


Figure 6: OECD FDI Restrictiveness Index by Top 12 Sector, 2019

The implication of these figures is diifferent for highest impact and highest capacity sectors. Less restrictive FDI regime will help the attractiveness for the former to target knowledge from abroad but the strategic implementation is still there to be done to create necessary environment for the sectors to thrive in the distant future. Meanwhile, easing FDI barriers will immediately enhance the latter as these sectors are having huge presence in Indonesia today.

3.2.3 Input's Binding Constraint

[4] Tariff and non-tariff barriers are also important trade restrictions. However, robust comparison analysis between traded and non-traded sectors are difficult to perform due the different nature of both.

The previous section included the promotional strategies from the time perspective, which evaluated sectors' urgency for promotion given the current presence. However, the analysis will be complemented by the need and intensity of inputs required to promote them. In this case, inputs will be separated into hard and soft category.

Prior to gauging the significance of soft and hard inputs for specific sectors, this study conducted an evaluation of the overall cost competitiveness of these inputs within Indonesia. To compile the requisite data, a diverse array of sources, including WEF, ILO, and the World Bank, were consulted. The benchmarking data were collected covering seven hard inputs (Road, Port, Airport, Logistic Support, Electricity, Fresh Water, and ICT Infrastructure) and five soft inputs (Engineer & Scientist, Managers, Shipping and Border Administration, R&D Utilization, and Financial Intermediaries). All inputs incorporate includes cost/ price, access, and quality depending on data availability.

To gauge Indonesia's performance relative to its Asian counterparts, we employed the calculation of "z-scores" for each variable, as detailed in Table 3. The findings unveiled that Indonesia does not exhibit strong competitiveness across various soft and hard inputs, particularly earning notably low z-scores in categories like R&D utilization, road infrastructure, and ICT framework. However, it is worth noting that Indonesia maintains a relatively moderate level of competitiveness when it comes to ports and trade border factors. In contrast, the nation garners a competitive edge in electricity infrastructure and logistics. Additionally, inputs related to highly skilled workers, such as engineers and scientists, showcase competitiveness. A noteworthy observation stems from the paradox of lacking innovation despite having an abundant and cost-competitive pool of engineers and scientists, primarily due to inadequate R&D utilization.

The study's subsequent analysis delved into the input requirements of the top 12 prioritized sectors. This examination underscored the significance of R&D, ports, electricity, and highly skilled workers for these sectors, followed closely by road infrastructure, ICT, finance, and water resources. Nevertheless, it's imperative to highlight that while Indonesia demonstrates satisfactory competitiveness in certain crucial inputs, it significantly lags in terms of R&D. Similarly, competitiveness levels are subpar for other pivotal inputs. These findings necessitate a comprehensive consideration in determining Indonesia's strategic priorities for enhancing input performance. Notably, Table 3 underscores the pressing need for improvement in R&D utilization and port infrastructure, especially in areas of the highest priority.

Table 3: Evaluation of Input Competitiveness and Requirement, Top 12 Sectors

Input	Input Competitiveness		Input Requirement	
	Z-score	Category	Relative to All Sectors (x)	Category
R&D	-0.56	Poor	2.10	Most Important
Road	-0.54	Poor	0.70	Important
ICT	-0.42	Poor	0.95	Important
Financing	-0.38	Poor	0.73	Important
Water	-0.34	Poor	0.88	Important
Ports	-0.18	Average	1.35	Most Important
Trade Border	-0.16	Average	0.37	Less Important
Electricity	0.15	Average	1.91	Most Important
Logistics	0.20	Average	1.49	Most Important
Managers	0.23	Average	1.37	Most Important
Engineer/ Scientist	0.29	Competitive	6.43	Most Important
Air transport	0.62	Very competitive	0.69	Important

4. Conclusion

This study aimed to quantify the sectors that require government support in Indonesia. Historically, sector-specific fiscal and non-fiscal incentives were provided without a robust quantitative basis. What sets this study apart is its distinctive approach, drawing from a wide range of sector-level data sources, encompassing international trade data, labor force survey, investment statistics, and other datasets.

This data-driven approach has yielded intriguing insights. For example, Indonesia's highest impact sectors is not conventional sectors such as garments and tourism but underdeveloped sectors like chemicals and machinery & equipment. This implies that Indonesia will create enormous gain when doing economic structural transformation from low to high technology manufacturing sector. Meanwhile, these traditional sectors must be still supported in the short run as they have existing capability and above average impact to Indonesian economy.

This analysis indicates that these are important restrictions (e.g, FDI restrictions) to loosen for policy targeting, given that not all sectors have some existing capabilities to contribute to the economy. Sectors with strong capabilities today will have the biggest leverage when the restrictions are eased. However, non-strong sectors today will need multiple strategic policies to make the sectors more attractive. In other words, this holds paramount significance when policymakers are deliberating on prospective targeted sectors and contemplating the necessary enabling environment, inputs, and other essential prequisites for an industry's success.

Indonesia cannot solely rely on market mechanisms to support industrialization, nor can it expect investors to venture into new promising sectors due to the substantial associated risks. Instead, the nation must transition towards a proactive approach, involving the removal of regulatory barriers and the enhancement of crucial input factors. This study marks the initial phase: identifying the most promising sectors and the reasons behind their potential. It is equally crucial to identify anchor investors and prominent domestic firms in these sectors and encourage them to develop expertise within Indonesia. Concurrently, it is imperative to foster an improved investment environment, with a dedicated focus on prioritized sectors. Only then can Indonesia fully realize the benefits of an unconventional growth trajectory.

As delineated in the methodology section, this analysis encompasses all tradable sectors, encompassing service sectors, at a higher level of aggregation. However, it's worth noting that when delving into a more detailed level of disaggregation, data limitations may constrain further examination within the Indonesian context. Indoensia's Statistics Office barely provide disaggregated data within its business/ manufacturing survey coverage. The advice is to engage with the government to allow more disaggregated data for future industry analysis. Another limitation lies on the historical data instead of forward-looking indicators. Historical dataset may tell what had happened but the future may be not the same as some global trends, such as climate change and digitalization, emerge[5].

It is also possible to extend the scope of the exercise. One direction would be to conduct "deep dive" analysis for priority sectors. The deep dive can cover various topics ranging from potential subsector, value chain, to regulatory bottlenecks. For example, motor vehicle sector is one of most high-impact sectors in Indonesian. However, one wants to analyze electric vehicle (EV) – as subsector of motor vehicle – opportunities and challenges in Indonesia. Some sectoral case study has been conducted in another country, as case example studied by Hsu et al. (2021) for Taiwanese automotive industry as potential sector for targeting.

Finally, it is worth emphasizing the need for regular updates to this study, possibly on a biennial or triennial basis. The world undergoes changes, new datasets become accessible, and the government's development priorities evolve with different administrations. Revisiting and broadening the analysis can also serve as a valuable exercise in monitoring the short-term progress of high-priority sectors. Their impact may shift due to emerging global trends, or their existing capabilities may transform because of government initiatives aimed at their promotion.

[5] Forecasting method will suit for forward-looking indicators but this requires strong and precise assumption over the long-term trend.

Funding: No funding required from other parties

Conflict of Interest: The authors declare no competing interests.

Ethical approval: The author never required any ethics approval for the study.

Informed consent: None; the research never involved humans or animals.

Author contribution: The author has been personally and actively involved in substantial work leading to the paper and will take public responsibility for its content. The author is responsible for any errors.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author, MAR. The data are not publicly available due to strict sharing policy from Statistics Office of Indonesia

References

Aswicahyono, H., Hill, H. & Narjoko, D., 2011. *Indonesian Industrialization: A Latecomer Adjusting to Crises ,* Helsinki: United Nations University, World Institute for Development Economic Research (UNU-WIDER).

Atolia, M., Loungani, P., Marquis, M. H. & Papageorgiou, C., 2018. *Rethinking Development Policy: Deindustrialization, Servicification and Structural Transformation,* Washingotn D.C: International Monetary Fund.

Dasgupta, S. & Singh, A., 2006. *Manufacturing, Services and Premature Deindustrialization in Developing Countries: A Kaldorian Analysis,* Helsinki: United Nations University, World Institute for Development Economic Research (UNU-WIDER).

Hausmann, R. et al., 2014. *The Atlas of Economic Complexity: Mapping Paths to Recovery.* 2nd ed. Cambridge, MA: MIT Press.

Hausmann, R. & Klinger, B., 2007. *The Structure of the Product Space and the Evolution of Comparative Advantage,* Harvard University: CID Working Paper.

Hidalgo, C., Klinger, B., Barabasi, A.-L. & Hausmann, R., 2007. The Product Space Conditions the Development of Nations. *Science,* pp. 482-487.

Hsu, B.-X., Chen, Y.-M. & Yan, T.-Y., 2021. Industrial targeting and firm performance: An integrated approach to industry selection. *Technological Forecasting & Social Change,* Issue 162, pp. 1-10.

Jacob, J., 2004. *Late Industrialisation and Structural Change: The Indonesian Experience,* Eindhoven: Eindhoven Centre for Innovation Studies, Technische Universiteit Eindhoven.

Krugman, P., 1983. *Targeted industrial policies: theory and evidence.* Kansas City, Federal Reserve Bank of Kansas City.

Liu, E., 2019. Industrial policies in production networks. *Quarterly Journal of Economics,* 134(4), p. 1883–1948.

Malalgoda, C., Samaraweera, P. & Stock, D., 2018. *Targeting Sectors for Investment and Export Promotion in Sri Lanka,* Boston: Harvard Center for International Development.

Puspitawati, E., 2021. *Indonesian Industrialization and Industrial Policy: Peer Learning from China's,* Geneva: United Nations Conference on Trade and Development.

Rodrik, D. & Hausmann, R., 2006. *Doomed to Choose: Industrial Policy as Predicament,* Harvard University: John F. Kennedy School of Government.

Salazar-Xirinachs, J. M., Nübler, I. & Kozul-Wright, R., 2014. *Transforming Economies: Making industrial policy work for growth, jobs and development.* 1st ed. Geneva: International Labour Organization.

UNESCAP, 2022. *Economic and Social Survey of Asia and The Pacific 2022: Building Forward Fairer ,* Bangkok: United Nations.

Appendix A. Overview of Datasets and Sources

Phase	Index	Sub-index	Variable	Source	Years Covered
Impact Criteria	Job Opportunity	Job creation	Jobs per value added (Indonesia)	Labor Force Surveys & BPS	2015 - 2019
			Jobs per value added (Malaysia)	CEIC	2015 - 2019
			Jobs per value added (USA)	CEIC & BEA	2015 - 2019
		Job quality	Average wage (Indonesia)	Labor Force Surveys	2015 - 2019
			Average wage (Malaysia)	CEIC	2015 - 2019
			Average wage (USA)	CEIC	2015 - 2019
		Job Inclusion	Female employment	Labor Force Surveys	2015 & 2018
			Employment Outside Java	Labor Force Surveys	2015 & 2018
	Market Size Opportunity	Domestic Market	Imports in Indonesia (current)	Trademap	2015 - 2019
			Imports in Indonesia (intensity)	Trademap	
			Imports in Indonesia (growth)	Trademap	
		World Market	Imports globally (current)	Trademap	2015 - 2019
			Imports globally (growth)	Trademap	
	Investment Impact	Investment Intensity	FDI per value added	BKPM	2015 - 2019
			DDI per value added		
			FDI per value added (OECD)	CEIC	2015 - 2019
		Investment Realization	Growth in FDI	BKPM	2015 - 2019
			Growth in DDI	BKPM	2015 - 2019
		Investment Sentiment	Business Tendency Index	CEIC	2018 - 2019
	Multiplier	Sophistication	Product Complexity	Atlas Harvard CID	2014 - 2018
		Linkages potential	Opportunity gain (New)	Atlas Harvard CID	2014 - 2018
			I-O table (Existing)	BPS	2016
Promotion strategy	Current Capacity	Labour	Employment (intensity)	ILO	2017
		Export Frontier	RCA	Trademap	2015 - 2019
			Product Distance Index	Atlas Harvard CID	2014 - 2018
	Input Intensity	Labour Quality	Managers	Labor Force Surveys & BLS	2015 & 2018
			Engineers & Scientists	Labor Force Surveys & BLS	2014 - 2015
		Electricity	Electricity use	BPS	2016
		Water	Water use	BPS	2016
		Transport	Land tpt use	BPS	2016
			Sea freight use	BPS	2016

			Air freight use	BPS	2016
			Logistic support	BPS	2016
		ICT	ICT use	BPS	2016
		Finance	Finance	BPS	2016
		Trade & Border	Export dependence	Trademap & BPS	2015 - 2019
		R&D	Spending on R&D, by industry	OECD	2014 - 2017

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 177-199
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.546

Regulation of Medical Devices – A Poland and U.S. Study: Marketing and Legal Aspects

Richard J. Hunter, Jr.[1], Héctor R. Lozada[2], John H. Shannon[3], Gary H. Kritz[4]

[1] Professor of Legal Studies, Seton Hall University, Stillman School of Business; Adjunct Professor of Legal Studies, University of Tulsa, Collins College of Business
[2] Associate Professor of Marketing; Director, Institute for International Business, Seton Hall University
[3] Professor of Legal Studies, Seton Hall University
[4] Associate Professor of Marketing, Seton Hall University

Abstract
Consider this scenario: One of your former students working in the medical devices field for over twenty years has been approached by a medical device manufacturer in Poland who wishes to market its medical devices in the European Union and eventually expand into the United States. You learn that the Polish government is especially interested in pursuing this opportunity as part of its larger outward foreign direct investment strategy. Your student is being considered as the CEO of prospective U.S. operations. Part I is a study of the various issues that will confront the potential Polish exporter in meeting European Union standards which will guarantee compliance with EU Regulation (EU) 2017/745 on medical devices (MDR). Part II discusses U.S. regulations concerning the importation of medical devices into the United States and the advertising & labeling of such devices.

Keywords: Medical Devices, Foreign Direct Investment, Field Service Corrective Actions, Advertising, Conformity, Food and Drug Administration

1. Introduction: The Context of Foreign Direct Investment in Poland

Poland has remained one of the most attractive destinations for foreign direct investment in the European Union (adapted from Hunter & Lozada, 2022). According to the U.S. Department of State (2019), the Polish government has prioritized expanding the domestic economy by supporting high-tech investments, increasing productivity and foreign trade, and supporting entrepreneurship, scientific research, and innovation through domestic and EU funding. Rodl & Partner (2020) report that a study conducted by the Polish Investment and Trade Agency (PAIH) in 2019 found that the positive investment climate fostered in Poland has resulted in as many as 94 percent of foreign investors stating they would re-invest in Poland.

Gorynia, Nowak, and Wolniak (2011, p. 148) noted that "Foreign direct investment (FDI) has played a pivotal role in the transformation of post-communist economies of Central and Eastern Europe (CEE) for more than a decade now. This is especially true for Poland which experienced a phenomenal growth of inward FDI." Hunter and Ryan (2013, p. 14) commented that "From the start of the process of economic transformation in Poland in

the fall of 1989, attracting FDI has been considered as a main policy objective of nearly all political parties and parliamentary configurations that have governed Poland and of all the individuals who have held the critical position of Minister of Finance in the Polish government."

Lloyd's Bank (2023) reports that Poland has consistently ranked among the most attractive countries in Europe in terms of attracting FDI. According to UNCTAD's *2022 World Investment Report* (UNCTAD, 2022), FDI inflows to Poland reached a record-high level of USD 24.8 billion in 2021, compared to USD 13.8 billion one year earlier and 83% above the pre-COVID level (Lyttle, 2022). Lyttle (2022) also states that Poland was 14th globally and third in the EU in terms of the value of FDI inflows in 2021. In the same year, the *total inward stock* of foreign investments stood at USD 269.2 billion, a 7.8% increase yearly.

According to PAIH (2023), in the period 2019-2021, foreign investors in Poland contributed to the creation of 339,000 jobs. The largest investor in the country during 2021 in terms of capital investment was South Korea (USD 1.9 billion), followed by the U.S. (USD 364 million) and Germany (USD 155 million). The majority of FDI stocks are held by Germany (21.2%), France (10.8%), the Netherlands (10.4%), and the United States, with investments directed mainly towards manufacturing (31.3%), wholesale and retail (14.8%), financial and insurance activities (14.2%), and real estate sectors (10.4%). Poland's main assets are its strategic position, literally in the "heart of Europe" (Pogonowski, 1987), a large population of nearly 38 million people, its membership in the European Union, economic stability, skilled labor at a competitive cost, advancing infrastructure, and a fiscal system attractive to businesses (Davies, 2022; PAIH, 2023). Moreover, Poland has established and nurtured many dynamic Special Economic Zones (Dorozynski, Swierkocki, & Urbaniak, 2016; Ambroziak & Harwell, 2017), which hold out the promise that the current trend will continue well into the future, especially by non-EEA and non-OECD investors (Cieslik, 2020; Gubanski, Gac, & Malobecki, 2023).

The Polish Investment and Trade Agency, (PAIH), supports the foreign expansion of Polish businesses and the inflow of FDI into Poland (see Hunter, 2019; Przezdziecka, 2021). In addition, PAIH assists in boosting Polish exports and supporting the new generation of entrepreneurs who have grown up in post-1989 Poland. Specifically, PAIH assists in overcoming administrative and legal roadblocks related to implementing specific projects, finding a suitable location in Poland for either a *greenfield* or *brownfield* investment (Hayes, 2021), and identifying reliable partners and suppliers to ensure the sustained success of an investment (see www.PAIH.gov.pl).

According to Rutkowski (2021) and Baker McKenzie (2022), as of this writing, more than 300 companies are operating in the medical products and devices industries, offering approximately 500,000 medical products as part of the government's export strategy. These products and devices have been approved for sale under strict EU regulations. The medical products and devices segments are a strong component of the Polish economy, indicating the success of efforts to bolster FDI activities.

Rutkowski (2021) states that the medical devices and equipment industry has become one of the priority industries of the Polish economy.

> Between 2000 and 2018 expenditure per capita in public healthcare increased from USD 200 to USD 979 (EUR 166 to EUR 812)1. This is reflected in the rising value of the domestic market for medical devices, which in 2017 was estimated at EUR 2.5 billion by the 'Technomed' Medical Industry Organization, compared to EUR 1.5 billion only four years earlier. The value of domestic market for medical devices and equipment was estimated by the Polish Investment and Trade Agency (PAIH) at EUR 2.9 billion in 2018 (Rutkowski, 2021, p. 8).

2. What are the Obligations of Producers of Medical Devices in Poland?

Melvin and Torre (2019) assert that medical device manufacturers entering the EU must have systematic methods for examining their devices once they are available. This entails thoroughly gathering, recording, and analyzing

data on safety and performance. These regulations were critical in establishing a modernized and more robust EU legislative framework (Melvin and Torre, 2019).

The product safety regulatory regime that applies to medical devices in Poland is based on EU Regulation (EU) 2017/745 (European Union, 2017) on medical devices (MDR) (see MedTech Europe, 2020; Chodorek, Tracz, Lokaj, & Izydorczyk, 2022). Vasiljeva, van Duren, and Pandit (2020, p. 123) noted:

> Up until 2017, medical devices were placed on the European Union's (EU) single market in accordance with either Medical Device Directive 93/42/EEC for general medical devices or Medical Device Directive 90/385/EEC for active implantable devices. However, some devices that complied with these directives still failed catastrophically. In the orthopaedic device field, these failures were most pronounced in metal-on-metal hip devices causing severe patient morbidity with increased need for revision surgery which had unpredictable outcomes. Subsequently, the newly introduced Medical Device Regulations 2017/745 are aimed at addressing patient safety based on previous experience and thorough device assessment prior to and post-release on the EU single market; to accommodate for this they are substantially different (and more stringent). This poses a greater challenge for manufacturers and regulatory bodies in terms of time and resources.

CE Marking (2022) notes that the new Polish national legislation on medical devices became a reality when Polish President Andrzej Duda signed the regulations on April 20, 2022. This has led to better consistency between the national law and the European directives. Polish regulations now align with EU Regulation 2017/745 (on medical devices, the MDR) and EU Regulation 2017/746 (on in vitro diagnostic medical devices, the IVDR; see also Pitkanen, Raunio, Santavaara, & Stahlberg, 2021).

According to Polish law (KG Legal, 2023):

> Medical device means a tool, apparatus, device, software, implant, reagent, material, or other article intended by the manufacturer to be used, either singly or in combination, in humans for one or more of the following specific medical uses:
>
> – the diagnosis, prevention, monitoring, prediction, prognosis, treatment, or mitigation of disease,
> – to diagnose, monitor, treat, mitigate, or compensate for an injury or disability,
> – the study, replacement, or modification of an anatomical structure or process or physiological or disease state,
> – for providing information through in vitro testing of samples collected from the human body, including those collected from organ, blood, and tissue donors, and which does not achieve its principal intended action by pharmacological, immunological or metabolic means in or on the human body, but whose action may be assisted by such means."

The following products are also considered medical devices:

– devices for the purpose of controlling conception or assisting conception,
– products specifically intended for the cleaning, disinfection or sterilization of devices.

The *Act on Medical Devices of 7 April 2022* specifies some of the most important obligations for medical device manufacturers, importers, and distributors (Swidrak, 2022). The law repealed the Act on Medical Devices of 20 May 2010 (see Urzad Regestracji Produktow Leczniczych Wyrobow Medycznych i Produktow Biobojczych, 2022).

A manufacturer is defined as**:**

> a) the entity responsible for the design, manufacture, packaging and labeling of the product before placing it on the market under its own name, regardless of whether these activities are performed by the entity itself or on its behalf by another entity,

b) an entity that assembles, packages, processes, completely reproduces or labels a finished product or gives it an intended use, in order to place it on the market as a product under its own name, with the exception of an entity that assembles or adapts products already placed on the market, in the purpose of their intended use by an individual patient.

A manufacturer residing or having its registered office in Poland is required to notify the President of the Office for Registration of Medicinal Products, Medical Devices, and Biocidal Products (URPL) at least 14 days before placing the device on the market or submitting the first device for evaluation (Baker McKenzie, 2022). The product manufacturer is responsible for the product, for the conformity assessment of the product before its placing on the market, and for placing the product on the market.

If the manufacturer is not a resident or is established in Poland, this responsibility is assumed by the authorized representative for that device. If the manufacturer has not appointed an authorized representative or if the product is not placed on the market under the responsibility of the manufacturer or the authorized representative, liability will be assessed to the entity or party that placed the product on the market.

The manufacturer with the place of residence or registered office in Poland is obliged to keep a *list of all healthcare providers and distributors* to whom the manufacturer has supplied the devices for the period of use of the device, and to make the list available during any inspections. The list must be immediately available at the request of the President of the Office for Registration of Medicinal Products, Medical Devices and Biocidal Products, (see http:urpl.gov.pl) Koperny, Maciorowska, Lesniak, & Bala, 2017; Cromos Pharma, 2022).

The manufacturer or its authorized representative is required to perform a clinical evaluation of the medical device or of an active implantable medical device to confirm compliance with the requirements relating to the properties and operation of the evaluated device and to assess any adverse effects and the acceptability of the clinical benefit to risk ratio (see Kaul, Stockbridge, & Butler, 2020) under normal conditions of use of the evaluated device. Exceptions are allowed when demonstrating compliance with the requirements without clinical evaluation is based on a performance evaluation, performance tests, and pre-clinical evaluation or is otherwise justified in the documentary evidence relating to conformity assessment. The documentation should justify any exclusion based on risk management results, considering the device's specific interactions with the human body.
The manufacturer is required to ensure that the authorized representative and any other entity authorized by the manufacturer to act on its behalf in cases of medical incidents and in matters related to product safety will implement *Field Safety Corrective Action*, hereinafter referred to as "FSCA" under MDR, Article 87 (generally, Gatt & Halliday, 2017). FSCA is an activity undertaken to reduce the risk of incidents to enhance the safety and performance of a medical device. These actions are not unique to Poland and may include:

- Problem identification
- Risk assessment and decision to implement FSCA
- Preparation of FSCA strategy
- Notification to authorities and affected consignees/parties
- FSCA execution
- Collection of FSCA information and data
- Submission of FSCA Report to the competent authority (see generally, Ministry of Health Malaysia, 2020).

Specifically relating to an in vitro device (IVD), the World Health Organization (2023) notes that a field safety corrective action (FSCA) is an action taken by a manufacturer to reduce a risk of death or serious deterioration in the state of health associated with the use of an IVD that is already in the market. An FSCA is triggered by information about any problem with an already distributed IVD posing an unacceptable increased risk when that IVD is used. The WHO indicates that such problems include malfunction or deterioration affecting the performance or operational characteristics of an IVD, as well as any inadequacy in the instructions for use which might lead or might have led to the death of a patient, user, or other individual or to a serious deterioration in his/her state of health. Such information may be collected during pre-distribution or post-distribution lot testing,

from reports from the field, during the review of IVD design, or changes in production or component specifications.

The manufacturer must investigate a *medical incident* (Simunovic, Kranjcec, Pekas, & Tomic, 2023) that has been reported to the manufacturer. In so doing, the manufacturer can assess whether the reported medical incident is an event that meets the criteria for reporting the incident to the President of the Office.
According to the *Act of 20 May 2010 on Medical Devices*, found in the Journal of Laws of 20 May 2010 (Wyrob Medyczny, 2012), the definition of a medical incident is as follows:

- a malfunction, defect, or deterioration in the characteristics or performance of the device, as well as an abnormality in its marking or instructions for use which may or may have led to the death or serious deterioration of the health of the patient or user of the device or, in the case of an in vitro diagnostic medical device or in vitro diagnostic medical device, indirectly another person, or

- a technical or medical cause related to the characteristics or performance of the device which may or may have led to the death or serious deterioration of the health of the patient or user and, in the case of an in vitro diagnostic medical device or in vitro diagnostic medical device, indirectly to another person, and leading, therefore, to external safety corrective action taken by the manufacturer."

The manufacturer who places a medical product on the market for use in Poland that requires special spare parts, consumables (a piece of single-use medical equipment that healthcare providers use in hospital and surgical settings), or consumables specified by the manufacturer of the device for its proper and safe operation, is required to attach to the product a list of suppliers of such parts and materials.

A manufacturer who places a product on the market for use in Poland, requiring professional installation, periodic maintenance, periodic or ad hoc service, software updates, periodic or ad hoc inspections, adjustments, calibrations, calibrations, checks or safety checks which, according to the instructions for use of the device, *cannot be performed by the user*, is also required to attach to the device a list of entities authorized by the manufacturer or authorized representative to perform these activities.

Issues Relating to Marketing and Advertising

The 2022 Law on Medical Devices provides for the introduction of a new, broad regime of regulations relating to the advertising of medical devices. The law will require Polish manufacturers to adapt their promotional communications in the Polish market (Czerw & Marek, 2013). In particular, the regulations refer to advertising to the general public, as opposed to "professional users," bringing the rules for advertising medical devices in line with the regulations applicable to advertising medicinal products.
Interestingly, the provisions:

- prohibit the use of images of healthcare professionals;
- prohibit advertising concerning devices intended for use by professional users (e.g., in hospitals or by persons conducting surgical procedures);
- require that templates (visual records) of advertisements and information where they were disseminated be kept for two years.

The Act provides that the Minister of Health may issue regulations further specifying additional rules on advertising. The contemplated regulation is intended to strongly limit the possibility of advertising to the public by requiring "\the use of warning signs specific to medicines, information on contraindications, and the familiar *"consult ... before use"* messages."

The regulations exhibit significant differences from the general European Union rules on advertising, which generally provide only for the prohibition of misleading advertising, or to rules established in the area of product warnings in the United States which provide:

1. A warning must be displayed in such a way as to reasonably *catch the attention* of the person expected to use the product. (This requirement deals with such factual questions as size, position, and even the color of the warnings.)

2. A warning must fairly apprise a reasonable user of the nature and extent of the danger and *not minimize* any danger.

3. A warning must instruct the user as to how to use the product in such as to avoid danger—essentially how to *safely use* the product (see Hunter, Shannon, & Amoroso, 2018, p. 19, citing *Spruill v. Boyle-Midway, Inc.*, 1962).

Advertising a medical device in Poland in breach of the regulations is subject to a fine of up to PLN 2 million—nearly a quarter million in US currency. The new advertising regulations came into force on January 1, 2023. However, the regulations will not apply to advertising that has already been disseminated but which does not meet the new regulation's requirements in the first six months of the year or until June 30, 2023.

According to Matczak, Kaczynski, and Kruczyk-Gonciarz (2021), the legal requirements for advertising to professionals are listed in the Pharmaceutical Act and the Regulation of the Ministry of Health of 21 November 2008. These regulations mandate that the following are included:

- The name of the medicinal product and the name commonly used.
- The product's qualitative and quantitative composition in respect of active substances and the excipients essential for the product's proper use.
- The pharmaceutical form.
- An indication or therapeutic indications for use.
- The dosage and method of administration.
- Counterindications.
- Special warnings and precautions for use.
- Adverse reactions.
- Identification of the marketing authorization holder (MAH).
- The number of the marketing authorization and the name of the authority that issued it.
- Information on the reimbursement category, and in the case of medicinal products on the lists of reimbursed medicines information on the official retail price and the maximum price.
- Information as to when the particular marketing material was drafted or revised."

Regulations Concerning Language (see Safar, Colquhoun, & Hill, 2012; Christen, 2021)

Article 10 (11) of Regulation (EU) 2017/745 requires manufacturers to include information in one or more official language(s) determined by the Member State in which the product is made available. In addition to labeling requirements, this regulation also requires that this information be clearly understandable to the intended users or patients. Concerning specific linguistic regulations, Article 23.1 a) states:

> The medium, format, content, legibility, and location of the label and instructions for use shall be appropriate to the particular device, its intended purpose and the technical knowledge, experience, education or training of the intended user(s). In particular, instructions for use shall be written in terms readily understood by the intended user and, where appropriate, supplemented with drawings and diagrams.

Christen (2021) notes that manufacturers of medical devices cannot avoid dealing with the language requirements of each country in which they wish to market their products. This also means that the internal processes for the

respective countries are to be adapted accordingly so that the products are delivered to the respective countries with the correct information or that users receive instructions for use in the local language upon request. Christen (2021) states that the MDR unequivocally makes distributors and importers responsible for compliance with the language requirements.

According to the law, medical devices intended for use by lay or non-professional persons must contain labels, instructions for use, and user interfaces in Polish. Devices for professional users in Poland may be supplied with documentation in English, except for patient-specific private information.

According to the MDR, advertising of devices must not be misleading concerning the device's intended *purpose, safety, and performance* by:

- ascribing functions and properties to the device which the device does not have;
- creating a false impression regarding treatment or diagnosis, functions or properties that the device does not have;
- failing to inform the user or the patient of a likely risk related to the use of the device in line with its intended purpose; or
- suggesting uses for the device other than those stated to form part of the intended purpose for which the conformity assessment was conducted."

3. An Overview of the Approval Process for Medicinal Products and Medical Devices

The European Commission is responsible for issuing a marketing authorization for medicinal products as part of the centralized procedure for approval of medical devices, veterinary medicinal products, and biocides which are chemical compounds or biological products used to kill, control the growth of, or repel a specific organism.

Poland has also established a specialized Office for Registration of Medicinal Products, Medical Devices, and Biocidal Products (URPL) (Kaczynski, Pachocki, & Radzikowska, 2021). This office is responsible for all matters relating to:

- Marketing authorization for medicinal products.
- Marketing and use of products.
- Marketing authorization, making available on the market and using biocidal products.
- Clinical trials, including veterinary clinical trials" (see also Manita et al., 2019).

Medicinal products can be placed on the market after the competent authority has issued the relevant decision relating to a marketing authorization of the medicinal product. Before issuing such a decision, the URPL will examine whether the medicinal product's quality is sufficient, and the product is *safe and effective*. The assessment is based on an application submitted by the "marketing authorization" holder and the documentation attached.

The URPL has published a detailed overview of the regulatory framework to assist medical device manufacturers and importers in complying with the applicable requirements (see Patryn, Zagaja, & Drozd, 2021).

URPL's Powers and Responsibilities

The URPL is responsible for the following matters for medical devices:

- approving medical devices to be marketed and used in Poland;
- Post-market surveillance and collection of the information regarding adverse event reports and notifications;
- Safety monitoring;
- Supervising clinical trials connected with medical devices;

- Making the final determination regarding the correct classification of medical devices and accessories thereto;
- Cooperation with the foreign national regulating authorities and international organizations operating in the sphere of medical devices; and
- Issuance of Free Sales Certificates for medical devices.

The "Free Sale Certificate" for Exporting Medical Devices

A manufacturer or authorized representative of medical devices, biomedical devices (Lam & Chen, 2019), in vitro diagnostic medical devices, or active implantable medical devices who wishes to export such devices outside the European Union must obtain a certificate of free sale (Government of Poland, 2018).

A free sale certificate (Noah, 2021) is a document intended to facilitate the exportation of medical devices, in vitro diagnostic medical devices, and active implantable medical devices outside of the European Union. The certificate is issued for a medical device bearing the CE marking and a custom-made medical device. To receive a certificate, a party must be either a manufacturer or the manufacturer's authorized representative and have a place of residence in Poland. The certificate is a statement or attestation confirming that the product is CE-marked, under the manufacturer's sole responsibility, and may be placed on the market and put into service in Poland and that it can be exported.

The CE Marking

Placed on commercial products, the letters **CE** (or the logo CE) means that the manufacturer or importer affirms the goods' *conformity* with European Economic Area (EEA) standards. It is not a quality indicator or a certification mark (see Lam & Chen, 2019). CE marking is required for goods sold in the EEA, but it is also found on products sold elsewhere manufactured to EEA standards (see Gronkvist, 2022).

Gronkvist (2022) notes that the following information is often included in a Certificate of Conformity:

- **Registration/Report Number:** The report or certificate number can be used to verify if the document is valid. All certificates have some registration or report number.
- **Issuing Company:** The company that issued the Certificate of Conformity, including their contact details and address.
- **Certificate Holder:** The company for which the certificate was issued. This is usually the importer or manufacturer which intends to sell the product.
- **Product Information:** Product name, SKU ("stock keeping unit" used for inventory control), or model number. One certificate can sometimes cover more than one product.
- **Regulations/Directives/Standards:** Summary of the regulations, directives, and standards to which the product is certified to conform.

The CE mark indicates that the product may be *traded freely* in any part of the European Economic Area, regardless of its country of origin. It consists of the CE logo and, if applicable, the four-digit identification number of the notified body involved in the conformity assessment procedure. "CE" is the abbreviation of *"conformité européenne* (French for "European conformity"). The CE mark on a product indicates that the manufacturer or importer of that product affirms its compliance with the relevant EU legislation and indicates that the product may be sold anywhere in the European Economic Area (EEA). It is a criminal offence to affix a CE mark to a product that is not compliant or offer it for sale.

Step-by-Step Procedures for Product Approval (Kaczynski, Wycichowski-Kuchta, & Zielinska, 2020)
The following are the steps required for product approval:

1. Submit an application, which includes the following documentation:

    - Application for issue of the certificate of free sale
    - Proof of payment of the fee
    - Power of attorney for administrative matters
    - Proof of payment of the fee for the power of attorney

2. The URPL will then evaluate the application and any supporting documentation: If the application does not contain proof of payment or any errors or deficiencies, or if the documentation found in the application contains errors or deficiencies, the office will ask the party to correct any errors or deficiencies. The party applying will have seven days to make any necessary corrections. If the party fails to make the required corrections, the application will not be considered further.
3. If all of the procedures are complied with, the submitting party will receive a certificate of free sale in both Polish and English. The applicant will normally receive the certificate within 15 days of application submission.

Poland employs what may be termed a *risk-based approach* to classifying medical devices (see Johner, 2019). Following Poland's medical device classification, all medical devices are divided into four classes (I, IIa, IIb, or III) depending on the risk associated with using the device. In particular, 18 rules are used for classification, depending on the device's intended purpose. Rules 1-4 are relevant for non-invasive medical devices; rules 5-8 are relevant for invasive medical devices; rules 9-12 are relevant for "active medical devices"; and rules 13-18 are special rules (Brkic, 2021). The medical device manufacturer makes the initial classification before applying for marketing approval. At the same time, the final classification of a medical device will be made by the regulating authority.

Any entity that is intended to place its medical device on the Polish market should contact and actively cooperate with the URPL during the whole lifecycle of the product, from initial approval for marketing and use to post-market surveillance, adverse event reporting, and corrective and preventive actions.

4. Marketing Medical Devices in the Polish Market

In addition to the requirements of the 2022 law, any medical device intended to be marketed and used in Poland is required to meet certain requirements. Depending on the type of the device, it should comply with the requirements set forth by the applicable regulation, namely:

- Regulation on the essential requirements and procedures for assessing the conformity of medical devices dated February 17, 2016, which established general *safety requirements for medical devices*;
- Regulation on the essential *requirements and conformity assessment procedures for in vitro diagnostic (IVD) medical devices* dated January 12, 2011;
- Regulation of the essential *requirements and conformity assessment procedures of active implantable medical devices* dated January 12, 2011.

In addition to the requirements outlined in the above-stated regulations for the marketing and use of medical devices in Poland, a medical device must comply with the requirements relating to safety and health protections for personal protective equipment if the device contains any hazardous substances or electronic or radio components, it must also meet the appropriate safety requirements relating to these substances or components as mandated in the Act on Conformity Assessment System, dated August 30, 2002 (Miareczko & Jedrzejewska, 2002).

Labeling Requirements and Instructions for Use

Requirements for a medical device intended to be marketed in Poland are related to the *labeling* placed on the device itself, its *packaging*, and the *instructions for use* to be supplied with the device. The manufacturer, its

authorized representative or agent, a supplier, or an importer is required to take into consideration the following general rules:

- Any device intended to be distributed in Poland is required to provide both labeling and instructions for use provided in Polish. However, the information contained in the labeling could be provided with the help of harmonized symbols generally recognized to provide the required information. [See Appendix I- Medical Device Symbols in the European Union]
- At the same time, if a foreign medical device is intended to be used in the particular healthcare facility that applies for its approval, it is suggested that the device be supplied with the labeling and instructions for use provided in English, while the information that is intended for patients should be provided in Polish.
- If the labeling of the device is provided in Polish, the instructions for use could be provided either also in Polish or described with the help of harmonized symbols.
- If the labeling placed on the package containing more than one medical device (a group or batch packaged) is provided in Polish, the labeling of each particular device could be provided either in Polish or with the help of harmonized symbols.

The URPL provides a detailed description of the obligations of the parties involved with medical devices including medical device manufacturers, authorized representatives of foreign medical device manufacturers, and importers and distributors. A foreign medical device manufacturer is required to appoint an authorized representative who is required to participate in all regulatory procedures related to medical devices. However, this rule can be waived if the medical device manufacturer is registered within the European Union (see Jarman, 2021). A domestic medical device manufacturer is required to keep its business records containing information about suppliers and distributors. All such records must be provided to the regulating authority upon request.

Before placing a new medical device on the market, the manufacturer is required to perform clinical trials in order to assess the effectiveness of the device and its compliance with applicable safety requirements. In the course of the clinical trials, the manufacturer of the device is required to evaluate the *balance between the benefit and risk* attended to the device (Kouroumalis, 2019) and document all identified side effects in connection with using the device. At the same time, the medical device may be exempted from the mandatory clinical trial procedure if it falls within the scope of an exemption due to the evaluation of the nature and risk associated with its use.

Another important consideration relates to a requirement of the Field Safety Corrective Actions (FSCA), described above. This requirement mandates "special actions" to be undertaken without undue delay if any *significant malfunctions of the device* or *new risks* associated with its use are identified after making the device available to healthcare facilities and patients (see Pane et al, 2019). In particular, such actions are intended to mitigate risks, reduce hazards, and prevent injuries that could be caused by the medical device based on this new information. In the course of such corrective actions, the medical device manufacturer is required to undertake one of the following measures:

- Issue the updated version of the instructions for use and provide users of the device with the necessary safety information;
- Make changes to the device to mitigate identified risks;
- Withdraw the devices from the market; or
- Revoke the devices already distributed among users.

PART II

Part II deals with the intention of Polish medical device manufacturers to export its products into the United States.

5. Importing Medical Products into the United States (adapted from USA Customs Clearance, 2020; see also Kramer, Xu, & Kesselheim, 2017).

In the United States, the Food and Drug Administration, (FDA), ensures that all imports under their jurisdiction comply with relevant statutes and administrative rules (Horvath, 2019; Alford, 2020). The FDA also ensures import compliance with the *Federal Food, Drug, and Cosmetic Act* of 1938, as amended by the *Medical Device Regulation Act* or *Medical Device Amendments of 1976.*

No individual or business entity can sell medical devices in the United States without the approval of the FDA. They must present proof that the device is *safe* and can be used for a *specific purpose* (see Termini & Hoxha, 2020).

In addition to registering with the FDA, there is a requirement to procure a customs bond before importing medical devices into the United States. Zbyszewski (2018) writes: "A Customs bond is a contract between three parties (Customs, a principal (i.e., an importer), and a surety) to ensure that all the duties and fees associated with the rules and regulations of importing or other Customs activities are paid to Customs by the principal." An import customs bond can be either a single-entry or a continuous bond. A continuous bond guarantees the U.S. Customs & Border Protection, (CBP), that the importer will make good on its payment. If the importer fails to make its payments, the CBP can file a claim against the bond from the surety company that guaranteed payment. A continuous customs bond covers all entries for the entire year, requiring one flat fee per transaction.

However, it is important to note that an "import license" is not required for the importation of medical devices into the United States. Instead, importers or other entities are required to *register* annually with the FDA (FDA, 2018b). In the United States, the following domestic entities (termed "establishments") are required to register with the FDA:

- Manufacturer
- Contract sterilizer, providing a service for another party's products
- Relabeler or repackager
- Specification developer
- Manufacturer of devices for export only

In contrast, businesses such as wholesale distributors, customs brokers, and component parts manufacturers are not required to register with the FDA.
In the United States, the FDA has established separate criteria to determine registration requirements for foreign entities. Some of the foreign entities that must *register* with the FDA include:

- Foreign exporter of devices
- Manufacturer
- Component manufacturer (subject to some exceptions)
- Remanufacturer

FDA Requirements

The FDA may require additional information and documentation when an entity intends to import medical devices into the United States. Many of these requirements exist in the documentation that must be provided at the time of entry.

- Premarket Notification (510k) or Premarket Approval

Depending on the device, either a premarket notification or premarket approval will be required, designed to ensure that devices meet specific FDA standards before entering the U.S. market. Proof of approval from the FDA will be required at the time of import.
Rish (2021) asserts that Premarket Approval, (PMA), is a thorough and exhaustive process of affirming the quality and safety of Class III medical devices. These high-risk, high-reward products are cutting-edge medical devices often designed to address the most dire health conditions.

These may include items such as pacemakers, cochlear implants, implanted prosthetics, or high-frequency ventilators. Regardless of the intended use, the FDA has identified some key characteristics of Class III products. According to FDA, Class III medical devices are:

- Devices that support or maintain a person's life
- Have substantial importance in preventing an impairment
- Ones permanently implanted in the body
- Products which otherwise present an unreasonable level of risk and/or fatalities."

In 2021, the FDA cleared or approved 27 medical devices for use in the United States (Food and Drug Administration, 2021).

- Labeling

All medical devices coming into the U.S. are required to meet certain FDA labeling standards (Yeng, Yang, & Wolthusen, 2020). Section 201(k) of the *Food, Drug, and Cosmetic Act* defines a 'label' as a:

- display of written, printed, or graphic matter upon the immediate container of any article
  The term *immediate container* does not include package liners. Any word, statement, or other information appearing on the immediate container must also appear 'on the outside container or wrapper, if any there be, or the retail package of such article, or is easily legible through the outside container of wrapper.'
  Section 201(m) defines *labeling* as:
- all labels and other written, printed, or graphic matter
  (1) upon any article or any of its containers or wrappers, or
  (2) accompanying such article at any time while a device is held for sale after shipment or delivery for shipment in interstate commerce.
  The term *accompanying* is interpreted liberally to mean more than physical association with the product. It extends to posters, tags, pamphlets, circulars, booklets, brochures, instruction books, direction sheets, fillers, etc. *Accompanying* also includes labeling that is brought together with the device after shipment or delivery for shipment in interstate commerce.

Labeling standards include:

- Intended use
- Language requirements
- Unique device identification
- Proper disposal directions
- Warning statements

Some devices such as condoms, hearing aids, eyeglasses and sunglasses must meet additional labeling requirements. The FDA (2020) notes that *labeling* is defined in the *Federal Food, Drug, and Cosmetic Act*, (FFDCA), as including all printed matter accompanying any article. The FDA does not exclude from the definition printed matter which constitutes advertising.

- Medical Device Reporting

The FDA must have access to past reports of complaints regarding any medical device. Devices deemed to be unsafe will be denied entry.

The FDA (2022) notes:

> Each year, the FDA receives several hundred thousand medical device reports of suspected device-associated deaths, serious injuries, and malfunctions. Medical Device Reporting, (MDR),

> is one of the postmarket surveillance tools the FDA uses to monitor device performance, detect potential device-related safety issues, and contribute to benefit-risk assessments of these products.
>
> Mandatory reporters (that is, manufacturers, device user facilities, and importers) are required to submit to the FDA certain types of reports for adverse events and product problems about medical devices. In addition, the FDA also encourages health care professionals, patients, caregivers and consumers to submit voluntary reports about serious adverse events that may be associated with a medical device, as well as use errors, product quality issues, and therapeutic failures. These reports, along with data from other sources, can provide critical information that helps improve patient safety.

QualityMedDev (2021) notes that the requirements mentioned in Code of Federal Regulation 21 CFR 803 consider that an event is reportable when:

- a device may have caused or contributed to a patient death or serious injury
- a malfunction of the device did occur and would likely cause or contribute to a death or serious injury if the malfunction were to recur.

> **Caused or Contributed**: A death or serious injury was or may have been attributed to a medical device, or that a medical device was or may have been a factor in a death or serious injury, including events occurring as a result of: (1) Failure; (2) Malfunction; (3) Improper or inadequate design; (4) Manufacture; (5) Labeling; or (6) Use Error.
> **Serious Injury:** it is an injure that: 1) Is life-threatening; 2) Results in permanent impairment of a body function or permanent damage to a body structure; 3) Necessitates medical or surgical intervention to preclude permanent impairment of a body function or permanent damage to a body structure.
> **Malfunction** : The failure of a device to meet its performance specifications or otherwise perform as intended. Performance specifications include all claims made in the labeling for the device. The intended performance of a device refers to the intended use for which the device is labeled or marketed."

- Medical Device Tracking

Some devices are required to be physically tracked from manufacture through purchase and use by the consumer. This requirement applies to certain Class 2 and Class 3 medical devices.

The FDA (2018a) notes that's the purpose of device tracking is to ensure that manufacturers of certain devices establish tracking systems that will enable them to promptly locate devices in commercial distribution. Tracking information may be used to facilitate notifications and recalls ordered by FDA in the case of serious risks to health presented by the devices. Because of this, manufacturers must adopt a method of tracking devices whose failure would be reasonably likely to have serious, adverse health consequences; or which is intended to be implanted in the human body for more than one year; or are life-sustaining or life-supporting devices used outside of a device user facility.

How to Determine Medical Device Classification

There are three main classes of medical devices. The FDA, under the authority of the U.S. Food, Drug, and Cosmetic Act, requires that all medical devices must comply with FDA regulations before being allowed importation into the United States in order to ensure safety and effectiveness. Generally, the FDA does not recognize regulatory authorizations (endorsements) from foreign nations.

Device Class and Regulatory Control

The classification of a device is based on several factors, including its intended use and also indications for use (Guintoli, 2020). There are three general classifications of medical devices (Lamph, 2012):

Class I – General Control: Class I devices are subjected to what has been termed *general control*. Most medical devices in Class I may enter the United States by ensuring their naming conforms to FDA guidelines. Class I devices are not meant to help life or draw out life, or be fundamentally significant in preventing injury to human well-being. Examples of Class I devices are bandages, assessment gloves, and hand-held clinical instruments. DeviceLab (2021) states that about 50% of all FDA-regulated medical devices are class I devices. Class I medical devices have a low risk-to-benefit profile, i.e., these products are well established, and there are non-significant consequences or injuries associated with the misuse. Since these devices are non-life sustaining or life-supporting, diagnoses from a Class I device would not be life-altering.

Class II - General Control with Special Control: Class II devices represent a higher risk than those in Class I (Hetrick, 2021). A defect in a Class II device may cause injury to consumers if defective. BMP Medical (2023) notes that Class II medical devices have a moderate to high risk to the patient and/or user. About 43% of medical devices fall under this category.

The main difference between a Class I and Class II medical device is the level of risk and the degree to which the device comes into contact with the patient. While Class I devices present minimal harm to the patient and are generally simple in design, Class II devices, while typically non-invasive, pose a higher degree of risk and must offer a higher level of assurance that it will not cause injury or harm (BMP Medical, 2023). Although some Class II devices are excluded from premarket procedures, special controls may include adherence to performance guidelines, labeling requirements, and post-market surveillance.

Some examples of Class II medical devices include wheelchairs, pregnancy tests, syringes, blood transfusion kits, and contact lenses.

Class III - General Control and Premarket Approval: Devices fall under this classification when there is not adequate information to ensure the overall safety and effectiveness of these products to be categorized under either Class I or Class II (Rimsys, 2022). Such devices require premarket validation and possess the overall controls of Class I. Class III devices are generally meant to support or extend human life, are critical in forestalling injury of human wellbeing, or reduce the chances of avoidable risk of injury. Examples of Class III devices are breast implants, pacemakers, defibrillators, high-frequency ventilators, and HIV diagnostic tests, and may require premarket notification (see Martinez, 2021).

Rimsys (2022) asserts that almost all Class III medical devices in the United States require the FDA's premarket approval (PMA) before being marketed. Due to the high-risk profile of Class III devices, the PMA process requires significant data to demonstrate the safety and efficacy of the device. Unlike Class II devices which require a 510(k) premarket notification, the PMA process requires a thorough review by the FDA that results in their approval of the product for entry into the U.S. market.

