

INVESTIGATION OF THE RELATIONSHIP BETWEEN THE DIGITAL LITERACY ON DECISIONS RELATED TO DIGITAL ENTREPRENEURSHIP

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ABSTRACT

The object of research. This study focuses on entrepreneurs operating micro and small enterprises in DKI Jakarta, specifically examining their digital literacy, behavioral intentions, and decisions related to digital entrepreneurship.

Investigated problem: Despite growing digital infrastructure and government support, many MSEs in Indonesia still struggle to adopt digital technologies effectively. Limited digital literacy among entrepreneurs is suspected to be a key barrier, yet few empirical studies have examined how digital literacy influences the decision-making process in digital entrepreneurship, especially through behavioral intention.

The main scientific results: using structural equation modeling–partial least squares (SEM-PLS), the study found that digital literacy significantly influences both behavioral intention and digital entrepreneurship decisions. Moreover, behavioral intention partially mediates the relationship between digital literacy and strategic digital decision-making. The model explains 69.7% of the variance in behavioral intention and 61.7% in digital entrepreneurship decisions, indicating strong explanatory power.

The area of practical use of the research results: The findings can inform entrepreneurship training programs, digital transformation policies, and capacity-building initiatives targeting MSEs, particularly in urban and digitally evolving economies.

Innovative technological product: A conceptual model of digital literacy-driven digital entrepreneurship behavior tailored for MSEs, integrating behavioral intention as a mediating factor.

Scope of the innovative technological product: Applicable to the design of policy interventions, digital training curricula, and entrepreneurship development frameworks aimed at enhancing digital adoption and competitiveness among small business owners in emerging economies.

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1. Introduction

Over the past decade, Indonesia has seen a surge in entrepreneurship driven by government, and private-sector initiatives. Programs emphasizing business networking, financial inclusion, and skill training have opened new pathways for micro- and small-enterprises (MSEs) to start and scale ventures. Yet, despite these efforts, the uptake of digital technologies remains limited. For example, the Ministry of Cooperatives and SMEs in 2021 reports that only 24% of all MSEs have integrated digital tools into their operations [1, 2], suggesting that a majority still rely on traditional methods.

A growing body of research identifies digital literacy, defined here as the ability to access, evaluate, create digital content, and use digital tools effectively, as a critical enabler for successful digital entrepreneurship [3–6]. Digital literacy not only underpins entrepreneurs' confidence in adopting e-commerce and social media marketing but also shapes their decision-making about technology investments and strategic innovations [7]. Despite its importance, few studies have empirically examined how variations in digital literacy influence MSE owners' decisions regarding digital business models, platform choice, or online value-creation strategies.

Prior work on digital entrepreneurship has often focused on behavioral intention [8–11] or treated digital literacy itself as an antecedent of technology adoption [12–14]. These studies show that intentions and literacy drive online marketing uptake and digital innovation in larger SMEs, but their findings may not generalize to small, survival-oriented enterprises. Some researchers even argue that prior digital experience, more so than mere intention, determines whether entrepreneurs will pursue digital business activities [15–17].

This paper addresses that gap by investigating the relationship between digital literacy and decision-making in digital entrepreneurship. Drawing on survey data collected from DKI Jakarta business owners, this study tests whether higher levels of digital literacy are associated with more proactive and strategic decisions, such as selecting appropriate e-commerce platforms, allocating budgets to online marketing, and adopting digital payment systems. By isolating digital literacy from related constructs (e.g., behavioral intention, experience), our study contributes empirically to the literature on digital entrepreneurship and offers actionable insights for policymakers and trainers aiming to strengthen digital capabilities.

1. 1. The object of research

The primary object of this research is to examine how variations in digital literacy among micro- and small-enterprise owners influence their decisions related to digital entrepreneurship. Specifically, focus on SMEs operating in DKI Jakarta and assess their capacity to select, implement, and leverage digital tools for business growth.

1. 2. Problem description

Although numerous programs support entrepreneurs, many MSEs still struggle to integrate digital technologies effectively. Low digital literacy impedes their ability to evaluate and adopt online sales channels, digital marketing tactics, and electronic payment systems. As a result, these businesses miss opportunities to expand market reach, improve customer engagement, and enhance operational efficiency.

1. 3. Suggested solution to the problem

This study proposes that enhancing digital literacy will lead to more informed and strategic decision-making in digital entrepreneurship. By empirically measuring digital literacy levels and mapping them to concrete business choices such as platform selection, budget allocation for online activities, and adoption of digital payment methods, this study can identify key leverage points for training programs and policy interventions.

Research question. This study seeks to answer the following overarching sub-questions.

- 1) How does digital literacy impact entrepreneurs' behavioral intention toward adopting digital business practices?
- 2) What is the direct effect of digital literacy on digital entrepreneurship outcomes?
- 3) How does behavioral intention influence digital entrepreneurship outcomes?
- 4) Does behavioral intention mediate the relationship between digital literacy and digital entrepreneurship?

Aims and objectives. To achieve this aim, the following objectives are accomplished:

- to analyze the impact of digital literacy on the behavioral intention;
- to analyze the impact of digital literacy on the digital entrepreneurship;
- to analyze the impact of behavioral intention on the digital entrepreneurship;
- to analyze the impact of digital literacy on the digital entrepreneurship through behavioral intention.

2. Materials and methods

2. 1. Measures and questionnaire design

All items use a five-point Likert scale (1 = “strongly disagree”; 5 = “strongly agree”). This study employs a survey instrument comprising three latent constructs:

- digital literacy (DL)
- behavioral Intention (BI)
- digital entrepreneurship decisions (DE)

2. 2. Sample and data collection

The sampling frame comprises entrepreneurs in DKI Jakarta. Questionnaires were distributed to entrepreneurs via direct visits and trained enumerators’ eligibility required active use of social media platforms for marketing. After screening for completeness and consistency. The sample includes 27.8% micro-enterprises and 72.2% small enterprises; 61.6% industrial, 36.9% trading, and 1.5% agricultural sectors; and firm sizes ranging from 1–5 employees (69.7%) to more than 11 employees