According to Rimsys (2022), a PMA will almost always require:

- Substantial clinical trial data
- A fully documented quality system compliant with design controls as defined in 21CFR Part 820
- Documented conformance to recognized consensus standards
- Detailed descriptions of the device and all of its components
- Product samples and/or the ability for the FDA to examine the device on-site.

Post-Market Surveillance

According to USA Customs Clearance (2020), “post-market surveillance, (PMS), is a system that provides continuous feedback about a device on the market to maintain a high standard of product quality. PMS is an

administrative requirement in the European Union and the United States. The surveillance system can be used to deny or verify the safety of devices and drugs after being used by a large population of people with various health conditions."

Smith (2023) maintains that post-market surveillance is how medical device manufacturers monitor their devices while on the market. It systematically generates and collects information on the device and its real-world use. This information may be used by manufacturers to:

- Discover safety issues with the design or use of the device
- Accurately understand how the device is used once on the market
- Gather clinical evidence on device use in the market, to promote commercial use cases or improve product and services
- Gather data for the production of iterations or new devices
- Comply with regulatory requirements.

ArborMetrix (2021) reports that many different aspects of a device or product are assessed in post-market surveillance (FDA 2023b). Examples include:

- **Clinical effectiveness:** Use data from real-world clinical settings to examine the relative effectiveness of a device or drug in a large, diverse patient group to compare that product to the standard of care or competition.
- **Adverse events and side effects:** Leverage real-world evidence to identify risks or adverse reactions that might have been missed in the initial clinical trial for a device or drug.
- **Utilization:** Examine how a product is actually used in the real world, which can be different than what is approved or marketed."

By way of contrast, Gimbel (2022) reports on post-market surveillance under EU MDR regulations:

> MDR Article 2 Section 60: 'post-market surveillance' means all activities carried out by manufacturers in cooperation with other economic operators to institute and keep up to date a systematic procedure to proactively collect and review experience gained from devices they place on the market, make available on the market or put into service for the purpose of identifying any need to immediately apply any necessary corrective or preventive actions.
> Requirements: MDR Article 83: For each device, manufacturers shall plan, establish, document, implement, maintain and update a post-market surveillance system in a manner that is proportionate to the risk class and appropriate for the type of device. The post-market surveillance system shall be suited to actively and systematically gathering, recording and analyzing relevant data on the quality, performance and safety of a device throughout its entire lifetime, and to drawing the necessary conclusions and to determining, implementing and monitoring any preventive and corrective actions.
> PMCF shall be understood to be a continuous process that updates the clinical evaluation…and shall be addressed in the manufacturer's post-market surveillance plan. When conducting PMCF, the manufacturer shall proactively collect and evaluate clinical data from the use in or on humans of a device which bears the CE marking…with the aim of confirming the safety and performance throughout the expected lifetime of the device ensuring the continued acceptability of identified risks and of detecting emerging risks on the basis of factual evidence (see also Hoxey, 2017).

*Hoxey (2017) notes that PMS i*s a manufacturer's systematic and proactive collection and review of experience gained from their devices. The objective of PMS is to identify any need for corrective action. As such, PMS must follow a PMS plan, in cooperation with authorized representatives, importers, and distributors.

Import Issues

Items regulated by the FDA can be denied admittance to the U.S. in the event that they do not comply with FDA guidelines relating to labels that contain false information, unapproved new drugs, items restricted for sale in the U.S., and products that are contaminated and are unsafe for use.
If an imported device appears to be in violation of any U.S. import requirements, the device will be temporarily detained by customs and border personnel in coordination with the FDA and cannot be offered for sale on the U.S. market. The FDA will provide a notice of action along with specific details of the suspected violation. The importer will then have a chance to offer evidence opposing the determination of the violation within a defined period. Import alerts are of the following categories: country or area-wide; manufacturing/product specific; shipper alerts; country/worldwide alerts.

An *import alert* may be issued when information is available to the FDA to allow for *Detention Without Physical Examination* (DWPE) (FDA, 2023a) of products found on an import alert. Items may be subject to DWPE depending on past violations. These violations can be identified with a specific product, a manufacturer, a transporter, or a carrier, or can be based on other data showing the device may violate FDA regulations.

While importers of medical devices are not required to engage a customs broker, it is highly recommended due to the risk involved with importing FDA-regulated products. USA Customs Clearance (2020) notes that at several points in the import process, things can go wrong, and mistakes can completely derail an import. Customs brokers work directly with importers to ensure these mistakes don't occur.

Import Duties on Medical Devices

The duties on imported medical devices vary based on a number of factors. First, there are many different types of medical devices and each has its own unique *HTS code* (Office of United States Trade Representative, 2023). Devices often have multiple codes depending on unique product features such as component materials or size. Second, the country of origin where the finished device was manufactured is an important aspect in determining the imposition of any import duty (Abely, 2019).

USA Customs Clearance (2020) reports that the U.S. sees the value in high-quality imported medical devices and in turn assesses a 0% import duty on many devices. However, some devices are still assessed an import duty, typically ranging from 2-6%. Specifically, some medical devices imported from China are currently being assessed with additional duties due to the Section 301of the *Trade Act of 1974* (see Houser, 2020). The question remains whether political considerations have supplanted legitimate safety issues, not because of public policy but rather because of political considerations (Fandi, 2021). Issues relating to trade with China and the imposition of duties on imports from China remain unresolved.

The Congressional Research Service (2023) explained that Section 301 of the *Trade Act of 1974* grants the Office of the United States Trade Representative, (USTR), a range of responsibilities and authorities to investigate and take action to enforce U.S. rights under trade agreements and respond to certain foreign trade practices. Prior to the Trump Administration and with the establishment of the World Trade Organization, (WTO), in 1995, the United States used Section 301 authorities primarily to build cases and pursue dispute settlement at the WTO. President Trump, however, was willing to act unilaterally under Section 301 authority (Crump, 2019; Liming, Haibo, & Yafeng, 2020).

The Trump Administration claimed that unilateral action was required to close a persistent gap between U.S. and foreign government practices that it said disadvantaged U.S. firms. In addition, President Trump justified many of its tariff actions—particularly those against China—by pointing to alleged weaknesses in WTO dispute settlement procedures and the inadequacy or nonexistence of WTO rules to address certain Chinese trade practices. The Trump administration also cited the failure of past trade negotiations and agreements to enhance reciprocal market access for U.S. firms and workers in the Chinese market (see Hunter, Lozada, & Shannon, 2023).

U.S. Medical Device Advertising

According to Adfirehealth.com (2022b), medical device advertising is a strategy used by small, medium, and large medical device companies to promote their products to doctors, hospitals, and other healthcare professionals (HCPs) via paid digital channels. For example, a medical device marketer may promote its medical device using programmatic ads on websites and apps to help build a brand, create brand awareness, increase sales leads, and drive repeat sales. Medical device advertising is monitored by both the FDA and FTC. But as long as one's advertising for medical device products is for the product's intended purpose, that is, basing your communication on the reasons why the device was approved to enter the market, regulations in the U.S. are not as "strict" compared to EU and other European promotional regulations.

Some social media platforms have stricter rules regarding medical device advertising than the FDA or FTC do. For example, Facebook does not allow promoting or selling medical devices (Facebook.com, 2023a), but they make a distinction for personal care products provided they follow a few rules (Facebook.com, 2023b):

- Ad content should not contribute to negative self-perception, such as highlighting a specific body type as desirable.
- Ads should never draw attention to health conditions, such as zoomed-in images of acne.
- Ads shouldn't contain false, deceptive, or misleading claims.
- Ads that include debunked claims related to medical treatments are prohibited.

Google has its own variety of policies related to medical device advertising. Adfirehealth.com (2022a) provides examples of some of the policies medical device manufacturers and advertisers should know:

- Marketers cannot promote non-government approved medical products that are advertised in a way that implies they're safe and effective in treating a particular disease or ailment.
- It is prohibited to market products that have been subject to any government or regulatory warning.
- Promotion of experimental medical treatments is prohibited.
- Clinical trial recruitment is prohibited in many countries. However, it is allowed in Canada, the United States, and some other countries.
- It is prohibited to promote at-home HIV tests except in the U.S., France, the Netherlands, and the U.K.
- Ads related to fertility and birth control are prohibited in some countries, such as Iran, China, and Saudi Arabia.

Regarding the promotion of medical devices in Poland, manufacturers must follow the multi-layered guidelines and regulations of several entities. Manufacturers must acquaint themselves with any specific Polish regulations and regulations from the European Union. Additionally, the social media platforms in Poland may have different restrictions.

Additionally, advertisers must also acquaint themselves with the EU's "Television Without Frontiers" Directive. This directive originates from 1989 to guide the creation, utilization, and regulation of television programming across many members' borders. This directive is very detailed. In our opinion, the main concern is how *surreptitious advertising* and *surreptitious teleshopping* are described in this directive. T*he Television Without Frontiers* Directive C 102 (Council of the European Communities, 1989; 2004), hereon the Directive, defines in Article 1 surreptitious advertising as "the representation in words or pictures of goods, services, the name, the trademark or the activities of a producer of goods or a provider of services in programs when the broadcaster intends such representation to serve advertising and might mislead the public as to its nature. Such representation is considered to be intentional in particular if it is done in return for payment or for similar consideration." (p. No L 298/26).

To be considered surreptitious advertising, there are three cumulative conditions: it must be intended by the broadcaster, it must be done to serve advertising, and it must be capable of misleading the public as to its nature. While the Directive does not contain an absolute ban on all references in words or pictures to goods, services, the name, the trademark or the activities of a producer of goods or a provider of services, the distinction between

surreptitious advertising and a lawful reference to goods, services, brands or names of economic operators can, in practice, be rather difficult for the national authorities to draw. To address this, the Commission considers it appropriate to apply the criterion of the *undue prominence* of the good, service, brand or company name. The undue nature may result from the recurring presence of the brand, good or service in question or from the manner in which it is presented and appears. In this regard, the content of the programs in which the brand, good or service appears should be considered (feature films, news programs). For example, the fact that a good is displayed prominently is, among others, a sign of surreptitious advertising when such a display is not warranted on the editorial grounds of the programs, is the result of an influence on the content thereof for commercial purposes or is likely to mislead the public on the nature of such a presentation."

We submit that the Directive's definition of surreptitious advertising may be problematic for foreign advertisers, given that it is subject to interpretation depending on its application in the various cultures that make up the EU and how advertising is currently practiced. If an EU medical device manufacturer were to market its product in the U.S., it would have more strategic freedom to advertise and promote than in Poland. A US medical device manufacturer might have to alter its advertising strategies when trying to market its product in an EU member country like Poland due to the more restrictive Television Without Frontiers Directive.

We also want to address two additional related subjects: product placement and comparative advertising. In the U.S., product placement is a common promotional practice. Products, services, and trademarks are often literally placed on television shows and in films to promote the brand. The placement may have absolutely nothing to do with the television show or film's storyline or the character's use of the product in a scene or multiple scenes as part of the plot. Since the products are placed there simply for promotion, that is, to be seen, this would likely fall under the criterion of "undue prominence," and per the Directive, it would not be allowed in any EU member state. Comparative advertising is the practice of directly or indirectly comparing one's brand to a competitor's brand on some attribute or benefit in an advertisement. "Directly" simply means that a brand's ad mentions or shows a direct competitor of the brand by name. "Indirectly" means that the competitor's brand name is not mentioned but is referenced in another way by comparing the ad's brand to "the leading brand" on some attribute or benefit. This practice is used to gain viewers' attention to the ad and to educate the viewer that the advertised brand has something or does something better than the named competitor or referenced competitor brand. The practice of comparative advertising in the US for medical devices or any other good or service might not be allowed in an EU member country's medical device advertising per the Directive on "surreptitious advertising." This advertising practice appears to meet the three criteria of surreptitious advertising: the representation in words or pictures of goods, services, the name, the trademark, or the activities of a producer of goods or a provider of services must meet three cumulative conditions mentioned above.

6. Concluding Comments

When a manufacturer of medical devices in Poland indicates its intention to export its products into the United States, it will be confronted by a duality of administrative regulations—one set emanating from legislation adopted in Poland in conformity with statutes established in the European Union. In addition, the putative exporter-manufacturer will be required to comply with a host of administrative rules and regulations adopted by the Food and Drug Administration relating to product safety and efficacy. With this in mind, the government of Poland, in pursuit of its policy of expanding the outward flow of foreign direct investment, has engaged in a partnership with domestic medical device manufacturers to assure the success of these endeavors.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics approval: Not applicable.

References

Abely, C. (2019). E-commerce transactions and country of origin marking for imported products: A gap between statutory purpose and legal requirements. *Virginia Journal of International Law*, 59: 1-45.

Adfirehealth.com (2022). Medical Device Marketing: An HCP Marketer's Guide, https://adfirehealth.com/blog/medical-device-marketing-guide/.

Adfirehealth.com (2022a). Medical Device Advertising Regulations: What to Know, https://adfirehealth.com/blog/medical-device-advertising-regulations/.

Adfirehealth.com (2022b). The Key to Selling Medical Devices? Smarter HCP Advertising, https://adfirehealth.com/blog/selling-medical-devices/.

Alford, P.E. (2020). Rethinking FDA regulation of complex problems. *Minnesota Journal of Law, Science and Technology*, 21: 477-539.

Ambroziak, A. & Hartwell, C.A, (2017). The impact of investments in special economic zones on regional development: The case of Poland. *Regional Studies*, 52(1): 1322-1331.

ArborMetrix (2021). The value of registries in post-market surveillance.

ArborMetrix.com (August 10), https://www.arbormetrix.com/post-market-surveillance/.

Baker McKenzie (2022). Regulatory, pricing and reimbursement overview. bakermckenzie.com (December 15), https://pharmaboardroom.com/legal-articles/regulatory-pricing-and-reimbursement-overview-poland/.

BMP Medical (2023). What is the difference between a class I medical device and a class II? bmpmedical.com, https://www.bmpmedical.com/merge/blog/whats-difference-fda-medical-device-classes-2/.

Brkic, K.Z. (2021). How to classify medical devices according to EU MDR. advisera.com (April 22, 2021), https://adversera.com/13485academy/blog/2021/04/22/mdr-classification-complete-guide/.

CE Marking (2022). Polish medical device law renewed. Cemarking.net (April 27, 2022),
https://cemarking.net/polish-medical-device-law-renewed/.

Chodorek, M., Tracz, M., Lokaj, J., & Izydorczyk, M. (2022). Medical devices & consumer health products 2022: Poland. Chambers and Partners (Practice Guides) (June 24, 2022), https://practiceguides.chambers.com/practice-guides/medical-devices-consumer-health-products-2022/poland.

Christen, N. (2021). EU MDR language requirements-what manufacturers and distributors need to know, decomplix.com (June 17, 2021), https://decomplix.com/eu-mdr-language-requirements/.

Cieslik, A. (2020). What attracts multinational enterprises from the new EU member states to Poland? *Eurasian Business Review*, 10: 253-269.

Congressional Research Service (2023). Section 301 of the Trade Act of 1974 (In Focus) (January 3, 2023), https://crsreports.congress.gov.

Council of the European Communities (1989). Council Directive of 3 October 1989, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31989L0552.

Council of the European Communities (2004). Commission interpretative communication on certain aspects of the provisions on televised advertising in the 'Television Without Frontiers' **Directive,"** https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A52004XC0428%2801%29.

Cromos Pharma (2022). Clinical trials in Poland-Country profile 2022. CromosPharma.com, https://cromospharma.com/conducting-clinical-trials-in-poland-2/.

Crump, L. (2019). Trump on trade. Negotiation Journal, 35(1): 141-146.

Czerw, A. & Marek, E.M. (2013). Restrictions on the conduct of advertising of medicinal products in Poland and their violations. Acta Poloniae Pharmaceutica – Drug Research, 70(4): 769-776.

Davies, N. (2022). An investor's guide to central and eastern Europe. Investment Monitor (November 1, 2022), https://www.investmentmonitor-ai/fdi-data/an-investors-guide-to-central-and-eastern-europe/.

DeviceLab (2021). FDA class I medical device information & overview.

DeviceLab.com (November 12, 2021), https://www.devicelab.com/blog/class-I-medical devices/.

Dorozynski, T., Swierkocki, J, & Urbaniak, W. (2016). The FDI inflow to special economic zones in Poland. *Contemporary Issues in Finance*, 98: 135-159.

European Union (2017). Regulation (EU) 2017/745 of the European Parliament and of the Council. eur.lex.eu, https://eur-lex.europa.eu/legal-content/en/TXT/html.

Facebook.com (2023a), Commerce/Terms and Policies/ Medical and Healthcare Products, https://www.facebook.com/policies_center/commerce/medical_and_healthcare_products#:~:text=POLICY, smoking%20cessation%20products%20containing%20nicotine.

Facebook.com (2023b). About Meta's Personal Health and Appearance advertising policy, https://www.facebook.com/business/help/2489235377779939?id=434838534925385.

Fandi, K.J. (2021). National security tariffs: A threat to effective trade policy. *University of Pennsylvania Journal of Business Law*, 23: 340-389.

Federal Register (2021). Postmarket surveillance under section 522 of the federal Food, Drug, and Cosmetic Act: Draft guidance for industry and food and drug administrative staff (A notice by the Food and Drug Administration; October 10, 2022), https://www.federalregister.gov/documents/2022/10/07/2022-21832/postmarket-surveillance-under-section-522-of-the-federal-food-drug-and-cosmetic-act-guidance-for-guidance-for-industry-and-administrative-staff.

Food and Drug Administration (FDA) (2018a). Medical device tracking. fda.gov, https://www.fda.gov/regulatory-information/search-fda-guidance-documents/medical-device-tracking.

Food and Drug Administration (FDA). (2018b). Who must register, list and pay the fee. fda.gov. https://www.fda.gov/medical-devices/device-registration-and-listing/who-must-register-list-and-pay-fee.

Food and Drug Administration (FDA) (2020). Device Labeling. https://www.fda.gov/medical-devices/overview-device-regulation/device-labeling.

Food and Drug Administration (FDA) (2021). 2021 device approvals. https://www.fda.gov/medical-devices/recently-approved-devices/2021-device-approvals.

Food and Drug Administration (FDA) (2022). Device adverse event overview.
https://open.fda.gov/apis/device/event/.

Food and Drug Administration (FDA) (2023a). Import alerts. https://www.fda.gov/industry/actions-enforcement/import-alerts.

Food and Drug Administration (FDA). (2023b). Postmarketing surveillance programs. https://www.fda.gov/drugs/surveillance/postmarketing-surveillance-programs.

Gatt, C. & Halliday, S. (2017). Do you know the requirements and your responsibilities for medical device vigilance reporting? British Standards Institute (BSI) (May 5, 2017), https://go.pardot.com/l/35972/2017-10-30/w7fbd6.

Gimbel, J. (2020). EU MDR Post-mark surveillance. R&QTeam.com, https://www.fdinews.com.

Giuntoli, D. (2020), Determine your medical device's FDA classification before it's too late. mindflowdesign.com (September 14, 2020), https://www.mindflow.com/insights/medical-devices-fda-classification-process/.

Gorynia, M., Nowak, J., & Wolniak, R. (2011). Investing in a transition economy. In the changing nature of doing business in transition economies: (Marinov, M. & Marinova, S., eds.), 148-182. Springer (Palgrave MacMillan): London, U.K.

Government of Poland (2018). Certificates of free sale for medical devices. Biznes.gov.pl, https://www.biznes.gov.pl/en/opisy-procedur/-/proc/454.

Gronkvist, F. (2022). CE certificate of conformity: A complete guide, compliancegate.com (February 16, 2022), https://www.compliancegate.com/ce-certificate-of-conformity/.

Gubanski, J., Gac, M., & Malobecki, I. (2023). Foreign direct investment reviews 2023: Poland. whitecase.com (March 20, 2023), https://www.whitecase.com/insight-our-thinking/foreign-direct-investment-reviews-2023-poland.

Hayes, A. (2021). Brownfield investments: definition, advantages, vs, greenfield. Investopedia (February 24, 2021), https://www.investopedia.com/terms/b'brownfield.asp.

Hetrick, C. (2021). What's the difference between a class I and class II medical device? sterlingmedicaldevices.com (April 8, 2021), https://sterlingmedicaldevices.com/medical-device-industry-news-trends/whas-the-difference-between-a-class-i-and-class-II-medical-device/.

Horvath, G. (2019). Emergent regulatory systems and their challenges: The case of combination medical products, 94: 1697-1767.

Houser, K.A. (2020). The innovation winter is coming: How the U.S.-China trade war endangers the world. *San Diego Law Review*, 57: 549-608.

Hoxey, E. (2017). What are the differences between market surveillance, post-market surveillance and vigilance? bsigroup.com (August 18, 2017),
https://compliancenavigator.bsigroup.com/en/medicaldeviceblog/what-are-the-differences-between-market-surveillance-post-market-surveillance-and-vigilance/.

Hunter, R.J. (2019). A comprehensive view of Poland and foreign direct investment: Pathway to development or flashpoint to conflict within the European Union. *Global Journal of Economics and Finance*, 3(1): 1-17.

Hunter, R.J. & Lozada, H.R. (2022). "Killing the Golden Goose?": FDI in Poland 2022, *Economics and Business Quarterly Reviews*, 5(4): 93-110.

Hunter, R.J., Lozada, H.R., & Shannon, J.H. (2023). The debate on reforms of the WTO appellate process: A proxy for a more serious discussion of the future of the WTO. *Economics and Business Quarterly Reviews*, 6(1): 86-105.

Hunter, R.J. & Ryan, L.V. (2013). Foreign direct investment 2013-2014. Destination Poland? An update and appraisal. Research in Applied Economics, 5(4): 13-21.

Hunter, R.J., Shannon, J.H., & Amoroso, H.J. (2018). Products liability. Seton Hall University: South Orange, N.J.

Jarman, H. (2021). Neither protective nor harmonized: The crossborder regulation of medical devices in the EU. Health Economics. *Policy and Law*, 16: 51-63.

Johner, C. (2019). Risk-based approach. JohnerInstitute.com (February 17, 2019), https://www.johner-institute.com/articles/qm-system-iso-13485/and-more/risk-based-approach/.

Kaczynski, T., Wycichowski-Kuchta, G., & Zielinska, H. (2020). Medicinal product regulation and product liability in Poland: Overview, https://uk.practicallaw.thomsonreuters.com/3-503-6059.

Kaczynski, T., Pachocki, J. & Radzikowska, M. (2021). Commercialisation of heathcare in Poland: Overview, https://uk.practicallaw.thomsonreuters.com/Document/I54c9657045bc11e598dc8b09b4f043e0/View/FullText.html?transitionType=SearchItem&contextData=(sc.Search).

Kaul, S., Stockbridge, N., & Butler, J. (2020). Benefit-risk tradeoffs in assessment of new drugs and devices. *Practical Law*, 142: 1974-1988.

KG Legal (2023). Guidelines for the evaluation of medical devices in Poland. kg-legal.eu (blog), https://www.kg-legal.eu/info/pharmaceutical-healthcare-life-sciences-law/guidelines-for-the-evaluation-of-medical-devices-in-poland-medical-technology-assessment/.

Koperny, M., Maciorowska, K., Lesniak, W., & Bala, M.M. (2017). Clinical guidelines development process in Poland. Przegl Epidemiol, 71(4): 647-659.

Kouroumalis, A. (2019). Benefit/risk assessment of medicinal products. European Medicines Agency, https://www.ema.europe.eu.

Kramer, D.B., Xu, S., & Kesselheim, A.S. (2017). Regulation of medical devices in the United States and the European Union. In The ethical challenges of emerging medical technologies: 1-8. Routledge: Milton Park, UK.

Lam, R.H.W. & Chen, W. (2019). Introduction to biomedical devices. In Biomedical devices: 1-30. Springer: New York.

Lamph, S. (2012). Regulation of medical devices outside the European Union. Journal of the Royal Society of Medicine, 105: 12-21.

Liming, L., Haibo, L., & Yafeng, Z. (2020). Is China's foreign investment policy to blame for US-China "forced technology transfer" and trade conflict: Comment on Trump administration's Section 301 investigation of China. China Economist, 15(2): 42-63.

Lloyd's Bank (2023). Foreign Direct Investment in Poland (Poland: Investing in Poland). lloydsbanktrade.com, https://www.lloydsbanktrade.com/en/market-potential/poland/investment.

Lyttle, C. (2022). Poland enjoys record year for FDI attraction in 2021, cementing its status as the CEE region's FDI capital. Investment Monitor (January 25, 2022), https://www.investmentmonitor.ai/news/poland-fdi-2021-record-year-investment/.

Manita, D., Aakash, V., Rana, A.C., & Sharma P.C. (2019). Regulation and clinical investigation of medical devices in the European Union. Applied Clinical Research, Clinical Trials and Regulatory Affairs, 6(3): 163-181.

Martinez, W.C. (2021). Attack of the clones: An examination and critique of FDA's medical device regulatory scheme. *Tennessee Journal of Law and Public Policy*, 15: 344-399.

Matczak, M., Kaczynski, T. & Kruczyk-Gonciarz, A. (2021). Distribution and marketing of drugs in Poland: Overview. Domanski Zakrzewski Palinks Sp.k, https://uk.practicallaw.thomsonreuters.com/1-618-5577.

MedTech Europe (2020). Impact of changes under the new EU medical devices regulation (EU) 2017/745 to international registrations. medtecheurope.org (May 26, 2020), https://www.medtecheurope.org/resource-library/impact-of-changes-under-the-new-EU-medical-devices-regulation-2017/745-to-international-registrations.

Melvin, T. & Torre, M. (2019). New medical device regulations: The regulator's view. EFORT Open Reviews, 4: 351-356.

Miareczko, B. & Jedrzejewska, M. (2002). Product conformity assessment in Poland. Central Institute for Labor Protection-National Research Institute (CIOP-PIB), https://www.ciop.pl/CIOPPortalWAR/appmanager/ciop/en?_nfpb=true&_pageLabel=P740041378134060966784 4&html_tresc_root_id=300001486&html_tresc_id=300001488&html_klucz=6813.

Ministry of Health Malaysia (2020). Medical device guidance document: Field corrective action (FCA). Mda.gov.my, https://portal-cloud.mda.gov.my/industry/vigilance-unit/field-corrective-action.html.

Noah, D. (2021). Creating a certificate of free sale for your exports. Passages-The International Trade Blog, https://www.shippingsolutions.com/blog/certificate-of-free-sale.

Office for the Registration of Medical Products, Medical Devices and Biocidal Products (2023). http://www.urpl.gov.pl (last accessed May 25, 2023).

Office of the United States Trade Representative (2023). U.S. harmonized tariff schedule. ustr.gov, https://www.usitc.gov/harmonized_tariff_information.

PAIH. (2023). Why Poland? https://www.paih.gov.pl/en (last accessed May 25, 2023).

Pane, J., Francisca, R.D.C., Verhamme, K.M.C., Orozco, M., Viroux, H., Rebollo, I., & Sturkenboom, M.C.J.M. (2019). EU postmarket surveillance plans for medical devices. Pharmacoepidemiology and Drug Safety, 28(9): 1155-1165.

Patryn, R., Zagaja, A., & Drozd, M. (2021). Safety of medical devices in Poland – Analysis of withdrawn and suspended certificates of compliance. Medical Devices: Evidence and Research, 14: 239-247.

Pitkanen, H., Raunio, L., Santavaara, I., & Stahlberg, T. (2021). European medical device regulations MDR & IVDR. Business Finland, https://biomarker.nu/summery/european-medical-device-regulations-mdr-ivdr-a-guide-to-market.

Pogonowski. I.C. (1987). Poland: A historical atlas. Hippocrine Books, Inc.: NY, NY.

Polish Investment and Trade Agency (PAIH). (2022). Doing business in Poland- Investor's guide. PAIH: Warsaw, Poland.

Przezdziecka, E. (2021). FDI in Poland (American Chamber of Commerce in Poland) (Presentation) (March 24, 2021). Available: https://www.researchgate.net/publication/350453390_FDI_in_Poland.

QualityMedDev (2021). 21CFR 803: Medical device reporting according to FDA regulation. Qualitymeddev.com (March18, 2021), https://www.qualitymeddev.com/2021/03/18/21-cfr-803/.

Rimsys (2022). Class III medical devices in the United States. (July 6, 2022), https://www.rimsys.io/blog/class-iii-medical-devices-in-the-united-states.

Rish, T. (2021). Understanding the premarket approval (PMA) process. Greenlight.guru (blog) (July 26, 2021), https://greenlight.gura/blog/premarket-approval-pma.

Rodl & Partner (2020). Successfully investing in Poland. Insights (May 2020), https://www.roedl.com/insights/internationalisation/investing-in-poland.

Rutkowski, E. (2021). Medical Devices and Equipment in Poland: Report 2021, https://www.trade.gov.pl/wp-content/uploads/2021/08/PPE_PL_Medical-Devices-and-Equipment-in-Poland-Report-2021.pdf.

Safar, L., Colquhoun, H., & Hill, C. (2012). Language requirements for EU medical device labels. Multilingual, 23(6): 1-3.

Simunovic, A., Kranjcec, K., Pekas, M., & Tomic, S. (2023*). Journal of Pharmaceutical Policy and Practice*, 16: Article 3 (online), https://link.springer.com/article/10.1186/s40545-023-00519-2.

Smith, B. (2023). Ultimate guide to postmarket surveillance of medical devices. Greenlight.guru (blog) (February 26, 2023), https://www.greenlight.guru/blog/postmarket-surveillance.

Spruill v. Boyle-Midway, Inc. (1962). 308 F.2d 79. United States Court of Appeals for the Fourth Circuit.

Swidrak, B. (2022). New Polish act on medical devices-part 2. taylorwessing.com (April 27, 2022), https://www.taylorwessing.com/en/insights-and-events/insihhts/2022/04/new-polish-act-on-medical-devices-part-2.

Termini, R.B. & Hoxha, J. (2020). This is not 1976 anymore – Moving forward in medical device safety and the 510(k) clearance process under the United States Federal Food, Drug, and Cosmetic Act. Quinnipiac Health Law Journal, 23: 135-164.

UNCTAD (2022). 2022 world investment report. Geneva: Switzerland.

United States Department of State (2019). 2018 Investment Climate Statements: Poland (Executive Summary). United States Department of State. Available: https://www.state.gov/reports/2019-investment-climate-statements/poland/.

Urzad Regestracji Produktow Leczniczych, Wyrobow Medycznych i Produktow Biobojczych (2022). urpl.gov.pl, http://www.urpl.gov/pl/pl/infor,acje-dla-osob-niepelnosprawynch.

USA Customs Clearance (2020). Importing medical devices into the US: What you need to know. USAcustomsclearance.com (September 9, 2020), https://usacustomsclearance.com/process/importing-medical-devices-into-the-US/.

Vasiljeva, K., van Duren, B.H., Pandit, H. (2020). Changing device regulations in the European Union: Impact on research, innovation and clinical practice. *Indian Journal of Orthopedics*, 54(2): 123-129.

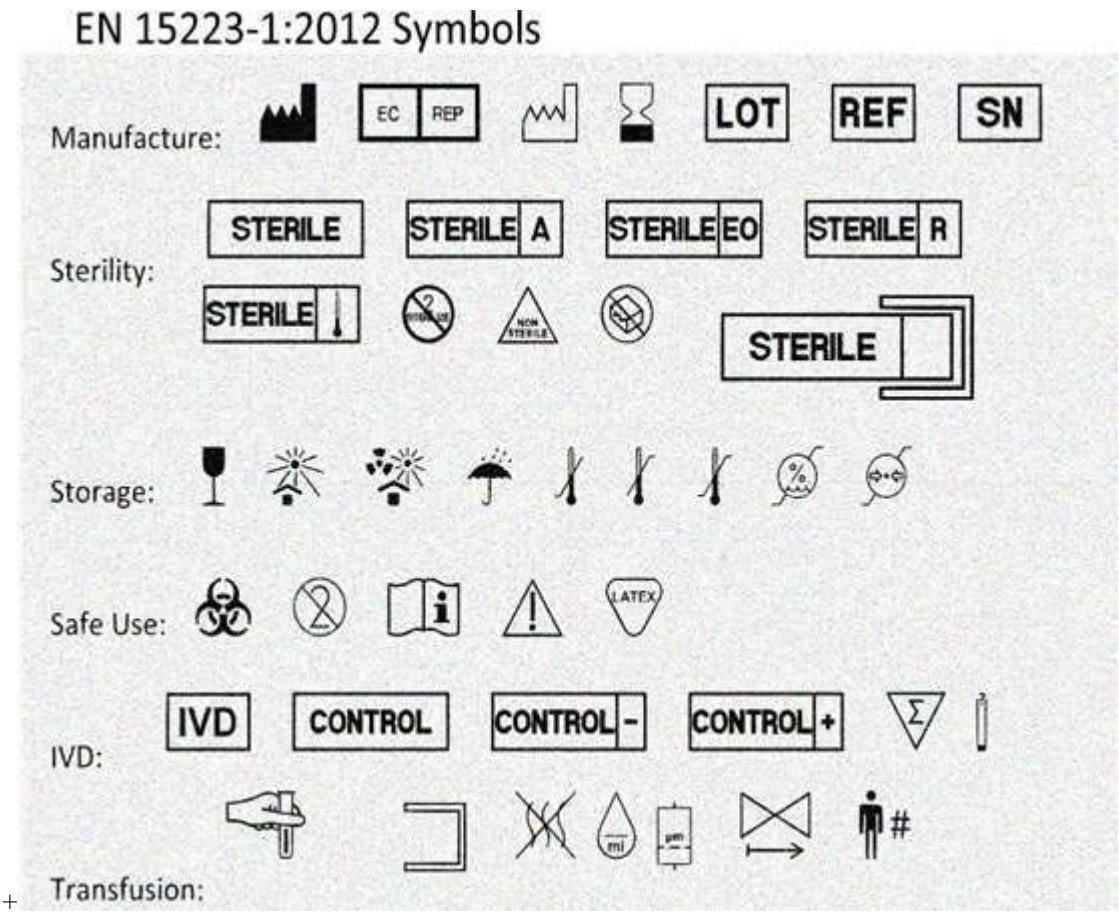
World Health Organization (2023). Field Safety Corrective Action, https://extranet.who.int/pqweb/vitro-diagnostics/field-safety-corrective-action.

Wyrob Medyczny (2012). Reporting medical incidents. wyrobmedyczyny.info (November14, 2012), https://www.wtrobmedyczny.info/en/incident-medical-2/.

Yeng, P., Yang, B., & Wolthusen, S.D. (2020). Legal requirements toward enhancing the security of medical devices. Journal of Advanced Computer Science and Applications, 11(11): 666-675.

Zbyszewski, M. (2018). What is a customs bond? https://info.expeditors.com/horizon/what-is-a-customs-bond.

APPENDIX I: MEDICAL DEVICE SYMBOLS IN THE EUROPEAN UNION



The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 200-213
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.547

Factors Influencing the Integrity of Financial Statements

Lailah Fujianti[1], Nurainun Bangun[2], Eka Putri Wahyuningtias[3]

[1] Accounting, Faculty of economic and business, Universitas Pancasila, Jakarta, Indonesia
[2] Accounting, Faculty of economics and business, Universitas Tarumanegara, Jakarta, Indonesia
[3] Accounting, Faculty of economics and business, Universitas Pancasila, Jakarta, Indonesia

Correspondence: Lailah Fujianti1Accounting, Faculty of economic and business, Universitas Pancasila, Jakarta, Indonesia. E-mail: lailahfujianti@gmail.com

Abstract
This research was aimed to determine the effects of independent commissioners, managerial ownership, institutional ownership, and audit committee, on the integrity of financial statements in manufacturing companies listed on the Indonesian stock exchange. The analysis model used is panel data regression analysis and data processing using Eviews9. The sample in this research is 33 manufacturing companies in various industry sectors and the consumer goods industry sector in the 2017-2019 research year. The type of data in this study is secondary data with a sample selection method that is purposive sampling method. The results of this study indicate that the variables of independent commissioners, institutional ownership, and audit committee affect the integrity of financial statements, while managerial ownership variables do not affect the integrity of financial statements.

Keywords: Integrity of Financial Statements, Independent Commissioners, Managerial Ownership, Institutional Ownership, Audit Committee

1. Introduction

Financial reports are the result of the accounting cycle process which starts from recording, grouping, summarizing to preparing financial reports. Financial reports present information related to the company's financial performance. This information is very useful for interested parties, both internal and external parties, for decision making. One important piece of information is the company's profit achievement in a certain time period which is useful for investors to assess the success of their investment decisions. Prospective investors can use this information as a basis for making decisions about whether to invest or not.

Financial reports will be of maximum benefit if they meet quality requirements. Quality financial reports are financial reports that contain important elements in running a business and meeting the needs of interested parties. Several requirements for the quality of financial reports include accuracy. Accurate means that the information presented in the financial statements does not contain errors or manipulation that could be misleading. Apart from that, financial reports must be transparent. All relevant and material information must be disclosed clearly, so that

external stakeholders can properly understand the company's financial and operational conditions. For this reason, companies are required to uphold ethics, morals and rules in order to present financial reports while upholding integrity. However, there is some evidence that cannot be denied that there are efforts that conflict with integrity by manipulating the presentation of financial statements.

Some evidence of financial report manipulation occurred in several companies such as Enron, Tyco, Global Crossing, and Worldcom in America. Similar manipulation was carried out in Indonesia by PT Kimia Farma. PT Kimia Farma Tbk. The company is suspected of manipulating financial reports in 2001 by inflating net profits in the 2001 financial reports. The inflated amount was Rp. 32,668 billion. The latest case occurred at PT Garuda in 2020. PT. Garuda Indonesia, Indonesia's national airline, was revealed to have manipulated financial reports by recording commission payments to Airbus aircraft sales agents that did not actually exist. This phenomenon is actually sufficient to prove that manipulation of financial data can occur as a failure of the integrity of financial reports to meet the information needs of financial report users. For this reason, the factors determining the integrity of financial report presentation are interesting to study.

Several reasons why companies manipulate financial reports, even though this kind of action is illegal and unethical. Some of these reasons include, firstly, to improve the company's image. Companies may want to create the impression that they are more successful and more profitable than they actually are in order to attract investors, shareholders, and potential business partners. The second reason is to avoid bankruptcy. When a company is in a bad financial situation, management may try to cover up the problem by manipulating financial statements to make them appear healthier than they actually are. This could help them obtain additional loans or delay potential bankruptcy. The third reason to increase share value. Manipulation of financial reports can also be done to raise the company's share price on the stock market. This can benefit management who own company shares or stock options. The fourth reason is to avoid regulations or taxes: Some companies may try to avoid regulations or taxes by manipulating financial statements. This could include avoiding taxes or meeting looser regulatory requirements. The fifth reason is bonuses and performance incentives. Executive management within a company can receive bonuses and incentives based on the company's financial performance. Therefore, they may have a personal incentive to manipulate financial reports to improve performance and obtain greater rewards. The sixth reason is pressure from shareholders or investment. Sometimes, large shareholders or investors who have influence in a company can put pressure on management to create financial reports that meet their expectations. The seventh reason is market instability. In times of economic instability or volatile markets, companies may feel the need to manipulate financial statements to remain strong and stable.

Several studies have examined several factors that might influence the integrity of a company's financial reports. One of them is Good Corporate Governance (GCG). GCG is a system and practice implemented within a company to ensure that the company is run in accordance with transparency, accountability, integrity and compliance with applicable laws and regulations. With high transparency, financial reports become easier to understand by stakeholders, such as shareholders, investors and regulators. This transparency also helps avoid fraudulent practices or manipulation of financial reports (Abed et al. 2022; Kassem, 2019). Company management accountability includes management's responsibility for the financial reports presented. In a good GCG environment, management is expected to be able to ensure that financial reports accurately reflect the company's performance and financial position. GCG also promotes strong internal control (Sudjono, 2023; Sunaryo et al. 2023). Effective internal controls can help prevent or detect errors or fraud in financial reports. This includes procedures for verifying financial transactions and correct reporting. The integrity of financial reports requires ethical business practices. GCG also emphasizes the importance of high business ethics in running a company. By following good ethics, companies will be less likely to engage in questionable practices that could affect the integrity of financial statements. In this way, the implementation of GCG is able to encourage the integrity of the presentation of financial reports so as to increase confidence in the presentation of financial reports (Fujianti,2023).

The GCG structure consists of the Board of Commissioners (DK), Board of Independent Commissioners (DKI), Institutional Ownership (KI), Managerial Ownership (KM) and Audit Committee (KA). The research results show that there are still varying results regarding the relationship between GCG and the integrity of financial reports. Wardhani and Samrotun (2020) show that the large number of DKIs encourages an increase in the integrity of

financial reports, whereas the opposite has been shown (Abbas et al. 2021), that the large number of DKI members reduces the level of integrity of financial reports. Oktaviana and Paramitha (2021) show that KI is significant for the integrity of financial reports and vice versa by Ulfa and Challen (2019). Anah et al. (2023) shows that KA is able to improve the integrity of financial reports, the opposite is found by Inayati and Azizah (2021). The integrity of financial reports is an important element in business and the factors that influence increasing the integrity of financial reports still vary from several previous researchers, so this research will review the factors that influence increasing the integrity of financial reports, especially the role of GCG in improving the integrity of financial reports in Indonesia. .

2. Theoretical Review

2.1. Literature Review and Hypothesis Development

2.1.1. Agency Theory

Agency theory is a conceptual framework used in economics and management to understand and analyze the relationship between company owners and managers who act on behalf of the owners in managing company assets or resources. The main concept in agency theory is the existence of a conflict of interest between company owners and managers. Owners want managers to take actions that will increase the value of the company and the owner's profits. However, managers also have personal interests, such as salaries, bonuses, and other incentives, that may not always align with the owners' interests. In the context of agency theory, it tries to explain how these conflicts of interest influence manager behavior and how company owners can manage risks and reduce agency costs (Payne and Petrenko, 2019).

2.1.2. The Integrity of Financial Reports

The integrity of financial reports is a very important concept in the field of accounting and finance. This refers to the quality of financial reports that reflect the truth and accuracy of a company's financial position and performance. The integrity of financial reports is the extent to which financial reports are presented correctly and honestly, where all information regarding financial position, performance and cash flow must be correct as is because it will be accountable to interested parties (stakeholders). Therefore, information that has high integrity has the ability to influence the decisions of readers of financial statements to help make decisions.

Financial report integrity includes several main aspects:

1. Precision/Accuracy

   Financial reports must be true and accurate. The information presented in the report must reflect transactions and events as they are, without intentional distortion or manipulation.

2. Openness
   Financial reports must be transparent. All relevant and material information must be disclosed clearly, so that external stakeholders can properly understand the company's financial and operational conditions.
3. Consistency
   Integrity also includes consistency in the presentation of financial reports from year to year. This is important so that stakeholders can compare company performance over time.
4. Neutrality
   Financial reports must be prepared neutrally, without any bias that favors or disadvantages a particular entity. This means that information must not be manipulated for the interests of certain parties.
5. Compliance with Accounting Standards
   Financial reports must be prepared in accordance with applicable accounting standards. This standard ensures that financial reports can be compared with reports from other entities, thereby enabling stakeholders to make informed decisions.
6. Disclosure

All relevant information, including risks and uncertainties, must be disclosed in the financial statements. This helps stakeholders to understand the risks that may affect the entity's financial performance.

7. No Fraud
   The integrity of financial reports also includes the absence of fraud or deliberate manipulation in the preparation of the reports. Fraud in financial statements is an illegal act that can result in serious legal and reputational consequences for a company
8. Independent Verification
   Financial reports are often verified by independent auditors to ensure their integrity. Auditors conduct a thorough examination of the company's financial records and accounting procedures to ensure that the reports correctly reflect the company's condition

The integrity of financial reports is an important foundation for building trust with external stakeholders, such as investors, creditors and the government (Saputra and Bakri, 2023). Dishonest or inaccurate financial reports can damage a company's reputation and result in serious financial losses. Therefore, it is important for every entity or company to prioritize integrity in preparing its financial reports

2.1.3. Good Corporate Governance (GCG)

GCG is a system and practice implemented within a company to ensure that the company is run in accordance with transparency, accountability, integrity and compliance with applicable laws and regulations. In this way, the implementation of GCG is able to encourage the integrity of the presentation of financial reports so as to increase confidence in the presentation of financial reports (Fujianti, 2023). GCG is also a rule, standard and organization in an economy that regulates the behavior of company owners, directors and managers who will be accountable for their duties to investors outside the company which include shareholders and lenders.

GCG factors consist of independent commissioners, managerial ownership, institutional ownership, and audit committee.

a. Independent Commissioners are members of the board of commissioners who are not affiliated with the directors, other members of the board of commissioners and controlling shareholders, and are free from business or other relationships that could affect their ability to act independently or act solely in the interests of the company
b. Managerial Ownership, the existence of share ownership by management will give rise to supervision of the policies taken by company management. According to Yuli Soesetio, managerial ownership is "the comparison between managerial share ownership and the number of shares outstanding. Shareholders and managers each have an interest in maximizing their objectives".
c. Institutional ownership is the ownership of a number of company shares by a non-bank financial institution where the institution manages funds on behalf of someone else. These institutions can be mutual fund companies, pension funds, insurance, investments, private foundations, endowments, or other large entities that manage funds on behalf of other people
d. The audit committee is a committee formed by and responsible to the board of commissioners to help carry out the duties and functions of the board of commissioners. The audit committee acts independently in carrying out its duties and responsibilities.

2.1.4. Hypothesis Development

The Relationship of Independent Commissioners with the Integrity of Financial Reports

DKI has a very significant role in maintaining the integrity of a company's financial reports (Abbas et al. 2021). DKI generally consists of individuals who do not have business relationships or significant financial interests with the company. Their presence provides independent oversight of management actions and decisions. This is important because management has an incentive to report the company's performance positively, especially if they have a personal interest in it. The existence of DKI can help ensure that financial reports reflect the actual condition

of the Company (Pramana et al. 2019). This is supported by previous research results which show a positive relationship between DKI and the integrity of financial reports (Parindur et al. 2019). Based on this, hypothesis 1 (H1) is as follows:

H1 : The Independent Board of Commissioners has a positive influence on the Integrity of Financial Reports

The Relationship between Managerial Ownership and the Integrity of Financial Reports

Managers who own significant shares in their companies have personal incentives to improve company performance and share prices (Duppati et al. 2020). This could mean they will be more likely to ensure that financial reports reflect actual performance and not manipulate them to make them look better than they are. Besides that, managers' investments in their companies can also increase the trust of third parties, such as auditors and regulators, in financial reports. They may be more inclined to work with third parties to ensure accurate financial reporting. Thus, significant managerial ownership of shares in a company can affect the integrity of financial reports. Ati et al. (2020) shows that there is a significant influence of managerial ownership on the integrity of financial reports, thus hypothesis 2 (H2) is as follows

H2 : Managerial Ownership has a positive effect on the Integrity of Financial Reports.

The Relationship between Institutional Ownership and the Integrity of Financial Reports

Investors often have a long-term view in their investments. Thus, they tend to prioritize the integrity of the financial reports of the companies in which they hold shares. Their interest in the company's long-term performance can encourage them to ensure that financial reports reflect actual performance, so that IP differentiation can encourage increased integrity of financial reports. Besides, institutional shareholders often have a large interest in company performance. They can play an important role in overseeing management actions and encouraging more transparent financial reporting practices. Strong institutional ownership can reduce the risk of manipulation or violations in financial reports because these institutions can take legal action or exercise their influence to ensure the integrity of the reports. Several previous studies have proven that the existence of institutional ownership can improve the integrity of financial reports (Budiharjo, 2020). Based on this, hypothesis 3 (H3) is as follows

H3 : Institutional Ownership influences the Integrity of Financial Reports

Relationship between the Audit Committee and the Integrity of Financial Reports

The Audit Committee is an important element in maintaining the integrity of a company's financial reports. The Audit Committee acts as an independent supervisor who helps supervise and ensure that the company's financial reports are prepared correctly, honestly and accurately. The Audit Committee usually consists of independent members from outside the company's management. This ensures that the committee can carry out an objective assessment of the financial reports without any pressure or influence from the parties involved in preparing the report. The Audit Committee monitors the effectiveness of the company's internal control system. They ensure that internal processes related to accounting and financial reporting function well and comply with applicable accounting standards. By carrying out the roles of the Audit Committee, it becomes one of the main guardians of the integrity of financial reports. Several studies support the positive relationship between audit committees and the integrity of financial reports, including Fikri and Suryani, E. (2020); Yudiawan and Kepramareni, (2022). Based on the description above, hypothesis 4 (H4) is as follows

H4 : The Audit Committee has a positive influence on the Integrity of Financial Reports.

3. Methodology

The population is companies registered on the IDX in various industrial sectors and consumer goods industrial sub-sectors for three years, on 2017-2019. Research data was taken for the 2017-2019 period, data before the occurrence of Covid-19 because the data was quite stable, while data after Covid-19, the industry was not yet completely stable from the downturn due to the impact of Covid-19. The collection used purposive sampling with data completeness criteria during 2017-2019. Based on this, 33 sample companies were selected so that for 3 years there were 99 company data.

The research model consists of 1 (one) dependent variable, that Financial Report Integrity (ILK), 4 (four) independent variables, that are GCG consisting of the Independent Board of Commissioners (DKI), Institutional Ownership (KI), Management Ownership (KM) and the Audit Committee (KA). The research model also includes 1 (one) control variable, that is Company Size. Company size is a control variable in this research because it has a significant influence on various aspects of business and the economy (Khatib, 2021). The research model can be seen in the following picture:

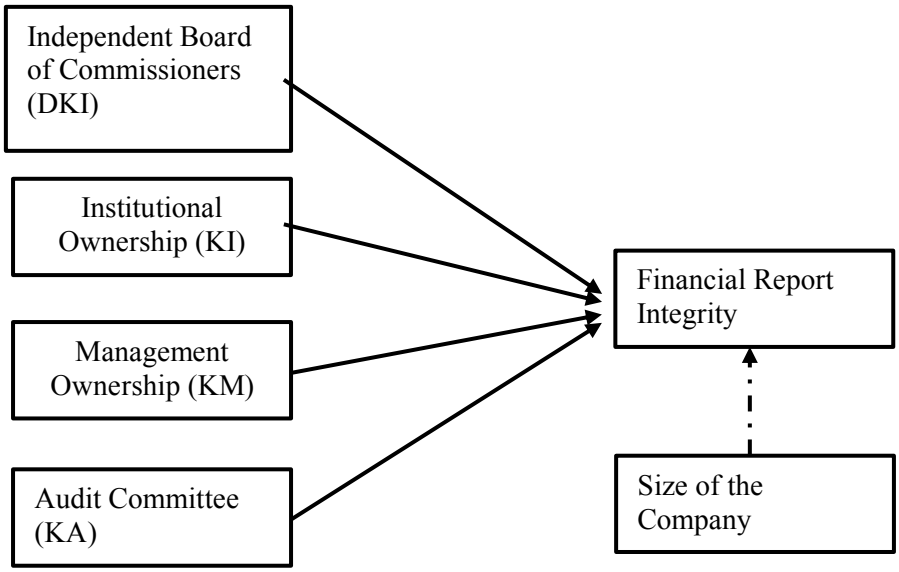


Figure 1: Research Model

The measurement of each variable is based on previous research. The following table shows the following measurements:

Financial Report Integrity is a measure of the extent to which financial reports are presented honestly without being covered up

Table 1: Measuring Variable

Variable			Measuring
	ILK	Financial Report Integrity is a measure of the extent to which financial reports are presented honestly without being covered up	MBV = $\frac{MVE}{BVE}$
	DKI	Members of the board of commissioners who come from outside the company	DKI = $\frac{Number\ of\ Independent\ Commissioners}{Total\ board\ of\ Commissioners}$
	KM	The proportion of shares owned by the management	KM= $\frac{the\ proportion\ of\ shares\ owned\ by\ management}{Number\ of\ shares}$
	KI	The proportion of shares owned	KI = $\frac{Number\ of\ shares\ owned\ by\ institutional}{Number\ of\ shares\ outstanding}$
	UP	Large size of the company	UP = Ln (Total Asset)

The data analysis techniques used in this research are descriptive statistics, classical assumption tests and panel data regression. Descriptive statistics aims to summarize data in a way that is easy to understand. This includes calculating the mean (average), median (middle value), mode (most frequently occurring value), maximum value, minimum value and standard deviation. The classical assumption test aims to ensure that the data used in statistical analysis meets these assumptions so that the resulting statistical analysis results can be considered valid. Classic assumption tests include normality, multicollinearity, heteroscedasticity and autocorrelation tests. Hypothesis testing was carried out using panel data regression.

4. Result and Discussion

4.1. Result

4.1.1. Descriptive Statistics

Based on table 2 in this study, there is 1 dependent variable, financial report integrity (ILK) and 4 independent variables, that are DKI, KM, KI, and KA and one control variable UP. The results of the analysis show descriptive statistics explained as follows:

Table 4.2 shows that the ILK variable shows a maximum value of 82.444, a minimum of -9.682, a mean value of 4.911 and a standard deviation of 12.084 and a median value of 1.535. The DKI variable shows a maximum value of 0.667, a minimum of 0.000, a mean value of 0.406 and a standard deviation of 0.125 and a median value of 0.375.

Table 2: Descriptive Statistics Test Result

	ILK	DKI	KM	KI	KA	UP
MEAN	4,911	0,406	0,083	0,682	3,030	28,685
MEDIAN	1,535	0,375	0,000	0,755	3,000	28,521
MAXIMUM	82,444	0,667	0,915	0,927	4,000	32,201
MINIMUM	-9,682	0,000	0,000	0,000	3,000	25,216
STD. DEV	12,084	0,125	0,219	0,241	0,172	1,501
OBSERVATION	99,000	99,000	99,000	99,000	99,000	99,000

The KM variable shows a maximum value of 0.915, a minimum of 0.000, a mean value of 0.083 and a standard deviation of 0.219 and a median value of 0.000. The KI variable shows a maximum value of 0.927, a minimum of 0.000, a mean value of 0.682 and a standard deviation of 0.241 and a median value of 0.755. The KA variable shows a maximum value of 4,000, a minimum of 3,000, a mean value of 3,030 and a standard deviation of 0.172 and a median value of 3,000. The UP Control Variable shows a maximum value of 32.201, a minimum of 25.216, a mean value of 28.685, and a standard deviation of 1.501 and a median value of 28.521.

4.1.2. Classical Assumption Test

Gujarati, (2009) shows that if the sample size is more than 30, then the data approaches a normal distribution. This study has a sample size of 33 with 99 observations, so according to this the data meets normality, so it does not require a normality test. Multicollinearity test results are in the following table. Based on table 3, it shows that the results of the correlation matrix show that the correlation coefficient value between independent variables in this study is in the range of numbers below 0.80, so it can be concluded that the data used in this study is free from multicollinearity problems.

Table 3: Multicolinearity Test Result

	DKI	KM	KI	KA	UP
DKI	1,000	-0,175	0,043	-0,103	-0,228
KM	-0,175	1,000	-0,338	-0,067	-0,152
KI	0,043	-0,338	1,000	0,161	0,116
KA	-0,103	-0,067	0,161	1,000	0,096
UP	-0,228	-0,152	0,116	0,096	1,000

To test heteroscedasticity in panel data analysis, the Glejser test is used, that regressing independent variables on absolute residuals. Based on the results from table 4.4, it can be concluded that the probability value of the independent variable is greater than 0.05, which means the independent variable is free from violations of the heteroscedasticity assumption.

The Durbin-Waton (DW) value is 2.412999. The DW value of 2.412999 will be compared with the DW table value using a significance level of 5% with the number of observations (T) = 99 and K (number of independent variables) of 6, then you will get a dL value of 1.5467 and dU of 1.8029, so the value DW of 2.412999 is located in the 5th area (dU < DW < 4 - dU). The DW value is higher than the lower limit (dL), so it can be concluded that the regression model does not contain autocorrelation.

Table 4: Heteroscedasticity Test Results

VARIABLE	COEFFICIENT	STD. ERROR	t-STATISTIC	PROB.
C	5,279	9,329	0,566	0,573
KI	-3,327	2,837	-1,173	0,244
KM	-1,652	1,683	-0,982	0,329
INS	1,636	1,507	1,085	0,281
KA	-2,883	2,033	-1,418	0,160
UP	0,223	0,265	0,844	0,401

4.1.3. Panel Regression Estimation Model

From the processed data, it can be seen that the Chow Test produces a period Chi-square value greater than $\alpha = 0.05$, that is $0.7592 > 0.05$. The results of the Chow Test calculations carried out show a decision to accept H0 and reject H1, so that a decision can be made that the common effect model is the best model when compared to the fixed effect model. The Hausman Test and Lagrange Multiplier Test do not need to be tested in research because the data from this research is data that does not have individual effects (Nanda, Eka, 2014).

Table 5: Chow Test Result

Redundant Fixed Effects Tests

Equation: fixed effect

Test period fixed effects

Effects Test	Statistic	d.f.	Prob.
Period F	0.251090	(2,90)	0.7785
Period Chi-square	0.550864	2	0.7592

4.2. Discussion

The results of the hypothesis test based on the common effect model panel data regression can be seen in the following table:

Tabel 6: Hypothesis Test Result

Variable	Coefficient	Std. Error	T-Statistic	PROB.
C	1,294	28,470	0,045	0,964
KI	-45,426	8,659	-5,246	0.0000
KM	-7,700	5,136	-1,499	0,137
INS	9,643	4,600	2,097	0,039
KA	-13,091	6,204	-2,110	0,038
UP	1,989	0,808	2,461	0,016

Based on the test results for the UP variable, it shows a probability value of 0.016 with a coefficient value of 1.989. The probability value shows this to be less than 0.050 or 0.16 < 0.050, so the UP variable functions as a control variable in this research. UP functions as a control variable in several studies (Fujianti, 2019; Fujianti et al. 2023) because company size can influence operational efficiency and profits. Larger companies may have greater economic advantages because they can take advantage of scale effects in production and distribution. Therefore, in research, it is necessary to control for UP so that scale effects do not become a factor influencing the observed results.

Based on the test results for the DKI variable, it shows a probability value of 0.000 with a coefficient value of -45, 425. The probability value shows this to be less than 0.050 or 0.000 < 0.050, so hypothesis H1 is accepted. This means that the DKI variable has a negative effect on the integrity of financial reports. The negative influence shows that the large number of DKI members will reduce the level of integrity of financial reports.

The presence of DKI gives credibility to the company's financial reports in the eyes of shareholders, investors, analysts and other external parties. When a company has an independent and competent board, the financial reports presented will be more trustworthy (Kaawaase et al. 2021), and this can increase market confidence in the company (Shahid and Abbas, 2019). However, this research does not support this statement, which is reflected in the results of the panel data regression test (table 4), showing that DKI actually has a negative effect on the integrity of financial reports. The results of this research support the research results of Prena, (2020) and Wiyono et al. (2023) and contradicts the research results of Srikandhi and Suryandari, (2020); Rahmadi et al. (2022); Nurbaiti and Elisabet, (2023).

DKI, which has the right qualifications and independence, should contribute positively to the integrity of the company's financial reports. However, there are certain situations where DKI can have a negative relationship to the integrity of financial reports, especially if its independence is threatened or compromised. DKI's independence could be threatened if it experiences pressure from external parties (Hidayah and Saptarini, 2019) such as lenders, external auditors, or large shareholders to suppress or change financial reports to suit their interests. This could threaten the independence of commissioners and lead to manipulation of financial reports.

DKI can also cause a decrease in integrity if it has a conflict of interest with company management or other shareholders. This can happen if DKI has business ties or personal relationships with parties who have an interest in financial reports, then its integrity can be questioned. For example, if a DKI has a large stake in a company or is associated with other businesses related to the company, then he or she may not be able to act independently. That is why one of the requirements as a DKI member is to be free from conflicts of interest and not have financial, management, share ownership and/or family relationships with parties who have an interest in financial reports (Junus et. al. 2022).

The factor that can cause the presence of DKI to reduce the level of integrity of financial reports is a lack of knowledge or experience. DKIs who lack knowledge of the industry or business of the company in which they serve, or have a lack of knowledge of accounting principles and financial reporting standards, may not be able to effectively assess financial reports. This may result in their inability to detect or avoid irregularities in reporting. Kim et al. 2017 states that a lack of knowledge about accounting principles and financial reporting standards will reduce the quality of financial report presentation.

Based on the test results of the KM variable, it shows a probability value of 0.137 with a coefficient value of -45.425. The probability value shows this to be greater than 0.050 or 0.137>0.050, so hypothesis H2 is rejected. This means that the KM variable has no effect on the integrity of financial reports. The research results are in line with the research results of Simamora and Setiyawati, (2023); Inayati and Azizah (2021) and contradicts the research results (Ati et al. (2020)

KM does not have a significant effect on the integrity of financial reports and needs to be considered carefully. Several conditions that can be expected to cause KM to have no effect on the integrity of financial reports include a conflict of interest. Management who have shares or significant ownership in a company may have a conflict of interest between their personal interests and the interests of the company. This may tempt them to commit unethical or questionable actions to maximize their personal gain, even if it is detrimental to the company. Internal Control conditions can be an obstacle to the relationship between KM and the integrity of financial reports. Management ownership can influence the level of internal control implemented in the company. Management that owns large stakes may tend to be less stringent in implementing the internal controls necessary to prevent fraud or manipulation of financial statements.

The transparency factor can also cause KM to not affect the integrity of financial reports. High KM can reduce the level of transparency in financial reporting. They may tend to conceal or reduce information that should be available to shareholders and other external parties. Significant management ownership can also affect the independence of the external auditor. Auditors may find it difficult to act independently if they have too close a relationship with management or have a financial interest in the company. Another reason is that management who own large shares may have a tendency to implement more aggressive or questionable accounting practices to improve the company's financial statements, especially if their bonuses or compensation are tied to financial performance. Besides that, management ownership value below 10% is a low percentage of share ownership, so management is unable to influence company policy, especially regarding the integrity of financial reports.

Based on the test results for the KI variable, it shows a probability value of 0.039 with a coefficient value of 9.643. The probability value shows this to be less than 0.050 or 0.039 < 0.050, so hypothesis H3 is accepted. This means that the KI variable influences the integrity of financial reports. The research results are in line with research results (Budiharjo, 2020) and contradict research results (Susandya and Suryandari, 2023).

KI, which includes share ownership by entities such as pension funds, insurance companies, investment companies, and professional investment managers, can have a significant influence on the integrity of a company's financial statements because financial institutions such as pension funds, insurance companies, investment companies and professional investment managers tend to have sufficient resources to conduct in-depth analysis and monitoring of the companies they invest in. They can conduct independent audits and analyzes to regularly examine a company's financial statements, identify potential problems or discrepancies, and take appropriate action if irregularities are discovered. Besides that, pension funds, insurance companies, investment companies are financial institutions that often have greater access to company management and internal information. They can participate in meetings with management, gain deeper insight into company operations, and influence company policy. This can give them greater control over the quality of financial reporting.

Furthermore, financial institutions have a high commitment to their reputation. If they are involved in investing in companies that engage in questionable or unethical financial reporting practices, their reputation could be tarnished. Therefore, they tend to go to great lengths to ensure the integrity of the financial statements of the companies in which they hold shares.

Based on the results of testing the KA variable, it shows a probability value of 0.038 with a coefficient value of 9.643. The probability value shows this to be less than 0.050 or 0.038 < 0.050, so hypothesis H3 is accepted. This means that the AC variable has a negative effect on the integrity of financial reports. The research results are in line with research results (Hermawati, 2021) and contradict research results (Purwaningsih 2021).

The existence of an audit committee actually has a negative effect on the integrity of financial reports, or in other words, KA can reduce the integrity of financial reports. This is a controversial matter. Audit committees are usually formed in companies or organizations with the aim of improving and ensuring the integrity of financial reports. However, there are several arguments that can be used as reasons that the existence of an audit committee can have a negative effect on the integrity of financial reports, that audit committee members may have a limited time commitment to carry out their duties. This can hinder their ability to conduct thorough audits to ensure the integrity of financial reports, because auditors who experience time pressure will reduce audit quality (Aswar et al. 2021). Besides that, audit committee members may not have sufficient knowledge in the fields of accounting and auditing to understand in depth the complexity of financial reports. This may make them less able to identify potential manipulation or inaccuracies in reports. An audit committee that does not have sufficient knowledge in the field of accounting will have a negative impact on audit quality (Denziana, 2015). Therefore, it is important for the audit committee to have members who have financial knowledge and expertise to ensure effective monitoring of the financial reporting process and improve the quality of financial information (Namakavarani et al. 2021).

5. Conclusion

Based on the results of the analysis, hypothesis testing, and interpretation of the results in the previous sections, the following conclusions can be drawn from this research:

The DKI variable has a negative effect on the integrity of financial reports. There are several factors that can cause DKI to have a negative influence, including DKI's independence being threatened due to pressure from external parties. There is a conflict of interest with management and has business interests or personal relationships with parties who have an interest in the financial statements.

The KM variable has no effect on the integrity of financial reports. This is because management's share ownership is too small so that KM is unable to influence company policy, especially regarding the integrity of financial reports.

KI includes financial institutions that have a high commitment to their reputation, therefore, they tend to work hard to ensure the integrity of the financial reports of the companies in which they hold shares.

The audit committee has a negative effect on the integrity of financial reports. Several arguments can be used as reasons that the existence of ACs can have a negative effect on the integrity of financial reports, one of which is that audit committee members may have a limited time commitment to carry out their duties.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Abbas, D. S., Ismail, T., Taqi, M., & Yazid, H. (2021). The influence of independent commissioners, audit committee and company size on the integrity of financial statements. *Studies of Applied Economics*, *39*(10).

Abbas, D.S., Siregar, I.G., Basuki (2021) Integrity Of Financial Statements And The Factors. *Journal of accounting science*. Vol 5 (2) :17-28

Abed, I. A., Hussin, N., Haddad, H., Almubaydeen, T. H., & Ali, M. A. (2022). Creative accounting determination and financial reporting quality: the integration of transparency and disclosure. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(1), 38.

Anah, S., Rizky Mustika Anggraeni, & Abdul Rahmat. (2023). The Effect of The Board of Directors, Audit Committee, and Company Size on The Integrity of Financial Statements (Empirical Study on State-Owned Enterpriseslisted on The Indonesia Stock Exchange 2016-2020 Period). *Journal of Accounting and Finance Management*, *4*(2), 168-179.

Aswar, K., Fahmi Givari, A., Wiguna, M., & Hariyani, E. (2021). Determinants of audit quality: Role of time budget pressure. *Problems and Perspectives in Management*, *19*(2), 308-319.

Ati, M., Paramita, R.W.D., , Yatminiwati, M., (2020) Managerial Ownership, Company Size, And Audit Quality Financial Report Integrity. *Progress Conference*, Vol. 3 (1): 219-224

Denziana, A. (2015). The effect of audit committee quality and internal auditor objectivity on the prevention of fraudulent financial reporting and the impact on financial reporting quality (a survey on state-owned company in Indonesia). *International Journal of Monetary Economics and Finance, 8*, 213-227.

Duppati, G., Rao, N. V., Matlani, N., Scrimgeour, F., & Patnaik, D. (2020). Gender diversity and firm performance: evidence from India and Singapore. *Applied Economics*, *52*(14), 1553-1565.

Fikri, M., & Suryani, E. (2020). Pengaruh Good Corporate Governance terhadap Integritas Laporan Keuangan (Studi pada Perusahaan BUMN yang terdaftar di BEI Periode 2014 sd 2018) [The Influence of Good Corporate Governance on the Integrity of Financial Reports (Study of BUMN Companies listed on the IDX for the 2014 to 2018 Period)]. *Jurnal Akuntansi (Media Riset Akuntansi & Keuangan)*, *8*(2).

Fujianti, L. (2019). The Role of Legal Compliance and Good Corporate Governance on Reducing Audit Delay on Publicly Listed Companies in Indonesia. *Research in World Economy*, *10*(3), 359-365.

Fujianti, L., 2023. The Role of Good Corporate Governance and Financial Conditions in Encouraging Dividend Policy in Indonesian and Malaysian Companies. Journal of Economics, Finance and Management Studies. Vol 6 (6): 2918-2925

Fujianti, Lailah., Nelyumna., Shahimi, Shahida., Natalia, Sonya Kristina, (2023) Syariah Governance and Disclosure Islamic Corporate Social Responsibility: A Comparative Study of Indonesian and Malaysian Islamic Banking. Economics and Business Quarterly Reviews, Vol.6 No.2: 11-19,

Hernawati, E. (2021). Corporate Governance, Earnings Management and Integrity of Financial Statements: The Role of Audit Quality and Evidence from Indonesia. *Review of International Geographical Education Online*, *11*(3).

Hidayah, E., & Saptarini, G. D. (2019). Pentagon fraud analysis in detecting potential financial statement fraud of banking companies in Indonesia. *Proceeding Uii-Icabe*, 89-102.

Inayati, N.I., dan Azizah, S.N. (2021) The Effect of Audit Quality, Managerial Ownership, And Audit Committee On The Integrity Of Financial Statements (Empirical Study on Manufacturing Companies listed on the IDX 2015-2019). Jurnal Akuntansi dan Pajak, 22(01), pp. 151-159

Inayati,N.I., Azizah, S.N. 2021. The Effect of Audit Quality, Managerial Ownership, And Audit Committee on The Integrity of Financial Statements (Empirical Study on Manufacturing Companies Listed on The IDX 2015-2019). Jurnal Akuntansi dan Pajak, 22(01): 151-159

Junus, I., Harymawan, I., Nasih, M., Anshori, M., Politically Connected Independent Commissioners and Independent Directors on the Cost of Debt. *International. Journal Financial Studies*. **2022**, *10*(2), 41: 13-21

Kaawaase, T.K., Nairuba, C., Akankunda, B. and Bananuka, J. (2021), Corporate governance, internal audit quality and financial reporting quality of financial institutions", *Asian Journal of Accounting Research*, Vol. 6 No. 3, pp. 348-366. https://doi.org/10.1108/AJAR-11-2020-0117

Kassem, R. (2019). Understanding financial reporting fraud in Egypt: evidence from the audit field. *Third world quarterly*, *40*(11), 1996-2015.

Khatib, S. F., & Nour, A. (2021). The impact of corporate governance on firm performance during the COVID-19 pandemic: Evidence from Malaysia. *Journal of Asian Finance, Economics and Business*, *8*(2), 0943-0952.

Kim, H., Kwak, B., Lim, Y., & Yu, J. (2017). Audit committee accounting expertise, CEO power, and audit pricing. *Asia-Pacific Journal of Accounting & Economics, 24*, 421 - 439.

Namakavarani, O.M., Daryaei, A.A., Askarany, D., & Askary, S. (2021). Audit Committee Characteristics and Quality of Financial Information: The Role of the Internal Information Environment and Political Connections. *The University of Auckland Business School Research Paper Series*.

Nurbaiti, A., & Elisabet, C. (2023). The Integrity Of Financial Statements: Firm Size, Independent Commissioners, And Auditor Industry Specializations. *Jurnal Akuntansi*, *27*(1), 1-18.

Oktaviana, H., & Paramitha, M. (2021). The Effect of Ownership Structure, Audit Committee, Company Size, and Audit Quality on the Integrity of Financial Statements on Manufacturing Companies Listed on IDX. *Journal La Bisecoman*, *2*(4), 15-29.

Parinduri, A. Z., Pratiwi, R. K., & Purwaningtyas, O. I. (2019). Analysis of corporate governance, leverage and company size on the integrity of financial statements. *Indonesian Management and Accounting Research*, *17*(1), 18-35.

Payne, G. T., & Petrenko, O. V. (2019). Agency theory in business and management research. In *Oxford Research Encyclopedia of Business and Management*.

Pramana, Y., Suprasto, H. B., Putri, I. G. A. M. D., & Budiasih, I. G. A. N. (2019). Fraud factors of financial statements on construction industry in Indonesia stock exchange. *International Journal of Social Sciences and Humanities*, *3*(2), 187-196.

Prena, G. D. (2020). The Influence Of Audit Tenure, Independent Commissioner, Audit Committee, And Audit Quality On Integrity Of Financial Statements. *Jurnal Ilmiah Econosains*, *18*(1), 39-49.

Purwantiningsih, A., & Anggaeni, D. (2021). Analisis Pengaruh Corporate Governance dan Kualitas Audit terhadap Integritas Laporan Keuangan pada Perusahaan Manufaktur Sub Sektor Otomotif dan Komponen yang Terdaftar di Bursa Efek Indonesia Periode 2012-2017. *Studi Akuntansi, Keuangan, dan Manajemen*, *1*(1), 33-43.

Rahmadi, Z. T., Wahyudi, M. A., Nurdiana, D., & Hasibuan, A. N. (2022). The Influence Of Independent Commissioners, Audit Committees And Profitability On The Integrity Of Lq-45 Indexed Companies' Financial Report . *Jurnal Ekonomi*, *11*(03), 612–622.

Saputra, W., & Bakri, B. (2023). The Influence of Quality of Financial Statements of Waqf Institutions on Stakeholder Trust. *Al-Buhuts*, *19*(1), 75-92.

Shahid, M. S., & Abbas, M. (2019). Does corporate governance play any role in investor confidence, corporate investment decisions relationship? Evidence from Pakistan and India. *Journal of Economics and Business*, *105*, 105839.

Simamora, J. M. D., & Setiyawati, H. (2023). Analysis of The Effect of Good Corporate Governance Structure on The Integrity of Financial Statements and Their Impact on The Quality of Financial Statements. Journal Of Humanities And Social Studies*)*, *7*(2), 355-358.

Srikandhi, M., & Suryandari, D. (2020). Audit Quality Moderates the Effect of Independent Commissioners, Audit Committee, and Whistleblowing System on the Integrity of Financial Statement. *Accounting Analysis Journal*, *9*(3), 186-192.

Sudjono, A. C. (2023). Do Good Corporate Governance and Whistleblowing Systems in Bank Industry Effectively Support Fraud Detection and Prevention? *Asia Pacific Fraud Journal*, *8*(1), 155-168.

Sunaryo, K., Kusumawardhani, I., & Astuti, S. H. (2023). Analysis of Internal Control System and Standard Operating Procedures Upn Yogyakarta Cooperatives to Support Good Corporate Governance. *CENTRAL ASIAN JOURNAL OF SOCIAL SCIENCES AND HISTORY*, *4*(9), 76-86.

Susandrya, A.A.P.G. B.A., Suryandari, N.N.A. 2023. The effect of Good Corporate Governance, Company Size and Leverage on the Integrity of financial Statement. Jurnal Ekonomi Teknologi dan Bisnis. Vol 2 (3) : 310-324

Ulfa, A.M., Challen, A.E., . Good Corporate Governance on Integrity of Financial Statements. Advances in Social Science, Education and Humanities Research, volume 439 : 40-45.

Wardhani, W. K., & Samrotun, Y. C. (2020). Pengaruh kepemilikan institusional, kepemilikan manajerial, ukuran perusahaan dan leverage terhadap integritas laporan keuangan [The influence of institutional ownership, managerial ownership, company size and leverage on the integrity of financial statements]. *Jurnal Ilmiah Universitas Batanghari Jambi*, *20*(2), 475-481.

Winoto, A., Salim, G., & Purnomo, A. (2023). Factors affecting the integrity of financial statements. *Corporate Governance and Organizational Behavior Review*, *7*(3), 211-227.

Yudiawan, I. N., & Kepramareni, P. (2022). Pengaruh Komisaris Independen, Komite Audit, Kepemilikan Institusional, Leverage Dan Ukuran Perusahaan Terhadap Integritas Laporan Keuangan Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia Periode 2018-2020 [The Influence of Independent Commissioners, Audit Committees, Institutional Ownership, Leverage and Company Size on the Integrity of Financial Reports in Manufacturing Companies Listed on the Indonesian Stock Exchange for the 2018-2020 Period]. *Kumpulan Hasil Riset Mahasiswa Akuntansi (KHARISMA)*, *4*(3), 302-311.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 214-229
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.548

Directors Gender Diversity, Company Size, Sales Growth against Financial Pressure with Intellectual Capital as Moderation

Masno[1], Supratikta[2], Florentina Raines[3]

[1] Postgraduate Lecturer of Master of Management at Pamulang University. Banten. Indonesian
Lecturer at the Faculty of Economics and Business UIN Syarif Hidayatullah Jakarta. Indonesian
Email: dosen00124@unpam.ac.id; masnomarjohan@yahoo.co.id
[2] Postgraduate Lecturer of Master of Management at Pamulang University Banten. Indonesian
Email: hadisupratikta@gmail.com
[3] Master of Management Student of Pamulang University. Banten. Indonesian.
Email: florentinaraines@gmail.com

Abstract
This research aims to analyze the factors that can influence financial distress. This study is a quantitative research as it explains the influence between variables through hypothesis testing. The research uses secondary data obtained from financial reports and annual reports with the research population being property and real estate companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022. The sampling method used in this research is purposive sampling. The sample that met the criteria was 38 companies. The data analysis method used in this research is quantitative data analysis using the Eviews program to process data using panel data regression analysis. The results show that gender diversity and sales growth have a significant influence on financial distress, while firm size does not have a significant influence. Intellectual capital can moderate the influence of gender diversity on financial distress, but it cannot moderate the influence of firm size and sales growth on financial distress. Based on the results of this research, it is expected that company management pays attention to the proportion of gender diversity in top-level management. Additionally, sales growth should be accompanied by increased profits, meaning that the company can effectively manage its burdens.

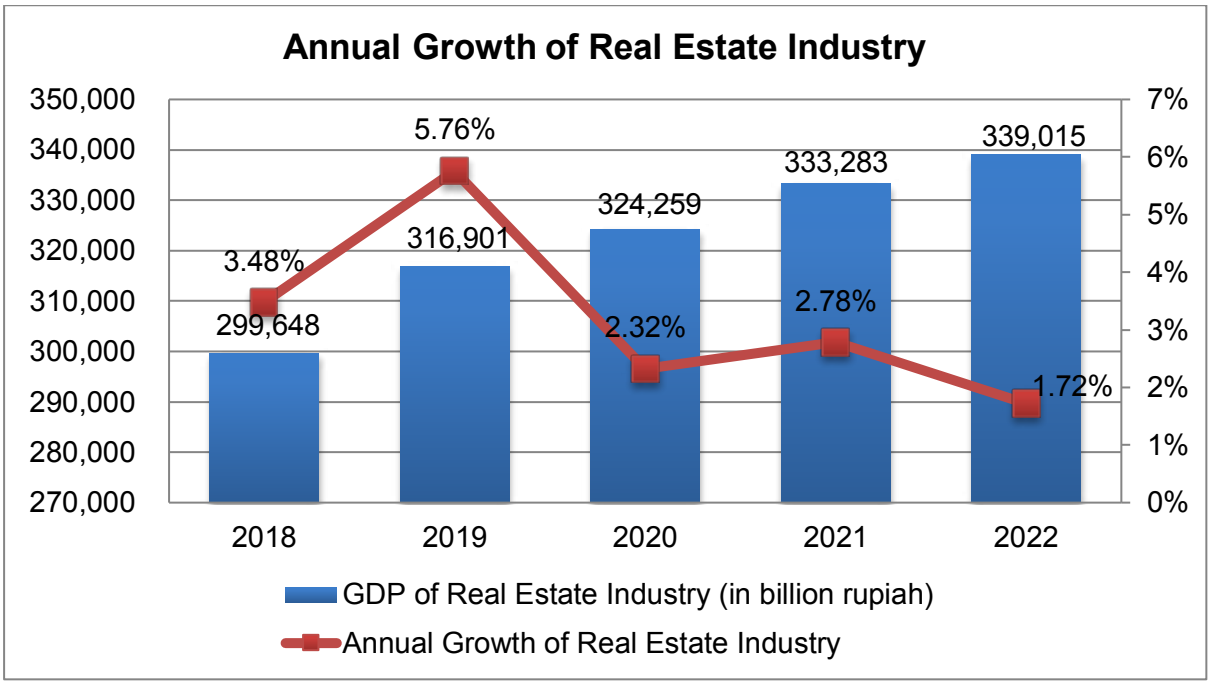
Keywords: Financial Distress, Gender diversity, Intellectual Capital, Sales Growth, Intellectual Capital

1. Introduction

The property, real estate, and construction sectors play a crucial role in the economy and development of Indonesia. This sector is also one of the indicators to assess the economic progress of a country. The property and real estate sector is a large sector that can absorb a significant amount of workforce and has a ripple effect on other sectors of the economy. The growth of the property and real estate sector will always attract the interest of investors because land and building prices tend to increase. It can be seen that this sector contributes significantly to the

Indonesian economy. Due to the increasing demand for housing, apartments, hotels, and shopping centers, property development is booming in Indonesia, both in urban and rural areas.

The COVID-19 pandemic has had a major impact on the property and real estate sector, causing a decline in its financial performance. Some of the impacts of the domestic financial crisis include companies facing financial crises (Pawitri & Alteza, 2020). Moreover, the financial crisis can reduce investor confidence in businesses, making it difficult for companies to obtain the necessary funds to operate.



Picture 1.1: Trend Data of Real Estate Industry Growth

Source: Data Industri Research

The graph above shows the growth trend of the real estate and property industry, which has experienced fluctuating conditions from 2018 to 2022. From 2018 to 2022, the GDP of the real estate industry experienced an increase, but the industry growth has declined since 2019 to 2022. This is due to the increase in GDP of the industry caused by the rising property prices, but high property prices can hinder the long-term growth of this sector as it can decrease the demand for properties. Sometimes, large projects or new developments can boost the GDP of the property industry in the short term, but at the same time, if there is a decrease in demand in the market, long-term growth can be disrupted. Changes in consumer preferences for specific types of properties or specific locations can affect the growth of the property industry. If consumers prefer different types of properties or locations, the demand for certain types of properties or in certain locations may decrease even though the overall GDP is increasing. In 2019, the real estate and property industry experienced growth. This increase was due to several factors, including the increase in demand in the hotel and convention hall segments. The increase in meetings and various events held by the government and multinational companies in the third quarter of 2019. Furthermore, the demand for hotels also increased in tourist areas such as Bandung and Denpasar (PPKOM Bank Indonesia, 2019). However, in 2020, there was a drastic decrease. This was due to the COVID-19 pandemic that hit Indonesia and the world, which also had a significant impact on the property sector, where property sales decreased significantly in 2020. In 2021, there was a slight increase, but not significant, as it was still in the recovery phase, and there was another decline in 2022.

2. Literature Review

2.1. Agency Theory

In agency theory, the party referred to as the principal is the investors and shareholders, while the management of the company is referred to as the agent (Kartika et al., 2020). This separation of interests can lead to conflicts because there are contracts applied between the principal who uses the agent to carry out a service activity (Nilasari, 2021). A manager has authority and rights in decision-making after being delegated by the owner as the principal. The agency relationship becomes problematic when the agent and principal have different goals. If the agent and principal try to dominate each other's roles and have different objectives, then the principal can no longer dominate the agent. Agency conflicts can be reduced by implementing monitoring mechanisms that align the interests of the manager with the owner. One monitoring mechanism that can be implemented is by requiring the manager to provide regular reports to the owner, such as financial reports and annual reports (Yuliani & Rahmatiasari, 2021). The condition of financial distress can be described as the inability or incapacity of the company to make timely debt payments.

Based on several theories of agency, this is expected to serve as a tool to reassure investors who will receive returns on their investments in the future. However, with the presence of financial reports showing poor results or earnings, it can create a situation or condition of financial distress.

2.2. Signalling Theory

Signalling theory is an important aspect in investor decision making. This is because the information provided by the company is a collection of important data that provides a record and overview of the company's past, present, and future. There are many pieces of information from the company that can be considered as signals. This information can be found in the annual report. The information contained in the annual report includes information about the company's activities, such as financial reports, as well as non-financial information that is not related to financial reports. Financial reports are created based on the activities that occur in the company during a specific period of time. Through financial reports, we can determine whether the company is in a healthy condition or experiencing financial distress. A healthy company is indicated by consistent profitability over a long period of time. Additionally, the company's cash flow can also provide insights. A high and consistent cash flow indicates that the company is able to pay its debts to creditors (Agustini & Wirawati, 2019).

2.3. Financial Distress

Financial distress is a condition where a company faces financial difficulties before it goes bankrupt. According to Nabawi and Efendi (2020), financial distress occurs because the company is unable to manage and maintain the financial performance stability, starting from the failure to promote its products, which results in a decrease in sales. As a result, with reduced income from minimal sales, the company may experience operational losses and net losses for the current year. Furthermore, these losses can lead to a capital deficiency due to a decrease in retained earnings used to pay dividends, causing an overall equity deficiency. If this continues, it is not impossible for the company's total liabilities to exceed its total assets. According to Drescher (2014:25) in Sudirgo et al., (2019), financial distress is the final stage of a liquidity crisis and potentially includes the bankruptcy phase, meaning that the company is having difficulty meeting its obligations to creditors. From a broader perspective, financial distress can be identified when a company's economic conditions deteriorate and even violate agreements with creditors, resulting in defaults (legal actions). Financial distress can cause a company to fail to make payments according to existing contractual agreements. Other impacts of financial distress include negative effects on the company's costs, such as tax loss carryforwards due to increased debt. Moreover, the relationships with customers, suppliers, employees, and creditors become strained due to doubts about the company's future existence. In 1984, Altman conducted a further research in various countries using different non-publicly traded manufacturing companies. This formula was then found to be more suitable for manufacturing companies that do not sell their shares on the Stock Exchange (Rudianto, 2013:256). The research resulted in a second Z-score formula for non-

publicly traded manufacturing companies, and this modified discriminant function by Altman can be formulated as follows (Qalbiyani et al., 2022):

$$Z = 0{,}717X1 + 0{,}847X2 + 3{,}107X3 + 0{,}420X4 + 0{,}998X5$$

X1 = Working Capital / Total Assets
X2 = Retained Earning / Total Assets
X3 = EBIT / Total Assets
X4 = Book Value of Equity / Book Value of Total Liabilities
X5 = Sales / Total Assets

2.4. Gender Diversity

Gender diversity is the diversity of genders where women and men have equal rights and responsibilities to occupy top management positions (Raharjanti, 2019). Gender diversity in a company is expected to provide positive effects such as innovation, creativity, and different perspectives (Samudra, 2021). Gender diversity is related to the characteristics of executives in decision-making. Executives are generally classified into two types: risk-averse executives and risk-taking executives (Safitri et al., 2021). Risk-averse executives tend to avoid risks and prefer safe and conservative decision-making, while risk-taking executives are more open to taking risks and new opportunities. Women are considered to be more cautious and risk-averse compared to men. This can be a reason why policies made by women in the board of directors are more targeted and can reduce risks (Pramesti, 2022).

Gender diversity is also related to agency theory, which involves overseeing every decision made by the board of directors, ultimately leading to the financial performance of the company. Women on the board of commissioners, who are seen as more cautious, meticulous, and attentive to risks, are expected to apply these qualities in overseeing the organization, thereby minimizing factors that could lead the company to financial distress. In this study, gender diversity is measured by comparing the number of female directors to the total number of directors in a company (Samudra, 2021). This can be represented by the formula:

$$Gender\ Diversity\ = \frac{Number\ of\ women\ in\ the\ board\ of\ directors}{Total\ number\ of\ directors}$$

2.5. Firm Size

Firm size or company size is a scale that can describe the magnitude of a company (Rachmawati, 2020). Companies can be classified as large or small in various ways, such as by calculating total assets, total sales, or market capitalization (Agustia & Suryani, 2018).

Company size can also be understood as a comparison of the magnitude of an object. Company size can be assessed in several ways. Company size can be based on total assets, total revenue, market capitalization, number of employees, and so on. Basically, company size is divided into four categories: large firms, medium firms, small firms, and micro firms (Khamisah et al., 2020). Therefore, it can be concluded that company size is an indicator that can indicate the status or characteristics of an organization or company, where several parameters can be used to determine the size (large and small) of a company, such as the number of employees employed by the company to carry out its operations, total assets owned by the company, total sales of the company during a certain period of time, and the number of shares outstanding. Large companies tend to attract the attention of the general public, which will later attract investors to invest their capital. Thus, large companies tend to maintain stability and the condition of the company.

In this study, firm size is measured using total assets, as it is more stable and representative in explaining the size of the company. The researcher calculates firm size referring to the study conducted by Khamisah et al., 2020, using the natural logarithm value of total assets.

$$Firm\ size = Ln\ (Total\ Aset)$$

2.6. Sales Growth

Sales growth is the increase or decrease in the value of a company's sales. According to Prasetya and Oktavianna (2021), sales growth is a ratio that depicts the increase in a company's sales over time. Therefore, sales growth can be used as a prediction for future sales growth. According to Rochendi and Nuryaman (2022), sales growth is a significant measure of growth, where an increase in sales growth indicates that the company can operate and achieve its targets because the company's sales increase over time. Thus, a high level of sales growth can be an indication of a successful company in their sales activities. Sales growth or the growth of sales is defined by Sinambela and Nur'aini (2021) as a benchmark for evaluating a company's performance based on profit acquisition in the company's financial statements from year to year. The growth of sales from year to year can serve as a basis for predicting the company's sales level in the future. Sinambela and Nur'aini (2021) also added that a high value of sales growth is evidence of a company's success in managing its operations, assets, and sales strategies. If the value of sales growth is higher, it can be interpreted that a company is successful in implementing its marketing and sales strategies. According to Agustini and Wirawati (2019), high sales growth indicates that the company's financial condition is relatively stable and avoids financial distress. Harahap (2013:39) in Putri (2019) formulated sales growth as follows:

$$Sales\ Growth = \frac{Sales\ t - Sales\ t-1}{Sales\ t-1}$$

The sales used is net sales, not gross sales, because gross sales may have deductions due to discounts and sales returns.

2.7. Intellectual Capital

According to Silalahi (2021) in Khoirony and Nazar (2023), intellectual capital is an intangible asset consisting of information and knowledge, and plays a crucial role in enhancing competitive ability and company performance. Intellectual capital is closely related to innovation, knowledge, and technology. When a company faces operational problems, employees and management will work together to find solutions to effectively manage the company and avoid financial distress. Each company has different components of intellectual capital, influenced by the values and culture unique to each company. These components can create value added for a company.

Intellectual capital is also related to signal theory, where in this case, it can act as a signal given by the company to stakeholders. Companies with strong intellectual capital can use this as a positive signal to stakeholders that the company possesses valuable resources and competencies, thereby increasing trust and confidence in the company. The Value-added Intellectual Capital Coefficient is measured by calculating the value added in three components of Intellectual Capital, namely Human Capital, Capital Employed, and Structural Capital, with the following calculation (Suzan & Rini, 2022) :

$$VAIC^{TM} = VACA + VAHU + STVA$$

VACA = Value Added Capital Employed
VAHU = Value Added Human Capital
STVA = Structural Capital Value Added

3. Hypothesis Development

3.1. The Influence of Gender Diversity on Financial Distress

The board of directors in a company is an important element and a key component in monitoring the company's performance (Indarti et al., 2021). The presence of a board of commissioners in a company is expected to reduce the occurrence of agency problems between shareholders as owners of the company and the board of directors as managers. The influence of gender diversity on financial distress is a research topic that examines how the presence of women in decision-making positions in a company can affect the level of financial difficulty or financial distress experienced by the company. The presence of women on the board of directors or in company management can bring different perspectives and experiences. This can result in more diverse and holistic decision-making, which

in turn can help identify and address financial problems before they develop into crises. A more diverse board of directors in terms of gender can bring more careful assessments of company performance. This can help identify financial problems earlier and take necessary corrective actions. Therefore, the more women there are in the board of directors, the smaller the chances of the company experiencing financial distress. Some previous empirical evidence, such as the research by Samudra (2021), Rodiah and Kristanti (2021), and Ramadanty and Khomsiyah, states that gender diversity has a significant influence on the condition of financial distress. However, these research results contradict some studies conducted by Nathania and Vitariamettawati (2022), Aldama and Kristanti (2022), and Mondayri & Tresnajaya (2022), which state that gender diversity does not affect financial distress. Therefore, based on this description, the first hypothesis can be formulated as follows:
H1: Gender diversity is suspected to have a significant influence on financial distress.

3.2. The Influence of Firm Size on Financial Distress

Widiastari and Yasa (2018) stated that firm size is a scale in which the size of a company can be classified by measuring it through total assets, total sales, stock value, and others. The size of a company can be seen from the magnitude of the assets owned by the company. Companies with large total assets indicate that the company has reached a level of maturity, where at this level the company's cash flow is already positive and is considered to have good prospects in a relatively long period. Therefore, the possibility of financial distress in large companies is smaller. If associated with signaling theory, large companies tend to have more resources and capabilities compared to small companies. The size of the company itself can be a strong signal to stakeholders that the company has financial stability and the ability to survive in a competitive industry. Large size can also give the impression of credibility to customers or investors because they believe that a business has passed the initial stage of development and has successfully built a reputation in the market. In addition, large companies often have easier access to additional capital from financial institutions and the ability to attract high-quality prospective employees. This can be a signal to the market that the company has the ability to develop business and obtain greater profits. Several previous empirical evidence, such as the research by Gaos and Mudjiyanti (2021), Aji and Anwar (2022), and Bernardin and Indriani (2020), state that firm size has a significant influence on the condition of financial distress. However, other research conducted by Saputra and Salim (2020), Aldama and Kristanti (2022), and Muslimin and Bahri (2022) contradicts their results where their research states that firm size does not affect the condition of financial distress. Firm size is an important point or outline of a company's resources. Large companies usually have a large book value and have large transaction developments, resulting in large profits. Therefore, based on this description, the second hypothesis can be formulated as follows:
H2: Firm size is suspected to have a significant influence on financial distress.

3.3. The Influence of Sales Growth on Financial Distress

Sales growth or sales growth ratio is a ratio used to predict future growth (Wibowo & Susetyo, 2020). Year-on-year sales growth can be used as a basis for predicting a company's sales level in the future. Sinambela and Nur'aini (2021) also added that high sales growth is evidence of a company's success in managing its operations, assets, and sales strategies. Increasing sales growth indicates that the company is able to execute its strategies to achieve its goals because the sales percentage shows an increase. This can be a signal to external parties as the level of business sales growth continues to increase, resulting in maximum and stable profits, ultimately avoiding financial difficulties for the company. Several previous empirical studies by Nathania and Vitariamettawati (2022), Muslimin and Bahri (2022), Purwanti and Syarif (2022), and Mulyatiningsih and Atiningsih (2021) stated that sales growth has a significant influence on financial distress. With high sales, the company's profit will also be high, reducing the likelihood of the company experiencing financial distress. But if the company's sales growth decreases, it will increase the company's chances of entering a financial distress condition because the profit from sales decreases, resulting in financial difficulties for the company. However, these findings contradict the research by Saputra and Salim (2020), Aji and Anwar (2022), and Prasetya and Oktavianna (2021), which stated that sales growth does not affect the financial distress condition. Therefore, based on this description, the third hypothesis can be formulated as follows:
H3: Sales growth is expected to have a significant influence on financial distress.

3.4. The Influence of Gender Diversity, Firm Size, and Sales Growth on Financial Distress

Based on the previous description, it has been explained that leverage ratio, firm size, and sales growth each have their roles in financial distress conditions. The higher a company's leverage ratio (relatively high debt level), the greater the risk of financial distress. This is because the more debt that needs to be paid off, the greater the pressure on cash flow if revenue decreases or costs increase. Companies with high leverage ratios will be more vulnerable to difficulties in paying off their debts on time, which can cause serious financial problems. Large-sized companies tend to have better access to financial resources such as bank loans or creditors, venture capital, or bond issuance. Thus, they may have more options to obtain additional funds in difficult situations and avoid financial distress. Sales growth means that a company's revenue will continue to increase. With higher revenue, the company has a source of funds to cover operational costs and financial obligations such as debt and interest payments. Based on previous research conducted by Nathania and Vitariamettawati (2022), it is stated that gender diversity, sales growth, and intellectual capital together (simultaneously) have an effect on financial distress. The research findings of Prasetya & Oktavianna (2021) also show that sales growth and intellectual capital simultaneously affect financial distress. Aji and Anwar (2022) state that firm size and sales growth together have an effect on financial distress. However, this research contradicts the findings of Saputra and Salim (2020), where their research findings state that firm size and sales growth simultaneously do not affect financial distress. Based on the description that has been explained, the fourth hypothesis is as follows:
H4: Gender diversity, firm size, and sales growth simultaneously have a significant influence on financial distress conditions.

3.5. The Influence of Intellectual Capital Interaction With Gender Diversity on Financial Distress

Intellectual capital is an intangible asset consisting of information and knowledge, and plays a crucial role in enhancing competitiveness and company performance (Khoirony & Nazar, 2023). In this context, it is expected that managers can optimize intellectual capital because it provides benefits and contributions that impact company profitability. Effective utilization and contribution of intellectual capital can create additional value that enhances financial performance (Kurniawati et al., 2020). Companies that can manage and utilize intellectual capital better tend to have positive financial performance as they can create value added and maintain competitive advantage. The advantage of intellectual capital reflected in high VAICTM value is believed to have a significant impact on company financial performance. The higher the intellectual capital performance, the higher the financial performance (Ulum, 2022:23). In the context of intellectual capital, the presence of gender diversity in management teams can generate innovative and creative thinking, enrich knowledge and expertise in the company. The combination of ideas, experiences, and knowledge from various gender backgrounds can produce diverse perspectives that are more adaptive and responsive to environmental changes. With good interaction between intellectual capital and gender diversity, organizations can generate better and different solutions than before, leading to overall performance improvement. This can enhance competitiveness, create added value for the organization, and help the company face challenges and reduce financial distress. According to previous research, intellectual capital directly has a significant influence on financial distress. Research by Nathania and Vitariamettawati (2022) and Mulyatiningsih and Atiningsih (2021) states that intellectual capital has a significant negative effect on financial distress. This means that the higher the intellectual capital value, the lower the likelihood of the company experiencing financial distress. The presence of female directors can bring different norms, perspectives, values, and understanding (Mahdalia & Ghozali, 2023). Women often have better understanding and sensitivity to specific markets and customers, which can help companies develop products and services that are more suitable for market needs. In line with the research by Mokoginta and Agung (2022), women are suitable for providing supervision to management, especially risk management. This suitability is based on their meticulous and conservative attitude, which can prevent actions that go against the interests of shareholders. Thus, management does not take reckless actions that could lead to financial distress.
H5: Intellectual capital can strengthen the influence of gender diversity on financial distress.

3.6. The Influence of Intellectual Capital Interaction With Firm Size on Financial Distress

The size of the company can also influence the company's ability to manage intellectual capital and face financial distress. Larger companies tend to have greater resources and capabilities to manage their intellectual capital. They may have more budget for investment in the development and utilization of intellectual capital. This provides a competitive advantage and allows companies to invest in further innovation. For example, large companies with patents and intellectual property rights can use them as resources to protect their innovation from competition. In addition, large companies with strong intellectual capital may have better access to financial resources, such as loans or equity investments, which can be used to overcome financial distress if it occurs. Therefore, larger companies are expected to have an advantage in facing financial distress. According to research by Saputra (2020), company size has a significant influence on intellectual capital disclosure, where the larger the company size, the higher the demand for information transparency compared to smaller companies. Companies strive to demonstrate that they have implemented good corporate management principles by providing more detailed information. By providing more complete and transparent information, companies aim to gain trust and confidence from their stakeholders. This can help companies in facing financial distress conditions, as stakeholders are more likely or have the opportunity to provide additional financial support, debt restructuring, or other business agreements. However, this contradicts the research by Utami and Agustin (2020) which states that the size of a company does not affect the disclosure of intellectual capital because companies may limit the disclosure of intellectual capital to avoid signaling to competitors. In this case, if a company has employees with high innovative skills and expertise, competing companies may be interested in recruiting them with higher salaries.
H6: Intellectual capital can strengthen the influence of firm size on financial distress.

3.7. The Influence of Intellectual Capital Interaction With Sales Growth on Financial Distress

Intellectual capital can also help companies improve operational efficiency. The knowledge and expertise possessed by employees can be used to optimize business processes, reduce production costs, and increase productivity. Company employees with in-depth knowledge of the products or services offered can identify new market opportunities, better cope with competition, and develop targeted marketing strategies. In addition, the use of existing skills and experience in the team can also help build good relationships with customers. having an advantage in strong relationships with customers and business partners can be used for market expansion and business diversification. These good relationships can make it easier for companies to introduce new products or expand their existing market reach and can increase sales. Companies with stable or increasing sales growth tend to have better cash flow, higher profits, and the ability to finance their operations, thereby reducing the risk of financial distress. Higher sales growth indicates that the company has been successful in leveraging its intellectual capital to create added value for customers and maintain market share.
H7: Intellectual capital can strengthen the influence of sales growth on financial distress. 😄

4. Methods

The research is conducted with the intention and purpose of testing the hypothesis regarding the impact of independent variables, namely gender diversity, firm size, sales growth, on the dependent variable of financial distress, as well as the moderation of intellectual capital. The research uses quantitative data in the form of secondary data obtained from the website www.idx.co.id and the official website of the company. Since the data collection for the research is obtained through a third party, it is considered as secondary data. The unit of analysis for the research is property and real estate companies listed on the Indonesia Stock Exchange (IDX). The research utilizes data pooling (panel pooled data), which is a combination of cross-section and time series data from 2018 to 2022. The data source is taken from the annual reports and financial statements of property and real estate companies listed on the IDX from 2018 to 2022.

4.1. Population and Research Sample

The population used in the research consists of all property and real estate companies registered on the IDX from 2018 to 2022. The research utilizes secondary data, which includes financial reports and sustainability reports of property and real estate companies obtained from their official websites and the IDX.

The research uses purposive sampling as the method. The following criteria are used for selecting the sample for the research:

1. Property and real estate companies that are consistently listed on the Indonesia Stock Exchange (IDX) during the period from 2018 to 2022.
2. Property and real estate companies that consistently publish financial reports and annual reports from 2018 to 2022.
3. Companies that provide the necessary information regarding the research variables during the period from 2018 to 2022.
4. Companies that do not have outlier data.

4.2. Types and Data Sources

The research utilizes quantitative data in the form of secondary data generated through the website www.idx.co.id and the official websites of the companies. Since the data for this research is obtained from a third party, it is considered secondary data.

4.3. Data Collection Method

The research uses the documentation method for data collection. The documentation method involves tracing and analyzing the selected company's annual reports and financial statements.

4.4. Data Analysis Method

This research utilizes panel data, which is a combination of cross-sectional and time series data.

5. Result and Discussion

5.1. Descriptive Statistics

Table 1: Descriptive Statistics

	FD	GD	FZ	SG	VAIC
Mean	3.590947	0.183158	2225.816	0.145895	2.987789
Median	3.360000	0.170000	2258.500	0.010000	2.040000
Maximum	28.72000	0.670000	2490.000	7.530000	50.99000
Minimum	-3.330000	0.000000	1794.000	-0.930000	-22.70000
Std. Dev.	3.459139	0.176969	156.9111	0.836053	7.020901
Skewness	3.111141	0.577598	-0.512951	4.878209	3.265796
Kurtosis	22.62532	2.346029	2.685048	37.22001	23.39142
Jarque-Bera	3355.638	13.95039	9.117398	10024.06	3629.567
Probability	0.000000	0.000935	0.010476	0.000000	0.000000
Sum	682.2800	34.80000	422905.0	27.72000	567.6800
Sum Sq. Dev.	2261.506	5.919105	4653387.	132.1082	9316.387
Observations	190	190	190	190	190

Source: Eviews 9 data processing.

In this study, descriptive analysis is used to understand the overview of the research variables in the sample companies during the study period of 2018-2022. Descriptive analysis is conducted by examining the minimum, maximum, mean, and standard deviation values.

Based on Table 4, the minimum value of gender diversity is 0.0000000, while the maximum value is 0.670000 with a standard deviation of 0.176969. The minimum value of firm size is 1794.000, while the maximum value is 2490.000 with a standard deviation of 156.9111. The minimum value of sales growth is -0.930000, while the maximum value is 7.530000 with a standard deviation of 0.836053. The minimum value of intellectual capital is -22.70000, while the maximum value is 50.99000 with a standard deviation of 7.020901. Lastly, the minimum value of financial distress is -3.3300000, while the maximum value is 28.72000 with a standard deviation of 3.459139.

5.2. Selection of Panel Data Estimation Model Technique

This test aims to determine the most appropriate regression model for panel data, whether it should use the Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM).

5.3. Chow Test

The Chow test is used to determine which model to choose for estimating the regression model for panel data, whether it is the Common Effect Model (CEM) or the Fixed Effect Model (FEM).

Table 2: Chow Test with Financial Distress as the Dependent Variable.
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.252752	(37,149)	0.0000
Cross-section Chi-square	136.949691	37	0.0000

Source: Eviews 9 data processing.

Based on the data processing results of the Chow test using Eviews 9 in table 1, it shows that the cross-section chi-square value is < 0.05 (5%), indicating that the Fixed Effect Model (FEM) is a better choice for estimating the regression model for panel data compared to the Common Effect Model (CEM).

5.4. Hausman Test

The Hausman test is conducted to determine which model to use between the Fixed Effect Model (FEM) or the Random Effect Model (REM).

Table 3: Hausman Test with Financial Distress as the Dependent Variable.
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.924685	3	0.0030

Source: Eviews 9 data processing

Based on the data processing results of the Hausman test using Eviews 9 in table 2, it can be observed that the probability value of cross-section random is < 0.05 (5%). Therefore, the panel data regression used in this study is the Fixed Effect Model (FEM).

5.5. Uji Lagrange Multiplier

Table 4: Lagrange Multiplier Test with Financial Distress as the Independent Variable

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	39.86638 (0.0000)	1.021804 (0.3121)	40.88819 (0.0000)
Honda	6.313983 (0.0000)	-1.010843 --	3.749886 (0.0001)
King-Wu	6.313983 (0.0000)	-1.010843 --	1.011888 (0.1558)
Standardized Honda	6.732224 (0.0000)	-0.772949 --	-0.447849 --
Standardized King-Wu	6.732224 (0.0000)	-0.772949 --	-1.863299 --
Gourierioux, et al.*	--	--	39.86638 (< 0.01)

Source: Eviews 9 data processing

The probability value of the LM-test Breusch Pagan (0.0000) is smaller than $\alpha = 0.05$, therefore it can be concluded that the random effect model is better than the common effect model in estimating financial distress.

Based on the paired testing results using the Chow test, Hausman test, and LM test on the regression model of panel data above, it can be concluded that the fixed effect model (FEM) is further used to estimate and analyze the influence of gender diversity, firm size, and sales growth on financial distress moderated by intellectual capital.

5.6. Estimation Results of Panel Data Regression Model

Based on the selection of the panel data regression model in this study, the results show that the best model is the Fixed Effect Model (FEM). Therefore, testing for partial (t), simultaneous (F) effects, and calculation of the coefficient of determination will be conducted by examining the values obtained from the estimation results of the Fixed Effect Model.

Table 5: Results of Panel Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	59.20641	50.70301	1.167710	0.2448
GD	12.47862	2.883322	4.327861	0.0000
FS	-2.605024	2.278397	-1.143358	0.2547
SG	0.553993	0.253973	2.181305	0.0307

Cross-section fixed (dummy variables)

R-squared	0.525356	Mean dependent var	3.590805
Adjusted R-squared	0.397935	S.D. dependent var	3.459200
S.E. of regression	2.684092	Akaike info criterion	5.001063
Sum squared resid	1073.448	Schwarz criterion	5.701737

Log likelihood	-434.1010	Hannan-Quinn criter.	5.284896
F-statistic	4.122989	Durbin-Watson stat	1.496741
Prob(F-statistic)	0.000000		

Source: Eviews 9 data processing

5.7. Partial Hypothesis Testing (t Test)

a. The probability value of the influence of gender diversity on financial distress is 0.0000 < α = 0.05, therefore H0 is rejected. The regression coefficient has a positive value of 12.47862, indicating that an increase in gender diversity in a company will lead to an increase in financial distress.Nilai probabilitas pengaruh firm size terhadap financial distress adalah sebesar 0,2547 > α = 0,05 sehingga H0 diterima. Nilai koefisien regresi bertanda negatif sebesar -2,605024.
b. The probability value of the influence of firm size on financial distress is 0.2547 > α = 0.05, therefore H0 is accepted. The regression coefficient has a negative value of -2.605024.
c. The probability value of the influence of sales growth on financial distress is 0.0307 < α = 0.05, therefore H0 is rejected. The regression coefficient has a positive value of 0.553993, indicating that an increase in sales growth in a company will lead to an increase in financial distress.

5.8. Simultaneous Hypothesis Testing (F-Test)

The F-test result shows an F-Statistic value of 0.000000, which is smaller than α = 0.05 (0.000000 < 0.05), indicating that H0 is rejected and Ha is accepted. This indicates that the independent variables, namely gender diversity, firm size, and sales growth, collectively have a significant influence on financial distress.

5.9. The Coefficient of Determination Test

The coefficient of determination (R2) test yields a value of 0.525356, which means that 52.5% of the variation in the changes of financial distress can be explained by the independent variables, while the remaining 47.5% can be attributed to other variables that were not examined in this study.

5.10. Moderated Regression Analysis

Table 6: Results of Moderated Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GD	-1.094715	1.340271	-0.816787	0.4151
FZ	-0.196704	0.146276	-1.344746	0.1804
SG	0.333860	0.377811	0.883669	0.3780
GD_VAIC	0.898279	0.255269	3.518947	0.0005
FZ_VAIC	0.000233	0.003042	0.076570	0.9390
SG_VAIC	0.009743	0.032147	0.303065	0.7622
C	7.512668	3.322104	2.261419	0.0249

Source: Eviews 9 data processing

The moderation test results, as seen in the table, show a probability value of the interaction variable of 0.00005, which is smaller than α = 0.05, indicating moderation. This means that the moderating variable, approximated by intellectual capital, can strengthen the relationship between gender diversity and financial distress.

However, the moderating variable approximated by intellectual capital cannot strengthen the relationship between firm size and financial distress because the probability (0.9390) > α = 0.05. Similarly, the moderating variable approximated by intellectual capital cannot strengthen the relationship between sales growth and financial distress because the probability (0.7622) > α = 0.05.

6. Conclusions

6.1. The Influence of Gender Diversity on Financial Distress

With the presence of gender diversity in financial decision-making, there will be diverse perspectives and thoughts that can help in facing challenges and risks. Women and men have different life experiences, so diverse perspectives can help identify problems comprehensively and find more effective solutions. The presence of women tends to be more conservative in taking risks compared to men. This could mean that decisions made by women in top management can have an impact on slower or less aggressive company growth. The influence of gender diversity is significantly positive. This is in line with the research by Ramadanty and Khomsiyah (2022) and Rodiah and Kristanti (2023), which state that the higher the proportion of women in top management, the greater the chance of financial distress because women are considered more cautious in making financial decisions and take longer time compared to male directors who are more willing to take risks.

6.2. The Influence of Firm Size on Financial Distress

In panel data regression analysis, it can be seen that firm size does not have a significant influence on financial distress. This may be because the size of the company does not always reflect the actual financial health. Although large companies may have larger resources, they may also have higher operational costs. Therefore, firm size is not the only factor determining financial stability. In addition, there are many small companies that are successful and financially stable. Smaller company size can provide greater flexibility to adapt to market changes and make quick and efficient decisions. This result is in line with the research by Muslimin and Bahri (2022), Aldama and Kristanti (2022), and Bernardin and Indriani (2020), which state that large companies have larger assets and have the ability to borrow money from third parties using assets as collateral. Large companies are considered more capable of facing crises and managing their businesses. However, if a company fails to manage its finances well, it can lead to increased operational costs and increased financial distress risk.

6.3. The Influence of Sales Growth on Financial Distress

In panel data regression analysis, it can be seen that sales growth has a significant positive influence. The larger the revenue growth, the more successful the company is in implementing marketing and sales strategies. Thus, the company is expected to gain greater profits. The growth rate is an indicator used to analyze revenue growth. However, this research shows that the sales growth rate has a greater influence on the risk of financial distress. Although high sales growth can be considered positive, it does not guarantee lower costs and higher profits. On the contrary, high sales growth can also lead to higher costs and increased risk of financial distress. This result is in line with the research by Purwanti and Syarif (2022), Muslimin and Bahri (2022), and Mulyatiningsih and Atiningsih (2021), which state that high sales growth in companies can lead to financial distress. The impact is that the higher the sales growth in a company, the higher the burden that the company has to bear. As a result, the profit obtained by the company will decrease.

6.4. The Influence of Gender Diversity, Firm Size, and Sales Growth on Financial Distress

In panel data regression analysis, it can be seen that gender diversity, firm size, and sales growth simultaneously have a significant influence on financial distress. This can be proven by the probability value of 0.00000 < α = 0.05. This result is in line with the research by Nathania and Vitariamettawati (2022), which states that gender diversity, sales growth, and intellectual capital are together in financial distress. The research by Prasetya and Oktavianna (2021) also shows that sales growth and intellectual capital simultaneously financial distress. Aji and Anwar (2022) state that firm size and sales growth together financial distress.

6.5. Intellectual Capital in Moderating the Influence of Gender Diversity on Financial Distress

In the moderation regression analysis, it is found that intellectual capital can moderate the influence of gender diversity on financial distress. The probability value of 0.0005 < α= 0.05 proves this. Intellectual capital can moderate gender diversity in terms of involving diverse knowledge, skills, and experiences. With rich intellectual capital, a company can combine various knowledge and skills possessed by team members with different gender backgrounds. This allows the company to face financial challenges from various perspectives and broader approaches, thus reducing the risk of financial distress. However, the presence of female directors who may have less strong analytical skills to manage company finances wisely can also occur. This could be due to a lack of understanding of financial data analysis or a lack of experience in making fact-based and cautious decisions. As a result, this can lead the company to a decline in financial performance due to slow and less accurate management decisions. The stronger the intellectual capital possessed by gender diversity in top management of a company, the more it will affect the condition of financial distress.

6.6. Intellectual Capital in Moderating Firm Size on Financial Distress

In the moderation regression analysis, it was found that intellectual capital is unable to moderate the influence of firm size on financial distress. The probability value of 0.9390 is greater than α=0.05. As a company grows larger, its operations become more complex. This could mean that there are more risks to be faced, including financial risks. Even though a company or its management has strong intellectual capital, the large size of the company can make financial distress risks more complex and difficult to overcome, even with good knowledge and skills. Additionally, there are external factors that also influence the financial distress risks of a company, such as economic conditions, market competition, or regulatory changes. The intellectual capital that a company possesses may help in anticipating and responding to these factors, but there are still limitations. Sometimes, the impact of these external factors can be so strong that the company's intellectual capital is not sufficient to moderate them.

6.7. Intellectual Capital in Moderating Sales Growth on Financial Distress

In the moderation regression analysis, it was found that intellectual capital is unable to moderate the influence of sales growth on financial distress. The probability value of 0.7622 is greater than α=0.05. Intellectual capital is indeed important in managing risks and making smart decisions. However, high sales growth can also bring its own risks. When a company experiences rapid sales growth, there is a possibility of pressure on the company's resources and finances. The intellectual capital of the management can help in anticipating and managing these risks, but it cannot always prevent the occurrence of financial distress risks. High sales growth also means the need to increase production capacity, infrastructure, and human resources. All of these require significant investments and can affect the company's liquidity. The intellectual capital of the management can help in planning investments wisely, but there are still external factors that can influence the success of these investments, such as market changes or intense competition. This is supported by Utami and Agustin (2020) who stated that the size of a company does not affect the disclosure of intellectual capital because companies may limit the disclosure of intellectual capital to maintain competitive advantage and not signal to competitors.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

Acknowledgement: According to the findings of this research, gender diversity and sales growth have a significant influence on financial distress, while firm size does not have a significant influence. Intellectual capital

is able to moderate the influence of gender diversity on financial distress, but it is unable to moderate the influence of firm size and sales growth on financial distress. Based on the results of this research, it is expected that company management pays attention to the proportion of gender diversity in top-level management. Additionally, sales growth should be accompanied by increased profits, meaning that the company can manage its burdens effectively. The company also needs to enhance its intellectual capital, especially at the top-level management, as it plays a role in the decision-making process to avoid financial distress. In future research, it is hoped that various diverse independent variables, such as macroeconomic factors and political risks, can be added. Additionally, it is also expected to extend the research period and use samples from other companies listed on the Indonesia Stock Exchange.

References

Agustia, Y. P., &; Suryani, E. (2018). The Effect of Company Size, Company Age, Leverage, and Profitability on Profit Management (Study on Mining Companies Listed on the Indonesia Stock Exchange for the 2014-2016 Period). *Journal of Assets (Research Accounting), 10*(1), 63–74. https://doi.org/https://doi.org/10.17509/jaset.v10i1.12571

Agustini, N. W., &; Wirawati, N. G. P. (2019). The Effect of Financial Ratios on Financial Distress of Retail Companies Listed on the Indonesia Stock Exchange (IDX). *E-Journal of Accounting*, *26*(1), 251–280. https://doi.org/10.24843/eja.2019.v26.i01.p10

Aji, P. S., &; Anwar, S. (2022). The effect of leverage, profitability, liquidity, sales growth, and firm size on financial distress in pulp & paper and plastic & packaging companies listed on the Indonesia Stock Exchange. *Journal of Bina Bangsa Ekonomika*, *15*(1), 43–51. https://doi.org/10.46306/jbbe.v15i1.106

Aldama, N. A., &; Kristanti, F. T. (2022). Financial Performance, Independent Commissioner, Gender Diversity, and Financial Distress. *E-Journal of Economics and Business Udayana University*, *11*(02), 123. https://doi.org/10.24843/eeb.2022.v11.i02.p01

Gaos, R. R., &; Mudjiyanti, R. (2021). THE EFFECT OF CORPORATE GOVERNANCE AND FIRM SIZE ON FINANCIAL DISTRESS (Study on Banking Companies listed on the Indonesia Stock Exchange for the period 2017-2019). *Compartment: Scientific Journal of Accounting*, *19*(1), 13. https://doi.org/10.30595/kompartemen.v19i1.11218

Indarti, M. G. K., Widiatmoko, J., & Pamungkas, I. D. (2020). Corporate Governance Structures and Probability of Financial Distress: Evidence from Indonesia Manufacturing Companies. *International Journal of Financial Research*, *12*(1), 174. https://doi.org/10.5430/ijfr.v12n1p174

Kartika, A., Rozak, H. A., Nurhayati, I., &; Bagana, B. D. (2020). Financial ratios as a prediction of financial distress. *Joint Proceedings. Multi-disciplinary National Seminar and Call for Papers*, 675–681.

Khamisah, N., Nani, D. A., &; Ashsifa, I. (2020). The Effect of Non-Performing Loan (NPL), BOPO, and Company Size on Return on Assets (ROA) of Banking Companies Listed on the Indonesia Stock Exchange (IDX). *Journal of Technobiz*, *3*(2), 18–23. https://doi.org/https://doi.org/10.33365/tb.v3i2.836

Khoirony, N. Al, &; Nazar, S. N. (2023). The Effect of Audit Committee Size, Intellectual Capital and Managerial Ownership on Financial Distress (Empirical Study on Hotel, Restaurant and Tourism Sector Service Companies listed on the IDX for the 2018-2022 Period). *PROCEEDINGS OF STUDENT SCIENTIFIC WEEK (PIM)*, *3*(2), 148–162.

Kurniawati, H., Rasyid, R., &; Setiawan, F. A. (2020). The influence of intellectual capital and company size on the company's financial performance. *Muara Journal of Economics and Business*, *4*(1), 64-76

Marjohan, M. (2021). The effect of financial management learning on gender-moderated investing behavior. JPPI (Indonesian Journal of Educational Research), 7(1), 155-163. https://doi.org/10.29210/020211139

Mokoginta, D. D., &; Agung, T. R. (2022). Risk Management Supervision and financial distress in agency theory. *E-Journal of Accounting, 32*(7), 1675. https://doi.org/10.24843/eja.2022.v32.i07.p01

Mondayri, S., & Tresnajaya, R. T. J. (2022). Influence Analysis Good Corporate Governance, Intellectual Capital, and Operating Cash Flow Against Financial Distress. *My Journal*, *2*(1), 25–43. https://doi.org/10.54957/jurnalku.v2i1.132

Mulyatiningsih, N., &; Atiningsih, S. (2021). The role of profitability in moderating the effect of intellectual capital, leverage, and sales growth on financial distress. *Journal of Accounting Research (CHAMPION)*, *11*(1), 55–74. https://doi.org/10.36733/juara.v11i1.2824

Nabawi, M., &; Efendi, D. (2020). The effect of leverage, profitability, activity, and growth firm on financial distress. *Journal of Accounting Science and Research*, *9*(1), 1–18. http://jurnalmahasiswa.stiesia.ac.id/index.php/jira/article/view/2773/2784

Nathania, V., &; Vitariamettawati, R. (2022). The effect of gender diversity, intellectual capital, sales growth, operating cash flow, and institutional ownership on financial distress. *Trisakti Economic Journal*, *2*(2), 331–342. https://doi.org/10.25105/jet.v2i2.14318

Nila, I. (2021). The effect of corporate governance, financial indicators, and company size on financial distress. *COMPETITIVE Journal of Accounting and Finance*, *5*(2), 62. https://doi.org/10.31000/competitive.v5i2.4196

Pawitri, A. I., &; Alteza, M. (2020). Analysis of the effect of liquidity, profitability*, leverage*, operating capacity, and managerial agency costs on *financial distress*. *Journal of Business Management Focus, 10(2),* 149. https://doi.org/10.12928/fokus.v10i2.2443

Prasetya, E. R., &; Oktavianna, R. (2021). Financial Distress Influenced by Sales Growth and Intellectual Capital. *Indonesian Journal of Sustainable Accounting*, *4*(2), 170–182. https://doi.org/http://dx.doi.org/10.32493/JABI.v4i2.y2021.p170-182

Princess, R. D. (2019). Analysis of the Effect of Sales Growth and Managerial Ownership on Financial Distress Conditions in Manufacturing Companies in Indonesia. *JUSIE (Journal of Social and Economic Sciences*), *4*(01), 54–63. https://doi.org/10.36665/jusie.v4i01.189

Qalbiyani, N., Karim, N. K., &; Astuti, W. (2022). Analysis of bankruptcy predictions in textile sub-sector manufacturing companies in 2016-2020 using the modified Altman method. *Journal of Accounting Student Research*, *2*(1), 100–111. https://doi.org/https://doi.org/10.29303/risma.v2i1.188

Ramadanty, A. P., & Khomsiyah, K. (2022). The Influence of Intellectual Capital and Gender Diversity on Financial Distress Dimoderasi oleh Firm Size. *Owner*, *6*(4), 3743–3750. https://doi.org/10.33395/owner.v6i4.1132

Rochendi, L. R., &; Nuryaman, N. (2022). The effect of sales growth, liquidity, and company size on financial distress. *Owner: Research & Journal of Accounting*, *6*(4), 3465–3473. https://doi.org/10.33395/owner.v6i4.1113

Rodiah, S. R., &; Kristanti, F. T. (2021). Analysis of gender diversity, corporate governance and leverage in predicting financial distress conditions in family business. *E-Journal of Economics and Business Udayana University*, *10*(11), 1015. https://doi.org/10.24843/eeb.2021.v10.i11.p08

Rudianto. (2013). *Information Management Accounting for Strategic Decision Making*. Jakarta: Erlangga

Ocean, G. D. (2021). Gender diversity and good corporate governance against financial distress. *Eqien: Journal of Economics and Business*, *8*(2), 52–60. https://doi.org/10.34308/eqien.v8i2.226

Safitri, M. G., & Yuliana, I. (2021). The Effect of Profitability and Leverage on Financial Distress with Inflation as Moderating. *Jurnal Aset (Akuntansi Riset)*, *12*(1), 134–143. https://doi.org/https://doi.org/10.17509/jaset.v13i1.31368

Saputra, A. J., & Salim, S. (2020). Effects of Profitability, Leverage, Firm Size, and sales growth towards Financial Distress. *Journal of Accounting Paradigm*, *2*(1), 262–269. https://doi.org/10.24912/jpa.v2i1.7154

Sinambela, T., &; Nur'aini, L. (2021). The Effect of Company Age, Profitability and Sales Growth on Tax Avoidance. *INOBIS : Indonesian Journal of Innovation and Management*, 05*(01), 25–34.* https://doi.org/https://doi.org/10.31842/jurnalinobis.v5i1.209

Sudirgo, T., Yuniarwati, & Bangun, N. (2019). Influence Financial Distress, Financial Performance and Liquidity Against Stock Return. *Business Management Journal*, *15*(2), 77–92. https://doi.org/http://dx.doi.org/10.30813/bmj.v15i2.1802

Suri Utami, R., &; Agustin, H. (2020). The effect of company size, profitability, and reputation of public accounting firms on intellectual capital disclosure. *JOURNAL OF ACCOUNTING EXPLORATION, 2*(3), 3197-3215. https://doi.org/10.24036/jea.v2i3.277

Suzan, L., &; Rini, A. C. (2022). Journal of E-Bus: Business Economics Influence of Intellectual Capital Components Based on the Pulic Method. *Journal of E-Bus: Business Economics*, *6*(2), 498–512. https://doi.org/https://doi.org/10.37339/e-bis.v6i2.951 Info

Widiastari, P. A., &; Yasa, G. W. (2018). The Effect of Profitability, Free Cash Flow, and Company Size on Company Value. *E-Journal of Accounting*, *23*(2), 957–981. https://doi.org/10.24843/eja.2018.v23.i02.p06

Yuliani, R., &; Rahmatiasari, A. (2021). The Effect of Corporate Governance on Financial Distress with Financial Performance as a Moderating Variable (Manufacturing Companies on the IDX).

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 230-243
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.549

Socioeconomic and Proximate Determinants of High Fertility in Timor-Leste

Wilson Rajagukguk[1]

[1] Faculty of Economics and Business, Universitas Kristen Indonesia, Jl. Mayjen Sutoyo No. 2, Jakarta Timur, Indonesia. E-mail: wrajagukguk@yahoo.com

Abstract
The purpose of this study was to examine the role of socioeconomic and proximate determinants in high fertility in Timor-Leste. The data used came from the 2016 Timor-Leste Demographic and Health Survey. The unit of analysis was women in union aged 35–49 years. The explanatory variables were socioeconomic and proximate background characteristics. The response variable was the number of children ever born. A Poisson regression analysis was employed to investigate the association between socioeconomic and proximate determinants and fertility. Government should improve maternal and child health care to reduce infant mortality and promote smaller ideal family size and marriage postponement, reduce unmet need for contraception, increase access to a mobile phone, enhance education access and employment opportunity for women, and socialize family planning and enhancing reproductive health and family planning program and fostering female labor force participation to encourage women and men to prioritize education and career over childbearing.

Keywords: Socioeconomic Determinants, Proximate Determinants, High Fertility, Timor-Leste

1. Introduction

Timor-Leste is characterized by a low development achievement. The United Nations Development Programme (UNDP) reported that in term of human development achievement, in 2021, Timor-Leste ranked at tn he 140th position of 191 countries in the world (United Nations Development Programme (UNDP) 2022). Of 11 countries in Southeast Asia, Timor-Leste was on the ninth position before Cambodia (the 146th) and Myanmar (the 149th). In 2021, the human development index (HDI) was 0.732 globally, 0.607 in Timor-Leste, lowest in South Sudan (0.385) and highest in Switzerland (0.962). This indicates that human development achievement in Timor-Leste is lower than human development achievement of the world on average.

Low development achievement in Timor-Leste can be partly attributed to its high population growth rate. Although the population is small, estimated to be around 1,321 million people in 2021, the population of Timor-Leste was estimated to grow at 1.62% per annum during 2020–2021 (United Nations, 2022). It means that Timor-Leste people will double within 43 years. In addition, in 2021 the age dependency ratio in Timor-Leste was 55th highest globally (68 population age 0–14 and 65 years and over per 100 population age 15–64). This population dynamic

of the country will have many challenging development implications, including the fulfillment of increasing needs of the people, in particular health, education, employment, food, energy, water, sanitation, housing and transportation. With its limitation as a young country, Timor-Leste must manage its population dynamic in order to improve the welfare of its people.

Specifically, Timor-Leste has to deal with its relatively high fertility rate that has caused its high population growth rate, and age dependency ratio. In its Strategic Development Plan 2011–2030, the Government of Timor-Leste recognized that its fertility is among the highest in the world and that lower fertility is an important factor of better health quality in Timor-Leste (República Democrática de Timor-Leste (RDTL). 2011). The results of the 2010 Population and Housing Census showed that on average a Timor-Leste woman would have about six children at the end of her reproductive age (National Statistics Directorate (Timor-Leste), 2010). This figure had declined to about four children per woman according to the results of the 2016 Timor-Leste Demographic and Health Survey (Ministry of Finance (Timor-Leste), 2010). But, fertility is relatively high in Timor-Leste and highest in Southeast Asia region.

High fertility is defined as five or more births per woman at the end of her reproductive age (General Directorate of Statistics, Ministry of Health and ICF. 2018). High fertility has detrimental implications on the health of children and mothers, child education, economic growth, capitalization of demographic dividend and natural environment. The probability of infant and early childhood death is higher for higher-order births and closely-spaced births and when the mother is over age 40. The likelihood of death caused by pregnancy, delivery and post-delivery complications is higher among mothers who have many children and among younger and older mothers. Therefore, the lifetime risk of maternal mortality can be reduced by lowering the average number of pregnancies each woman experiences. The chance to attain higher level of education is lower for children from large families. In addition, consecutively larger birth cohorts – a characteristic of higher fertility societies – diminish the quality of education by reducing the expenditure per student.

High fertility causes high population growth. Population growth relates negatively with economic growth: fertility decline increases productive output in the long-run. Fertility decline also results in the favorable population age structure of "demographic dividend" of larger share of productive age population relative to non-productive age population that can be capitalized through supporting human resources investment policies that can increase per capita productivity. High fertility and the consequential high population growth is a direct and proximate determinant of alarming scarcities of fresh water in many countries and global warming. Fertility decline through family planning is one of the more cost-effective ways for limiting global warming. The negative consequences of high fertility imply the importance of the investigation of its determinants. A rich theoretical and empirical literature of the determinants of fertility in low-income and traditional societies has been produced since the 1950s (Timor-Leste Demographic and Health Survey 2016, 2018) World Bank (WB), 2010,
Davis, K. & J. Blake J.,1956, Easterlin, Richard A. 1975)

For example, (Timor-Leste Demographic and Health Survey 2016, 2018) proposed that the socioeconomic determinants can affect fertility through the proximate determinants. The proximate determinants are grouped into intercourse factors, such as the age of entry into sexual unions, conception factors, such as the use or non-use of contraception and gestation factors (unmet need), such as the fetal mortality from involuntary causes (child mortality experience).

Meanwhile, the World Bank (General Directorate of Statistics, Ministry of Health and ICF.,2018), employing the Easterlin Synthesis Framework, proposed that the determinants of high fertility include factors influencing (i) the supply of children, such as the age at first union; (ii) the motivation to regulate fertility, such as the child mortality; the demand for children, such as the ideal number of children, unmet need for family planning, and socioeconomic factors (education, type of place of residence, working status, and household wealth status); and (iv) the costs of fertility regulation, such as non-access obstacles to contraceptive use (e.g. cultural barriers, such as religion).

The age at entrance to first union heavily determines the age at first birth and the pace of childbearing (General Directorate of Statistics, Ministry of Health and ICF.,2018). The faster the pace, the higher the likelihood a woman

will at any particular period have a supply of children that fits or surpasses her demand for children. Early start of union exposes women to early start of childbearing and long motherhood period than in turn exposes them to having many children ever born (Davis, K. & Blake. J., 1956). In high fertility societies, women tend to start union and childbearing at a relatively young age, less than 20 averagely. The empirical researches show that delayed marriage was associated with smaller number of children ever born (Rosenzweig, M. R., & Schultz, T. P., 1985, Nisa U., 2007, Adhikari R., 2010, Mekonnen W. & Worku, A. 2011)

Motivation to regulate fertility is determined by child survival. In high fertility societies, child survival is relatively poor. The death of a child exposes a woman to the risk of conceiving again through the termination of breastfeeding and resumption of menses and ovulation. It also motivates couples to have additional children to replace a child death and to ensure that their fertility goals are achieved. The effect of child mortality on fertility have been richly studied (Nisa U., 2007, Adhikari R., 2010, Forty, J., Navaneetham, K. & Letamo, G., 2022, Cervellati, Matteo & Sunde, U., 2007, Shapiro D., 2007) These studies found that fertility is higher among women who ever experienced child mortality.

In high fertility societies, the ideal number of children is high as children are considered as source of satisfaction, labor, and old-age security (Asep, V., 2020) Therefore, the high ideal number of children will motivate couples to have many children in order to guarantee these sources. Empirical studies (Rosenzweig, M. R., & Schultz, T. P., 1985, Nisa U., 2007) confirm the positive effects of the ideal number of children on fertility. Study in Nepal (Nisa U., 2007) and in East Nusa Tenggara in Indonesia (Rosenzweig, M. R., & Schultz, T. P., 1985), a province in the same island with Timor-Leste, found that women who considered a higher number of children as ideal were more likely to have a higher number of children ever born.

Unmet need for family planning, the situation of desiring to prevent pregnancy, for spacing or limiting births, but not practicing contraception, is an important measure for evaluating the ability of women to achieve their reproductive goals (Schultz T.P., 2007). Thus, unmet need for family planning exposes women to the risk of unwanted conception and increases the likelihood of having a large number of children ever born. In many contemporary high-fertility societies, the levels of unmet need for family planning are moderate to high Estimation that satisfying the need for contraception lowered fertility by 35% in Latin America and the Caribbean, by around 20% in the Arab States and in the eastern and southern Africa and by approximately 15% in Asia and West Africa (MacQuarrie & Kerry L.D., 2014) Meanwhile, (Cleland J. et al. 2006) also found that the unmet need reduction was strongly correlated with fertility decline in Latin America, Asia, and South Africa.

Education is a strong determinant of fertility (Casterline & El-Zeini, 2014) and second strong factor after child mortality (Bryant, J., 2007). Increase in years of schooling among women will reduce the likelihood of early marriage and birth, will enhance access to more modern employment sector, and will improve their capacity to regulate their fertility. These all in turn will reduce the chance of having many children. In high fertility societies, women lack of schooling. Empirical studies have confirmed that the importance of education in fertility reduction

Income and household economic status lowers fertility through aspiration for better child investment. In high fertility countries, income is low. Studies have found the significant relationship between income and fertility. For example, (Asep, V., 2020, Billari et al., 2017) found that at country level, measures of income are negatively and strongly related to fertility. Meanwhile, (Mekonnen W. & Worku, A. 2011) in their study in Malawi found that women from poorer households had higher chance of having more children than women from wealthier households.

Work reduces fertility through time demand and inflexibility with motherhood and nurturing children. Studies found that working women had lower number of children ever born (Mekonnen & Worku, 2011, Shapiro, D. & Gebreselassie, T, 2007, Agadjanian , 2000)

In urban areas, demand for children is lower as children have lower participation in the labor force, living cost are more expensive, and access to family planning information and services are better than in rural areas. Odusina, et

al. (2020) in their study in the United States of America and Mekonnen W. & Worku, A. (2011) in their study in Malawi confirmed that urban women had lower fertility than rural women.

A recent study had shown that digital revolution, including mobile phone ownership, may also affect fertility (Angeles L., 2010, Daniels, K. et al. 2017, Trudeau J., 2016, Guldi M. & Herbst C.M., 2017). A study in Malawi show that mobile phone ownership was associated with lower fertility in high-fertility societies through information access, role modelling, and preference change mechanisms (Guldi M. & Herbst C.M., 2017). In term of information access, the cost of searching information can be reduced by mobile phones (Billari F.C. Rotondi V. & Trinitapoli J., 2020). This helps persons make informed choices on various matters including fertility and family planning (Guldi M. & Herbst C.M., 2017). In terms of role modelling, mobile phone ownership can increase access to social media sites that might influence the suitability and public appropriateness of specific behaviors, including the number of children and family planning (Guldi M. & Herbst C.M., 2017). In term of preference change, mobile phone ownership can increase access to financial inclusion and hence might lower the demand of children by basically self-protecting households, particularly the weakest, against unpredicted shocks (Guldi M. & Herbst C.M., 2017).

A characteristic of modernization is women's autonomy, including economic (Forty et al. 2022). It is proposed that women's autonomy is associated with fertility reduction through decision making power including in reproductive health areas. Studies found that women who had a financial autonomy, such as having a bank account, had lower fertility n(Aker, 2010, Cigno & Rosati, 1992, Filoso & Papagni, 2011,Agyeman, 2021, Singh, et al. 2019.

Non-access obstacles to contraception affect fertility by hindering family planning practice and hence exposing a woman to the risk of unwanted pregnancy and having large number of children. These obstacles include cultural barriers, such as the religion (WB 2010). Religions are differentiated by particular norms about fertility and therefore generating differences among religious groups. Bhupatiraju (2022) proposed that religion influences fertility by disseminating views about certain fertility-related behaviors, by requiring submission to these views, either through community pressure or through punishments, and by enforcing religious unity. In particular, during the Industrial Revolution, the European Catholics were categorized by the devotion to high fertility views and family-centered norms (McQuillan, K., 2004). A study by Lesthaeghe & Wilson (1986) in France, that still preserves its Catholic identity, confirmed that religious Catholic women had higher children ever born than other women.

A study of the determinants of fertility in Timor-Leste using the results of the 2003 Timor-Leste Population and Housing Census show that the age of women, marital status, still-birth experience, child death experience, education, work status, housing characteristics and mother tongue statistically affected fertility significantly in Timor-Leste (Shapiro D., 2007). However, some determinants were not included in the analysis since this information was not collected in the 2003 Census, in particular the age at first union, unmet for family planning, ideal number of children and non-use of contraception because of fear of health side-effects. This information is available from the 2016 TLDHS.

Studies on the association between socioeconomic and proximate determinants and fertility in Timor-Leste was limited. Therefore, in general the present study aimed to examine the impact of socioeconomic and proximate factors on fertility in Timor-Leste. The specific objectives were to (i) analyze the differences in fertility by socioeconomic factors (education, household wealth, place of residence, work status, husband or partner's education and work status, mobile phone and bank account ownership, and religion) and proximate determinants (age at first union, child death experience, ideal number of children, and unmet need for contraception) and (ii) to assess the effects of these socioeconomic and proximate determinants on fertility.

2. Methods

2.1. Data

Data used in the study come from the results of the 2016 Timor-Leste (Demographic and Health Survey Ministry of Finance (Timor-Leste), 2010). It is the second national level population and health survey carried out as part of the world Demographic and Health Surveys and implemented by the General Directorate of Statistics of the Ministry of Planning and Finance and the Ministry of Health, Education and Social Solidarity of Timor-Leste. The survey was carried out between September and December 2016.

The 2016 TLDHS utilized the sampling frame of the 2015 Timor-Leste Population and Housing Census (2015 TLPHC) supplied by the Timor-Leste General Directorate of Statistics. The sampling frame was a complete list of enumeration areas (EAs) produced for the 2015 TLPHC. On average, there were 89 households per EA. Information covered in the sampling frame included the administrative unit, type of residence, number of residential households, and male and female population in each of the EAs.

There are five geographic regions in Timor-Leste which are subdivided into 12 municipalities and special administrative region (SAR) of Oecussi. Therefore, the 2016 TLDHS sample was designed to produce reliable estimates of indicators for the country as a whole, for urban and rural areas, and for each of the 13 municipalities. A representative probability sample of about 12,000 households was drawn from which women were interviewed. The sample was stratified into urban and rural areas and the multistage sampling design was employed for choosing the respondents. At the first stage, 455 EAs were chosen with probability proportional to EA size from the 2015 TLPHC: 129 EAs in urban areas and 326 EAs in rural areas. At the second stage, 26 households were randomly selected within each of the 455 EAs.

There were 12,607 eligible women age 15–49 years successfully interviewed in the 2016 TL-DHS. Of these women, 61.1% (7,697) were women in union, either currently married or living with partner women. Further, of these women, 42.5% (3,272) were aged 35–49 years. The unit of analysis in this study was women in union age 35–49 years. This selection was done to obtain the values that approach the completed childbearing (Billari et al. 2020)

2.2. Variables

The dependent variable is the number of living children (CEB). The socioeconomic determinants were the highest educational level (WEduc), household wealth (Wealth), place of residence (Rural), work status (WWork), husband or partner's educational level (HEduc), husband or partner's work status (HWork), mobile phone ownership (MPhone), bank account ownership (Bank), and religion (Religion). WEduc was grouped into no education, primary, secondary, and higher and formed three dummy variables which were WNoEduc, WPrimary, and WSecondary. Wealth were classified into lowest, second, middle, fourth, and highest and had four dummy variables which were WealthLowest, WealthSecond, WealthMiddle, and WealthFourth. WWork was grouped into yes (WWork = 0) and no (WWork = 1). Rural was classified into urban (Rural = 0) and rural (Rural = 1). HEduc was grouped into no education, primary, secondary, and higher and formed three dummy variables which were WNoEduc, WPrimary, and WSecondary. HWork was grouped into "worked" (HWork = 0) and "did not work" (HWork = 1). MPhone was classified into yes (MPhone = 0) and no (MPhone = 1). Bank was classified into yes (Bank = 0) and no (Bank = 1). Religion was grouped into Other (Religion = 0) and "Catholic" (Religion = 1).

Meanwhile, the proximate determinants included the age at first union (Agemar), child death experience (DeathExp), ideal number of children (Ideal), and unmet need for contraception (Unmet). Agemar was categorized into before 20 (Agemar = 1) and 20–49 (Agemar = 0), DeathExp was grouped into ever (DeathExp = 1) and never (DeathExp = 0), Ideal was classified into four or less (Ideal = 0) and five or more or non-numeric (Ideal = 1), and Unmet was divided into met (Unmet = 0) and unmet (Unmet = 1).

2.3. Statistical Analysis

The Statistical Package for Social Sciences version 21 (Lesthaeghe, R.J. & Wilson, C., 1986) was employed to analyze the data. Univariate analysis was carried out to evaluate the percentage distribution of number of children ever born, socioeconomic factors (education, household wealth, place of residence, work status, husband or

partner's education and work status, mobile phone and bank account ownership, and religion), and proximate determinants (age at first union, child death experience, ideal number of children, and unmet need for contraception). Bivariate analysis was used to assess the differentials in number of children ever born by these socioeconomic and proximate determinants.

Since the number of children ever born is a count data, a Poisson regression was appropriate (Baudin, T., 2015, IBM Corp.,2012, Fagbamigbe & Adebowale, 2014, Pandey & Kaur, 2015, Dwivedi et al. 2016) to evaluate the association between socioeconomic and proximate determinants and fertility. The assumption of the equal variance was tested employing Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC). However, since the variance of children ever born was greater than the mean, the Negative Binomial regression was considered to correct this over-dispersion problem (Forty, et al. 2022). Still, it was recommended to select the model with lower Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC). In this study, lower AIC and BIC indices were obtained from the Poisson regression (14,087.5 and 14,215.8 respectively) compared to AIC and BIC indices from the Negative Binomial regression (18,000.7 and 18,129.0 respectively). Therefore, Poisson regression was chosen in this study.

Poisson regression model is derived from Poisson distribution by letting the parameter μ (mean) dependent on covariates or regressors. In Poisson regression, the dependent variable Y, that is the number of children, is assumed to follow Poisson distribution that is caused by a set of explanatory variables, X_1, X_2, ..., X_k as follows.

$$\Pr(Y = y) = \frac{e^{-\mu}\mu^{y}}{y!} \; ; \; \mu > 0, y = 0, 1, 2, \ldots$$

Where $\ln(\mu)$ is a linear function of the independent variables

$$\ln(\mu) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \varepsilon$$

and X_i is the independent variable, α is constant, and β_i is the Poisson regression coefficient of the ith independent variable. The model can be rewritten as follows.

$$\mu = e^{\alpha+\beta_1 X_1+\beta_2 X_2+\cdots+\beta_k X_k+\varepsilon}$$

The regression coefficients were exponentiated to produce the incident rate ratio (IRR) for interpretation of the results. It measures how a change in an independent variable will influence the dependent variable.
Therefore, the model in this study is as follows.

$$\begin{aligned}\ln(\mu) = \beta_0 &+ \beta_1 Agemar + \beta_2 DeathExp + \beta_3 Ideal + \beta_4 Unmet + \beta_{51} WNoEduc \\ &+ \beta_{52} WPrimary + \beta_{53} WSecondary + \beta_{61} WealthLowest + \beta_{62} WealthSecond \\ &+ \beta_{63} WealthMiddle + \beta_{64} WealthFourth + \beta_7 Rural + \beta_8 WWork + \beta_{91} HNoEduc \\ &+ \beta_{92} HPrimary + \beta_{93} HSecondary + \beta_{10} HWork + \beta_{11} MPhone + \beta_{12} Bank \\ &+ \beta_{13} Religion + \varepsilon\end{aligned}$$

The goodness-of-fit chi-squared test was used out to assess how well the model fits using the deviance statistic (D). The model fits reasonably well if the goodness-of-fit chi-squared test is not statitiscally significant (the p-value is greater than the significance level). Next, the likelihood ratio chi-square was used to evaluate the significance of the overall model. Further, the significance of each independent variable in the model was tested using the Wald chi-square at the significance level of 0.15.

2.4. Ethics Statement

The 2016 Timor-Leste Demographic and Health Survey follows the Standard DHS survey protocol under the Demographic and Health Surveys Program (DHS-7) that was approved by the Institutional Review Board of

International Classification of Functioning, Disability and Health and complied with the United States Department of Health and Human Services requirements for the "Protection of Human Subjects" (45 CFR 46).

3. Results

The results of univariate analysis are presented in Table 1. It can be seen that 61% of the women in the study had five or more children, 40% were married before age 20, 23% ever had a child mortality, 60% wanted to have five or more or non-numeric children, 20% experienced unmet need for contraception, 40% had no education, 19% came from lowest household wealth index quintile, 74% were rural dwellers, 51% were currently not working, 34% had husbands or partners with no education, 23% had jobless husbands or partners, 56% did not have a mobile phone, 85% did not have a bank account, and 98% were Catholic.

The percentage distribution of children ever born of women in union age 35–49 years by background characteristics were displayed in Table 2. It can be seen that the percentage of women in union age 35–49 years with five or more children differed by background characteristics. It was higher among those who were married during teenager, who experienced a child death, whose ideal number of children was five or more or non-numeric, whose contraceptive need was unmet, who had lower education, who came from lower household wealth index quintile, who lived in rural areas, who were currently not working, whose husbands or partners were low educated, whose husbands or partners did not work, who did not have a mobile phone, who did not have a bank account, and who were Catholic.

Table 1: Percentage distribution of women age 35–49 years by background characteristics, Demographic and Health Survey Timor-Leste 2016

Background characteristics		Number of observation	%
Number of children ever born			
	0–4	1,272	38.9
	5–15	2,001	61.1
Age at first union			
	10–19	1,309	40.0
	20–49	1,963	60.0
Child death experience			
	Ever	744	22.7
	Never	2,528	77.3
Ideal number of children			
	0–4	1,324	40.4
	5–15 or non-numeric	1,949	59.6
Unmet need for contraception			
	Met	2,620	80.1
	Unmet	652	19.9
Highest educational level			
	No education	1,318	40.3
	Primary	694	21.2
	Secondary	1,052	32.1
	Higher	209	6.4
Household wealth quintile			
	Lowest	615	18.8
	Second	640	19.6
	Middle	649	19.8
	Fourth	655	20.0
	Highest	712	21.8
Place of residence			
	Urban	865	26.4
	Rural	2,407	73.6
Currently working			
	Yes	1,595	48.7
	No	1,677	51.3

Husband/partner's educational level			
	No education	1,116	34.1
	Primary	756	23.1
	Secondary	1,049	32.1
	Higher	350	10.7
Husband/partner's work status			
	Worked	2,513	76.8
	Did not work	759	23.2
Owns a mobile phone			
	Yes	1,452	44,4
	No	1,821	55,6
Has a bank account			
	Yes	500	15.3
	No	2,772	84.7
Religion			
	Roman Catholic	3,215	98.3
	Other	57	1.7
Total		3,272	100.0

Table 2: Percentage distribution of children ever born of women in union age 35–49 years by background characteristics, Demographic and Health Survey Timor-Leste 2016

Background characteristics		**Number of children ever born**				**Total**	
		Four or less		**Five or more**		**Obs.**	**%**
		Obs.	**%**	**Obs.**	**%**		
Age at first union							
	10–19	275	21.0	1,034	79.0	1,309	100.0
	20–49	997	50.8	966	49.2	1,963	100.0
Child death experience							
	Ever	126	16.9	619	83.1	745	100.0
	Never	1,146	45.3	1,382	54.7	2,528	100.0
Ideal number of children							
	0–4	865	65.3	459	34.7	1,324	100.0
	5–15 or non-numeric	407	20.9	1,542	79.1	1,949	100.0
Unmet need for contraception							
	Met	1,084	41.4	1,536	58.6	2,620	100.0
	Unmet	188	28.8	464	71.2	652	100.0
Highest educational level							
	No education	476	36.1	842	63.9	1,318	100.0
	Primary	209	30.1	485	69.9	694	100.0
	Secondary	455	43.3	597	56.7	1,052	100.0
	Higher	132	63.2	77	36.8	209	100.0
Household wealth quintile							
	Lowest	220	35.8	395	64.2	615	100.0
	Second	205	32.0	435	68.0	640	100.0
	Middle	235	36.2	414	63.8	649	100.0
	Fourth	266	40.6	389	59.4	655	100.0
	Highest	346	48.6	366	51.4	712	100.0
Place of residence							
	Urban	405	46.8	460	53.2	865	100.0
	Rural	867	36.0	1,541	64.0	2,408	100.0
Currently working							
	Yes	660	41.4	935	58.6	1,595	100.0
	No	612	36.5	1,066	63.5	1,678	100.0
Husband/partner's educational level							
	No education	397	35.5	721	64.5	1,118	100.0
	Primary	250	33.1	506	66.9	756	100.0
	Secondary	437	41.7	612	58.3	1,049	100.0

	Higher	189	54.0	161	46.0	350	100.0
Husband/partner's work status							
	Worked	987	39.3	1,527	60.7	2,514	100.0
	Did not work	285	37.5	474	62.5	759	100.0
Owns a mobile phone							
	Yes	804	44.2	1,017	55.8	1,821	100.0
	No	468	32.2	984	67.8	1,452	100.0
Has a bank account							
	Yes	233	46.6	267	53.4	500	100.0
	No	1,039	37.5	1,733	62.5	2,772	100.0
Religion							
	Roman Catholic	1,246	38.8	1,969	61.2	3,215	100.0
	Other	25	43.9	32	56.1	57	100.0
Total		1,271	38.9	2,001	61.1	3,272	100.0

The results of the analyses for the full model show that the goodness-of-fit chi-squared test is not statitiscally significant. The deviance statistic *D* is 2,920.9, degrees of freedom is 3,300 and *p*-value is 0.99999. Therefore, the model fits reasonably well. Next, the likelihood ratio chi-square is 1,236.9 and *p*-value is less than 0.001. Hence, the model is statistically significant. Further, the significance of each independent variable in the model is tested using the Wald chi-square at the significance level of 0.15.

The incidence rate ratios (IRR) of having more children ever born by characteristics of women in Timor-Leste based on Poisson regression model were presented in Table 3. It can be seen that socioeconomic and proximate determinants were significantly associated with fertility statistically. Of socioeconomic determinants, education was significant at the 0.10 level, work status was significant at the 0.001 level, husband or partner's education was significant at the 0.10 level, husband or partner's working status was significant at the 0.05 level, and mobile phone ownership was significant at the less than 0.001 level. Meanwhile, all proximate determinants (age at first union, child death experience, ideal number of children, and unmet need for contraception) were significant at the less than 0.001 level. In addition, household wealth, place of residence, bank account ownership, and religion did not have significant association with fertility statistically at the 0.15 significance level.

Ideal number of children was the first main reason for high fertility in Timor-Leste. Women in union age 35–49 years whose ideal number of children was five or more or non-numeric had 1.37 times more children ever born than women age 35–49 years whose ideal number of children was four or less.

Age at first union was the second most important factor of high fertility in Timor-Leste. Women in union age 35–49 years who started a union before age 20 years had 1.274 times more children ever born than those whose age at first union was 20 or older.

Child death experience was the third significant cause of high fertility in Timor-Leste. Women in union age 35–49 years who ever experienced child death had 1.266 times more children ever born than those who did not ever experience a child death.

Unmet need for contraception was the fourth important factor of high fertility in Timor-Leste. Women in union age 35–49 years whose need for contraception was unmet had 1.13 times more children ever born than those whose need for contraception was met.

Mobile phone ownership was the fifth significant factor of high fertility in Timor-Leste. Women in union age 35–49 years who did not own a mobile phone had 1.08 times more children ever born than those who owned a mobile phone.

Work status was the sixth reason for high fertility in Timor-Leste. Women in union age 35–49 years who were not working had 1.05 times more children ever born than women age 35–49 years who were working.

Husband or partner's work status was the seventh important factor of high fertility in Timor-Leste. Women in union age 35–49 years whose husband or partner were not working had 0.95 times less children ever born than those whose husband or partner were working. Or, women in union age 35–49 years whose husband or partner were working had 1.05 times less children ever born than those whose husband or partner were not working.

Education was the eighth essential reason for high fertility in Timor-Leste. Women in union age 35–49 years who had primary education had 1.09 times more children ever born than those who had higher education.

Table 3: Incidence rate ratio (IRR) of the Poisson regression Demographic and Health Survey Timor-Leste 2016

Covariates		**IRR [95 CI]**	***p*-value**
Age at first union (ref: 20-49)			
	10–19	1.274 [1.23–1.31]	< 0.001
Child death experience (ref: Never)			
	Ever	1.266 [1.22–1.31]	< 0.001
Ideal number of children (ref: 0-4)			
	5–15 or non-numeric	1.37 [1.33–1.42]	< 0.001
Unmet need for contraception (ref: Met)			
	Unmet	1.13 [1.09–1.17]	< 0.001
Highest educational level (ref: Higher)			
	No education	1.05 [0.96–1.15]	0.305
	Primary	1.09 [1.00–1.20]	0.059
	Secondary	1.06 [0.98–1.16]	0.143
Household wealth quintile (ref: Highest)			
	Lowest	1.01 [0.94–1.08]	0.808
	Second	1.04 [0.97–1.11]	0.247
	Middle	1.01 [0.95–1.07]	0.857
	Fourth	0.99 [0.94–1.05]	0.718
Place of residence (ref: Urban)			
	Rural	1.00 [0.96–1.05]	0.964
Currently working (ref: Yes)			
	No	1.05 [1.02–1.09]	0.001
Husband/partner's educational level (ref: Higher)			
	No education	0.94 [0.87–1.01]	0.090
	Primary	0.99 [0.95–1.03]	0.633
	Secondary	1.00 [0.96–1.04]	0.962
Husband/partner's work status (ref: Worked)			
	Did not work	0.95 [0.92–0.99]	0.017
Owns a mobile phone (ref: Yes)			
	No	1.08 [1.05–1.12]	< 0.001
Has a bank account (ref: Yes)			
	No	0.98 [0.94–1.03]	0.511
Religion (ref: Other)			
	Roman Catholic	1.08 [0.96–1.22]	0.208
Constant		8.47 [7.53–9.53]	< 0.001

Husband or partner's education was the ninth significant cause of high fertility in Timor-Leste. Women in union age 35–49 years whose husband or partner had no education had 0.94 times less children ever born than those whose husband or partner had higher education. Or, women in union age 35–49 years whose husband or partner had higher education had 1.06 times more children ever born than those whose husband or partner had no education.

4. Discussion

The present study indicated that socioeconomic and proximate determinants were associated with higher fertility in Timor-Leste as found in previous studies.

The present study show that higher ideal number of children was associated with higher number of children ever born. Higher ideal number of children motivated couples in Timor-Leste to have many children to ensure the source of life satisfaction, manpower, and old security, as well as the continuation of culture and tradition. This finding supports the empirical evidence that confirmed the positive effects of the ideal number of children on fertility (Rosenzweig, M. R., & Schultz, T. P., 1985, Nisa U., 2007)

It was found that women whose age at first union was during teenager had higher number of children ever born. Early age at first union exposed women in Timor-Leste to early age at first birth, faster pace of childbearing, and longer motherhood period that increased their likelihood at any particular period of having a supply of children that fit or surpassed their supply of children. This finding supports the theory and empirical results of inverse relationship between age at first union and fertility (Easterlin, 1975, Rosenzweig & Schultz, 1985, Nisa, 2007, Adhikari R., 2010, Dwivedi et al., 2016)

Child death experience was associated with higher fertility. This result supports the idea that in high fertility society such as Timor-Leste, couples tended to replace the dead children by having another child that has led to high fertility in the country (General Directorate of Statistics, Ministry of Health and ICF, 2018). This finding supports the previous studies that found higher fertility among women who experienced a child death

Unmet need for contraception was found to be associated with higher fertility confirming the results of the study by (Schultz, 2007, Cleland et al. 2006). Unmet need for contraception exposed women in Timor-Leste to unwanted pregnancies and births that can lead to higher number of children ever born.

The results of this study show that support findings from previous studies that mobile ownership is associated with lower fertility. Women in Timor-Leste who had a mobile phone might have better access to fertility and family planning information, to role model of desirable and socially acceptable number of children, and to financial inclusion that empowered them (Guldi & Herb, 2017, Schumacker R.E. & Lomax R.G., 2010) including in the area of reproductive health and goals that consequently reducing their demand for children. This result is consistent with the findings of study in Malawi (Guldi M. & Herbst C.M., 2017) that discovered that mobile phone ownership was negatively related with fertility (Rosenzweig & Schultz, 1985, Nisa, 2007, Adhikari, 2010, Mekonnen & Worku, 2011, Bryant, 2007, Angeles, 2010, Billari et al. 2017, Shapiro & Gebreselassie, 2007, Agadjanian, 2000).

Contrary to the expectation, the findings of the study showed that women with higher educated and working husband or partner had higher number of children ever born than women with lower educated and non-working husband or partner. It suggests that husbands or partners with better socioeconomic status in Timor-Leste still consider children as the welfare symbol.

The results of the study confirm the importance of socioeconomic and proximate determinants in high fertility in Timor-Leste. Higher number of children ever born was associated with teenage marriage, having a child death, larger or non-numeric ideal number of children, unmet need for contraception, lower education, not working, higher educated husband or partner, working husband or partner, and not having a mobile phone.

the effects of mobile phone ownership on fertility in Timor-Leste, even after controlling for supply for children, demand for children, motivation to regulate fertility, and costs of fertility regulation. Fertility was higher among women who did not own a mobile phone. In addition, a higher fertility was associated with early age at first marriage, larger ideal number of children, shorter years of education, poorer household wealth, having a child death, and non-use of contraception because of health concerns.

The results from the present study offer guidance essential for improving population management in Timor-Leste. For fertility reduction in Timor-Leste, the Government should improve maternal and child health care to reduce infant mortality and should promote smaller ideal family size and marriage postponement, reduce unmet need for contraception, increase access to a mobile phone, enhance education access and employment opportunity for women, and socialize family planning to working and higher educated husbands or partners through enhancing

reproductive health and family planning program and fostering female labour force participation to encourage women and men to prioritize education and career over childbearing.

5. Limitations

This study has some limitations. First, the independent variables were at the time of the survey, while the dependent variable was before the survey. So, it was assumed that the independent variables did not change much before the survey. Second, information used for mobile phone was limited to ownership, not the use and purposes. Third, the data was not recent as the latest Demographic and Health Survey in Timor-Leste was in 2016. Lastly, only one digital revolution variable was used in the study due to strong correlation between internet use and other socioeconomic characteristics, such as place of residence, education, and household wealth in the context high-fertility society like in Timor-Leste. However, these limitations should not importantly influence the results, and this study still gives a valuable contribution to the research in high fertility. Also, these limitations imply that the future Demographic and Health Survey should also collect retrospective history of socioeconomic information.

Conflict of Interest: The authors have no conflict of interest associated with the material presented in this paper.

Funding: None.

Acknowledgements: None.

Author Contribution: Conceptualization: WR. Data curation: WR. Formal analysis: WR. Funding acquisition: None. Methodology: WR. Project administration: WR, Visualization: WR. Writing – original draft: WR. Writing – review - & editing: WR.

References

Adhikari R. (2010). Demographic, socio-economic, and cultural factors affecting fertility differentials in Nepal. BMC Pregnancy Childb 2010; 10:19.

Agadjanian V. (2000). Women's work and fertility in a sub-Sahara urban setting: a social environmental approach. J Biosoc Sci., 32(1):17–35.

Agyeman, A. (2021). Multivariate Analysis of Fertility: an Application of the Generalized Poisson Regression Model. Statistika, 101(2).

Aker J.C. (2011). Information from markets near and far: Mobile phones and agricultural markets in Niger. American Economic Journal: Applied Economics 2010; 2(3): 46-59.

Angeles L. (2010). Demographic transitions: analyzing the effects of mortality on fertility. J Popul Econ 2010; 23: 99–120.

Baudin, T. (2015). Religion and fertility: The French connection. Demographic Research 32(13): 397-420.

Bhupatiraju, S. (2022). Fertility and financial development: an analysis of Indian households. Quality and Quantity, 56(2). https://doi.org/10.1007/s11135-021-01139-1)

Billari F.C., Giuntella O., & Stella L. (2017). Does broadband internet affect fertility? Population Studies 2017; 73(3), 297-316.

Billari FC, Rotondi V, Trinitapoli J. (2020). Mobile phones, digital inequality, and fertility: Longitudinal evidence from Malawi. Demographic Research 2020; 42(37): 1057-1096.

Bongaarts, J. (1978). A Framework for Analyzing the Proximate Determinants of Fertility. Population and Development Review 4(1):105–132.

Bryant, J. (2007). Theories of Fertility Decline and the Evidence from Development Indicators, Population and Development Review 33: 101–127.

Casterline, J. B., & El-Zeini, L. O. (2014). Unmet need and fertility decline: a comparative perspective on prospects in sub-Saharan Africa. Studies in family planning, 45(2), 227–245. https://doi.org/10.1111/j.1728-4465.2014.00386.x

Cervellati, M. & Sunde. U. (2007). Human Capital, Mortality and Fertility: A Unified Theory of the Economic and Demographic Transition. Discussion Paper No. 2905. The Institute for the Study of Labor (IZA) in Bonn.

Cigno, A. & Rosati, F. C. (1992). The effects of financial markets and social security on saving and fertility behaviour in Italy. Journal of Population Economics, 1992, 5(4), pp. 319–341.

Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. (2006). Family planning: the unfinished agenda. *Lancet* 2006; 368: 1810-27.

Davis, K. and Blake. J. (1956). Social Structure and Fertility: An Analytic Framework. Economic Development and Cultural Change 4(3): 211-235.

Daniels, K., Martinez, G. M., & Nugent, C. N. (2017). Urban and Rural Variation in Fertility-related Behavior Among U.S. Women, 2011-2015. NCHS Data Brief, 297.

Dwivedi V.K., Sediadie T. & Ama, N.O. (2016). Factors affecting children ever born (CEB) in Botswana, application of Poisson regression model. Res J Math Stat Scien; 4: 1-9.

Easterlin, Richard A. (1975). An Economic Framework for Fertility Analysis, Studies in Family Planning 6: 54–63.

Fagbamigbe A.F. & Adebowale A.S. (2014). Current and predicted fertility using Poisson regression model: evidence from 2008 Nigerian demographic health survey. African Journal of Reproductive Health 2014; 18(1), 71-83.

Filoso, V. & Papagni, E. (2011) Fertility choice and financial development (No. 2). Belgium: Economics and Econometrics Research Institute.

Forty, J., Navaneetham, K. & Letamo, G. (2022) Determinants of fertility in Malawi: Does women autonomy dimension matter? BMC Women's Health 22, 342 (2022). https://doi.org/10.1186/s12905-022-01926-4

General Directorate of Statistics, Ministry of Health and ICF (2018). Timor-Leste Demographic and Health Survey 2016. Dili, Timor-Leste and Rockville, Maryland, USA: GDS and ICF 2018.

Guldi, M. (2017). Herbst CM. Offline effects of online connecting: the impact of broadband diffusion on teen fertility decisions. Journal of Population Economics 2017; 30, 69-91.

IBM Corp. (2012). IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.

Lesthaeghe, R.J. & Wilson C. (1986). Modes of production, secularization and the pace of fertility decline in Western Europe, 1870-1930. Princeton, NJ: Princeton University Press.

MacQuarrie & Kerry L.D. (2014). Corresponding Unmet Need for Family Planning among Young Women: Levels and Trends, DHS Comparative Reports No. 34, USAID.

McQuillan, K. (2004). When Does Religion Influence Fertility? Population and Development Review 30(1): 25-56.

Mekonnen W, Worku A. (2011) Determinants of fertility in rural Ethiopia: the case of Butajira Demographic Surveillance System (DSS). BMC Public Health, 11:782, available at https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-782.

Pandey R. & Kaur C. (2015). Modeling Fertility: An Application of Count Regression Models. Chinese Journal of Population Resources and Environment 2015; 13(4): 1-9.

National Statistics Directorate [Timor-Leste], Ministry of Finance [Timor-Leste], and ICF Macro (2010). Timor-Leste Demographic and Health Survey 2009–10. Dili, Timor-Leste: NSD [Timor-Leste] and ICF Macro 2010.

Nisa U. (2007). Factors Influencing Fertility in East Nusa Tenggara Province, Indonesia, Unpublished Master Thesis at School of Geography, Population, and Environmental Management, Faculty of Social Sciences, Flinders University of South Australia, Adelaide, 2009.

Odusina, E. K., Ayotunde, T., Kunnuji, M., Ononokpono, D. N., Bishwajit, G., Yaya, S., & Yaya, S. (2020). Fertility preferences among couples in Nigeria: A cross sectional study. Reproductive Health, 17(1). https://doi.org/10.1186/s12978-020-00940-9

República Democrática de Timor-Leste (RDTL) (2011). Timor-Leste Strategic Development Plan 2011–2030. Dili, Timor-Leste.

Rosenzweig, M. R., & Schultz, T. P. (1985). The demand for and supply of births: Fertility and its life cycle consequences. American Economic Review, 75(5).

Samosir O.B., Kiting A.S. & Aninditya F. (2020). Role of information and communication technology and women's empowerment in contraceptive discontinuation in Indonesia. J Prev Med Public Health 2020; 53(2): 117–125.

Singh, A., Kumar, K., Mcdougal, L. P., Silverman, J. G., Atmavilas, Y., Gupta, R., & Raj, A. (2019). Does owning a bank account improve reproductive and maternal health services utilization and behavior in India? Evidence from the National Family Health Survey 2015–16. SSM - Population Health, 100396. doi:10.1016/j.ssmph.2019.100396

Schultz T.P. (2007). Fertility in Developing Countries. Center Discussion Paper No. 953, Economic Growth Center Yale University.

Schumacker R.E. & Lomax R.G. (2010). A beginner's guide to structural equation modeling. 3rd ed. London: Routledge/Taylor & Francis Group.

Shapiro, D. & Gebreselassie, T. (2007). Fertility Transition in Sub-Saharan Africa: Falling and Stalling. Paper presented at the Annual Meeting of the Population Association of America, New York, NY, March 29-31.

Shapiro D, Tenikue M. (2017) Women's education, infant and child mortality, and fertility decline in urban and rural sub-Saharan Africa. Demographic Research; 37, 669-708.

Trudeau J. (2016). The role of new media on teen sexual behaviors and fertility outcomes – the case of 16 and pregnant. Southern Economic Journal 2016; 82(3): 975-1003.

United Nations Development Programme (UNDP) (2022). Human Development Report 2021/2022 Uncertain Times, Unsettled Lives: Shaping Our Future in a Transforming World. UNDP, New York.

United Nations (2022). World Population Prospects 2022. Department of Economic and Social Affairs, Population Division, New York.

Vong Asep V. (2010). The Role of Education and Child Mortality in Fertility Behavior in Timor-Leste: The Analysis of the 2004 Timor-Leste Population and Housing Census Data. Unpublished Master Thesis at the Postgraduate Programme on Population and Manpower Studies of the University Indonesia, Depok, Indonesia.

World Bank (WB) (2010). Determinants and Consequences of High Fertility: A Synopsis of the Evidence. Portfolio Review. The World Bank, Washington DC.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 244-254
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.550

Swipe, Tick, Buy: Exploring E-Wallet Structures that Translate Browsers into Buyers Among Gen Z and Gen Y

Cristina Teresa N. Lim[1], Edgar Chang[2]

[1,2] College of Business, De La Salle University, Manila, Philippines

Correspondence: Cristina Lim, College of Business, De La Salle University Manila, 2401 Taft Ave, Malate, Manila, Philippines. Tel: (+63) 928 792 5630. E-mail: cristina.lim@dlsu.edu.ph

Abstract
In the modern - day landscape, overt by prevalent mobile phone and internet usage, e-wallets emerged as a revolutionary platform, facilitating instantaneous access to various financial services and products. These digital wallets have been upheld as invaluable during the COVID-19 pandemic, instigating safety protocols among consumers and businesses. Despite their renowned advantages, it has been pondered that the convenience offered by e-wallets has steered shifts in consumer behavior, diminishing their control over inadvertent purchases. With 1,054 respondents, this study utilized Partial Least Square Structural Equation Modeling (PLS-SEM) to evaluate the specific characteristics of e-wallets and their influence on consumer satisfaction and perceived enjoyment, consequently scanning their influence on impulse buying behavior. The outcomes unveiled that perceived interactivity, subjective norms, convenience, and monetary savings positively correlate with professed enjoyment and satisfaction. Furthermore, information quality and visual appeal were found to have a positive association uniquely with apparent enjoyment. Perceived enjoyment suggestively wedged impulsive buying tendencies, underscoring the convoluted interplay between the digital wallet facet, user experience, and consumer behavior. Fostering on these findings, e-wallet operators can enrich the consumer experience through generational marketing, optimizing application interfaces with a user-centric approach. Additionally, strategic partnerships with corporate entities can be leveraged to deliver precisely tailored promotions that align with each consumer generation's distinct preferences and demographics.

Keywords: E-Wallets, SOR Model, Gen Y, Gen Z

1. Introduction

Amidst the COVID-19 pandemic, the exigencies of restricted physical interaction and social distancing measures severely curtailed the traditional modes of transactions (Izaidin et al., 2022). In response to these unparalleled issues, electronic wallets or e-wallets evolved as an innovative alternative. An e-wallet turns as a cupola comprising currency that can be accessed using a smartphone app, where individuals can upturn their funds with debit, credit, or online transfers. Henceforward, mobile phones became a requisite tool, facilitating the seamless implementation of electronic payment systems.

As early as the 2000s, e-wallets have been accessible in the Philippines. Smart Communications introduced Smart Money, a pre-paid debit card accessible using a mobile phone, but discontinued it on December 15, 2020, to give way for PayMaya (now known as Maya). On the other hand, Globe Telecom released Gcash in 2004, an electronic money transfer facility that turns a mobile phone into an electronic wallet. Maya and Gcash are the reigning financial technology (FinTech) contenders. In 2022, the Philippines ranked as the 3rd nation with the highest digital payments in Southeast Asia (Statista, 2023). Digido, a consumer credit service company, disclosed that roughly 58 million Filipino users devoted 4.4 million hours to using e-wallets during the same period (CNN Philippines, 2023).

The nation's digital payment terrain is embodied by ongoing growth and development, grounded on the aggressive initiatives of the Bangko Sentral ng Pilipinas (BSP). BSP has been a frontrunner in advancing financial inclusion, defining it as a state where everyone has adequate access to diversified variety of financial products and services (BSP, 2015). Its endeavors are promoting cashless transactions and increasing the uptake of digital payments. This vision aligns seamlessly with the Department of Trade and Industry (DTI) championing the digitalization of the payment ecosystem in the e-commerce Philippine Roadmap. For business owners, e-wallets improve business efficiency (Vitug, 2023). Businesses were compelled to adapt, innovate, and enter the online market to sustain operations and stay afloat during the pandemic (Abdelrhim & Elsayed, 2020). Synchronously, digital payment systems became the lifeblood of e-commerce transactions, progressively supplanting traditional physical cash-based methods (Daragmeh et al., 2021).

Generation Y (Gen Y) and Generation Z (Gen Z) are vital target populations of the Fintech ecosystem, showcasing the most elevated adoption rates due to their heightened awareness of financial technology and longer life (Carlin et al., 2017). Utilizing the Generational Cohort Theory lined by Ryder (1965), Gen-Y can be identified as digital natives and Gen-Z as mobile natives. Gen Y encompasses individuals born from 1981 to 1996, while Gen Z comprises those born after 1997 (Dimock, 2019). The standpoint and outlook of any generation regarding finance and banking are chiefly influenced by the economic episodes they observe and encountered during their formative years. Individuals belonging to Generation Y exhibit a greater inclination towards seeking information on the Internet (Kneidinger, 2014).

Notwithstanding the conceded benefits of electronic wallets, these cashless modalities have also been recognized as exhibiting potential risks to consumers, with one anticipated consequence being impulsive purchasing. Consumers may now have less inclination to curb impulse buying as cashless payments are perceived as "painless" than physical cash transactions (Pradhan et al., 2018). Impulse buying is an unpredictable and sudden purchase that is hard to control, commonly a response to an environmental stimulus (Rook, 1987). Alwan et al. (2023) further asserted that consumers' purchasing habits had been altered, increasing online buying for essential and non-essential commodities. With a few swipes and ticks, phones have become potent platforms to purchase the items you covet. People have clinched contactless payments, finding ease and trust in mobile banking and payment applications.

To examine the impacts of e-wallets on Filipino impulse-buying tendencies, this study follows Lee et al.'s (2020) framework for adopting perceived interactivity, visual appeal, and subjective norms. Subsequently, this model was magnified by integrating extrinsic factors: convenience, information quality, and monetary savings. The research framework of this study builds on the stimulus organism response (SOR) model. With a dataset of 1,054 respondents, this study employed Partial Least Square Structural Equation Modeling (PLS-SEM) through bootstrapping to establish links between the variables. It primarily gauges if the extrinsic and intrinsic factors positively correlate with perceived enjoyment and satisfaction. Therefore, this research reconnoitered if perceived enjoyment and satisfaction would enticingly influence impulse buying.

1.2 Literature Review, Theoretical Framework, and Hypothesis Development

1.2.1 Stimulus-Organism-Response (SOR) Model

The SOR model, introduced by Mehrabian and Russel (1974), is the predominant theoretical framework for assessing various factors that can impact impulse buying. The model postulates that external cues (stimulus) sensed from the surroundings prompt a consumer's internal assessment (organism), resulting in a behavioral reaction (response). A stimulus can either be external or internal. External stimuli can materialize from arousing triggers, such as marketing, situational, and website factors, whereas internal stimuli stem from the user's characteristics. Under the organism component, there are two evaluation types: cognitive and reactive (Chan et al., 2017). Cognitive reactions include mental activities, such as perceptions of the possible limitations arising from impulse buying (Parboteeah et al., 2009). Conversely, affective reactions relate to the consumer's emotions (Sun & Zhang, 2006). Consumers retort to the perceived stimuli and organisms. In this study, the main response variable in evaluation is impulse buying.

1.2.2 Internal Stimuli

The highly competitive panorama of today's digital commerce necessitates retailers to actively incorporate interactive features to foster customer engagement and experience (Ocak & Cagiltay, 2017; Wang, 2021). Interactivity pertains to how technological interfaces resemble natural human interaction during communication (Heeter, 1989). The preponderant literature underscores the significance of perceived interactivity in technology (Krishnan et al., 2016) and its relevance in adopting electronic payment services (Liebana-Cabanillas et al., 2020). Salleh (2012) postulated that interactive features substantially impact the satisfaction of end users in online communication.

Beyond interactive features, consumers also highly value visually pleasing interfaces as they navigate different platforms. Visual appeal pertains to the visual elements (e.g., pictures) that elicit a positive virtual haptic experience among users (Zhang et al., 2020). Applications with element-rich interfaces can enhance one's emotional experience during browsing, thereby eliciting the user's enjoyable or pleasant experiences (Ku & Chen, 2020). Across different fields, visual appeal has been recognized as a fundamental determinant of perceived enjoyment (Do et al., 2020; Xiang et al., 2016). Furthermore, visual appeal positively correlates with satisfaction, such as in the website interface (Amanah & Harahap, 2020). Lastly, Subjective norms are formed due to an individual's perception of actions corresponding to potential rewards or punishments (Peña-García et al., 2020). As per Kim et al. (2013), subjective norms in this study represent the motivation a consumer derives from friends, family, and colleagues to use e-wallets. Shaw & Kesharwani's (2019) study in India revealed the substantial impact of subjective norms on payment adoption, with this influence being moderated by smartphone addiction.

1.2.3 External Stimuli

A higher level of convenience motivates users, encouraging them to spend more time accessing technology. Tetteh (2022) defines convenience as the ease and security of conducting transactions from one's preferred location. It simplifies complexities, minimizes hassles, and ensures usability in various situations (Jin & Jim, 2021). If a payment system is perceived as user-friendly and convenient, consumers are more likely to engage in transactions using that system (Haudi, 2022; Huang et al., 2022). Information quality constitutes one of the six dimensions for assessing information systems' success in the framework introduced by Delone and McLean (2003). In the context of e-wallets, information quality refers to the pertinence, adequacy, precision, and timeliness of information, as defined by Azizah et al. (2018). Information quality significantly influences users' satisfaction levels when utilizing digital wallets (Chalik & Faturohman, 2022; Haryadi & Suroso, 2021). Similarly, including cost-saving features in e-wallet systems increases users' intentions to continue using the application. As observed by Pal et al. in 2020, numerous e-wallet applications have entered the market in recent years, each offering significant price advantages such as discounts in a competitive effort to establish market dominance. Hasyim and Ali (2022) discovered that monetary savings in the form of cashback promotions offered by the Indonesian E-wallet application OVO positively influenced customer satisfaction in the Indonesian market. As such, convenience, information quality, and monetary savings are postulated to influence satisfaction and enjoyment significantly.

1.2.4 Perceived Enjoyment, Satisfaction, and Impulse Buying

Prior studies have instituted that positive emotional states primarily influence impulsive buying intentions (Zhang et al., 2021). Satisfaction stands as a pivotal factor shaping the future scene of the thriving digital wallet industry. It embodies a consumer's assessment of the performance of a purchased product or service. Satisfaction further reflects the level of comfort in meeting their needs, encompassing both instances where expectations are met and exceeded (Oliver, 2012). Individuals exhibiting higher satisfaction levels during their shopping experiences were more inclined to engage in impulsive buying behaviors (Verplanken & Sato, 2011). Nevertheless, Lee et al. (2022) identified a lack of significant correlation between satisfaction and impulse buying, contradicting prior research. Do et al. (2020) posited that the impact of customer satisfaction on impulsive purchasing is still a matter requiring empirical investigation, mainly due to the absence of substantial theoretical basis and research in this area.

Lucas and Koff (2014) observed that users, upon establishing emotional connections with e-wallet platforms, experience a heightened sense of enjoyment. According to Zhou & Feng (2017), perceived enjoyment is derived from using an information system independent of expected performance outcomes. Several studies have confirmed the significant correlation between perceived enjoyment and impulse buying intention. Iyer et al. (2020) affirmed that the pleasure and positive emotions consumers experience during their shopping encounters frequently result in impulsive purchasing inclinations. Hence, the enjoyment derived from browsing and discovering new products or services can catalyze impulsive buying behavior.

2. Method

Causal quantitative method was used to explore the relationships of particular variables. Participants were selected through homogenous purposive sampling to ensure a cohesive sample. Through a Google form survey, the study gathered 1,054 active e-wallet users in Metro Manila, Philippines. The study's sampling frame can be divided into two generational cohorts: Gen Z (18 – 26 years old) and Gen Y (27 – 42 years old) (Dimock, 2019). The study's structural model was primarily analyzed using partial least square structural equation modeling (PLS-SEM) conducted in Smart PLS 4.0. Furthermore, a multi-group analysis (MGA) was conducted to assess the potential variances among the perceptions of generational cohorts.

Respondents were asked about their familiarity with e-wallets, their usage of the top three e-wallet platforms, and the duration of their usage (more than one year). Only participants answering affirmatively to the first two questions and indicating a usage period of one year or more were deemed eligible to evaluate their perceptions and usage behaviors related to E-wallets. Thus, the collected data contained no missing values. All survey questions were adapted from existing literature and were rated on a five-point Likert scale, ranging from "1 - strongly disagree" to "5 - strongly agree."

3. Results

3.1 Common Method Bias and Normality Test

PLS-SEM has demonstrated its efficacy in analyzing small sample sizes with non-normal distributions (Kock, 2015). The Cramér-von Mises and Mardia tests were assessed to detect univariate and multivariate normality. Both tests revealed a departure from normal distribution within the survey data. PLS-SEM and bootstrapping techniques were employed to ensure robust analysis in response to this identified non-normality. Moreover, the findings provided evidence of the absence of Common Method Bias (CMB), as indicated by a VIF below 3.3 (Kock, 2015; Kock & Lynn, 2012) and correlations lower than 0.9 (Rodriguez-Ardura & Meseguer-Artola, 2020; Tehseen et al., 2020). These results, plummeting well within established thresholds, affirm that CMB did not significantly influence the relationships among variables in this study.

3.2 Measurement Model Assessment

Measurement model was assessed to confirm the suitable utilization of survey tools, encompassing convergent validity, reliability assessments, and discriminant validity. The outer loadings and Average Variance Extracted (AVE) values were assessed for convergent validity. As per Hair et al. (2021), factor loadings above 0.7 and AVE values exceeding 0.5 were deemed essential. Initial findings indicated that most questionnaire items met this criterion, except for items S3 (0.5) and SN4 (0.6), signifying satisfaction and subjective norms, respectively. Consequently, these two items were removed to meet the criterion. Additionally, all AVE values in Table 1 in the analysis surpassed the 0.5 threshold for all three models, affirming a robust level of construct validity in the results.

Table 1: Construct reliability and validity

	Gen Z			Gen Y			Overall		
Items	A	CR	AVE	A	CR	AVE	A	CR	AVE
C	0.811	0.814	0.726	0.868	0.87	0.717	0.847	0.852	0.687
IB	0.87	0.876	0.72	0.889	0.905	0.75	0.881	0.888	0.737
IQ	0.855	0.865	0.697	0.895	0.896	0.76	0.882	0.885	0.738
MS	0.859	0.862	0.78	0.869	0.874	0.792	0.865	0.869	0.787
PI	0.807	0.809	0.634	0.84	0.845	0.676	0.835	0.838	0.669
PE	0.828	0.831	0.662	0.867	0.868	0.716	0.848	0.849	0.687
S	0.759	0.759	0.675	0.834	0.836	0.751	0.805	0.806	0.72
SN	0.803	0.809	0.717	0.831	0.841	0.747	0.82	0.828	0.735
VA	0.88	0.881	0.735	0.892	0.893	0.755	0.887	0.888	0.747

Note: C: Convenience; IB: Impulse buying; IQ: Information quality; MS: Monetary savings; PI: Perceived interactivity; PE: Perceived enjoyment; S: Satisfaction; SN: Subjective norms; VA: Visual appeal; A: Cronbach's alpha, CR: Composite Reliability and AVE: Average Variance Extracted

Moreover, the study used Cronbach's alpha and composite reliability (CR) to evaluate internal consistency. Established standards in the literature suggest a threshold of approximately 0.7 for both metrics (Hair et al., 2021). The findings in Table 1 reveal that both Cronbach's alpha and CR values surpass the specified minimum threshold. This outcome affirms the strong internal consistency of the measures utilized in this study. Heterotrait-Monotrait Ratio of Correlation (HTMT), Cross Loadings, and the Fornell-Larcker Criterion were utilized to evaluate discriminant validity. All the HTMT values are below 0.85, except for the S and PE constructs (0.88). Nonetheless, this value adheres to the threshold of 0.9 suggested by Gold et al. (2001). Likewise, the absolute correlation between constructs is lower than the square root of AVE, meeting the Fornell-Larcker Criterion. Lastly, all factor loadings on a specific construct surpass the cross-loadings with other variables, substantiating the successful establishment of discriminant validity.

3.3 Structural Model

The assessment of the model relied on specific fit indices: Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI), or Bentler and Bonett Index. The results indicate that the SRMR value stands at 0.66, below the established threshold of 0.8, signifying an acceptable fit (Hu & Bentler, 1999). Additionally, the NFI value of 0.78 is slightly below the 0.8 threshold; the NFI value remains within an acceptable range.

Table 2: SEM Results

	Gen Z		Gen Y		Overall		Result
Hypothesis	B	T	B	T	B	T	
H_1: PI→S	0.134^{***}	2.961	0.121^{***}	2.739	0.124^{***}	3.765	Both Supported
H_2: PI→PE	0.163^{***}	3.745	0.049^{***}	1.305	0.087^{***}	2.932	Both Supported
H_3: SN→S	0.152^{***}	3.583	0.119^{***}	3.266	0.134^{***}	4.871	Both Supported
H_4: SN→PE	0.222^{***}	4.683	0.155^{***}	4.225	0.185^{***}	6.133	Both Supported
H_5: VA→S	0.067^{NS}	1.331	0.117^{***}	2.423	0.095^{***}	2.637	Gen Y Only
H_6: VA→PE	0.195^{***}	3.696	0.199^{***}	4.57	0.200^{***}	5.757	Both Supported
H_7: C→S	0.286^{***}	5.175	0.250^{***}	4.507	0.269^{***}	6.528	Both Supported
H_8: C→PE	0.177^{***}	3.224	0.251^{***}	5.302	0.225^{***}	6.082	Both Supported
H_9: IQ→S	0.189^{***}	3.677	0.262^{***}	4.863	0.232^{***}	5.929	Both Supported
H_{10}: IQ→PE	0.035^{NS}	0.641	0.159^{***}	3.154	0.103^{***}	2.818	Gen Y Only
H_{11}: MS→S	0.191^{***}	4.655	0.139^{***}	4.868	0.162^{***}	6.566	Both Supported

H_{12}: MS→PE	0.239^{***}	5.726	0.210^{***}	6.451	0.23^{***}	8.85	Both Supported
H_{13}: S→IB	0.066^{NS}	0.969	$-0.043^{N.}$	0.69	0.009^{NS}	0.197	Not Supported
H_{14}: PE→IB	0.259^{***}	3.871	0.368^{***}	5.872	0.314^{***}	6.817	Both Supported

*Note: PI: Perceived interactivity; SN: Subjective norms; VA: Visual appeal; C: Convenience; IQ: Information quality; MS: Monetary savings; S: Satisfaction: PE: Perceived enjoyment: IB: Impulse buying; B = Path Coefficient; T: T Statistics; *** denotes significance at the 1% level (two-tailed); ** denotes significance at the 5% level (two-tailed)*

The overall model disclosed that all hypotheses were supported except H13, indicating an insignificant relationship between satisfaction and impulse buying. The results of the generation-specific samples are relatively consistent with the overall model. The quantitative study presents four variables as pivotal antecedents of both satisfaction and perceived enjoyment among Gen Y and Gen Z: perceived interactivity, subjective norms, convenience, and monetary savings. Moreover, the findings reveal that not all variables are deemed significant predictors in Gen Z participants' E-wallet usage, as showcased by H5 and H10.

Among the intrinsic factors, the findings obscured that perceived interactivity and subjective norms are key determinants of satisfaction and perceived enjoyment. A well-designed and interactive interface makes an app more satisfying and enjoyable. Similarly, individuals who received societal encouragement to use e-wallets are highly likely to be receptive to the advantages offered by e-wallets, thus increasing their enjoyment and satisfaction. Beyond functionality, a visually pleasing app can captivate a user and ensure a consumer's prolonged engagement with the app. The findings divulged that visual appeal positively correlates with perceived enjoyment but does not establish a link with satisfaction. Like Lee et al. (2023), realizing an application's aesthetics increases the sense of enjoyment. Conversely, there is a probability that the positive emotional response (perceived enjoyment) encountered during the initial interaction embodies a fleeting experience, failing to translate into sustained satisfaction over time.

Moving forward to extrinsic factors, convenience and monetary savings instituted a positive link with perceived enjoyment and satisfaction. This prohibitive degree of convenience zeniths to enhanced user satisfaction and perceived enjoyment. Promotional discounts and deals are operative marketing strategies for enticing customers. When users discern that a specific e-wallet offers numerous alluring offers, notifications about these promotions generate a sense of enjoyment and satisfaction. Also, the results denote no substantial connection between the quality of information and satisfaction. However, a positive correlation is eminent between information quality and perceived enjoyment. High-quality application information enhances user understanding, leading to sander interactions and increased enjoyment. Accuracy alone may not ensure satisfaction; the information must also be relevant to users' needs and concerns.

Empirical evidence does not support the hypothesis that there is a positive relationship between satisfaction and impulse buying. The findings show a significant and positive association between perceived enjoyment and impulsive purchasing, inferring that using e-wallets encourages spontaneous and unplanned purchases. This supports erstwhile research indicating that emotional connections significantly impact impulsive buying behavior, as users are more inclined to make spontaneous purchases when positively influenced (Iyer et al., 2020).

4.5 Multigroup analysis

Before proceeding with the multigroup analysis, the measurement invariance of composite models (MICOM) proposed by Henseler et al. (2016) should be conducted. In particular, MICOM has three requirements: 1) configural invariance, 2) compositional invariance, and 3) equality of composite mean values and variances. (Hair et al., 2021). The configural invariance assessment does not involve any statistical test. Instead, the SmartPLS software automatically established configural invariance, affirming that both generational cohorts were scrutinized using an identical model setup and conceptual framework. Secondly, the compositional invariance was established with all the permutation values of the constructs surpassing the global criterion of 0.05 (see Table 3).

Moving forward, the permutation value associated with monetary savings was below 0.05, signifying a significant difference in the mean between Gen Y and Gen Z. On the other hand, information quality and perceived interactivity exhibited p-values exceeding 0.05 in step 3b, establishing the inequality of composite means and

variances. The observed inequality sets the stage for further constructing structural models for each generational cohort, validating the need for multigroup analysis.

Table 3: MICOM Step 2 and Step 3 Analysis

	Step 2: *Compositional Invariance*		Step 3a: *Inequality of Composite Mean*		Step 3b: *Inequality of Composite Variance*	
Items	Correlation	P-value	Differences	P-value	Differences	P-value
C	1	0.206	-0.105	0.091	-0.134	0.205
IB	0.998	0.212	-0.001	0.979	-0.078	0.281
IQ	1	0.197	0.088	0.164	-0.285	0.012
MS	1	0.985	-0.152	0.013	0.064	0.404
PI	1	0.302	-0.109	0.079	0.059	0.532
PE	1	0.848	0.069	0.277	-0.387	0.008
S	1	0.491	-0.054	0.382	-0.12	0.216
SN	1	0.755	-0.117	0.066	0.015	0.874
VA	1	0.652	0.055	0.388	-0.157	0.088

Note: P-value represents the permutation p-value

The MGA results from Table 4 showcase significant generational differences for three hypotheses, namely H2, H5, and H10. First, the study found that perceived interactivity showed a stronger relationship with perceived enjoyment for Gen Z than Gen Y. As digital natives, their ease and familiarity with engaging digital interfaces result in heightened responsiveness to perceived interactivity. In the case of Generation Y, the positive influence of information quality on perceived enjoyment surpasses that observed in Generation Z. This observation aligns with the findings of Kneidinger (2014), affirming Generation Y's inclination to explore product information online. This trend may also be indicative of the age distribution among the respondents. Most Gen Z respondents in the study are currently enrolled as university students, suggesting a continued financial dependency. In contrast, Generation Y, predominantly comprising the working class, exhibits a propensity for cautious utilization of e-wallet applications, demonstrating a meticulous consideration of the provided information. Similarly, the impact of visual appeal on satisfaction is more pronounced among individuals belonging to Generation Y.

Table 4: Multigroup Analysis Results

	Gen Y		Gen Z		Invariant
Items	Estimates	P-value	Estimates	P-value	Differences
H_1: PI→S	0.121	0.003	0.134	0.002	Yes
H_2: PI→PE	0.049	0.096	0.163	0	No
H_3: SN→S	0.119	0.001	0.152	0	Yes
H_4: SN→PE	0.155	0	0.222	0	Yes
H_5: VA→S	0.117	0.008	0.067	0.092	No
H_6: VA→PE	0.199	0	0.195	0	Yes
H_7: C→S	0.25	0	0.286	0	Yes
H_8: C→PE	0.251	0	0.177	0.001	Yes
H_9: IQ→S	0.262	0	0.189	0	Yes
H_{10}: IQ→PE	0.159	0.001	0.035	0.261	No
H_{11}: MS→S	0.139	0	0.191	0	Yes
H_{12}: MS→PE	0.21	0	0.239	0	Yes
H_{13}: S→IB	-0.043	0.245	0.066	0.166	Yes
H_{14}: PE→IB	0.368	0	0.259	0	Yes

3. Conclusion and Management Implications

This study espouses the SOR framework, encompassing both extrinsic and intrinsic factors as stimuli. The review appraises whether the organism variables positively impact the response variable, namely, impulse buying. Based on the PLS-SEM results, eleven out of the fourteen hypotheses presented in this study were confirmed through rigorous analysis. The remaining three hypotheses, purposely about the influence of visual appeal and information quality on satisfaction and the effect of satisfaction on impulse buying, were found to lack statistical significance.

This implies that consumers' impulse buying tendencies are not substantially impacted by their satisfaction levels. This consequence conveys a distinguished shift in consumer behavior, where the traditional positive correlation between visual appeal, information quality, and satisfaction appears to be diminishing. Lastly, three notable distinctions emerge in the analysis conducted through MGA in the influences exerted across diverse generations. In particular, Generation Y prefers to prioritize information quality and visual appeal, whereas Generation Z places a higher priority on interactivity.

The findings show operable strategies for e-wallet system designers and operators. Primarily, valuing the significance of interactivity, convenience, and visual appeal, system designers are fortified to take a user-centric approach to amplify their user interface by piloting user experience surveys. Their feedback may divulge twinge points in the current system that may daunt them from prolonged interaction with the application.

Acknowledging the focal role of subjective norms and promotional initiatives in eliciting positive responses from e-wallet users necessitates a fastidious marketing strategy. E-wallet platforms are beseeched to devote a comprehensive approach, catering to a diverse range of age demographics. E-wallet providers have a strategic prospect to increase brand visibility through generational marketing. For the younger demographic (Gen Z), e-wallet providers must offer mobile-responsive features. In targeting Generation Y, the focus should be on applications that furnish valuable and thorough information and attention to visual elements that attract this demographic.

Both generational cohorts have shown similar proclivity with monetary savings. Businesses can use digital wallet platforms to deliver customers exclusive content or promotional offers in real time. It surges user engagement and at the same time cultivates a strong sense of brand loyalty, establishing e-wallets as critical conduits for personalized and rewarding consumer experiences. By employing these stratagems, e-wallet providers can enthrall their intended audience, ultimately resulting in elevated user satisfaction and enjoyment and a sustained foothold in the highly competitive landscape of payment systems.

Future inquest ingenuities can conduct a comparative analysis of consumer behavior across diverse generational cohorts. The thorough exploration of the nuances inherent in consumer decision-making, particularly concerning distinct intrinsic and extrinsic factors, enhances the research's depth and precision. The differentiation between online and offline purchases within these inquiries would yield invaluable insights into potential disparities in impulse buying tendencies. Such peculiarities are essential for understanding consumer behavior patterns in varied transactional contexts.

Author Contributions: The authors contributed substantially to the conception, acquisition, analysis, or interpretation of data. The authors have approved the submitted version and agrees to be personally accountable for the authors' contributions and for ensuring that questions related to the accuracy or integrity of any part of the work.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics approval: All participants were fully informed about the anonymity of their responses, why the research is being conducted, how their data will be used, and if there are any risks associated.

Acknowledgments: I would like to express my sincerest gratitude to my family for their unwavering support and encouragement and, most significantly, to God for his guidance.

References

Abdelrhim, M., & Elsayed, A. (2020). The Effect of COVID-19 Spread on the e-commerce market: The case of the 5 largest e-commerce companies in the world. http://dx.doi.org/10.2139/ssrn.3621166

Alwan, S. Y., Hu, Y., Al Asbahi, A. A. M. H., Al Harazi, Y. K., & Al Harazi, A. K. (2023). Sustainable and resilient e-commerce under COVID-19 pandemic: a hybrid grey decision-making approach. *Environmental Science and Pollution Research*, *30*(16), 47328-47348. https://doi.org/10.1007/s11356-023-25456-0

Amanah, D., & Harahap, D. A. (2020). Visual appeal model for consumer online impulsive purchases in Indonesia. *International Journal of Scientific & Technology Research*, *9*(6), 388-397.

Bangko Sentral ng Pilipinas. (2015). National Baseline Survey on Financial Inclusion. 2015. Bangko Sentral ng Pilipinas. Retrieved from https://www.bsp.gov.ph/Inclusive%20Finance/Financial%20Inclusion%20Reports%20and%20Publications/2015/NBSFIFullReport.pdf

Chan, T. K., Cheung, C. M., & Lee, Z. W. (2017). The state of online impulse-buying research: A literature analysis. *Information & Management*, *54*(2), 204-217. https://doi.org/10.1016/j.im.2016.06.001

Chalik, F. R., & Faturohman, T. (2022). Customer satisfaction of e-wallet user: an adoption of information system success model. In *Quantitative Analysis of Social and Financial Market Development* (pp. 61-83). Emerald Publishing Limited. http://dx.doi.org/10.1108/S1571-038620220000030005

Cheng, Y. M. (2015). Towards an understanding of the factors affecting m-learning acceptance: Roles of technological characteristics and compatibility. *Asia Pacific Management Review, 20*(3), 109–119. https://doi.org/10.1016/j.apmrv.2014.12.011

CNN Philippines. (2023). Filipinos spent 4.4 million hours on e-wallets in 2022 - credit service. https://www.cnnphilippines.com/business/2023/4/10/filipinos-4-million-hours-e-wallet-apps.html#google_vignette

Daragmeh, A., Sági, J., & Zéman, Z. (2021). Continuous intention to use e-wallet in the context of the covid-19 pandemic: Integrating the health belief model (hbm) and technology continuous theory (tct). *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(2), 132.https://doi.org/10.3390/joitmc7020132

Dimock, M. (2019). Defining generations: Where Millennials end and Generation Z begins. *Pew Research Center*, 17(1), 1-7. https://www.pewresearch.org/short-reads/2019/01/17/where-millennials-end-and-generation-z-begins/

Do, H., Shih, W., & Ha, Q. (2020). Effects of mobile augmented reality apps on impulse buying behavior: An investigation in the tourism field. *Heliyon*, *6*(8), e04667. https://doi.org/10.1016/j.heliyon.2020.e04667

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook* (p. 197). Springer Nature.

Haudi, H., Rahadjeng, E., Santamoko, R., Putra, R., Purwoko, D., Nurjannah, D., ... & Purwanto, A. (2022). The role of e-marketing and e-CRM on e-loyalty of Indonesian companies during Covid pandemic and digital era. Uncertain Supply Chain Management, 10(1), 217-224. http://dx.doi.org/10.5267/j.uscm.2021.9.006

Haryadi, L. I. L., & Suroso, J. S. (2021). Analysis the Effect of Information Quality, System Quality, and Service Quality on Digital Wallet User Satisfaction of Students in Jakarta. *International Journal*, *10*(2). https://doi.org/10.30534/ijatcse/2021/901022021

Hasyim, U., & Ali, H. (2022). Reuse Intention Models through Customer Satisfaction During the Covid-19 Pandemic: Cashback Promotion and E-Service Quality Case Study: OVO Electronic Money in Jakarta. *Dinasti International Journal of Digital Business Management, 3*(3), 440-450.https://doi.org/10.31933/dijdbm.v3i3.1170

Heeter, C. (1989). Implications of new interactive technologies for conceptualizing communication. *Media use in the information age: Emerging patterns of adoption and consumer use*, 217-235

Henseler, J., Ringle, C. M., & Sarstedt, M. (2016). Testing measurement invariance of composites using partial least squares. *International marketing review*, *33*(3), 405-431. http://dx.doi.org/10.1108/IMR-09-2014-0304

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Huang, F., Teo, T., & Scherer, R. (2022). Investigating the antecedents of university students' perceived ease of using the Internet for learning. Interactive learning environments, 30(6), 1060-1076.http://dx.doi.org/10.1080/10494820.2019.1710540

Izaidin, M. D. B. A., Athavale, V. A., Razak, M. D. B. A., Zain, N. H. B. M., Aqimu'Ajiby, N. A. B., Singh, S., & Katkar, Y. R. (2022). Touch n Go e-Wallet: The New Payment Style Existed when COVID-19 Hits. *International Journal of Accounting & Finance in Asia Pasific (IJAFAP)*, *5*(3), 107-116.

Jin, Z., & Lim, C. K. (2021). Structural relationships among service quality, systemic characteristics, customer trust, perceived risk, customer satisfaction and intention of continuous use in mobile payment service. *Journal of System and Management Sciences, 11*(2), 48–64. https://doi.org/10.33168/JSMS.2021.0204

Kim, E., Ham, S., Yang, I. S., & Choi, J. G. (2013). The roles of attitude, subjective norm, and perceived behavioral control in the formation of consumers' behavioral intentions to read menu labels in the restaurant industry. *International Journal of Hospitality Management*, *35*, 203-213. https://doi.org/10.1016/j.ijhm.2013.06.008

Kneidinger, B. (2014). Intergenerational contacts online: An exploratory study of cross-generational Facebook "friendships". *Studies in Communication Sciences*, *14*(1), 12-19. https://doi.org/10.1016/j.scoms.2014.03.004

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec), 11*(4), 1-10. http://dx.doi.org/10.4018/ijec.2015100101

Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for information Systems, 13*(7). http://dx.doi.org/10.17705/1jais.00302

Krishanan, D., Khin, A. A., Teng, K. L. L., & Chinna, K. (2016). Consumers' perceived interactivity & intention to use mobile banking in structural equation modeling. *International Review of Management and Marketing*, *6*(4), 883-890. https://econjournals.com/index.php/irmm/article/view/3202

Ku, E. C., & Chen, C. D. (2020). Flying on the clouds: how mobile applications enhance impulsive buying of low cost carriers. *Service Business*, *14*(1), 23-45.https://link.springer.com/article/10.1007/s11628-019-00407-3

Lee, Y. Y., Gan, C. L., & Liew, T. W. (2022). Do E-wallets trigger impulse purchases? An analysis of Malaysian Gen-Y and Gen-Z consumers. *Journal of Marketing Analytics*. https://doi.org/10.1057/s41270-022-00164-9

Liebana-Cabanillas, F., Carvajal-Trujillo, E., Villarejo-Ramos, Á. F., & Higueras-Castillo, E. (2020). Antecedents of the intention to use NFC mobile applications in tourism. *Journal of Hospitality and Tourism Technology*, *11*(2), 369-383.http://dx.doi.org/10.1108/JHTT-03-2019-0048

Lucas, M., & Koff, E. (2014). The role of impulsivity and of self-perceived attractiveness in impulse buying in women. *Personality Individual Differences, 56*(January), 111–115. https://doi.org/10.1016/j.paid.2013.08.032

Mehrabian, A., & Russell, J. A. (1974). The basic emotional impact of environments. *Perceptual and Motor Skills, 38*(1), 283–301. https://doi.org/10.2466/pms.1974.38.1.283

Muruganantham, G., & Bhakat, R. S. (2013). A review of impulse buying behavior. *International journal of marketing studies*, *5*(3), 149.http://dx.doi.org/10.5539/ijms.v5n3p149

Ocak, N., & Cagiltay, K. (2017). Comparison of cognitive modeling and user performance analysis for touch screen mobile interface design. *International Journal of Human–Computer Interaction*, *33*(8), 633-641.http://dx.doi.org/10.1080/10447318.2016.1274160

Osakwe, C. N., & Okeke, T. C. (2016). Facilitating mCommerce growth in Nigeria through mMoney usage: A preliminary analysis. *Interdisciplinary Journal of Information, Knowledge, and Management*.http://dx.doi.org/10.28945/3456

Pal, A., Herath, T., De', R., & Rao, H. R. (2020). Contextual facilitators and barriers influencing the continued use of mobile payment services in a developing country: insights from adopters in India. *Information Technology for Development, 26*(2), 394-420. https://doi.org/10.1080/02681102.2019.1701969

Parboteeah, D. V., Valacich, J. S., & Wells, J. D. (2009). The influence of website characteristics on a consumer's urge to buy impulsively. *Information systems research*, *20*(1), 60-78. https://doi.org/10.1287/isre.1070.0157

Peña-García, N., Gil-Saura, I., Rodríguez-Orejuela, A., & Siqueira-Junior, J. R. (2020). Purchase intention and purchase behavior online: A cross-cultural approach. *Heliyon*, *6*(6). https://doi.org/10.1016/j.heliyon.2020.e04284

Pradhan, D., Israel, D., & Jena, A. K. (2018). Materialism and compulsive buying behaviour: The role of consumer credit card use and impulse buying. *Asia Pacific Journal of Marketing and Logistics*, *30*(5), 1239-1258. http://dx.doi.org/10.1108/APJML-08-2017-0164

Rodríguez-Ardura, I., & Meseguer-Artola, A. (2020). How to prevent, detect and control common method variance in electronic commerce research. *Journal of theoretical and applied electronic commerce research*, *15*(2), 1-5. https://doi.org/10.4067/S0718-18762020000200101

Rook, D. W. (1987). The buying impulse. *Journal of consumer research*, *14*(2), 189-199.

Salleh, M. A. M. (2012). The impact of interactivity features in enhancing online communication satisfaction. *Jurnal Komunikasi: Malaysian Journal of Communication*, *28*(2), 21-36.

Shaw, B., & Kesharwani, A. (2019). Moderating Effect of Smartphone Addiction on Mobile Wallet Payment Adoption. *Journal of Internet Commerce*, *18*(3), 291–309. https://doi.org/10.1080/15332861.2019.1620045

Statista. (2023). Digital payments in the Philippines - statistics & facts. https://www.statista.com/topics/9799/digital-payments-in-the-philippines/#topicOverview

Sun, H., & Zhang, P. (2006). A Critical Survey and a Research Model. *Human-computer interaction and management information systems: Foundations*, *295*. https://doi.org/10.4324/9781315703619

Tehseen, S., Ramayah, T., & Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of management sciences*, *4*(2), 142-168. http://dx.doi.org/10.20547/jms.2014.1704202

Tetteh, J. E. (2022). Electronic Banking Service Quality: Perception of Customers in the Greater Accra Region of Ghana. *Journal of Internet Commerce, 21*(1), 104–131. https://doi.org/10.1080/15332861.2020.1870340

Verplanken, B., & Sato, A. (2011). The Psychology of Impulse Buying: An Integrative Self-Regulation Approach. *Journal of Consumer Policy, 34*(2), 197–210. https://doi.org/10.1007/S10603-011-9158-5

Vitug, E. G. 2023. E-wallets as Forefront of Future Payment Platforms: Technology Adoption and Utilization of Businesses in Central Luzon, Philippines. *Partnership*, *16*, 28.

Wang, S., Liu, Y., Du, Y., & Wang, X. (2021). Effect of the COVID-19 Pandemic on Consumers' Impulse Buying: The Moderating Role of Moderate Thinking. *International Journal of Environmental Research and Public Health*, *18*(21). https://doi.org/10.3390/ijerph182111116

Xiang, L., Zheng, X., Lee, M. K., & Zhao, D. (2016). Exploring consumers' impulse buying behavior on social commerce platform: The role of parasocial interaction. *International Journal of Information Management*, *36*(3), 333-347. https://doi.org/10.1016/j.ijinfomgt.2015.11.002

Yamawaki, M. A. C. (2017). *The millennials luxury brand engagement on social media: A comparative study of brazilians and italians* (Doctoral dissertation). http://dx.doi.org/10.18568/internext.v14i1.442

Zhang, W., Leng, X., & Liu, S. (2020). Research on mobile impulse purchase intention in the perspective of system users during COVID-19. *Personal and Ubiquitous Computing*, 1-9. https://doi.org/10.1007/s00779-020-01460-w

Zhou, R., & Feng, C. (2017). Difference between Leisure and Work Contexts: The Roles of Perceived Enjoyment and Perceived Usefulness in Predicting Mobile Video Calling Use Acceptance. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.00350

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 255-265
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.551

Compatibilities of University Entrepreneurship Program and Students' Entrepreneurial Characteristics in Indonesia

Bagas Narendra Parahita[1], Ghufronudin[2], Anis Suryaningsih[3], Nur Fatah Abidin[4], Lies Nurhaini[5]

[1] Department of Sociology Anthropology Education, Sebelas Maret University, Surakarta, Central Java 57126, Indonesia
[2] Department of Sociology Anthropology Education, Sebelas Maret University, Surakarta, Central Java 57126, Indonesia
[3] Pancasila and Civic Education Department, Sebelas Maret University, Surakarta, Central Java 57126, Indonesia
[4] Department of History Education, Sebelas Maret University, Surakarta, Central Java 57126, Indonesia
[5] Department of Accounting Education, Sebelas Maret University, Surakarta, Central Java 57126, Indonesia

Correspondence: Bagas Narendra Parahita, Department of Sociology Anthropology Education, Sebelas Maret University, Surakarta, Central Java 57126, Indonesia. E-mail: bagasnarendrap@staff.uns.ac.id

Abstract
University entrepreneurship programs in Indonesia have been rapidly developed under the policy Merdeka Belajar Kampus Merdeka. This article analyzes the compatibility of university entrepreneurship programs and students' entrepreneurial characteristics. A mixed method based on sequential approach was used as research methodology. The data were collected though Focus Group Discussion and interview with stake holder, practitioner, and academicians. The finding of research shows that the dimension of the compatibility of entrepreneurship program to millennial generation should pay attention to adaptive entrepreneurship education material, instructor's experience, teaching method, the compatibility of science background, socialization of program, creating a business ecosystem, ease and flexible of budget management, legal assistance, business orientation, discretion in solving the problem, entrepreneurial mindset, business research, and facilitation. The recommendation given is that to improve the entrepreneurship program, a dynamic entrepreneurship program is required in all Universities in Indonesia corresponding to the millennial generation's needs in post-industrial society.

Keywords: Higher Education, Entrepreneurship Programs, Entrepreneurial Characteristics

1. Introduction

Covid-19 pandemic situation beginning to occur in early 2020 in Indonesia generates a variety of economic problem. One of which is the potential estimated increase in unemployment rate from 2.91 million to 5.23 million in 2020 in Indonesia, according to data of National Economic Recovery Program (Indonesian: Program Pemulihan Nasional or PEN) (Pemulihan Ekonomi Nasional, 2020). Therefore, a sustainable economic recovery attempt taken by government is to reduce national unemployment rate through adapting the education orientation to the reality in work and industrial realms. State universities are expected to produce graduates ready for working

independently and according to the demand of work realm today. The attempt is in line with Ministry of Education and Culture arranging a Freedom-to-Learn – Independent Campus program aiming to encourage the development of each education unit, the adjustment of learning process condition in academic, cultural, local wisdom, social-economic, and infrastructural system aspects.

In this case, government takes an attempt of implementing the education-oriented economic improvement by encouraging the students, as the agent of change, to adapt to work realm in order to improve the human resource competency. It is intended to prepare demographic bonus that will expectedly occur in 2020-2035 (Badan Pusat Statistik, 2013). The data collected shows that there is still an increase in open unemployment rate among the graduates of universities by 1.27% in February 2020 - February 2021. Particularly in February 2021, the total unemployment rate of university graduates is 6.97% (Hermawan, 2016). The fact is a problem arising related to the course of entrepreneurship education and program in universities that has not achieved the outcome as expected in relation to the educated unemployment rate.

Entrepreneurship program has been prepared for being a part of other governmental programs held by Education, Research and Technology Ministry such as internship activity, independent study, student exchange, Student Study Service for building village, assistance, and humanity project through Freedom-to-Learn – Independent Campus (Indonesian: Merdeka Belajar Kampus Belajar or MBKM) (Jenderal et al., 2020). Particularly, the learning process and various entrepreneurship education developments at universities can direct entrepreneurship attitude to the more positive one and to affect significant the students' entrepreneurship behavior (Rudi Irwansyah & Lulup Endah Tripalupi, n.d.). The government does so as an attempt of encouraging the students to have academic knowledge and complex practical experience in entrepreneurship when they study in the university.

The government's attempt of preparing qualified human resource based on Government Regulation Number 17 of 2010 about Education Management and Organization stating that high education aims, among others, to create faithful and pious, knowledgeable, competent, skillful, critical, creative, innovative, health, independent, self-confidence, tolerant, socially sensitive, and responsible humans. In its implementation, a further review should be conducted on the sustainability of entrepreneurship program to millennial student as the basic target of the improvement of competency in entrepreneur development practice in order to be appropriate-target corresponding to the millennial students' entrepreneurial preference. Regarding this, the concept of entrepreneurship for students should be adjusted with technology change and various social issues occurring recently.

2. Method

The author selects millennial-generation students to be the subject of primary data in this research, the students born in 1992 – 2012. The combination between millennial and zillennials generations shows similar characteristics that can distinguish them from the previous generation. Adolescents born in that year become the early Indonesian generation of adolescent adaptation equally feeling various big transitions in learning cyberspace, social media, digital world, and technology. Thus, specifically, the students admitted to the universities in 2017-2021 who have passed through the adaptation process and any challenges of business development in the digital era and various social issues within it.

The characteristics of social entrepreneurs coming from the millennial generation can be seen from the research (Zhang et al., 2021). Identifying millennial generation through perseverance, proactive personality, concern for social problem, internal life satisfaction standard as self-motivation, and self-efficacy. The literature review delivered (Kusumawardhany, n.d.) found that there is a positive constructive effect on the creation of entrepreneurial intention through personal attitude, education support, and social media use. Previous research conducted (Rodriguez et al., 2019) found that courage and hard work shown by millennials can strengthen entrepreneurial attitude and loyalty. The identification process is continued to find the dimension of the compatibility of entrepreneurship programs to the millennial generation in Indonesia. It becomes the state of the art of this research if the compatibility is explored to entrepreneurship programs needed by millennial students in Indonesia.

This research aims to analyze the suitability of entrepreneurship programs in State Universities by seeing millennials, academicians, practitioners, and many parties including stakeholders related to entrepreneurship development for the millennial generation. Theoretically, the approach used is post-industrial society seeing modern society development building more on training and education provisions based on personal service and skill (Daniel Bell, 2020). Conceptually, the bottom-up design approach is used to put the millennial-generation students to be the main subject of research entitled to participate in the development of Indonesian education policy and programs.

2.1. Research Design

This research employed mixed methods; the research design chosen was the explanatory sequential design. The process of collecting data was conducted through hybrid (online and offline) Focus Group Discussion, in-depth interviews, and online questionnaire distribution. The research design chosen was the explanatory sequential design. This pattern is called a two-phase design (Creswell, 2002).

2.2. Sample

The result of observation on the student's perception was conducted in June 2021 by distributing an online questionnaire to the students in 75 state universities in Indonesia, with a total of 3920 respondents was used for the process of analyzing quantitative data to obtain the data of the millennial generation's entrepreneurial preference. A qualitative approach is conducted through hybrid (online and offline) FGD and in-depth interviews with the students selected using the purposive sampling technique, consisting of 114 students coming from 10 (ten) State Universities in and out of Java Island. The analysis process can be continuous until the data are considered as having been qualified to be categorized systematically.

3. Results and Discussions

The result of the online questionnaire was obtained from 3920 respondent students in State Universities. The millennial entrepreneurial characteristics can be seen from the perception of students as the actor participating in entrepreneurship program activities at State University.

3.1. Characteristics of Respondents

The template is designed so that author affiliations are not repeated each time for multiple authors of the same affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization). This template was designed for two affiliations. The majority of respondents are millennial students born in 1999-2003. In this research, the ratio of students enrolled in State Universities in Java Island to those out of Java Island completing the online questionnaire concerning millennial entrepreneurial characteristics is fairly equal (58%:42%). This composition of respondents is expected to represent the actual condition in the field. By major group, majority respondents (66%) are students coming from the social and humanities group, while the rest of (34%) are those coming from the Science and Technology group.

3.2. Respondents' Perception

In this study, individual respondents should answer 5 (five) question items. The items of question were scored using the Likert scale (1-5). From the result of quantitative data, the respondents' response to the questions posed by the author is presented in the table 1 below.

Table 1: Statistic Data Result of Online Questionnaire Question Items

Millennial Entrepreneur Indicators	Entrepreneurial Tendency Score Based on the Year of Birth of the Millennial Generation in Indonesia					Mean	Interpretation
	1999 *n*=337	2000 *n*=717	2001 *n*=1287	2002 *n*=1161	2003 *n*=418		
Perseverance							
I determine the target of the task regularly	4,02	4,04	4,09	4,11	4,09	4,07	High
Business routines are essential in entrepreneurship	4,16	4,16	4,13	4,17	4,07	4,13	High
Proactive Personality							
I am interested in the entrepreneurship course	3,83	3,78	3,75	3,63	3,51	3,70	High
I am waiting for orders from the lecturer while studying independently	3,21	3,16	3,12	3,15	3,15	3,15	Moderate
Concern for social problem							
Environmental issues are considered in the business plan	4,15	4,15	4,12	4,13	4,00	4,11	High
I follow national developments regularly	3,63	3,62	3,60	3,60	3,54	3,59	High
Life Satisfaction							
I procrastinate doing heavy tasks	3,27	3,21	3,26	3,35	3,38	3,29	Moderate
Self Efficacy							
I feel talented to be an entrepreneur	3,47	3,47	3,34	3,36	3,32	3,39	High
Entrepreneurs can bring social change for the better	4,33	4,31	4,31	4,30	4,32	4,31	Very High
Digital Literacy							
I feel proud of my social media accounts	3,47	3,38	3,36	3,44	3,31	3,39	High
Business Motivation							
Entrepreneurs can develop their capacity	4,34	4,31	4,32	4,33	4,32	4,32	Very
Professional work has low time flexibility	4,33	2,84	2,87	2,84	2,97	3,17	High
I will set up a business that matches my hobby	4,20	4,11	4,12	4,13	4,11	4,13	Moderate High
Critical Attitude							
Successful entrepreneurs tend to be apathetic	3,50	3,61	3,56	3,44	3,48	3,51	High
I prefer to follow other people's directions	3,10	3,14	3,12	3,14	3,45	3,19	Moderate

Source: Processed Primary Data (2021)

In Quantitative data, millennials tend to have high persistence maximum value scale of 5. The data shows that the millennial education process tends to be neutral to wait for orders from lecturers (3.15). In achieving life satisfaction, millennials are at a moderate trend (3.29). Millennials are also in a neutral position to receive directions from others (3.19). Millennial motivation is still in a neutral position to be able to work professionally (3.17). The various neutral tendencies of the millennial generation obtained from quantitative data became the basis for conducting FGD activities and in-depth interviews to find programs needed by the millennial generation to give them confidence in their future orientation. Dimensional findings were obtained after getting perspectives from millennials regarding entrepreneurship learning, involvement in entrepreneurship programs, academic and practitioner perspectives, and seeing the role models of entrepreneurship programs that have been carried out.

3.3. Students' View on Entrepreneurship Learning Process

Qualitative data collected from millennials shows that the students who are attending education in State University perceived that the entrepreneurship education process through entrepreneurship course remains to be desirable. It is an important factor in growing the interest in being entrepreneurship among the millennials through the academic process.

Therefore, in its sustainability, University should stimulate a systematical entrepreneurship education. Millennial students give some inputs concerning the entrepreneurship learning they have obtained from attending the entrepreneurship education in the campus. The participation of facilitator with complex competency including

cognitive competency and practitioners strongly experienced with entrepreneurship learning process becomes important to millennial students. The main objective of job opportunity creation delivered by the millennial students in developing entrepreneurial skill can be considered as the millennial generation's high motivation to develop their entrepreneurial spirit.

Millennials really expect the participation of practitioners and the reinforcement of experiential practice in entrepreneurship learning. In other condition, the millennials' comments imply the mentoring process sustainability during the entrepreneurship learning. Therefore, an advanced entrepreneurship learning design is required to be the early formulation of policy in term of the development of the students' entrepreneurial interest and talent. Furthermore, some students state that the participation of mentor mastering entrepreneurship field either academically or practically is desirable to support the students' freedom of thinking in deciding various entrepreneurial ideas. In State Universities, despite different characteristics of study programs, such disciplines as social humanities and science and technology remain to be important to obtain the foundation of entrepreneurship learning. Also, the millennials' input seems to be related to the process of integrating entrepreneurship material into the learning in campus. The integration process can be done by leading the knowledge on entrepreneurship to the positive social effect like digital-preneur and knowledge on market development can be described at table 2 below.

Table 2: Analysis of the students' view on entrepreneurship learning on the campus

Dimension	Analysis of the Millennial students' View
Adaptive entrepreneurship education material	Entrepreneurship learning is still considered important, but the material should be adapted to business development today to know the market well
Instructor's experience	Entrepreneur Academician & practitioner professional in entrepreneurship
Teaching Method	Being interested more in the practical approach to entrepreneurship
The compatibility of science background	Millennial students with social humanities and science and technology disciplines still need entrepreneurship according to their focus

Source: Processed Primary Data (2021)

3.4. Students' Experience and Expectation for Attending Entrepreneurship Program in Campus

In universities, students have various opportunities of participating in entrepreneurial program activities. The following result presents a perspective based on the experience and participation of students in the entrepreneurship program on the campus. It shows that millennial students tend to have perseverance. It implies that millennial students are very adaptive to the quality of entrepreneurship programs delivered to them. The entrepreneurship program provided should be able to accommodate all the needs of businesses operated by millennials, due to varying target markets.

Socialization process should run well and acceptable from upstream to downstream or study program to enable the students to give their best potency to apply for fund to various schemes of entrepreneurship programs existing. Basically, millennial pay much attention to the information accepted concerning the offering of entrepreneurship program. The early spirit of millennials should be followed up immediately before they think of business planning too far, because they can be overthinking when they think of the business plan themselves. Millennials with high motivation should be supported with structured facilitation. Adequate time for the millennials to prepare themselves will result in good business planning, for example through the business proposal joining the competition. Another constraint encountered by millennial in the planning process when attending the competition of entrepreneurship program, the millennial students need supporting facilitation in designing and allocating budget during attending the entrepreneurship program.

Although millennials have many business ideas, without structured facilitation to see the constraints encountered, they will implement them less maximally. The optimization of entrepreneurship program develops more maximally in state universities if it is supported with facilitation involving training, mentoring and facilitator to fulfill the need of students attending this program. The facilitation is also conducted by academician and practitioners experienced in entrepreneurship field to direct the students later according to systematical stage. Entrepreneurship program in State Universities should pay attention to external cooperation based on community including alumni business community or the community established independently by students, cooperation with community and industry beyond the campus.

Table 3: Analysis of the experience and expectations of students who attend the entrepreneurship program on campus

Dimension	Socialization of Program	Creating Business ecosystem	Ease and Flexible of Budget Management	Legal Assistance	Business Orientation	Discretion in Solving Problem
Analysis	Distribution of Information should be done routinely to all students. Millennials still have creative ideas that haven't materialized yet.	Collaboration should be made among the parties or internal and external stakeholders to support the establishment of a business community organization with a broad network	A flexible approach must be given so that millennial students do not experience difficulties in terms of budget management, cash flow organization, and financial report writing	Millennial students want the campus to help legalize the product, obtain intellectual property right to the product, and register the business permission	There should be a change of mindset in entrepreneurship programs for millennial students, from the money-oriented to the socially-oriented one.	Try to give students many opportunities for facilitation and business collaboration to increase their experience with solving various social problems using an independent campus approach

Source: Processed Primary Data (2021)

3.5. Practitioner's and Academicians' Perspective View

An entrepreneurial process is a very long one, in which millennials do not develop in the condition of strong field experience. In this case, the University should be able to identify the students' potency in such a way that has entrepreneurial passion and spirit as it is not easy. The university should, among others, be able to encourage the students to have negotiating ability in terms of product development. It can strengthen the personality of a millennial entrepreneur to be a multidisciplinary entrepreneur.

An entrepreneurial process is a very long one, in which millennials do not develop in the condition of strong field experience. In this case, the University should be able to identify the students' potency in such a way that has entrepreneurial passion and spirit as it is not easy. The university should, among others, be able to encourage the students to have negotiating ability in the term of product development. It can strengthen the personality of a millennial entrepreneur to be a multidisciplinary entrepreneur.

An attempt taken by the government, through the Ministry of Education and Culture, is to launch the Freedom-to-Learn – Independent Campus programs, one of which is the entrepreneurship program. The practitioners see this as an opportunity. Entrepreneurship program implemented in State University can be developed in the Freedom-to-Learn – Independent Campus curriculum to facilitate the program giving the millennial students an opportunity of developing their creativity according to time challenges today.

Academicians play important role in strengthening the basis of entrepreneurship knowledge through theoretical explanation and the direction of entrepreneurship concept insight. In early conditions, millennials have not been aware of the potency they have, but their development process academicians motivate those who have interest and talent in entrepreneurship to learn more deeply the good business knowledge base. The big potency the millennials have can facilitate the actors of education, in this campus and academicians, in the term of preparing the appropriate program. Millennials' high motivation should be welcomed by a good entrepreneurial education ecosystem.

Table 4: Analysis of Stakeholder's view on Entrepreneurship Program for the millennial generation.

Dimension	Practitioner	Academician
Entrepreneurial Mindset	It is important to prepare mentality of entrepreneurial spirit in a broad sense	The delivery of appropriate teaching methods affects positively the millennials' interest
Business Research	Business innovation should be based on market research	Evaluative research should be conducted to strengthen entrepreneurship education and practice.
Facilitation	Business incubator programs should be consistent with time development, by using technological skills the millennials have.	Monitoring should be conducted sustainably to see the business development process implemented by millennials.

Source: Processed Primary Data (2021)

3.6. Role Modeling of Entrepreneurship Program in State University

Support is given to entrepreneurship programs in Indonesia as an attempt of developing an entrepreneurial spirit that has been implemented by universities since a long time ago. Many strategies and models are applied expected to make the students interested in learning and participating in a variety of entrepreneurship programs. Recently, the role modeling of entrepreneurship programs through reinforcing the entrepreneurship learning process and incubation approach has been implemented well in various universities. For example, the attempt has been taken by Universitas Sebelas Maret, through the Directorate of Innovation and downstream, to establish UNS innovation Hub constituting an institution to commercialize the result of the invention, research, and innovation. UNS Innovation Hub also gives millennial students an opportunity of developing a new idea, channel various creativities, and help the acceleration of business ecosystem and startup incubation development. In its process, UNS Innovation Hub has a program structure operating in 3 channels: (1) Pre-incubation conducted to screen the potential tenants, (2) incubation conducted to develop individual and tenant's talent, and (3) post-incubation expected to accelerate the development of startup and to be given an opportunity of getting advanced fund along with Business Management Agency (BPU).

In terms of product legalization produced by millennial students, UNS Innovation Hub facilitates the millennial students to have intellectual property (HKI, KI, PT, etc) through the business tenant. It is very helpful to the millennial students in the aspect of acceptance and recognition of product quality in the public. The students attending the incubation program held by UNS Innovation Hub answer the needs for millennials in developing their potency through systematic mentoring and monitoring processes. Universities should adjust the business ecosystem with the millennials' needs; the self-confidence the millennials have should be maximized through concrete entrepreneurship facilitation and giving many benefits. Supporting education implemented in the university environment as the entrepreneurship education institution contributes positively to the development of entrepreneurship broadly (Fayolle et al., 2014). The structured ecosystem of the university has highly affected the entrepreneurship intention (Moraes et al., 2018). In this case, the campus should always make adequate adaptations to accommodate the millennial students' needs, and the campus also can facilitate it through the program in line with the interest and talent of students with diverse backgrounds.

The millennial students have high perseverance, as indicated with so many programs initiated by students to make a change into the better one today. Perseverance and spirit are desirable as they believe in an individual's capability to achieve the long-term objective (Duckworth et al., 2007). A proactive personality gives an individual to be responsible for identifying business opportunities by understanding the procedure to embark on business (Neneh, 2019). A proactive individual is a figure always developing culture intensely in finding opportunity (Chipeta et al., n.d.). The support of education is related directly to entrepreneurship intention (Turker & Selcuk, 2009). Developed and developing societies should know social entrepreneurship as a global phenomenon and should identify further the similarity and the difference between different contexts within it (Zhang et al., 2021). Intellectual capital is an important factor in increasing personal knowledge and working more efficiently and productively (Alshebami & Seraj, 2021). University is the highest educational institution that can create millennial students mastering academic fields and having complex skills concerning social entrepreneurship. Such a condition is very desirable to face a demographic bonus in the next few years.

Some factors like knowledge, experience, bond, attitude, social norm, perceived behavioral control, and personalities affect positively the entrepreneurial intention in the millennial generation (Koe et al., 2012). Millennials prefer being guided by a mentor to get some inputs (Berkup, 2014). The entrepreneurial intention will get stronger if the attitude an individual has is supported with stronger education (Kusumawardhany, n.d.). Millennials want a comprehensive facilitation process from mentoring to monitoring processes when they hold entrepreneurship learning. Life satisfaction can be managed by millennials having encountered many constraints. Millennials' dissatisfaction with their career or experience can motivate them to develop themselves in entrepreneurship activity (Shaw & Carter, 2007). The entrepreneurship approach should shift from traditional practice to a holistic teaching process; the main key is the development of behavior through an entrepreneurial mindset (Daniel, 2016). The mobility process affects positively innovation and entrepreneurial orientation in a university (Civera et al., 2020). Through the freedom-to-learn-independent campus system, the university can provide freedom opportunities through providing space for creative ideas, volition, thinking, and soul, and giving the millennial generation to develop according to their potency and ability.

The entrepreneurial mental ability can be created when universities can adjust the need with the characteristics of the millennial generation. It can be synchronized with the post-industrialist society dimension theory approach suggested by Daniel Bell (Daniel Bell, 2020). The preference found in entrepreneurial youngsters in the service sector is compatible with the post-industrialist economic structure (Martynova et al., 2017). Post-industrialist society to date concentrates more on the reinforcement of education or knowledge to generate new and bright ideas or innovation. Entrepreneurship growth is very important to the post-industrial environment because of the absence of entrepreneurial culture constructed in an ecosystem, various difficulties will be faced in the adaptation process (Gherhes et al., 2018). The entrepreneurship education process can encourage the improvement of an individual's entrepreneurial competency (Koe, 2016). The ecosystem constructed through a business incubator is perceived to bear future-oriented millennial generations as an attempt of solving the problems arising in the future challenge.

From the results of the entrepreneurship role model program analysis above, the entrepreneurship program launched by the State University can be said to be an appropriate program for the millennial generation who have a high tendency of Millennial Social Entrepreneurial characteristics. It takes several dimensional approaches derived from the needs of millennial entrepreneurs to provide opportunities for millennial students who need to strengthen their self-confidence to become entrepreneurs. In developing the Freedom-to-Learn – Independent Campus program, through the entrepreneurial program approach implemented by each university, it must adjust the needs and characteristics expected by the millennial generations.

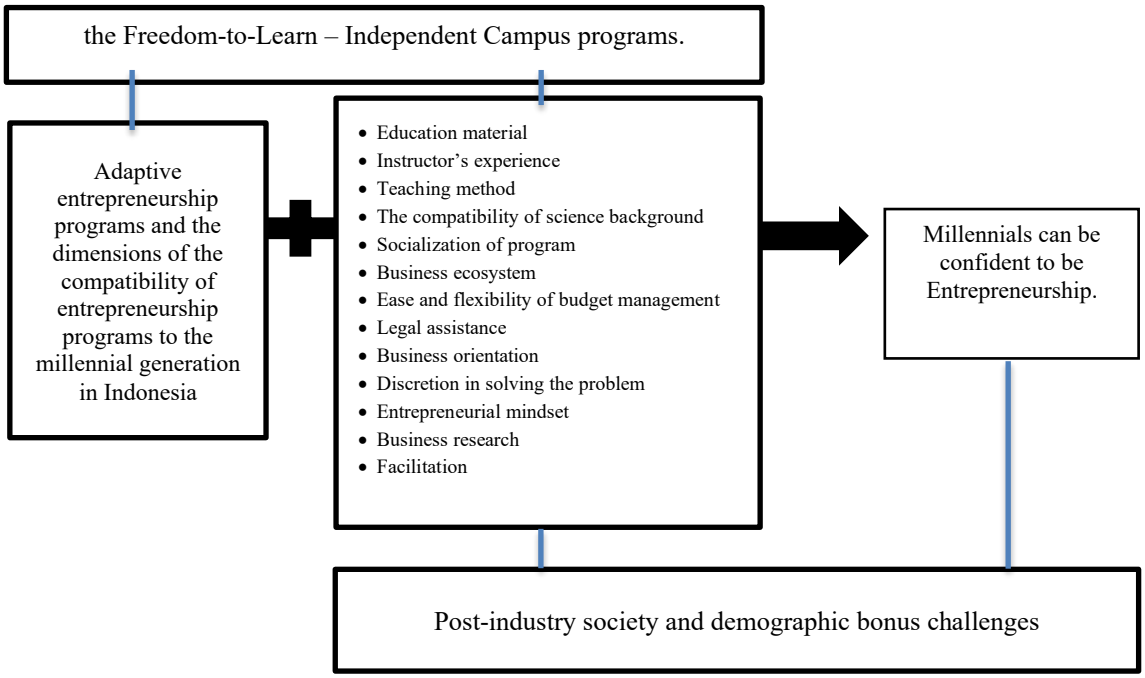


Figure 1: The model of the suitability of the entrepreneurship program with the millennial generation in Indonesia.

The dimensions of the compatibility of entrepreneurship program to the millennial generation that should be taken into account by the entrepreneurship program in implementing its activities are adaptive entrepreneurship education material, instructor's experience, teaching method, the compatibility of science background, socialization of program, creating a business ecosystem, ease and flexible of budget management, legal assistance, business orientation, discretion in solving the problem, entrepreneurial mindset, business research, and facilitation.

Considering the result of research and discussion, the entrepreneurship program delivered by the State Universities is compatible with the entrepreneurial preference of the millennial generation and desirable to post-industrial society era. It can be seen from the role model of entrepreneurship programs implemented in universities. Its development is expected to strengthen the entrepreneurial potency the millennials have in academic facilitation and practice, particularly through a strong business ecosystem such as creating various business incubators corresponding to the millennials' needs.

Thus, an analysis of the suitability of various entrepreneurship programs in universities is suitable for millennials who have a high tendency, but universities must provide a different approach for other millennial characters to have the confidence to be involved in various entrepreneurship programs. The entrepreneurship program is expected to collaborate with the Freedom-to-Learn – Independent Campus curriculum and to be the bridge between universities to give the millennial students an opportunity of choosing the entrepreneurship program needed according to each interest.

The results of this study can be used as an alternative for universities to adjust entrepreneurship programs according to the dimensions of the needs of the millennial generation. Recommendations for further research are to focus on identifying entrepreneurship programs that follow the changing millennial characteristics of each university by approaching the social, economic, and cultural conditions of the local area.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: There is no conflict of interest

Acknowledgments: The author would like to express her sincere gratitude to the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia which funded this research through the 2021 budget-year research contract No: 02762/H2/PBJ/2021.

References

Alshebami, A., & Seraj, A. (2021). The Impact of Intellectual Capital on the Establishment of Ventures for Saudi Small Entrepreneurs : GEM Data Empirical Scrutiny. *Review of International Geographical Education*, *11*(6), 129–142. https://doi.org/10.48047/rigeo.11.08.13

Badan Pusat Statistik. (2013). Katalog BPS: 2101018. In *Bps*.

Berkup, S. B. (2014). Working with generations X and Y In generation Z period: Management of different generations in business life. *Mediterranean Journal of Social Sciences*, *5*(19), 218–229. https://doi.org/10.5901/mjss.2014.v5n19p218

Chipeta, E. M. (2015). *Social entrepreneurship intentions among university students in Gauteng* (Doctoral dissertation).

Civera, A., Meoli, M., & Vismara, S. (2020). Engagement of academics in university technology transfer: Opportunity and necessity academic entrepreneurship. *European Economic Review*, *123*. https://doi.org/10.1016/j.euroecorev.2020.103376

Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative* . Prentice Hall.

Daniel, A. D. (2016). Fostering an entrepreneurial mindset by using a design thinking approach in entrepreneurship education. *Industry and Higher Education*, *30*(3), 215–223. https://doi.org/10.1177/0950422216653195

Daniel Bell. (2020). *Post-industrial society*. Routledge.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and Passion for Long-Term Goals. *Journal of Personality and Social Psychology*, *92*(6), 1087–1101. https://doi.org/10.1037/0022-3514.92.6.1087

Fayolle, A., Liñán, F., & Moriano, J. A. (2014). Beyond entrepreneurial intentions: values and motivations in entrepreneurship. *International Entrepreneurship and Management Journal*, *10*(4), 679–689. https://doi.org/10.1007/s11365-014-0306-7

Gherhes, C., Vorley, T., & Williams, N. (2018). Entrepreneurship and local economic resilience: the impact of institutional hysteresis in peripheral places. *Small Business Economics*, *51*(3), 577–590. https://doi.org/10.1007/s11187-017-9946-7

Hermawan, H. (2016). The Impact of the Development of the Nglanggeran Tourism Village on the Economy of the Local Community. *Jurnal Pariwisata*, 3(2), 105-117.

Jenderal, D., Tinggi, P., Pendidikan, K., & Kebudayaan, D. (2020). *Independent Learning Guidebook - Independent Campus*.

Koe, W.-L. (2016). The relationship between Individual Entrepreneurial Orientation (IEO) and entrepreneurial intention. *Journal of Global Entrepreneurship Research*, *6*(1). https://doi.org/10.1186/s40497-016-0057-8

Koe, W.-L., Sa'ari, J. R., Majid, I. A., & Ismail, K. (2012). Determinants of Entrepreneurial Intention Among Millennial Generation. *Procedia - Social and Behavioral Sciences*, *40*, 197–208. https://doi.org/10.1016/j.sbspro.2012.03.181

Kusumawardhany. (n.d.). *Kusumawardhany2020*.

Martynova, S. E., Dmitriev, Y. G., Gajfullina, M. M., & Totskaya, Y. A. (2017). "Service" Municipal Administration as Part of the Development of Youth Entrepreneurship in Russia. *Social Indicators Research*, *133*(3), 1151–1164. https://doi.org/10.1007/s11205-016-1406-2

Moraes, G. H. S. M. de, Iizuka, E. S., & Pedro, M. (2018). Effects of Entrepreneurial Characteristics and University Environment on Entrepreneurial Intention. *Revista de Administração Contemporânea*, *22*(2), 226–248. https://doi.org/10.1590/1982-7849rac2018170133

Neneh, B. N. (2019). From entrepreneurial intentions to behavior: The role of anticipated regret and proactive personality. *Journal of Vocational Behavior*, *112*, 311–324. https://doi.org/10.1016/j.jvb.2019.04.005

Pemulihan Ekonomi Nasional. (2020). *Media Briefing: National Economic Recovery Program. Ministry of Finance.*

Rodriguez, M., Boyer, S., Fleming, D., & Cohen, S. (2019). Managing the Next Generation of Sales, Gen Z/Millennial Cusp: An Exploration of Grit, Entrepreneurship, and Loyalty. *Journal of Business-to-Business Marketing*, *26*(1), 43–55. https://doi.org/10.1080/1051712X.2019.1565136

Shaw, E., & Carter, S. (2007). Social entrepreneurship: Theoretical antecedents and empirical analysis of entrepreneurial processes and outcomes. *Journal of Small Business and Enterprise Development*, *14*(3), 418–434. https://doi.org/10.1108/14626000710773529

Turker, D., & Selcuk, S. S. (2009). Which factors affect entrepreneurial intention of university students? *Journal of European Industrial Training*, *33*(2), 142–159. https://doi.org/10.1108/03090590910939049

Zhang, Y., Trusty, J., Goroshnikova, T., Kelly, L., Kwong, K. K., McGuire, S. J. J., Perusquia, J., Prabhu, V. P., Shen, M., & Tang, R. (2021). Millennial social entrepreneurial intent and social entrepreneurial self-efficacy: a comparative entrepreneurship study. *Social Enterprise Journal*, *17*(1), 20–43. https://doi.org/10.1108/SEJ-07-2020-0054

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 266-276
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.552

Simple Estimations of the Natural Rate of Interest in Japan with the Band-Pass Filters

Kazuhiko Nakahira[1]

[1,2,3] Department of Economics, Meikai University, Chiba, JAPAN, E-mail: nakahira@meikai.ac.jp

Abstract
Estimation of natural rate of interest is required since it is unobservable. One of the practical ways of estimating the natural interest rate is to extract the trend component from estimated short-term real interest rate. We utilize the Christiano-Fitzgerald filter and the Baxter-King filter for the extraction process. If the central bank intends to raise the policy interest rate as a policy implementation when it acknowledges an inflationary pressure (or excess demand), and if this policy action is smoothly transmitted into adjustment processes of prices in economic activities, statistically observed short-term real interest rate should behave closely around the evolutionary path of the natural interest rate. In this context, the extracted trend component from short-term real interest rate by means of a statistical filter would be regarded as the estimated natural rate of interest. We utilize the Christiano-Fitzgerald filter and the Baxter-King filter for our extraction process. Concerning the estimation of expected inflation rate as the factor to construct the short-term real interest rate, the Carson-Parkin method is adopted. Our empirical results show a recent persistent decline of natural rate of interest in Japan.

Keywords: Natural Rate of Interest, Inflation Expectations, Christiano-Fitzgerald Filter, Baxter-King Filter

JEL Classification Code: C53; E31; E32, E37

1. Introduction

To conduct an empirical research on the natural interest rate is an inevitable work for economists since it is one of the significant determinants or references for monetary policy. In general, the natural rate of interest is regarded as the short-term real interest rate consistent with the output equaling its potential level or the one reflecting stable prices. Since it cannot be observed directly, estimation of the natural rate of interest is required. Because of these properties, many elaborate previous studies on theoretical and empirical analysis have been published.

The issue whether the natural interest rate is substantially declining (and will continue to decline) has attracted attention after the noticeable remarks by Summers (2013). Rachel and Smith (2015), Sajedi and Thwaites (2016), and Eggertsson *et al.* (2017) as well as Summers (2014) are the examples of research that are related to this issue or to the secular stagnation hypothesis.

Laubach and Williams (2003) is one of the most famous research of this kind. It regards the IS curve, the Phillips curve, and the natural rate of interest equations as the keys to describe the structural relationships of economy, and

uses the Kalman filter to estimate some unobservable variables. Pescatori and Turunen (2016), Hakkio and Smith (2017), Holston *et al.* (2017), and Lewis and Vazquez-Grande (2017), Fries *et al.* (2018) are the applications of Laubach and Williams (2003). On the other hand, Lubik and Matthes (2015) applies the time-varying parameter vector autoregressions method.

The so-called DSGE (dynamic stochastic general equilibrium) model that clarifies structural interpretations of the system is also a commonly used instrument for analyzing the natural rate of interest. Edge *et al.* (2008), Justiniano and Primiceri (2010), Barsky *et al.* (2014), Curdia *et al.* (2015), Del Negro *et al.* (2015, 2017), Goldby *et al.* (2015), Hristov (2016), Gerali and Neri (2017), Okazaki and Sudo (2018), and Iiboshi *et al.* (2022) are the studies based on DSGE methodology.

One of the informative methods to estimate the natural interest rate is to extract the trend component of short-term real interest rate by utilizing a statistical filter. Namely, if the central bank is inclined to raise the policy interest rate when it acknowledges an inflationary pressure (or excess demand) and if such a policy implementation is transmitted smoothly into adjustment processes of prices in economic activities, short-term real interest rate should behave closely around the evolutionary path of the natural rate of interest. In this sense, extracted trend of short-term real interest rate through a statistical filter would be regarded as the estimated value of the natural rate of interest. We utilize the Christiano-Fitzgerald filter and the Baxter-King filter for the extraction process. On the other hand, we should have the estimation of expected inflation rate in order to acquire short-term real interest rate by following the Fisher equation. In this paper, the Carlson and Parkin (1975) method is adopted to estimate the expected inflation rate.

The rest of this paper is organized as follows. Section 2 summarizes the Carlson-Parkin method, and the estimation of consumers' inflation expectation. Section 3 sets out the empirical investigations of the natural rate of interest by utilizing the Christiano-Fitzgerald (2003) filter and the Baxter-King (1999) filter. Lastly, Section 4 is devoted to the concluding remarks.

2. Inflation Expectations and its Estimations

2.1. Survey Data for the Estimation

The main purpose of this research is to estimate the natural rate of interest based on short-term real interest rate. In this regard, we should have the estimation of expected inflation rate in the course of acquiring the short-term real interest rate in accordance with the Fisher equation. In short, the Fisher equation explains that the real interest rate equals the nominal interest rate minus the expected inflation rate.

Consideration of the inflation formation process from the aspect of general public's expectation with survey data would lead us towards widely applicable research without any specific economic models. We can find two types of survey data on inflation expectations: qualitative and quantitative. In the qualitative surveys, respondents answer in a qualitative manner. The data given by this kind of survey is presented in a qualitative statistical form that indicates whether the majority of the polled respondents expect that future price level will rise, remain constant, or decline. In other words, the survey of this type explores the general tendency of the expectation on the future price level or inflation. On the other hand, respondents answer to the question in a quantitative manner in the case of a quantitative survey. The problem in the case of quantitative survey is that it is hard to obtain an exact point forecast of the public's inflation expectation because the survey of this kind may have some flaws. For instance, this kind of direct measure is apt to cause some measurement and sampling errors. Thus, it is worth relying on the special method of quantifying qualitative data.

2.2. The Carlson-Parkin Method for Quantifying Qualitative Survey Data

We need a method of quantifying qualitative data series to examine public's inflation expectation expressed as the answer to the question in the social survey. Our difficulty is the fact that the way of manipulation of the data given by a qualitative survey with respect to prices can generate some problems. For example, the respondents answer

Table 1: Example of the Survey Result of "Price Expectations a Year Ahead"

(Unit:%)

	Go down			Stay the same	Go up			Don't know
	greater than or equal to -5%	less than -5% to greater than or equal to -2%	less than -2%	about 0%	less than 2%	greater than or equal to 2% to less than 5%	greater than or equal to 5%	
2012 Jul	1.7	2.6	4.4	19.2	19.1	30.0	16.2	6.9
Aug	1.3	2.1	5.6	21.5	22.1	26.6	14.0	6.8
Sep	1.1	1.9	5.0	18.5	23.2	29.2	14.9	6.2
Oct	0.8	2.5	4.4	17.0	25.4	31.0	13.6	5.3
Nov	0.7	1.9	5.6	20.4	25.0	27.7	13.3	5.3
Dec	0.7	2.4	6.3	20.8	24.1	26.2	13.6	5.8

Source: http://www.esri.cao.go.jp/en/stat/shouhi/shiken_summary_e.html

only their expectation of price level (or inflation) as "rise", "fall" or "remain unchanged" for some periods ahead in the survey. Namely, because they are qualitative data, we cannot get a statistical value. Therefore, several techniques have been proposed to deal with this difficulty. The Carlson and Parkin (1975) method is the most useful probability approach for quantifying qualitative data and often applied to estimate rate of expected inflation.

The Carlson-Parkin method presumes that the qualitative answer in the social survey follows an individual probability distribution that is statistically independent from the one of other respondents and normally distributed with finite mean and variance. Furthermore, this method assumes that, at time t, respondents form an inflation expectation for time $t+1$. The joint probability distribution $f(\mathrm{x}_{t+1}|\Omega_t)$ is derived by the aggregation of the individual subjective probability distributions where x_{t+1} is the percentage change in price level for the period from t to $t+1$ and Ω_t describes the information set at time t.This distribution is considered to have finite first- and second-order moments, and we can express the inflation expectation for the period $t+1$ as $E[\mathrm{x}_{t+1}|\Omega_t] = \pi^e_{t+1}$. In addition, Carlson-Parkin methodology postulates that there exists a threshold, δ_t (>0), for the interval $(-\delta_t, \delta_t)$ around 0 in order that the answer "no change" will lies within this interval.

We utilize the Carlson-Parkin method to estimate the expected inflation in Japan. However, it is not exactly the same as the original procedure but the modified one. The modified version for our estimation is based on Henzel and Wollmershäuser (2006), Oral (2013), and Scheufele (2011).

2.3. Consumer Confidence Survey

The "consumer confidence survey" (in Japan), conducted by the Economic and Social Research Institute of the Cabinet Office,[1] asks the respondents to report consumer perception and expectation about the economy.[2] It is one of the most useful data sources for empirical study with the Carlson-Parkin-type approach in Japan. Concretely, monthly data series of the survey are available from April 2004 onward. In particular, the qualitative data indicated in the section "price expectations a year ahead" would be applied to our estimation of inflation expectations in that the respondents give their expectations of future price level as "go down," "stay the same," "go up," or "don't know." The example of the survey result is displayed in Table 1.

[1] See "http://www.esri.cao.go.jp/en/stat/shouhi/shouhi_kaisetsu-e.html" for details.

[2] The things that we should pay attention to the "consumer confidence survey" are as follows. (a) The survey of "price expectations a year ahead" is conducted across three categories: "all households," "all households except one-person households," and "one-person households." (b) From May 2004 to February 2007, telephone surveys were conducted in months other than June, September, December, and March, and direct-visit and self-completion questionnaires are conducted in June, September, December, and March. (c) Since April 2013, the survey has been conducted by mail. In addition, the number of sample households has been increased. Therefore, we are obliged to use discontinuous survey data in our sample period.

Figure 1: Estimated Expected Inflation Rate with the Carlson-Parkin Method based on Japan's "consumer confidence survey" (%)

2.4 Estimation of Consumers' Inflation Expectations

Monthly data of "consumer price index" (excluding fresh food, whole Japan, total), seasonally non-adjusted,[3] change from the previous year, spanning the period from April 2004 to October 2023[4] is utilized as the rate of inflation (π_t) for our estimation. On the other hand, the qualitative data obtained from the "consumer confidence survey" for "all households" is used for our constitution of expected inflation rate (π_t^e) with the Carlson-Parkin method. The three ratios respectively included in the "go down" and "go up" (see Table 1) are combined to make the totals of "go down" and "go up" for our estimation, while the answers "don't know" are eliminated from our data set. Thus, the ratios for each item are reorganized in accordance with our revised format.

Figure 1 reports the estimated expected inflation rates by the Carlson-Parkin method with $\hat{\delta} = 0.101573$.[5] The estimated expected inflation rate is fluctuated through our sample period from the lowest: $-0.010873(\%)$ for December 2009 to the highest: $1.461125(\%)$ for February 2023.

3. Estimating the Natural Rate of Interest with Statistical Filters

3.1. Basics of the Christiano-Fitzgerald Filter

We can decompose the series into a trend and a cyclical component to understand behavior of time series data. The so-called "band-pass filter" is used to separate the cyclical component of a time series data by specifying a certain range of its duration. To put it another way, the band-pass filter is one of the statistical linear filters with a two-sided weighted moving average of the data series where cycles in a specified "band" is consisted by the lower and the upper limits. The series classified into the "band" are extracted and "passed" through the "band-pass filter" whereas the remaining cycles are filtered out.

[3] The reason of adopting seasonally non-adjusted series (instead of seasonally adjusted series) of consumer price index (change from the previous year) is as follows. We also have to use the data given by the consumer confidence survey which are not seasonally adjusted. In order to have a consistency of the format between the two kinds of data series, seasonally non-adjusted series of consumer price index is applied.

[4] The data on "consumer price index" were retrieved from the "Portal Site" of Official Statistics of Japan operated by the Ministry of Internal Affairs and Communications, Statistics Bureau, Director-General for Policy Planning (Statistical Standards) & Statistical Research and Training Institute (in English): "http://www.e-stat.go.jp/SG1/estat/eStatTopPortalE.do."

[5] Several problems regarding sign of δ have been discussed in previous studies.

There are some kinds of band-pass filter, for example, the Christiano-Fitzgerald filter,[6] the Baxter-King filter,[7] and so on. The important point is that all band-pass filters that practically used are only approximations of the "ideal" filter. The "ideal" band-pass filter is designed as a both-side or two-sided infinite-order moving average process:

$$a(L) = \sum_{k=-\infty}^{\infty} a_k L^k. \quad (1)$$

The cycle, in short, the filtered series, is found by passing the raw series through the filter,

$$\varepsilon_t = a(L) y_t, \quad (2)$$

where y_t and ε_t are the unfiltered and the filtered series, respectively.

In the frequency domain, the transfer function can be recovered by the rule,

$$T(\omega) = \left|a(e^{-i\omega})\right|^2, \quad (3)$$

where ω is the frequency. The corresponding spectrum of the cycle is

$$s_\varepsilon(\omega) = T(\omega) s_y(\omega), \quad \omega \in [0, \pi], \quad (4)$$

where s_ε is the spectrum of the filtered series, and s_y is the one of the original series. $T(\omega)$ is the weight of the frequency responses as they pass to s_ε from s_y.

The "ideal" transfer function is described by

$$T(\omega) = \begin{cases} 1 & \omega_l \le |\omega| \le \omega_u \\ 0 & otherwise, \end{cases} \quad (5)$$

where ω_l and ω_u are the lower and the upper limits on the frequencies of interests. The "ideal" transfer function passes through a band of frequencies into the spectrum of the cycle unaltered. However, the "ideal" band-pass filter based on equation (1) needs an infinite amount of information to construct. Therefore, the "ideal" transfer function has to take an approximate structure in a practical sense.

For this reason, in the case of the Christiano-Fitzgerald filter, the moving average process is truncated as

$$\hat{T}^{p,f}(L) = \left|\sum_{j=-f}^{p} \hat{a}_j^{p,f} L^j\right|^2, \quad (6)$$

where $f = T - t$ and $p = t - 1$. The $\hat{a}_j^{p,f}$ are the weights and given if we solve the following minimization problem:

$$\min_{\hat{T}_j, j=-f,\dots,p} \int_{-\pi}^{\pi} \left|T(e^{i\omega}) - \hat{T}^{p,f}(e^{i\omega})\right|^2 s_y(\omega) d\omega, \qquad subject\ to\ \hat{T}^{p,f}(1) = 0. \quad (7)$$

This specification is close to the one of the Baxter-King filter with some exceptions. Actually, the objective function in equation (7) is identical to the one of the Baxter-King filter except for the $s_y(\omega)$ weighting $\left|T(e^{i\omega}) - \hat{T}^{p,f}(e^{i\omega})\right|^2$ term. If y_t is white noise with a flat spectrum, the objective function in equation (7) is compatible with the one in the Baxter-King filter. On the other hand, the objective function in equation (7) does not follow the symmetry constraint applied in the Baxter-King filter. The constraint $\hat{T}^{p,f}(1) = 0$ expresses that the filter returns stationary results, while the relaxation of the symmetry constraint follows a phase shift. The filtered time series by Christiano-Fitzgerald filter is to be trimmed, not on both-side, but only on the left side. Namely, the Christiano-Fitzgerald filter is taken advantage of the real-time applications where the current estimate of the cycle is desirable. In contrast, the Baxter-King filter trims both sides of the filtered series, and it not always optimal for real-time forecasting.

The solution of the minimization problem expressed by the equation (7) is described as

$$c_t = a_0 y_t + a_1 y_{t+1} + \cdots + a_{T-1-t} y_{T-1} + \tilde{a}_{T-1} y_T + a_1 y_{t-1} + \cdots + a_{t-2} y_2 + \tilde{a}_{T-1} y_1 \quad \text{for } t = 3, 4, \dots, T-2, \quad (8)$$

where $a_j = \frac{sin(jc) - sin(jb)}{\pi j}$ for $j \ge 1$, $a_0 = \frac{c-b}{\pi}$, $b = \frac{2\pi}{p_h}$, $c = \frac{2\pi}{p_l}$, and $\hat{a}_k = -\frac{1}{2} a_0 \sum_{j=1}^{k-1} a_j$.

[6] See Christiano and Fitzgerald (2003) for details.
[7] See Baxter and King (1999) for details.

3.2. Basics of the Baxter-King Filter

The so-called Baxter and King (1999) filter is one kind of band pass filter as a modification of the Hodrick-Prescott (1997) filter. It is a method of extracting cycle component through signaling out the repeated component of a time series setting the width for oscillations of periodic component.

Baxter-King filter is a bandpass filter of finite order K which is optimal if it is an approximate bandpass filter with trend-reducing properties and symmetric weights ensuring that there is no phase shift in the filter output. The impact of the filter on an input series y_t in time domain is obtained by the finite moving average:

$$y_t = B(L)x_t, \tag{9}$$

$$B(L) = \sum_{j=-\infty}^{\infty} B_j L^j, \tag{10}$$

$$L^n x_t = x_{t-n} \tag{11}$$

where L is the lag operator. In a frequency domain, the filter is characterized by its Fourier transform, $\alpha(\omega)$, and computation of the weights needs the cut-off frequency which is set by the user describing permissible non-cyclical (or non-seasonal) oscillation of the smoothed series. Or, in order to find the weights B_j, we should solve the minimization problem as

$$\min_{a_j} Q = \int_{-\pi}^{\pi} |\beta(\omega) - \alpha(\omega)|^2 s_y(\omega) d\omega, \qquad \textit{subject to } \alpha(0) = 0; \tag{12}$$

where $|\beta(\omega)|$ is the gain of the "ideal" filter with cut-off frequencies ω_1 and ω_2. The gain of a filter describes the change in the amplitude of the input components if it is transformed by the filter. The gain of the "ideal" bandpass filter, $|\beta(\omega)|$, takes the value 1 in the $[\omega_1, \omega_2]$ frequency interval, or 0 outside this interval. For the two kinds of ω, we define them as

$$\omega_1 = \frac{2\pi}{\omega_u};\ \omega_2 = \frac{2\pi}{\omega_l} \tag{13}$$

where ω_u, ω_l are the upper and the lower limits of the cut-off frequency of our interests. The constraint ensures that the resulting filter has trend reducing properties. If we remove the component with the frequency $\omega = 0$ from the series, then the filter weights must sum to zero[8].

Solving the minimization problem leads to the following results:

$$B_j = b_j + \theta,\ j = 0, \pm 1, \dots, \pm K, \tag{14}$$

$$b_0 = \frac{\omega_2 - \omega_1}{\pi}, \tag{15}$$

$$b_j = \frac{sin(\omega_2 j) - sin(\omega_1 j)}{\pi j} \quad \text{if } j = \pm 1, \pm 2, \dots, \tag{16}$$

$$\theta = \frac{-\sum_{j=-K}^{K} b_j}{2K+1}. \tag{17}$$

The filter is symmetric (namely, $B_j = B_{-j}$). Thus, it does not impose a phase shift on the output. Considering the experience with the business cycle in the united states, Baxter-King filter proposes the set of parameters: $K = 12$, $\omega_1 = 2\pi\frac{1}{32}$, and $\omega_2 = 2\pi\frac{1}{6}$ or $2\pi\frac{1}{2}$ for quarterly data, while it suggests $K = 3$, $\omega_1 = 2\pi\frac{1}{8}$, and $\omega_2 = \pi$ for annual data. However, these values depend on the length of the observation period and on the frequency band. The power transfer function (ptf) of the Baxter-King filter is its squared gain, and allows to evaluate the filter impact on the spectrum of the input series.

The Baxter-King filter removes the cycle component S from the time series Y by passing on the weighted moving average with specified weight. A cycle (or seasonal) component of the source series is given by the formula:

$$S_t = Y_t B_0 + \sum_{j=1}^{K} Y_{t-j} B_j + \sum_{j=1}^{K} Y_{t+j} B_j, \tag{18}$$

where B_j means the weight value in accordance with value of the source series Y at the distance j from the current element. The result of smoothing by the filter is the source series with removed cycle component. A generalized Baxter-King filter can be applied to non-stationary time series. In this case, "non-stationarity" is described by the matrix of weights that depends on the number of observations in generalized model. Thus, computation of cycle component is implemented by the formula:

$$S_t = Y_t B_{0,t} + \sum_{j=1}^{K} Y_{t-j} B_{j,t} + \sum_{j=1}^{K} Y_{t+j} B_{j,t}, \tag{19}$$

[8] See Baxter and King (1999) for details.

Table 2: Augmented Dickey-Fuller Test

without drift and trend				
variable	level / first difference	lag Length	test statistic	p-value
estimated real short-term interest rate	level	0	-0.306587	0.5744
estimated real short-term interest rate	first difference	0	-16.41822	0.0000
with drift				
variable	level / first difference	lag length	test statistic	p-value
estimated real short-term interest rate	level	0	-1.108676	0.7128
estimated real short-term interest rate	first difference	0	-16.43397	0.0000
with drift and trend				
variable	level / first difference	lag length	test Statistic	p-value
estimated real short-term interest rate	level	0	-2.607941	0.2772
estimated real short-term interest rate	first difference	0	-16.43004	0.0000

Notes: The p value (one-sided) is based on MacKinnon (1996). Optimal lag length is determined by the Schwarz information criterion with the maximum length = 12.

where $B_{j,t}$ is the weight value that correspond to value of the source series Y at the distance j from the element Y_t. The Baxter-King filter proposed the recommended values for lead, lag, upper and lower limits of bandwidth based on frequency of the source series.

3.3. Estimation of the Natural Rate of Interest

Estimation of natural rate of interest is required since it is unobservable. One of the practical ways of estimating the natural interest rate is to extract the trend component from short-term real interest rate. We utilize the Christiano-Fitzgerald filter and the Baxter-King filter for the extraction process.

If the central bank intends to raise the policy interest rate as a policy implementation when it acknowledges an inflationary pressure (or excess demand), and this policy action is smoothly transmitted into adjustment processes of prices in economic activities, statistically observed short-term real interest rate should behave closely around the evolutionary path of the natural interest rate. In this context, the extracted trend component from short-term real interest rate by means of a statistical filter would be regarded as the estimated natural rate of interest. Concerning the estimation of expected inflation rate as the factor to construct the short-term real interest rate, the Carson-Parkin method described in the previous section is adopted. Concretely, we assume the following relation by considering the Fisher equation, and estimated the short-term real interest rate.

Estimated short-term real interest rate
= short-term nominal interest rate − expected inflation rate
= observed uncollateralized overnight call rate[9] − estimated expected inflation rate with the Carson-Parkin method (explained in Section 2.2)

We implement the trend extraction based on this estimated short-term real interest rate. The Christiano-Fitzgerald (2003) filter is utilized for our first extraction. We use the full sample and asymmetric lag type Christiano-Fitzgerald filter (although symmetric fixed forward and backward lags type also can be applied). Before this process, the unit root test to find the time series characteristics of the estimated short-term real interest rate should be conducted. Concretely, the augmented Dickey-Fuller (ADF) tests are implemented to check the order of integration of the variable. According to the test results shown in Table 2, the test statistic is not significant at level but it is significant at first difference. These test results imply that the estimated short-term real interest rate is integrated of order 1 (written as $I(1)$), or it follows a unit root process. In line with this result, the Christiano-Fitzgerald filter (full sample and asymmetric type) is applied with the assumption that the variable (short-term real

[9] The data on "uncollateralized overnight call rate" were retrieved from "BOJ Time-Series Data Search" in the website of The Bank of Japan (in English) "https://www.stat-search.boj.or.jp/index_en.html".

Figure 2: Estimated Natural Interest Rate with the Christiano-Fitzgerald Filter (full sample and asymmetric lag type) (%)

interest rate) follows $I(1)$ unit root process. The fixed length filters consume same number of lead and lag terms for all weighted moving average, and lose the same number of observations from the beginning and the end of the original sample. In contrast, the asymmetric length filters can conduct an estimation from the beginning to the end of the sample without losing any observations. The asymmetric-type filter is operated with different weights on the lead and lag terms. They are time-varying depending on the data and changing for each observation. The duration or periodicities range (P_L, P_U) to pass through should be set when we utilize the band-pass filters including the Christiano-Fitzgerald filter and the Baxter-King filter. One way to settle (P_L, P_U) is (18, 90) for monthly observation by following Burns and Mitchell (1946) since they assume business cycle endures somewhere from 1.5 to 8 years. However, in our study, we assume (P_L, P_U) is (31, 90) based on "The Reference Dates of Business Cycle"[10] decided by the Committee for Business Cycle Indicators (organized by the Economic and Social Research Institute, Cabinet Office, Government of Japan) since we find the shortest duration of business cycle in Japan is 31 months (the 8th cycle) and the longest one is 90 months (the 16th cycle) as of November, 2023.

Next, the Baxter-King (1999) filter is used for our second extraction process. It is originally a symmetric fixed lag type filter, and we set symmetric fixed 12 forward and backward lags in this study. The fixed length symmetric filter including the Baxter-King filter needs a fixed lead/lag length for weighted moving average. This type of filters is time-invariant because the weights for moving average rely on the specified frequency band, not on the data. With regard to the (P_L, P_U), we assume (31, 90) based on "The Reference Dates of Business Cycle" as is the case with the estimation by utilizing the Christiano-Fitzgerald filter described above.

Figure 2 shows the estimated natural interest rate by applying the Christiano-Fitzgerald filter (with full sample) as the non-cycle series. The estimated rate goes back and forth between positive and negative values around zero from April 2004 to March 2010. Subsequently, it consistently takes negative value from October 2010 to October 2023 although it fluctuates and shows unstable developments.

Figure 3 describes the estimated natural rate of interest by utilizing the Baxter-King filter. We lose 12 observations from both the beginning and end of the sample since we set 12 fixed leads and lags for our filter. By considering the result of estimation, we find out that the estimated natural rate of interest shows quite unstable movement around zero percent from April 2005 to December 2010, and it consistently takes negative value from January 2011 to October 2022, the end of observation.

[10] See "https://www.esri.cao.go.jp/en/stat/di/rdates.html" and "https://www.esri.cao.go.jp/jp/stat/di/hiduke.html" for details.

Figure 3: Estimated Natural Interest Rate with the Baxter-King Filter (fixed length symmetric type) (%)

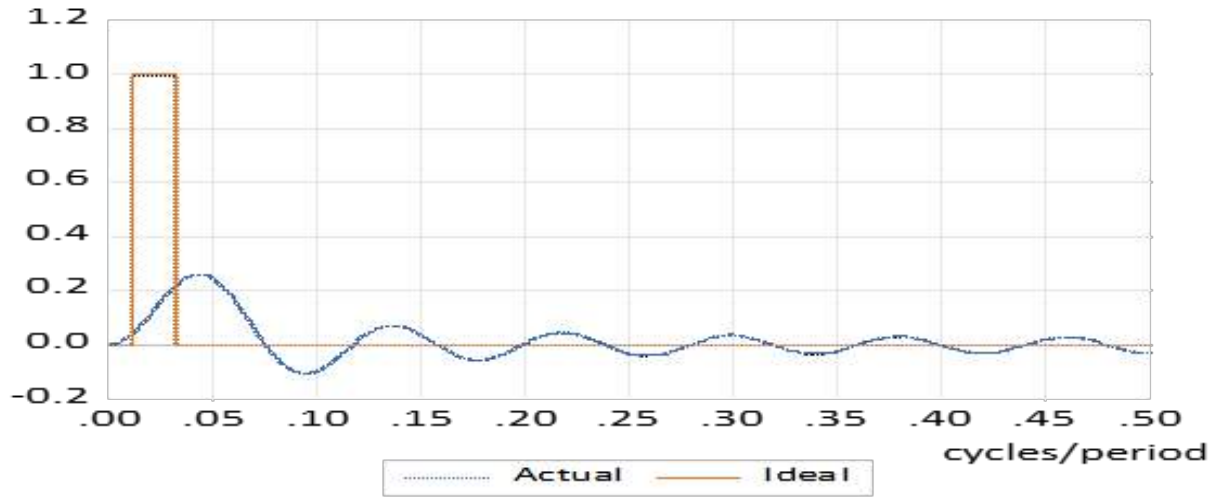


Figure 4: Frequency Response Function of Estimated Natural Rate of Interest by the Baxter-King Filter

Figure 4 displays the frequency response function of the estimated natural interest rate derived by the Baxter-King Filter. The horizontal axis is in the interval between 0 to 0.5 in units of cycles per duration, and the frequency response function given by the "ideal" band-pass filter including the Baxter-King filter for periodicities (P_L, P_U) should be in the range $\left(\frac{1}{P_U}, \frac{1}{P_L}\right)$. For a frequency ω, we have $|\alpha(\omega)|^2$ that expresses how the moving average raises and lowers the variance of the filtered series in comparison with the one given by the original series. In this context, $\alpha(\omega)$, the frequency response function, describes the response of the filtered series to the original series at frequency ω. The derived response depicted in Figure 4 does not seem to be close to the one for the "ideal" filter. It may indicate a potential problem of our estimation.

If these results of estimation are reliable information, the Japanese central bank is faced with the great difficulty since it is hard to deal with such a situation by conducting a monetary policy based on the usual framework.

4. Concluding Remarks

Our empirical results show a recent persistent decline of natural rate of interest in Japan. If the natural rate of interest continues to fall. usual framework of monetary policy cannot be pursued. In a situation like this, monetary policy has no choice but to guide real interest rate to negative level by raising expected inflation rate or by

decreasing nominal interest rate. The difficulty is whether the central bank can induce real interest rate to be negative when the natural interest rate is negative with the non-negative constraint of nominal rate. In this context, detecting the cause of decline of the natural rate of interest with the consideration of its future direction should be an integral element for deliberating effective monetary policy in Japan.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Barsky, R., A. Justiniano, and L. Melosi (2014) "The Natural Rate of Interest and Its Usefulness for Monetary Policy," *American Economic Review*, Vol.104, pp.37-43.

Baxter, M., and G. King (1999) "Measuring Business Cycles: Approximate Band-Pass Filters for Economic Time Series," *The Review of Economics and Statistics*, Vol.81, No.4, pp.575-593.

Burns, A. M., and W. C. Mitchell (1946) *Measuring Business Cycles*, New York: National Bureau of Economic Research.

Curdia, V., A. Ferrero, G. C. Ng, and A. Tambalotti (2015) "Has U.S. Monetary Policy Tracked the Efficient Interest Rate?" *Journal of Monetary Economics*, Vol.70, pp.72-83.

Carlson, J. A., and M. Parkin (1975) "Inflation Expectations," *Economica*, Vol.42, No.166, pp.123-138.

Christiano, L. J., and T. J. Fitzgerald (2003) "The Band Pass Filter," *International Economic Review*, Vol. 44, No. 2, pp.435-465.

Del Negro, M., D. Giannone, M. P. Giannoni, and A. Tambalotti (2017) "Safety, Liquidity, and the Natural Rate of Interest," *Federal Reserve Bank of New York, Staff Report*, No.812.

Del Negro, M., M. P. Giannoni, M. Cocci, S. Shahanaghi, and M. Smith (2015) "Why Are Interest Rates So Low?" *Federal Reserve Bank of New York, Liberty Street Economics* (NY Fed Blog), May 20, 2015. (https://libertystreeteconomics.newyorkfed.org/2015/05/why-are-interest-rates-so-low/)

Edge, R. M., M. T. Kiley, and J. Laforte (2008) "Natural Rate Measures in an Estimated DSGE Model of the U.S. Economy," *Journal of Economic Dynamics and Control*, Vol.32, pp.2512-2535.

Eggertsson, G., N. Mehrotra, and J. Robbins (2017) "A Model of Secular Stagnation: Theory and Quantitative Evaluation," *NBER Working Paper Series,* No.23093.

Fries, S., J. Mésonnier, S. Mouabbi, and J. Renne (2018) "National Natural Rates of Interest and the Single Monetary Policy in the Euro Area," *Journal of Applied Econometrics*, Vol.33, Issue 6, pp. 763-779.

Gerali, A., and S. Neri (2017) "Natural Rates across the Atlantic," *Bank of Italy, Temi di discussione* (working paper), No.1140.

Goldby, M., L. Laureys, and K. Reinold (2015) "An Estimate of the UK's Natural Rate of Interest," Bank of England, *Bank Underground*, August 11, 2015. (https://bankunderground.co.uk/2015/08/11/an-estimate-of-the-uks-natural-rate-of-interest/)

Hakkio, C. S. and A. L. Smith (2017) "Bond Premiums and the Natural Real Rate of Interest," *Economic Review* (Federal Reserve Bank of Kansas), Vol.102, Issue 1, pp.5-40.

Henzel, S., and T. Wollmershäuser (2006) "Quantifying Inflation Expectations with the Carlson-Parkin Method – A Survey-Based Determination of the Just Noticeable Difference," *Journal of Business Cycle Measurement and Analysis*, Vol. 2, No. 3, pp.321-352.

Hodrick, R. J., and E. C. Prescott (1997) "Post-War U.S. Business Cycles: An Empirical Investigation," *Journal of Money, Credit and Banking*, Vol.29, No.1, pp.1-16.

Holston, K., T. Laubach, and J. C. Williams (2017) "Measuring the Natural Rate of Interest: International Trends and Determinants," *Journal of International Economics*, Vol.108, Supplemment.1, pp.59-75.

Hristov, A. (2016) "Measuring the Natural Rate of Interest in the Eurozone: A DSGE Perspective," *CESifo Forum* (Ifo Institute - Leibniz Institute for Economic Research at the University of Munich), Volume 17, Issue 01, pp.86-91.

Iiboshi, H., M. Shintani, and K. Ueda (2022) "Estimating the Nonlinear New Keynesian Model with the Zero Lower Bound for Japan," *Journal of Money, Credit and Banking*, Vol.54, Issue 6, pp.1637-1671.

Justiniano, A., and G. Primiceri (2010) "Measuring the Equilibrium Real Interest Rate," Federal Reserve Bank of Chicago, *Chicago FED Economic Perspectives*, No.2010-1Q.

Laubach, T., and J. C. Williams (2003) "Measuring the Natural Rate of Interest," *The Review of Economics and Statistics*, Vol.85, pp.1063-1070.

Laubach, T., and J. C. Williams (2016) "Measuring the Natural Rate of Interest Redux," *Business Economics*, Vol.51, pp.57-67.

Lewis, K. F., and F. Vazquez-Grande (2017) "Measuring the Natural Rate of Interest: Alternative Specifications," Board of Governors of the Federal Reserve System*, Finance and Economics Discussion Series*, No.2017-059.

Lubik, T. A., and C. Matthes (2015) "Time-Varying Parameter Vector Autoregressions: Specification, Estimation, and an Application," Federal Reserve Bank of Richmond, *Economic Quarterly*, Vol.101, No.4, pp. 323-352.

MacKinnon, J, G. (1996) "Numerical Distribution Functions for Unit Root and Cointegration Tests," *Journal of Applied Econometrics*, Vol. 11, No. 6, pp. 601-618.

Okazaki, Y., and N. Sudo (2018) "Natural Rate of Interest in Japan - Measuring its size and identifying drivers based on a DSGE model -," *Bank of Japan Working Paper Series*, No.18-E-6.

Oral, Ece (2013), "Consumer Inflation Expectations in Turkey," *IFC Working Papers* (Bank for International Settlements), No.10.

Pescatori, A., and J. Turunen (2016) "Lower for Longer: Neutral Rate in the U.S.," *IMF Economic Review*, Vol.64, No.4, pp.708-731.

Rachel, L., and T. Smith (2015) "Secular Drivers of the Global Real Interest Rate," *Bank of England Working Paper*, No.571.

Sajedi, R., and G. Thwaites (2016) "Why Are Real Interest Rates So Low?" The Role of the Relative Price of Investment Goods," *IMF Economic Review*, Vol.64, No.4, pp.635-659.

Scheufele, R. (2011), "Are Qualitative Inflation Expectations Useful to Predict Inflation?," *Journal of Business Cycle Measurement Analysis*, Vol.2011/1, pp.29-53.

Summers, L. H. (2013) "Remarks in Honor of Stanley Fisher," in Fourteenth Jacques Polak Annual Research Conference. International Monetary Fund, Washington DC, 7-8 November 2013. (published in Summers, L. H. (2015) "POLICY CORNER: Have we Entered an Age of Secular Stagnation? IMF Fourteenth Jacques Polak Annual Research Conference in Honor of Stanley Fischer, Washington, DC," *IMF Economic Review*, Vol.63, No.1, pp.277-280.)

Summers, L. H. (2014) "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound," *Business Economics*, Vol.49, No.2, pp.65-73.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 277-291
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.553

Audit Delay: Complexity of Company Operations as Moderation Variable

Karlina Johansyah[1], Firda Ayu Amalia[2], Novitasari Agus Saputri[3], Agung Prasetyo Nugroho Wicaksono[4]

[1,2,3,4] Accounting Department, University of Muhammadiyah Malang, Malang, Indonesia

Correspondence: Firda Ayu Amalia, Accounting Department, University of Muhammadiyah Malang, Malang, Indonesia. Tel: +62 822-3225-7943. E-mail: firdaayu@umm.ac.id

Abstract
Financial statements are the most critical information for the company. Therefore, the submission of financial statements must be timely so that the information provided remains reliable and appropriate. Data on the Indonesia Stock Exchange shows that many companies still submit their financial statements yearly late. This study aims to empirically determine the effect of financial distress, company size, and audit opinion on audit delay, as well as the complexity of company operations as moderating the effect of financial distress, company size, and audit opinion on audit delay. The research method used is the quantitative method. This research was conducted on manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2018-2022. Samples were taken by 285 companies using purposive sampling techniques. Data collection techniques are using literature study and documentation. The data analysis technique used is a panel data regression model using STATA 14.2 as a data analysis tool. The results of the analysis stated that financial distress and auditor opinion did not affect audit delay, while company size had an impact on audit delay. The complexity of the company's operations can moderate the relationship between audit opinion and audit delay. In contrast, the complexity of the company's operations cannot moderate the relationship between financial distress and company size to money delay.

Keywords: Audit Delay, Financial Distress, Company Size, Audit Opinion, Complexity of Company Operations

1. Introduction

1.1 Introduce the Problem

Public listed companies in Indonesia listed on the Indonesia Stock Exchange (IDX) are required to submit audited financial statements annually and publish the financial reports. Financial statements themselves can provide information that is utilized by decision-makers well. Therefore, information about financial statements must be submitted promptly. This timeliness is also a form of responsibility given by the company's management to the information user. However, there are still many companies in Indonesia that experience delays in completing their

audited financial statements; companies submit their financial statements beyond the predetermined submission deadline, which is a maximum of 120 days; this is explained according to the Financial Services Authority regulation Number 29 / POJK / 2016 (Sihombing, 2021).

In data published by IDX on April 1 2019, 64 companies had not published their financial statements as of December 31, 2018. The Indonesia Stock Exchange stated that as of June 2, 2020, 63 companies had not published financial statements ending December 31, 2019. The Indonesia Stock Exchange, through an announcement dated June 10, 2021 stated that as of May 31, 2021, 88 listed companies had not published financial statements as of December 31, 2020. Then, on May 13, 2022, which was also quoted from cnbcindonesia.com stated, "Based on IDX monitoring until May 9, 2022, there are 785 listed companies, of which 668 companies have submitted their financial statements ending December 31, 2021 on time. Then, based on data published by the IDX on May 2, 2023, it was explained that 61 companies had not submitted audited financial statements ending December 31, 2022. In research conducted by (Hilal Al Ambia et al., 2022), the phenomenon of audit delay itself is not new in Indonesia, but this phenomenon occurs every year.

(Sihombing, 2021) States that audit delays impact the submission of information to users of financial statements. Suppose the financial statements are published promptly. In that case, the information submitted is more reliable. However, if there is a delay in issuing financial statements, the information presented does not reflect the company's actual state. Audit delay is the length of days or time it takes the auditor to complete his audit work. So, the longer an auditor completes his audit work, the longer the audit is delayed. However, delays in publishing financial statements in a company can be influenced by factors such as financial distress, company size, audit opinions, and the complexity of company operations.

(Indrayani & Wiratmaja, 2021) Explained that financial distress is when the company experiences financial difficulties and is considered bad news that can affect the length of the audit delay. (Fatimah & Wiratmaja, 2018) Research states that financial distress positively and significantly affects audit delay. This is because financial distress can increase audit risk, which makes auditors take a long time to conduct audits and impacts the length of audit delays. However, this research is inversely proportional to the results of research conducted by (Pingass & Dewi, 2022), which state that financial distress does not influence the occurrence of audit delays.

Audit opinions are given to the company by the auditor regarding the fairness of presenting the company's financial statements after the audit. On (Sihombing, 2021), Audit opinion affects audit delay. Suppose the company gets an audit opinion other than unqualified (such as qualified, adverse, and disclaimer). In that case, it indicates that some significant findings need to be discussed between the auditor and company management, so it will take longer and cause delays in issuing the company's financial statements. This research was also conducted by (Pingass & Dewi, 2022) with the same independent variable, namely audit opinion, where the results of the research state that audit opinion negatively affects audit delay.

The complexity of the company's operations can be seen from the existence of child ownership. Research conducted by (Hilal Al Ambia et al., 2022) states that the complexity of operations tends to affect the time required by auditors to complete audit assignments and the timely submission of financial statements by the company. This is in line with the research of (Dewi & Wahyuni, 2021), which states the positive and significant influence of the company's complexity on audit delay. However, these studies are inversely opposed to the research (Manajang & Yohanes, 2022), which states that the company's complexity does not affect audit delay.

This study will examine the factors that cause audit delays. The object chosen is a manufacturing company listed on the IDX in 2018-2022. This is because many manufacturing companies listed on the IDX experience delays in submitting their financial reports or audit delays. PT Eterindo Wahanatama Tbk, PT Central Proteina Prima Tbk, and PT Golden Flower Tbk are manufacturing companies that experience lag in submitting financial statements to the IDX.

The phenomenon of completing audit delays has long been a problem in Indonesia. Many factors cause financial statements in companies in Indonesia to be problematic. Therefore, I again examine the factors that affect audit

delay. The selection of variables, namely financial distress, company size, audit opinion, and complexity of company operations, refers to several previous studies. Audit delay research has been done quite a lot, but many differences in results are contrary between one study and another researcher. Therefore, this research is still very feasible and exciting to be reviewed again. This study aims to find the effects of financial distress, company size ownership, and audit opinions on audit delays. Placing a moderation variation, namely the complexity of company operations, aims to find other influences that can make financial distress variables, ownership of company size, then the existence of audit opinions allows the company to be more untimely in publishing its financial statements.

1.2 Theoretical Framework

1.2.1 Theory Obedience

Obedience theory was first introduced by Stanley Milgram in 1963. Milgram (1963) states that individuals are generally more likely to be submissive to other individuals in positions of authority. The point is that most individuals will follow the orders of someone with authority. Every individual must follow the rules because the rules are necessary and suitable, but some individuals follow the rules or orders because of a compulsion. This theory relates to audit delays, arguing that companies will try their best so that their financial statements do not cause delays because they can be subject to sanctions and warnings for violating regulations. By (Indrayani & Wiratmaja, 2021) Compliance theory can be the basis for a company to comply with laws that are considered by the company's internal normalities. Related financial reporting has been regulated in Law Number 8 of 1995 related to capital market challenges OJK regulation Number 29 / POJK.04 / 2016, which requires all issuers and publicly listed companies on the IDX to submit annual financial statements to OJK no later than four months starting from the date and year of the financial end.

1.2.2 Agency Theory

The theory of Keagenan was first introduced by Alchian and Demsetz in 1972 and Jensen and Meckling in 1976. (Jensen & Meckling, 1976) Declare the existence of an agency relationship if one or more people hire others to provide services, then delegate decision-making authority to a company. Supriyono (2018:63) in (Sihombing, 2021), states that agency theory is a concept where there is a contractual relationship between two parties, namely principals (shareholders) and agents (management). The difference in interests between the principal and this agent can cause information asymmetry. Agents who access company information have more freedom because agents (management) are more active in managing and management in the field.

According to (Fatimah & Wiratmaja, 2018), Audit delay has a very close relationship with the timeliness of financial statement publication. This is because the benefits of financial statements will decrease in value if the submission is not made on time. Reduced value of information that reaches the principal will cause asymmetric information, because the agent can commit fraud by manipulating data because of the large amount of internal information known by the agent in detail compared to the private party, which only knows company information from the results made by the agent (management). Therefore, the importance of timeliness is to reduce asymmetric information between agents and principals, so that financial statements at the company can be submitted transparently to the principal.

1.3 Hypotheses Development

1.3.1 The Effect of Financial Distress on Audit Delay

Compliance theory states that with the rules and attitudes of obedience to each company entity, it aims to avoid delays in submitting audit financial statements. In addition, there is also agency theory stating the existence of a form of chronological relationship between the agent and the principal. The agent has more information related to the company because the agent runs a company entity. The agent is obliged to provide information to the principal

regarding the company's condition, and it is essential to provide excellent and timely information from the agent to the principal so that asymmetric information does not occur.

In journal research, (Fatimah & Wiratmaja, 2018) State that financial distress positively and significantly affects audit delays. The condition of companies that experience financial distress can increase audit risks for independent auditors, especially control risks and detection risks. Then, in research, (Sawitri & Budiartha, 2018) state the effect of financial distress on audit delay, because there is an increased audit risk in the company due to financial distress, which makes auditors have to check the risks that cause audit delays. From the concepts that have been described, hypotheses can be formulated:

H1: Financial distress affects audit delay.

1.3.2 The Effect of Company Size on Audit Delay

Every company must comply with all regulations, including the period for submitting audited financial statements. Compliance theory states that there are rules made to prevent audit delays. Agency theory states that the agency has an important task in conveying information related to things that occur in a company to the principal. The difference in the interests of the agent and the private party raises a problem related to information that cannot be trusted because the agent can manipulate information related to the company for its interests, both in terms of company wealth and the system that runs in it because the agent plays a more critical role in running the company. The company's size explains how big or small a company is as measured by the value of assets owned by the company (Darma Saputra et al., 2020). The company's size related to the assets owned by the company is important information that aims to be used in decision-making for principal parties such as investors in investing in the company. Therefore, the information from the agent can be delivered on time with the aim that there is no information gap or fraud in the delivery of information.

In the research conducted by (Simatupang et al., 2018) and (Oktaviani & Ariyanto, 2019), the company's size negatively affects the audit delay. This is because, in addition to internal control in large companies, large companies also tend to publish their financial statements earlier than small companies because large companies are more closely monitored by investors, creditors, and also the government, so large-scale companies must experience higher pressure to announce his audit report earlier. However, research by (Darma Saputra et al., 2020) Shows that the company's size positively affects audit delay. Companies with large sizes will increase the possibility of audit delays, while companies with small sizes tend to minimize the possibility of audit delays. From the concepts that have been described, hypotheses can be formulated:

H2 : Company size affects Audit delay

1.3.3 The Effect of Audit Opinion on Audit Delay

Compliance theory states that there are rules made to avoid audit delays, the existence of regulations related to the submission of financial statements makes companies obliged to obey them. Even though the company is in a condition that is not good, it still has to submit its financial statements on time. In agency theory, there is a difference in interests between the principal and the agent, where the delay in providing information from the agent to the principal can lead to asymmetric information. The audit opinion is one of the important pieces of information that must be in the company's report so that the recipients of information or the principal know well whether the financial statements in the company are created properly and by existing regulations. Companies that have obtained opinions other than fair without exception (unqualified opinion) will cause a longer audit delay because the auditor takes much time to collect the opinion issued (Pingass & Dewi, 2022).

The research conducted by Sihombing (Sihombing, 2021) Stated that audit opinions affect audit delays. The results of his research explain that companies that get unqualified opinions indicate that there are no significant findings that need to be discussed between the auditor and company management so that the company can publish its financial statements promptly. Meanwhile, if companies that get audit opinions other than unqualified indicate some significant findings that need to be discussed between the auditor and company management, it takes longer

and causes the issuance of the company's financial statements to be late. This is in line with research by (Pingass & Dewi, 2022), (Indrayani & Wiratmaja, 2021), and (Puryati, 2020), which states that audit opinion affects audit delay. In addition, the auditor also needs time to renegotiate the opinions given to clients. From the concepts that have been described, hypotheses can be formulated:

H3: Audit opinion affects audit delay

1.3.4 The Effect of Financial Distress on Audit Delay with the role of moderating the complexity of company operations

The theory of preaching states that companies will try their best to promptly follow the rules of reporting time because if delays occur, even though the company is experiencing unfavorable conditions, including financial difficulties, the company must still obey the predetermined rules. Financial distress will impact the greater level of audit risk for independent auditors, especially control and detection risks. The increased risk experienced by the company due to financial distress causes a longer investigation process and results in an increase in audit delays or delays in the publication of financial statements. The relationship has been supported by research by (Oktaviani & Ariyanto, 2019), who state that financial distress has a positive and significant effect on audit delay because companies that experience these conditions can increase audit risk to independent auditors, especially in control risk and detection risk. From the concepts that have been described, hypotheses can be formulated:

H4 : Financial distress affects audit delay by being reinforced by the complexity of the company's operations.

1.3.5 The Effect of Company Size on Audit Delay with the role of moderating the complexity of company operations

The existence of rules that the OJK has set regarding the timing of audit financial reporting requires all companies to comply with them. This is related to compliance theory, where companies will try their best to ensure that their financial statements do not cause delays, and so they are not subject to sanctions and warnings for violated regulations. The company's size can be seen from the large or small value of the company's ownership assets. The tendency to have many assets makes auditing take a short time and delays audit. This is supported by research conducted by (Darma Saputra et al., 2020), which states that the company's size has a positive and significant effect on audit delay but differs from the research conducted by (Oktaviani & Ariyanto, 2019). The size of the company negatively and significantly affects audit delay. Then, in opinion, (Manajang & Yohanes, 2022) states that the size of the company does not influence audit delay.

There are various research results on the effect of company size on audit delay. The inconsistency in the previous study could be caused by other factors that can affect the relationship between company size and audit delay. Therefore, the complexity of company operations is used as a moderation variable to strengthen or weaken the company's size variable against audit delay. The existing research conducted by (Fatimah & Wiratmaja, 2018) Regarding the moderation variable, namely the complexity of the company's operation, stated that the complexity of the company's operation was chosen because the number of children owned by the company tends to have a large number of operating units and the need for checks for each activity or transaction, which means that the asset value is also included in the inspection which will make the auditor take longer to audit.

The company's size can be one of the causes of audit delays. Suppose there are complex operations in large companies with a tillering company. In that case, it can make the auditor increase time in the adjudication process because the scope of the audit is wider, which will cause audit delays. From the concepts that have been described, hypotheses can be formulated:

H5: The size of the company affects the audit delay by being reinforced by the complexity of the company's operations.

1.3.6 The Effect of Audit Opinion on Audit Delay with the role of moderating the complexity of company operations

Some conditions that occur in companies can be an obstacle to the submission of financial statements, but in Indonesia, they have been regulated and must be obeyed by every company. Compliance theory explains that companies must be able to comply with every regulation that has been made, including timeliness related to the submission of financial statements, even though the company is in a bad condition. Every company expects an unqualified opinion from the auditor because the opinion shows that the company's financial statements have been presented following accounting standards and do not require much correction. In the research conducted by (Sihombing, 2021), which states that audit opinion influences audit delay, the study results are also in line with (Hilal Al Ambia et al., 2022), which states that audit opinion affects audit delay. However, it is different from the research conducted by (Adiraya & Sayidah, 2018), (Isnaeni & Nurcahya, 2021). The results of their research stated that there was no significant effect on audit delay.

Judging from the research, there are inconsistencies in research results, which could happen because other factors, such as the complexity of company operations, can cause audit delays. Therefore, there is an addition of variables in the complexity of company operations that act as moderation. According to (Fatimah & Wiratmaja, 2018), the placement of the complexity of company operations as a moderation variable due to the ownership of subsidiaries causes the scope of audits to be audited by auditors, which will have an impact on the time needed by auditors in the process of completing their audit tasks.

Opinions expressed in a company if there are errors will be corrected, where the correction treatment carried out by this auditor causes the publication time of a financial statement to be late (audit delay). The complexity of the Company's operations can be affected because if an error occurs, the improvement or correction to the financial statements made by the auditor with the company being audited will be more complex. After all, some subsidiaries make the scope of the audit wider, and this causes an increase in audit delays. From the concepts that have been described, hypotheses can be formulated:

H6 : Audit opinion affects audit delay by being reinforced by The complexity of the company's operations.

2. Method

2.1 Operational Variable Definition

This research is a type of research with quantitative methods. This study has three variables: the dependent variable of audit delay, the independent variable of financial distress, company size and audit opinion, and the moderation variable of the complexity of the company's operations. Here are the measurements of each variable

2.1.1. Audit delay

The quantitative measurement is included in the interval scale design, namely from the end date of the company's financial year (December 31) to the date of publication of the independent report, with the following formula.

Audit Delay = Independent Audit Report Deadline – Financial Statement Submission Date

2.1.2. Financial Distress

Financial distress is measured using the Altman Z Score method. According to (Sanjaya, 2018), Z-Score is a score determined from standard calculations showing the possibility of company bankruptcy or financial difficulties. Five financial ratios were used Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Taxes to Total Assets, Market Value of Equity to Book Value of debt, and Sales to Total Assets. According to Toto Prihadi 2010: 336 in (Sanjaya, 2018), the Altman Z-Score equation can be formulated as follows.

$$Z = 1{,}2X1 + 1{,}4X2 + 3{,}3X3 + 0{,}6X4 + 1{,}0X5$$

Information:
X1: Working Capital to Total Asset
X2: Retained Earnings to Total Assets
X3: Earnings Before Interest and Taxes to Total Assets
X4: Market Value of Equity to Book Value of Debt
X5: Sales to Total Assets

According to (Sudrajat & Wijayanti, 2019) stated that the criteria for predicting the company's bankruptcy rate based on the Z-Score model include:

Table 1: Company bankruptcy rate based on Z-Score model

If Z-Score > 2,60	The company is categorized as a healthy company.
If 1,10 < Z-Score < 2,60	The company is in a gray area, which means the company can potentially go bankrupt or not go bankrupt.
If Z-Score < 1,10	The company has the potential to go bankrupt.

Source: Sudrajat & Wijayanti 2019

2.1.3. Company Size

In this variable, Log Natural is used in calculating assets worth hundreds or trillions and will be simplified, without changing the proportion of the actual number of assets owned by the company. Therefore, the calculation formula for the company size variable is as follows.

Company size = Ln (Total Assets)

2.1.4. Opini Audit

Audit opinions are calculated or measured using an ordinal scale where a value of 4 is given for unqualified fair opinions, a value of 3 for unqualified fair opinions with explanatory language, a value of 2 for fair with exception opinions, a value of 1 for unfair opinions and a value of 0 for unqualified opinions.

2.1.5. The complexity of the company's operations

Measurement of the variable complexity of company operations uses a dummy variable where the number "1" is for companies with subsidiaries or branches, while "0" is for companies that do not have subsidiaries or branches of the company.

2.2 Participant (Subject) Characteristics and Sampling Procedures

The population in this study is all companies in the manufacturing sector listed on the Indonesia Stock Exchange in 2018-2022. This is because quite a lot of manufacturing companies experience audit delays. The sampling technique used in this study itself is purposive sampling. Purposive sampling is a technique in which samples are selected by making certain considerations or samples have entered into criteria that have been made and determined (Sugiyono, 2018). Data sources can be obtained from the official website of the Indonesia Stock Exchange (www.idx.co.id) or the company's website.

The sample criteria in this study are as follows.

1. Manufacturing Company in 2018-2022 listed on the Indonesia Stock Exchange.

2. Companies that have audited annual financial statements that ended on December 31 in the 2018-2022 period.
3. Companies that have experienced delays for the 2018-2022 period.
4. Manufacturing companies not subject to suspension from 2018-2022 from the Indonesia Stock Exchange.

2.3 Data Analysis Technique

An analysis method was used with the Panel Data Regression model to analyze each variable in the study. The tool used to assist data processing in this study is STATA 14.2. According to (Gujarati & Porter, 2009), Panel data is a combination of time series and individual data, which means an observation or data collected from time to time on a subject who experiences various conditions or circumstances.

The panel data regression model in this study is as follows:

$$AD_{it} = \alpha + \beta_1 FD_{it} + \beta_2 UP_{it} + \beta_3 OA_{it} + \beta_4 KOP_{it} + \beta_5 FD_{it} * KOP_{it} + \beta_5 FD_{it} * KOP_{it} + \beta_6 UP_{it} * KOP_{it} + \beta_7 OA_{it} * KOP_{it} + e$$

Information:

AD_{it} = Audit Delay company i in year t (dependent variable)
α = Constanta
β = Coefficient
FD_{it} = Financial Distress company i in year t
UP_{it} = Company Size of company i in year t
OA_{it} = Company Audit Opinion I in year t
KOP_{it} = Complexity of the company's operations i in year t (moderation variable)
e = Error

In analyzing the data, descriptive statistics will first be carried out to determine the characteristics of the sample data. Furthermore, a model determination test will be carried out with several tests, namely the Chow test, the Hausman Test, and the Multiplier Lagrange Test to determine the panel data regression model that best suits CEM, FEM or REM. Then, proceed with the classical assumption test consisting of a normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. After that, a hypothesis test will be carried out.

3. Results

3.1 Recruitment

This research uses the object of manufacturing companies listed on the Indonesia Stock Exchange (IDX) in the 2018-2022 period with 167 companies. In this study, purposive sampling is used by researchers in sample selection with certain criteria. Based on the criteria that have been made, the number of objects obtained is 57 companies, with a total of 285 samples during 2018-2022.

The following is a table of the results of the selection of samples obtained according to the criteria.

Table 2: Sampling Results

No	Sample criteria	Sum
1	Manufacturing companies listed on the IDX in 2018-2022	(167)
2	Companies that have not published the 2018-2022 Annual Report	(0)
3	Companies that did not experience delays in 2018-2022	(107)
4	Companies affected by the 2018-2022 suspension	(3)
	Company sample count	**57**
	Number of Observations (57 × 5 years)	**285**

3.2 Statistics and Data Analysis

Table 3: Descriptive Statistical Results

Variable	Obs	Mean	Std. Dev.	Min	Max
Audit Delay	285	110.2526	38.35278	44	401
Financial Distress	285	5.451463	25.96039	-11.35042	314.1852
Company Size	285	28.07972	1.547589	24.42849	31.76208
Opini Audit	285	3.515789	.6256798	0	4
The complexity of the company's operations	285	.6491228	.4780841	0	1

Source: STATA 14.2

3.4 Hypothesis Testing

Table 5: Panel Regression Model Estimation Results

Variable	CEM		FEM		REM		Conclusion
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	
Constanta	270,555	0,000	307,2053	0,000	270,555	0,000	The model selected based on model selection is CEM. However, the existing data did not pass the classical assumption test, so the method used Generalized Least Squares (GLS) and not Ordinary Least Squares (OLS)
Financial Distress	-0,8577309	0,450	-0,5795678	0,574	-0,8577309	0,449	
Company Size	-5,220728	0,052*	-4,882605	0,043**	-5,220728	0,051*	
Audit Opinion	-5,129806	0,497	-18,24112	0.011**	-5,129806	0,497	
Complexity of the company's operations	5,916995	0,948	-12,43931	0,879	5,916995	0,948	
Complexity of Company Operations*Financial Distress	0,8026653	0,480	0,569008	0,582	0,8026653	0,480	
Complexity of Company Operations*Company Size	2,50666	0,426	2,505955	0,377	2,50666	0,425	
Complexity of Company Operations*Audit Opinion	-19,72306	0,021**	-14,65717	0,059*	-19,72306	0,020**	
F-test	7,52		13,85		52,66		
Prob. F	0,0000		0,0000		0,0000		
Adj R-squared	0,1385		0,1531		0,1597		
Chow test	0,0578*						*Models selected CEM
Hausmant test	-356,79*						*Models selected FEM
BP/Lagrange Multiplier test	1,000*						*Models selected CEM

*Note. * sig at the level < 10%; ** sig at the level <5%; ***sig at the level 1% Source :STATA 12.4*

3.4.1. Simultaneous Test (Test - F)

The F statistical test aims to test the feasibility of a fit or unfit model for testing. A model is considered fit if the significance value is < 0.05. Based on Table 5, regression results were obtained with a significance value of 0.000, a calculated F value of 52.66, and a table F value of 2.64. It states that the value of F count is greater than F table (F count > F Table) and the significance value is less than 0.05, then it can be concluded that the regression model fit is tested (feasible to use to test the hypothesis).

3.4.2. Test Coefficient of Determination (R2)

The Coefficient of Determination (R2) test aims to measure the percentage of influence of all independent variables on the dependent variable. Based on Table 5, the adjusted value of R-Square is 0.1597. This value shows that the variables of financial distress, company size, and audit opinion, as well as moderation variations in the complexity of company operations, can affect audit delay by 15.97%, while other factors outside this study influence the remaining 84.03%.

4. Discussion

4.1 The Effect of Financial Distress on Audit Delay

The results of this study were unable to prove the effect of financial distress on audit delay. Indrayani & Wiratmaja (2021) stated that financial distress conditions in the company could increase audit risk for auditors, especially in control risk and detection risk, which causes an increase in audit delays. However, in contrast to the results found in the study, which showed evidence that companies predicted to experience bankruptcy or financial difficulties were not related to audit delays and delays in publishing their financial statements. This research supports the compliance theory where all companies must report their annual audit finances on time by applicable regulations even though the company's condition is not good enough.

Good or bad financial conditions in the company also cannot affect the length or absence of time for the company to publish its financial statements as long as the cash flow in the company is still running and the process of production activities in the company is still carried out. This is in line with research conducted by Pingass & Dewi (2022), which states that even though the financial condition of a company worsens, the most important thing is that cash flow can continue so that the production process at the company does not stop and this will not affect the date of issuance of the audited financial statement. This research is also supported by Frimmantuti & Julianto (2022), where the results of the study state that there is no effect of financial distress on audit delay because companies in healthy conditions, prone to bankruptcy, will not cause the financial statement audit process by auditors to be more extended or even delayed. In addition, these conditions will also not cause bad news, such as giving a bad reaction to the market and shareholders. Bani Adam et al. (2022) also stated that there is no effect of financial distress on audit delay because of the form of professional attitude possessed by auditors that can overcome various obstacles that arise during the audit process with predetermined procedures by company conditions that can reduce the time needed to complete the audit process.

4.2 The Effect of Company Size on Audit Delay

The results showed that the company's size significantly negatively affected audit delay. According to Darma Saputra et al. (2020), Companies with large sizes will increase the possibility of audit delay and vice versa. Small companies will have a low chance of audit delay. This happens because of the assets owned by the company. If the assets owned by the company are many, it will tend to increase the time in the audition process. The results of this study support the agency theory that agents can hire to provide services whose results are used as a company's decision-makers. This also happens because there are differences in goals between agents and principals who manage the presence of other parties in helping to make decisions; differences in plans between the two cause delays in providing information. In this study, the company's size has a negative influence, which indicates that a large company can better complete the audit process on time.

Large companies always try to ensure there is no loss of control related to all company activities and reduce monitoring costs by creating a good internal audit system so that external auditors are more dependent on the existing system as a whole to reduce the audit work required and cause the audit time needed to be shorter. This research is also in line with research conducted by Oktaviani & Ariyanto (2019) and research conducted by Adiraya & Sayidah (2018), which states that total assets have a significant influence on the length of auditing time, this is because large companies have good control systems that cause low error rates in presenting reports making it easier for auditors to conduct audits. Ebaid (2022) also states that there is a negative relationship between

company size and audit delay. Companies with large sizes must have more resources and better information systems and control systems than small companies, thus giving large companies a better ability to publish financial statements quickly. This also aligns with research (Astuti et al., 2022) and (Hanif & Ariani, 2023). Large companies also tend to get higher pressure from external parties, so management will try to publish audited financial statements on time.

4.3 The Effect of Audit Opinion on Audit Delay

Based on the results of this study, it shows that audit opinion does not affect audit delay. This means that the opinion received by the company from the auditor in the form of both unqualified and qualified opinions has no influence on the audit time gap and will not affect the sooner or later the company submits its report. In research, Apriani & Suharti (2019) state that the type or form of audit opinion issued by the auditor cannot affect the time the audit report is published. This is because an agreement has been made regarding the completion time related to the audit process between the auditor and the company, so the revenue earned by the auditor, whether the income is good news or bad news related to company performance, is not a determining factor in timeliness in terms of audit reporting. The results of this study support the theory of compliance, where the existence of regulations related to the period of audit financial reporting makes companies, both those with unqualified opinions and qualified opinions, must continue to report their audited financial statements on time.

The results of the study are similar to the results of research conducted by (Isnaeni & Nurcahya (2021) and Darma Saputra et al., (2020), which state that the audit opinion does not influence the audit delay. This research is also in line with research that has been conducted by Adiraya & Sayidah (2018), who state that there is no influence of the audit opinion on the audit delay because the auditor has the authority to give an opinion or statement in the form of an opinion in which the management must accept the results of the audit. This research also aligns with (Nurhasanah & Meldawati, 2022) in (Sugiyanto, 2022). There is no influence of Aduit's opinion on audit delay, and this is because an auditor, in determining an opinion, must already have sufficient evidence to support in making decisions related to the fairness or impropriety of the presentation of financial statements so that if the company gets other than an unqualified opinion and negotiations are held between the auditor and the company's management does not take a long time and giving an opinion is the last decision in auditing so that it will not interfere with audit financial reporting.

4.4 The Role of Company Operation Complexity as Financial Distress Moderation to Audit Delay

The research results show that complexity cannot moderate the relationship between financial distress and audit delay. This indicates that the company is experiencing financial distress, coupled with the company having complex operations characterized by the ownership of this subsidiary, which cannot affect the time in the auditing process, causing audit delays. This can happen even though the company has complex operations due to the establishment of a good accounting information system and internal control, and this will help the process of making and submitting audit reports promptly even though the company has complexity in all forms of activities within the company due to the existence of subsidiaries. This research supports the theory of compliance with the applicable rules that every company listed on the IDX must report its audit report promptly and under unqualified conditions, including companies experiencing financial difficulties and in complex company operating environments. This research is also supported by research conducted by Fatimah & Wiratmaja (2018), which states that the complexity of the company's operations has no role in strengthening the relationship of financial distress to audit delay because the auditor has in advance anticipated if the company has a subsidiary by looking at the readiness of existing resources so that the audit process is expected to be completed on time.

4.5 The Role of Company Operation Complexity as a Moderation of Company Size Against Audit Delay

The study results show that the complexity of the company's operations cannot moderate the relationship of company size to audit delay. This means that the large size of the company, by looking at the number of assets ownership in the company, accompanied by the ownership of subsidiaries that make the complexity of operations

in the company, does not affect sooner or later the company reports its audit report. According to research conducted by Fatimah & Wiratmaja (2018), Companies with subsidiaries, on average, will choose auditors with a good reputation and ability so that they can complete the auditing process promptly. This condition also supports compliance theory because all forms of companies, both large and small companies, and complex and irregular companies, are required to collect audit reports on time. In this condition of the company, the auditor, before conducting the audit process, has carried out audit preparation and planning so that the complexity of operations in the company, as seen from the maintenance of subsidiaries, will not affect the period of the auditing process and will not affect the sooner or later the audit report is reported. Large companies have high complexity in their operations, which will not affect the time to complete the audit.

4.6 The Role of Company Operation Complexity as Moderating Audit Opinion Against Audit Delay

The research results show that the complexity of the company's operations can moderate audit opinions on audit delays. It can be interpreted that the existence of an audit opinion given by the auditor to the company can impact audit delay if the company has a subsidiary company, so this study can prove that companies with complex operations can potentially experience audit delays. This research supports agency theories where there are differences in the interests of agents and principals, making audit opinions very important for both parties. Audit opinions other than unqualified indicate that several findings need to be discussed and will expand the audit process so that it takes time to carry out the process with the complex operation of a company in the form of ownership of tillering companies will cause an increase in the audit process and cause audit delays. The complexity of operations in the company also makes the auditor sample room wider, which will impact the audit completion period and can affect the occurrence of audit delays. In addition, companies that have tillering companies that then get audit opinions other than unqualified indicate that there are findings that make auditors have to conduct audit checks on more complex posts so that the time to complete the audit process will last longer than companies that do not have subsidiaries.

5. Conclusion

This study aims to determine the factors that cause audit delays in manufacturing companies for 2018-2022. 3 variables are used as independent variables in this study, namely financial distress, company size, and audit opinion. The difference in the results of these various studies makes the study review related to variables suspected to be factors causing audit delays. In addition, moderation variables, namely the complexity of company operations, may have a role in influencing the relationship between independent and dependent variables.

Based on the results of the hypothesis test that has been carried out, results state that there is no significant effect on financial distress and audit opinion on audit delay. However, there is a significant influence on the size of the company on audit delay. Then, related to moderation variables, the complexity of company operations can moderate the relationship between audit opinions and audit delays, but the complexity of company operations cannot moderate the effect of financial distress and company size on audit delay.

The narrowness of information related to moderation variables is one of the limitations of this study because there is still a lack of research that makes the complexity of company operations a moderation variable. In addition, the scope of research is quite limited, and this is because this research is only carried out in the manufacturing sector, which publishes a small sample. Then, it is recommended for future research to add or use other independent variables, such as audit quality, profit management, and auditor switching, while still using the variable complexity of company operations as a moderation variable. It is also expected that further researchers will add a wider scope of research not only in one sector, with the aim that more samples will be obtained.

Author Contributions: All authors contributed to this research.

Funding: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

References

Adiraya, I., & Sayidah, N. (2018). Pengaruh Ukuran Perusahaan, Profitabilitas, Solvabilitas, dan Opini Auditor Terhadap Audit Delay [The Influence of Company size, Profitability, Solvency, and Audit Opinion on Audit Delay]. *Jurnal Analisa Akuntansi Dan Perpajakan*, *2(2),* 99–109.

Apriani, A., & Suharti, S. (2019). Analisis Faktor-Faktor yang Mempengaruhi Audit Delay Pada Perusahaan LQ45 yang Terdaftar di Bursa Efek Indonesia Periode 2013-2017 [Anlysis of Factors Affecting Audit Delay in LQ45 Companies Listed on the Indonesian Stock Exchange for the 2013-2017 Period]. *Kurs : Jurnal Akuntansi, Kewirausahaan Dan Bisnis*, *4(2)*, 244–257. http://www.ejournal.pelitaindonesia.ac.id/ojs32/index.php/KURS/article/view/649

Astuti, Dewi Nainggolan, C., & Dermawan Sembiring, L. (2022). Audit Delay : Influencing Factors (Case Study Of Large Trading Companies On The Indonesia Stock Exchange For The Period 2017 – 2021). *International Journal of Science, Technology & Management*, *3*(6), 1540–1548. https://doi.org/10.46729/ijstm.v3i6.700

Bani Adam, W., Purnamasari, P., & Hartanto, R. (2022). Pengaruh Kondisi Keuangan, Kompleksitas Operasi dan Umur Perusahaan terhadap Audit Report Lag [The Influence of Condition Operational Complexity and Company Age on Audit Report Lag]. *Jurnal Riset Akuntansi*, *2*(2), 143–152. https://doi.org/10.29313/jra.v2i2.1495

Darma Saputra, A., Rahmi Irawan, C., & Anggresia Ginting, W. (2020). Pengaruh Ukuran Perusahaan, Opini Audit, Umur Perusahaan, Profitabilitas dan Solvabilitas Terhadap Audit Delay [The Influence of Company Size, Audit Opinion, Company Age, Profitability and Solvency on Audit Delay]. *Owner : Riset Dan Jurnal Akuntansi*, *4*(No.2), 286–295.

Dewi, N. K. A. A. D., & Wahyuni, M. A. (2021). Pengaruh Rasio Keuangan , Kompleksitas , dan Kualitas Audit Terhadap Audit Delay pada Perusahaan Manufaktur di BEI [The Influence of Financial Ratio, Complexity and Audit Quality on Audit Delay in Manufacturing Companies on the IDX]. *Jurnal Akuntasi Profesi*, *12*(2), 410–419.

Ebaid, I. E.-S. (2022). Nexus between corporate characteristics and financial reporting timelines: evidence from the Saudi Stock Exchange. *Journal of Money and Business*, *2*(1), 43–56. https://doi.org/10.1108/jmb-08-2021-0033

Fashhan, M. R., & Fitriana, V. E. (2019). The Influence of Corporate Governance and Intellectual Capital towards Financial Distress (Empirical Study of Manufacturing Company in IDX for the Period of 2014-2016). *JAAF (Journal of Applied Accounting and Finance)*, *2*(2), 163. https://doi.org/10.33021/jaaf.v2i2.553

Fatimah, S., & Wiratmaja, I. D. N. (2018). Kompleksitas Operasi Perusahaan sebagai Pemoderasi Pengaruh Pergantian Auditor dan Financial Distress terhadap Audit Delay [Complexity of Company Operation as a Moderating Effect of Auditor Change and Financial Distress Audit Delay]. *E-Jurnal Akuntansi*, *25*(2), 1205. https://doi.org/10.24843/eja.2018.v25.i02.p15

Frimmantuti, H., & Julianto, W. (2022). Pengaruh Ukuran Perusahaan, Financial Distress, Auditor Switching Dan Pandemi Covid-19 Terhadap Audit Delay [The Influence of Company Size, Financial Distress, Auditor Switching and the Covid-19 Pandemic on Audit Delay]. *Jurnal Ilmiah Raflesia Akuntansi*, *8*(2), 1–11. https://doi.org/10.53494/jira.v8i2.139

Gujarati, D. N., & Porter, D. C. (2009). *BASIC ECONOMETRICS* (5th ed.). Douglas Reiner.

Hanif, I. F., & Ariani, K. R. (2023). The Effect of Company Size and Complexity of Company Operations on Audit Delay with Auditor Quality as a Moderating Variable (Empirical Study of Manufacturing Companies Listed on the Indonesian Stock. *International Journal of Latest Research in Humanities and Social Science*, *06*(04), 286–292. www.ijlrhss.com

Hilal Al Ambia, Afrizal, & Riski Hernando. (2022). Pengaruh Audit Tenure, Kompleksitas Operasi, Opini Audit Dan Ukuran Kantor Akuntan Publik (KAP) Terhadap Audit Delay [The Influence of Audit Tenure, Operational Complexity, Audit Opinion and Size of the Public Accounting Firm (KAP) on Audit Delay]. *Jurnal Buana Akuntansi*, *7*(2), 106–121. https://doi.org/10.36805/akuntansi.v7i2.2383

Indrayani, N. L. P., & Wiratmaja, I. D. N. (2021). Pergantian Auditor, Opini Audit, Financial Distress dan Audit Delay [Change of Auditor, Audit Opinion, Financial Distress and Audit Delay]. *E-Jurnal Akuntansi Universitas Udayana*, *31*(4), 880–893.

Isnaeni, U., & Nurcahya, Y. A. (2021). Pengaruh Manajemen Laba, Kompleksitas Operasi Perusahaan, Solvabilitas, dan Opini Audit Terhadap Audit Delay Pada Perusahaan Sektor Industri Barang Konsumsi di Indonesia Untuk Tahun 2017-2019 [The Influence of Profit Management, Complexity of Company Operations, Solvency, and Audit Opinion on Audit Delay In Cosumer Goods Industry Sector Companies in

Indonesia for 2017- 2019]. *Jurnal Akuntansi AKUNESA*, *10*(1), 24–34. https://doi.org/10.26740/akunesa.v10n1.p24-34

Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *The Economic Nature of the Firm: A Reader, Third Edition*, *3*(4), 1–77. https://doi.org/10.1017/CBO9780511817410.023

Lumban Gaol, R., & Duha, K. S. (2021). Faktor-Faktor Yang Mempengaruhi Audit Delay Pada Perusahaan Pertambangan Yang Terdaftar Di Bursa Efek Indonesia [Factors Affecting Audit Delay in Mining Companies Listed on the Indonesian Stock Exchange]. *Jurnal Riset Akuntansi & Keuangan*, *7*(1), 64–74. https://doi.org/10.54367/jrak.v7i1.1157

Manajang, F. C., & Yohanes. (2022). PENGARUH KOMPLEKSITAS PERUSAHAAN, UKURAN PERUSAHAAN, REPUTASI KAP, DAN PANDEMI COVID-19 TERHADAP AUDIT DELAY [THE INFLUENCE COMPLEXITY OF THE COMPANY, COMPANY SIZE, KAP'S REPUTATION, AND THE COVID-19 PANDEMIC ON AUDIT DELAY]. *Jurnal Akuntasi Trisakti*, *9*(2), 245–268.

Milgram, S. (1963). Behavioral Study of obedience. *Journal of Abnormal and Social Psychology*, *67*(4), 371–378. https://doi.org/10.1037/h0040525

Nurhasanah, H., & Meldawati, Y. (2022). The Effect of Audit Opinion, Solvency, and Profitability on Audit Delay in Companies Listed on the Indonesia Stock Exchange. *Management Research and Behavior Journal*, *2*(2), 68. https://doi.org/10.29103/mrbj.v2i2.10457

Oktaviani, N. P. S., & Ariyanto, D. (2019). Pengaruh Financial Distress, Ukuran Perusahaan, dan Corporate Governance pada Audit Delay [The Influence of Financial Distress, Company Size, and Corporate Governance on Audit Delay]. *E-Jurnal Akuntansi Universitas Udayana*, *27*(3), 2154–2182.

Pingass, R. L., & Dewi, N. L. (2022). PENGARUH FINANCIAL DISTRESS DAN OPINI AUDIT TERHADAP AUDIT DELAY [THE EFFECT OF FINANCIAL DISTRESS AND AUDIT OPINION ON AUDIT DELAY]. *Jurnal Akuntasi Universitas Jember*, *20*(1), 63–77.

Praptika, P., & Rasmini, N. (2016). Pengaruh Audit Tenure, Pergantian Auditor Dan Financial Distress Pada Audit Delay Pada Perusahaan Consumer Goods [The Influence of Audit Tenure, Change of Auditor and Financial Distress on Audit Delay in Consumer Goods Companies]. *E-Jurnal Akuntansi*, *15*(3), 2052–2081.

Pratiwi, C. I. E., & Wiratmaja, I. D. N. (2018). Pengaruh Audit Tenure dan Kompleksitas Operasi Terhadap Audit Delay Perusahaan Pertambangan di BEI Tahun 2013-2016 [The Influence of Audit Tenure and Operational Complexity on Audit Delay of Mining Companies on the IDX in 2013-2016]. *E-Jurnal Akuntansi*, *24*(3), 1964–1989. https://doi.org/10.24843/eja.2018.v24.i03.p12

Puryati, D. (2020). Faktor Yang Mempengaruhi Audit Delay [Factors Affecting Audit Delay]. *Jurnal Akuntansi Kajian Ilmiah Akuntansi (JAK)*, *7*(2), 200–212. https://doi.org/10.30656/jak.v7i2.2207

Sanjaya, S. (2018). Analisis Prediksi Kebangkrutan Perusahaan Dengan Menggunakan Metode Altman Z-Score Pada Perusahaan Sektor Perkebunan Yang Terdaftar di Bursa Efek Indonesia (BEI) Periode 2011-2016 [Analysis of Company Bankruptcy Predictions Using the Alman Z-Score Method in Plantation Sector Companies Listed on the Indonesian Stock Exchange (BEI) for the 2011-2016 Period]. *Jurnal Ilman*, *6*(2), 51–61. http://journals.synthesispublication.org/index.php/ilman

Sawitri, N. M. D. C., & Budiartha, I. K. (2018). Pengaruh Audit Tenure dan Financial Distress pada Audit Delay dengan Spesialisasi Auditor Sebagai Variabel Pemoderasi [The Influence of Audit Tenure and Financial Distress on Audit Delay with Auditor Specialization as a Moderating Variable]. *E-Jurnal Akuntansi*, *22*(3), 1965. https://doi.org/10.24843/eja.2018.v22.i03.p12

Sihombing, T. (2021). PENGARUH AUDIT OPINION, AUDIT TENURE, DAN PROFITABILITAS TERHADAP AUDIT DELAY DENGAN REPUTASI KANTOR AKUNTAN PUBLIK (KAP) SEBAGAI VARIABEL MODERASI [THE INFLUENCE OF AUDIT OPINION, AUDIT TENURE, AND PROFABILITY ON AUDIT DELAY WITH TEHA REPUTATION OF THE PUBLIC ACCOUNTING FIRM (KAP) AS A MODERATION VARIABLE]. *Jurakunman (Jurnal Akuntansi Dan Manajemen)*, *14*(1), 26. https://doi.org/10.48042/jurakunman.v14i1.59

Simatupang, L., Putra, W. E., & Herawaty, N. (2018). PERBANDINGAN PENGARUH UKURAN PERUSAHAAN, OPINI AUDIT, PROFITABILITAS, DAN REPUTASI KAP TERHADAP AUDIT DELAY [COMPARISON OF THE INFLUENCE OF COMPANY SIZE, AUDIT OPINION, PROFABILITY, AND CAPITAL REPUTATION ON AUDIT DELAY]. *Jurnal Ilmiah Wahana Akuntansi*, *13*(2), 143–156.

Sirait, I. M. (2021). Pengaruh Ukuran Perusahaan, Komite Audit, Dan Income Smoothing Terhadap Audit Delay [The Influence of Company Size, Audit Committee, and Income Smoothing in Audit Delay]. *Kompartemen : Jurnal Ilmiah Akuntansi*, *19*(2), 136–146. https://doi.org/10.30595/kompartemen.v19i2.9062

Subramanyam, K. . (2017). *Analisis Laporan Keuangan* [Financial Report Analysis]. (11th ed.). Salemba Empat.

Sudrajat, M. A., & Wijayanti, E. (2019). Analisis Prediksi Kebangkrutan (Financial Distress) Dengan Perbandingan Model Altman, Zmijewski Dan Grover [Analysis of Bankruptcy Prediction (Financial Distress) Using a Comparison of the Almant, Zmijewski and Grover Models]. *Inventory: Jurnal Akuntansi*, *3*(2), 116. https://doi.org/10.25273/inventory.v3i2.5240

Sugiyanto, S. (2022). The Effect of The Audit Opinion, Financial Distress, and Good Corporate Governance on Audit Delay. *Jurnal Manajemen Dan Jurnal Akuntansi*, *7*(1), 73–82. http://openjournal.unpam.ac.id/index.php/keberlanjutan/index

Sugiyono, prof D. (2018). *METODE PENELITIAN KUANTITATIF KUALITATIF dan R&B* [QUANTITATIVE QUALITATIVE RESEARCH METODHS AND R&B] (Edisi 2). ALFABETA.

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.6, No.4, 2023: 292-299
ISSN 2775-9237

DOI: 10.31014/aior.1992.06.04.554

Impact of Credit Risk Pricing on Commercial Banks' Loan Performance in Nigeria

James Joel Gunen[1], M. C. Duru[2], P. P. Njiforti[3]

[1,2,3] School of Postgraduate Studuies, Ahmadu Bello University, Zaria, Nigeria

Abstract
The impact of credit risk pricing on commercial banks' loan performance was investigated to find out whether credit risk pricing of commercial banks can be used to achieve stability of loan performance in Nigeria. Variables like interest rate (maximum and prime lending rates), total loan and advances (TL/A), the ratio of loan and advances to total deposit (LA/TD), non-performing loan ratio (NPLR), risk premium (RP), gross domestic product (GDP), inflation rate (INFR) proxy by consumer price index, and exchange rate (EXR), were estimated using VAR model with lag one period as the optimum lag length. Generally, the result for cointegration shows the existence of a long-run relationship between the variables. The VECM was also estimated for short run analysis and the result shows that the past values of RP and FXR have positive and significant impact in explaining the current/future path of NPLR in the short run in Nigeria while the past value of MLR have negative and significant impact in explaining NPLR in the current period at 5% level of significance. However, the VAR model result for bank specific factors show that only the past period NPLR is positive and statistically significant in explaining the current/future path of commercial banks' loan performance proxy by NPLR at the 10% level of significance. Whereas for macroeconomic factors, the result of the VAR model shows that the value of FXR is negative and that of NPLR is positive and statistically significant in the past periods in explaining the current/future path of NPLR in Nigeria at 5% and 10% level of significance respectively. This may perhaps imply that commercial banks in Nigeria at the time of lending to their clients play down on these variables in building up their price for credit (interest rate). This may be as a result of the existence of relationship banking and compliance failure by banks in performing their astute functions. Hence, the variables can be used to determine the impact of credit risk pricing on commercial banks' loan performance in Nigeria. The paper recommends that the risk premium should not be made only to capture market expectations but also the volatility and asymmetry involved in their hidden activities of relationship banking which have taken a central stage in Nigeria's banking business. The CBN should also develop a more robust and practical risk pricing model peculiar to the Nigerian environment aside the template existing.

Keywords: Credit, Credit Risk, Credit Risk Pricing, Loan Performance, Non-Performing Loans Rate, Interest Rate, Commercial Banks

1. Introduction

Financial institutions perform a crucial role of intermediating between deficit and surplus financing units. This role cannot be under-emphasized because they mobilize savings of potential lenders (surplus units) and allocate them efficiently across the investment projects of potential borrowers – deficit units (Ayo, 2002; Somoye, 2010;

and Adolphus, 2011). This shows that commercial banks by their very nature exist not only to accept deposits of customers but also to make funds available in form of loan and advances to their prospective customers, thereby making them catalyst for economic growth and development. Nonetheless, while carrying out this function, there is always a probability that some customers will not keep to the terms and conditions of repayment at a maturity date; and this may imply that such commercial banks are bound to face credit risk.

In finance, credit risk is the probability that an existing borrower may fail either willingly or unwillingly to honour his or her obligations as they fall due. This failure to honour such debt obligation is often accompanied by the variation in some macroeconomic factors which render the credit function of commercial banks ineffective (Kargi, 2011). This incompetence exposes the banks to credit risk. Since credit risk determines the internal performance of commercial banks, the inability of commercial banks to minimize or avoid its occurrence implies that they will have to contend with non-performing loans (NPLs) in their balance sheets. These non-performing loans (NPLs) in commercial banks' balance sheet are capable of triggering financial or banking crisis. In fact, banking and financial crisis with its devastating effect is now considered of utmost priority globally to regulators, policy makers and the academia due to its eminent impact on the global economy as a whole. These crises had occurred in the past with the 'Great Depression' of the 1930s, to the interest rate regime fluctuations of the early 1990s, to the crude oil market crisis of the early 2001/2002 and finally to the recent financial melt-down of the late 2007 – 2009. These are all the result of the credit function of commercial banks (CBN, 2012). In addition, the banking sector in Nigeria was not isolated from the banking crisis as the effects of the global financial crisis led to the collapse of about six commercial banks in 2011 which were later bailed out by the CBN with the sum of N620 billion. The global economic melt-down also resulted to the collapse of the Nigerian stock market in 2008/2009, with many banks incurring huge losses amounting to N1.6 trillion (Sanusi, 2010; 2012). As a result of this, commercial banks non-performing loans (NPLs) increased from 5.6% in 2008 to 36% in 2009 (Rewane, 2010). This risk-taking behaviour by banks according to Soludo (2009) is the major cause of the global financial crisis which started as a banking problem in the United States (U.S), spreading to other countries and resulting in a global melt-down. Thus, these financial irregularities informed an immediate need to assess the impact of credit risk pricing strategies on commercial banks loan performance generally.

The pricing of credit risk by banks vary in pattern on the basis of the client's risk profile. This may involve charging different prices (interest rates) for each loan application to minimize the risk of default. However, the pricing of risks in the financial industry (credit risk, insurance risk or asset risk) pose great challenge to both financial regulators, supervisory bodies and the academia with the sudden outburst of the recent global economic melt-down.

According to Feldblum (1990), in the banking subsector, the challenge is to determine an appropriate interest rate to include in a lender's rate that covers the cost of funds and the risk of default should in case the borrower defaults in repayment at a specified maturity date.

These problems led us to ask the question: What is the impact of credit risk pricing on commercial banks' loan performance?

It is on this note that Ansari (2013) in his study provided a theoretical and empirical analysis of optimal loan pricing by the commercial banks in India with regulatory requirement. He investigated the commercial banks' loan pricing decisions which could be influenced by a host of factors, using dynamic panel data methodology and annual accounts data of 33 commercial banks over the period 1996 to 2011. The determinants of loan interest rate and spreads were classified into: regulatory and policy variables such as banks prudential regulatory variables, repo rate; bank specific variables pertaining to capital adequacy, asset quality, managerial efficiency, earnings, liquidity, bank size, loan maturity, cost of funds, competition and macroeconomic variables including the rate of growth of GDP and WPI inflation rate. The result showed that bank spreads are positively impacted by the policy indicators. At the same time, loan interest rate is influenced by various market structures, bank specific and macroeconomic factors. It also showed that more competition reduces transmission by reducing the loan rate but a positive policy shock increases the cost of fund and reduces the spread. The interaction between policy rate and the competition in the banking sector had a negative and highly significant coefficient, which is the impact of

competition on interest rate pass-through. Regarding the bank specific variables, loan interest rates and their spreads showed statistically significant positive relationship with operating cost, profitability and capital adequacy, loan maturity, asset quality, bank size and liquidity indicators. Macroeconomic variables such as GDP growth and inflation rate showed positive impact on loan interest rates. Reforms had mixed effects, while managerial inefficiency raises rates and spreads and product diversification reduces both. Costs of deposits are passed on to loan rates. Regulatory requirements raise loan rates and spreads. Hence, these findings highlight the roles of operating efficiency, risk aversion, asset-liability management, and credit risk management in commercial banks loan pricing decisions.

Furthermore, the empirical study by José and Wilson (2012) explores the risk-based pricing strategy of banks issuing credit cards in the United States (U.S). They used a database which combines both the risk of cardholders (demand side) and terms and conditions of credit cards (supply side) offered. Their results suggest that the annual percentage rates paid per unit of long-term risk decrease, implying that high-risk cardholders pay lower interest rates than their low-risk counterparts. This effect is more pronounced for sub-prime cardholders. However, under stressed conditions, it seems that issuer banks have increased their interest rates to account for the high prevailing level of short-term risk observed in the market. On a general note, their findings suggest that the risk-based pricing strategies employed by banks in the U.S do not sort effectively cardholders in terms of risk. Hence, the non-price characteristics of credit cards (such as network affiliation, issuer brand and reward program) play an important role in complementing the risk-based strategies.

AL-Jarrah (2012) also evaluates the riskiness of the banking sector of Jordan using a panel data regression analysis. He engaged various accounting variables that measure overall risk, leverage risk, credit risk and liquidity risk to discern those accounting measures that significantly explained the various measures of risks. His conclusion was that; the systematic risk dominates the non-systematic risk in the banking sector of Jordan. Hence, neither the managers of the banks under study nor the regulatory authorities should be blamed for these risks because they are non-controllable and their impact are uniform despite any precautionary procedures that might have been undertaken.

In addition, Al-Khouri (2011) assessed the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, the results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk. Ben-Naceur and Omran (2008) in attempt to examine the influence of bank regulations, concentration, financial and institutional development on commercial banks' margin and profitability in Middle East and North African (MENA) countries from 1989-2005 found that bank capitalization and credit risk have positive and significant impact on banks' net interest margin, cost efficiency and profitability.

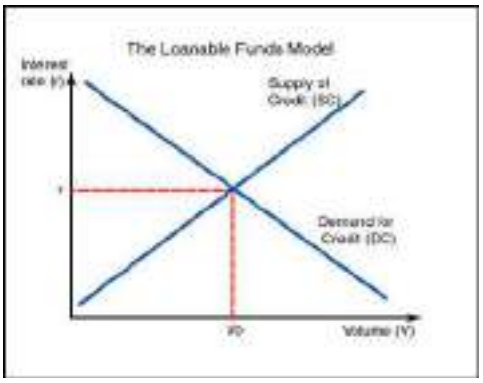
Kayode, Obamuyi, Owoputi and Adeyefa (2015) in their study investigate the impact of credit risk on banks' performance in Nigeria. A panel estimation of six banks from 2000 to 2013 was done using the random effect model framework. The result shows that credit risk is negatively and significantly related to bank performance, measured by return on assets (ROA). This suggests that an increased exposure to credit risk reduces bank profitability. We also found that total loan has a positive and significant impact on bank performance. Therefore, to stem the cyclical nature of non-performing loans and increase their profits, the banks should adopt an aggressive deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults.

Moreover, Ofonyelu and Alimi (2013) in their study on "Perceived loan risk and ex post default outcome: are the banks' loans screening criteria efficient?" using the standard correlation test methodology maintained that the estimated and ex-post default risk incidence differ (though not significantly). The study shows that Prospective borrowers from commercial banks are usually made to pass through stringent lending procedure; although screening procedure is intended to forestall likely default intents and reduce credit risks. This paper provides evidence that bank screening criteria do not effectively foreclose total default risk, and affirm that perceived and

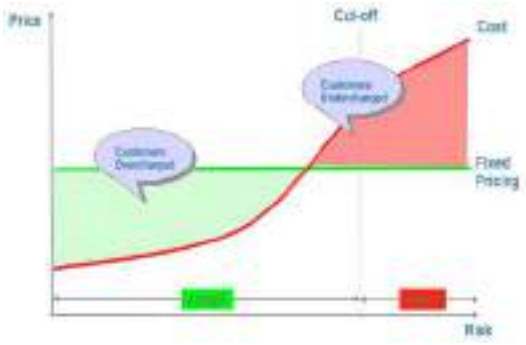
ex-post default risks differ. Using data obtained from a survey of investment loans made to 210 borrowers between 2000 and 2012 among 15 commercial banks in Nigeria, this study observed that the banks' screening criteria was limited by the presence of information asymmetry. Adverse selection and moral hazard were observed to persist in the loan markets irrespective of the stringency of the banks' screening measures. The observed difference between estimated and ex-post default risk incidence arise because of the presence of information asymmetry and other uncertainties in loan pricing

1.1. Theoretical Framework

The theoretical framework follows the classical loanable funds theory and the risk-based pricing model as shown below:



Source: Acebedo, L. and Durnall, J. (2013).



Source: Acebedo, L. and Durnall, J. (2013).

2. Research Methodology

2.1 Introduction

This chapter contains the description of the methodology adopted in conducting the study. It comprises the sources of data, estimation techniques, and model specification.

2.2 Sources of data

This study used mainly time series data obtained from CBN Statistical Bulletin, 2015/2016, CBN Annual Report and Statement of Account, NDIC Report and World Bank website on sampled Nigerian Banks covering a period of 21 years (between 1995 – 2015) comprising interest rate (maximum and prime lending rate), loan and advances (LA), the ratio of loan and advances (LA) to total deposit (TD), non-performing loan ratio as bank specific factors and risk premium as a measure of credit risk pricing. We also incorporate gross domestic product (GDP), inflation rate (INFR) proxied by consumer price index, and exchange rate (EXR) to show the effect of macroeconomic factors in credit risk pricing.

2.3 Estimation Techniques

This section describes the estimation procedure used by the study which includes; stationarity test, VAR test for co-integration, VAR estimates and vector error correction model.

The study conducts stationarity test to obtain a standard and reliable result. This is necessary because most time series variables may not be stationary at level and using non stationary variables to estimate a model may yield spurious result (Granger and Newbold, 1974). Hence, we employed the Augmented Dickey Fuller (ADF) unit root test specified below as:

$$\Delta y_t = \alpha_0 + \alpha_1 t + \phi y_{t-1} + \sum_{i=1}^{p} ß_i \Delta y_{t-i} + \varepsilon_t \quad \text{..... 3.1}$$

The Vector Autoregressive (VAR) approach to co-integration developed by Johansen (1999) was used to empirically determine the long-run relationships among the variables. To estimate the impact of credit risk pricing on loan performance of commercial banks in Nigeria, the following VAR model has been specified as:

$$\Delta Log(NPLR_t) = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta Log(RP_{t-i}) + \sum_{i=1}^{q} \alpha_2 \Delta Log(TL/A_{t-i}) + \sum_{i=1}^{q} \alpha_3 \Delta Log(L/D_{t-i}) + \sum_{i=1}^{q} \alpha_4 \Delta Log(NPLR_{t-i}) + \sum_{i=1}^{q} \alpha_5 \Delta Log(MLR_{t-i}) + \sum_{i=1}^{q} \alpha_6 \Delta Log(CPI_{t-i}) + \sum_{i=1}^{q} \alpha_7 \Delta Log(FXR_{t-i}) + \sum_{i=1}^{q} \alpha_8 \Delta Log(GDP_{t-i}) + \alpha_9 Log(RP_{t-1}) + \alpha_{10} Log(TL/A_{t-1}) + \alpha_{11} Log(L/D_{t-1}) + \alpha_{12} Log(NPLR_{t-1}) + \alpha_{13} Log(MLR_{t-1}) + \alpha_{14} Log(CPI_{t-1}) + \alpha_{15} Log(FXR_{t-1}) + \alpha_{16} Log(GDP_{t-1}) + u_t \quad \text{.....3.2.}$$

This approach uses the Trace test and Max-eigenvalue test for cointegration to see whether the variables in the equations are cointegrated which confirm the existence of a long run relationship among the variables.

3. Results and Discussion

3.1 Stationarity Test- ADF Unit Root Test

The stationarity test conducted is shown in table 3.1 below.

Table 3.1: Stationarity Test- ADF Unit Root Test

Variable	Level	1st Diff	2nd Diff	Inference
PLR	-3.339754**	----	----	$I_{(0)}$
MLR	-2.836119	-4.728439*	----	$I_{(1)}$
RP	-2.234832	-1.350127	-9.828679*	$I_{(2)}$
TL/A	1.095224	-3.917095*	----	$I_{(1)}$
L/D	-2.998148	-3.608406**	----	$I_{(1)}$
NPLR	-2.300821	-5.393551*	----	$I_{(1)}$
FXR	0.248245	-3.469782**	----	$I_{(1)}$
CPI	6.770412	-1.088100	-5.617721*	$I_{(2)}$
GDP	3.054760	-2.017694	-4.498361*	$I_{(2)}$

Source: Author's computation *Note that: * and ** indicates 1% and 5% level of significance*

The result in table 3.1 shows that the variables PLR is stationary at level and 5% level of significance. MLR, TL/A and NPLR are stationary at first order difference and 1% level of significance. Similarly, the variables; L/D, and FXR are stationary at first order difference and 5% level of significance. Also, the variables RP, CPI and GDP are stationary at second order difference and at 5% and 1% level of significance respectively.

3.2 Assessment of the Impact of Credit Risk Pricing on Commercial Banks Loan Performance in Nigeria.

In this section, the study assessed the impact of credit risk pricing on loan performance of commercial banks in Nigeria by estimating the long run relationship for the variables using the Johansen multivariate test for cointegration under the null hypothesis that the variables are not co-integrated and the result is presented in table 3.2a and 3.2b below:

Table 3.2a: Cointegration Test

LOG(NPLR) LOG(RP) LOG(MLR) LOG(FXR)						
Hypothesized No. of CE(s)	Trace Statistic	5% Critical Value	Prob.**	Max-Eigen Statistic	5% Critical Value	Prob.**
None *	67.11489	47.85613	0.0003	35.69295	27.58434	0.0037
At most 1 *	31.42194	29.79707	0.0322	24.35071	21.13162	0.0170
At most 2	7.071226	15.49471	0.5694	7.063003	14.26460	0.4817
At most 3	0.008223	3.841466	0.9273	0.008223	3.841466	0.9273

Source: Author's computation

Both Trace test and Max-eigenvalue test indicates two co-integrating equations at 5% level of significance

Table 4.5: Vector Error Correction Model

Dependent Variable: D(LOG(NPLR))				
	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
ECT(-1)	-1.085284	0.388249	-2.795333	0.0189
D(LOG(NPLR(-1)))	0.163994	0.341012	0.480905	0.6409
D(LOG(RP(-1)))	4.130454	1.322275	3.123749	0.0108
D(LOG(MLR(-1)))	-10.76715	3.701357	-2.908972	0.0156
D(LOG(FXR(-1)))	11.86553	5.348867	2.218326	0.0508
C	-0.702154	0.289752	-2.423297	0.0359
R-squared	0.549633			
F-statistic (Prob)	2.440819 (0.1077)			
Durbin-Watson stat	2.038248			

Source: Author's computation

LM test = 0.5865 (0.5785), Heteroskedasticity test = 0.9672 (0.5242), Normality test = 0.9255 (0.6295)

From the table 3.2a, the result shows that the Trace test and Max-eigenvalue test indicates two cointegrating equations at 5% level of significance. This implies that the variables are cointegrated in the long run. However, the VECM result in table 3.2b shows that the coefficient of error correction term is negative and statistically significant at 5% level of significance. This implies that the short run disequilibrium will converge to equilibrium in the long-run at a speed of about 109%. Also, the result shows that there is a positive and significant relationship between credit risk pricing (RP) and commercial banks' loan performance proxied by NPLR at 5% level of significance in the short-run in Nigeria. Similarly, the result shows that there is a negative and significant relationship between maximum lending rate (MLR) and NPLR at 5% level of significance in the short-run in Nigeria. The result further indicated that there is a positive and significant relationship between foreign exchange rate (FXR) and NPLR at 5% level of significance in the short-run in Nigeria.

3.3 Impact of Bank Specific/Macroeconomic Factors on Credit Risk Pricing in Nigeria

The study examined the relationship between bank specific factors on one hand and macroeconomic factors on the other hand on commercial banks' loan performance in Nigeria. The cointegration test conducted under the null hypothesis that the variables are not cointegrated was not rejected, meaning that the variables have no long run relationship. Hence, we estimate the VAR model for them and the results are presented in table 3.3a and 3.3b below:

Table 3.3a: Vector Autoregressive Model

Dependent Variable: D(LOG(NPLR))				
	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
LOG(NPLR(-1))	0.482642	0.242415	1.990976	0.0679
LOG(LD(-1))	1.293127	0.945799	1.367233	0.1947
LOG(MLR(-1))	0.257368	1.294748	0.198778	0.8455
C(4)	-4.902351	6.487182	-0.755698	0.4633
R-squared	0.516856			
F-statistic (Prob)	4.635691 (0.0204)			
Durbin-Watson stat	2.036957			

Source: Author's computation

Table 3.3b: Vector Autoregressive Model

Dependent Variable: D(LOG(NPLR))				
	Coefficient	Std. Error	t-Statistic	Prob.
LOG (NPLR(-1))	0.402182	0.202161	1.989420	0.0681
LOG (MLR(-1))	-0.390269	1.006505	-0.387747	0.7045
LOG (FXR(-1))	-2.213966	0.862160	-2.567928	0.0234

C(4)	13.36656	5.303214	2.520464	0.0256
R-squared	0.633360			
F-statistic (Prob)	7.485721 (0.0036)			
Durbin-Watson stat	2.0612			

Source: Author's computation

4. Conclusion

This study assessed the impact of credit risk pricing on commercial banks' loan performance and the following conclusions were drawn:

The variables estimated for the Johansen multivariate cointegration test from our VAR model shows that there is evidence of cointegration among the variables in the long run in Nigeria at 5% level of significance. This implies that the variables in the model move together in the long run as shown by the estimated values of the Trace test and Max-eigenvalue test. The Vector Error Correction Model (VECM) result shows that the coefficient of error correction term is negative and statistically significant at 5% level of significance. This implies that the short run disequilibrium will converge to equilibrium in the long-run at a speed of about 109%. The result of the finding also shows that there is a positive and significant relationship between credit risk pricing (RP) and commercial banks' loan performance proxied by NPLR at 5% level of significance in the short-run in Nigeria. Similarly, the result shows that there is a negative and significant relationship between maximum lending rate (MLR) and NPLR at 5% level of significance in the short-run in Nigeria. The result further indicated that there is a positive and significant relationship between foreign exchange rate (FXR) and NPLR at 5% level of significance in the short-run in Nigeria.

For bank specific factors, only the past value of NPLR is positive and statistically significant in explaining the current and future path of commercial banks' loan performance proxy by NPLR. This means that a one percent increase in the past value of NPLR will lead to a 0.48% increase in commercial banks' loan performance in the current period. However, the past values of loan to deposit ratio (L/D) and maximum lending rate (MLR) are statistically insignificant in explaining commercial banks' loan performance in the current period.

From the empirical findings of this study, we recommended the following:

1) That the risk premium should not be made only to capture market expectations but also the volatility and asymmetry involved in their hidden activities of relationship banking which have taken a central stage in Nigeria's banking business.
2) The CBN should also develop a more robust and practical risk pricing model peculiar to the Nigerian environment aside the template existing.

Author Contributions: All authors contributed to this research.

Funding: The research was funded privately by the author (Gunen James Joel). No external funding was received.

Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

Acknowledgement: This study is supervised by Prof. M.C Duru and Prof P.P Njiforti

References

Acebedo, L. and Durnall, J. (2013). Risk Based Pricing: When does it work and when does it not? An Adverse Selection Approach. An Experian White Paper, NG2 Business Park Nottingham. www.experian.co.uk

Bexley, J. B. and J. James (1999). Risk Management in Pricing a Financial Product. Retrieved from http://www.sbaer.uca.edu/re search/sribr/1999/07.pdf

Black, F., M. Jensen and M. Scholes, (1972), Capital Asset Pricing Model: Some Empirical Tests, in Michael Jensen, ed.: Studies in the Theory of Capital Markets (Praeger, New York).

Bonfim, D. (2009). Credit Risk Drivers: Evaluating the Contribution of Firm Level Information and of Macroeconomic Dynamics. *Journal of Banking & Finance*, 33, 281–299.

Brownbridge, M. (1998). The Causes of Financial Distress in Local Banks in Africa and Implications for Prudential Policy. A United Nations Conference on Trade and Development (UNCTAD) Discussion Paper No. 132 March, 1998. UNCTAD/OSG/DP/132

Curak, M., S. Pepur and K. Poposki (2013). Determinants of Non-Performing Loans – Evidence from Southeastern European Banking Systems. Banks and Banking Systems, Volume8, Issue 1

Demirguc-Kunt, A. and E. Detragiache (1998). The Determinants of Banking Crisis in Developing and Developed economies. *IMF Staff Papers* 45 (1)

Demirguc-Kunt, A. and H, Huizinga (1999). "Determinants of Commercial Banks Interest Margin and Profitability: Some International Evidence. *World Bank Economic Review* 13 (2) P. 379-408.

Diette, M. D. (2000). How Do Lenders Set Interest Rates on Loans? A Discussion of the Concepts Lenders Use to Determine Interest Rates. *www. Minneapolisfed. Org/ research/ pub_ display.cfm?id=3030.*

Kargi, H. S. (2011). Credit Risk and the Performance of Nigerian Banks. Dept. of Accounting, Ahmadu Bello University, Zaria, Nigeria.

Ofonyelu, C .C and R. S. Alimi (2013). Perceived Loan Risk and Ex Post Default Outcome: Are the Banks' Loan Screening Criteria Efficient? *Asian Economic and Financial Review, 2013, 3(8):9911002. http://www .investor words. com/955 /commercialbank.html #ixzz3 D7F6z4hX*

Rewane, B. (2010). Nigerian Economic and Banking Industry Review and Outlook 2011.*Paper Presentation to Management of Union Bank of Nigeria at Management Retreat, Held in December, 2010 at Eko Hotel, Victoria Island, Lagos.*

Sanusi, A. R. (2010). Interest Rate Pass-Through and the Efficiency of Monetary Policy in Nigeria. A Paper Presentation at the 1st National Conference on State of the Nigerian Economy Held at M. A. Auditorium, BUK, Kano, Nigeria.

Duffie, D. and K. J. Singleton (2003). Credit Risk Pricing, Measurement, and Management. Princeton University Press. New Jersey.

Horvath, R. and P, Podpiera (2012). Heterogeneity in Bank Pricing Policies: The Czech Evidence. *Published by Economic Systems* Vol. 36, Issue No. 1 P. 87 – 108 *information @treasury.govt.nz*

Hou, Y. (2007). Non-performing Loans: Some Bank- Level Evidences. Research conference paper on Safety and Efficiency of the Financial System Organized with the support of the EU Asian Link Programme. *cba.uupd.edu.ph/asialink/Hou_Dick inson.pdfo* 20/2/2014.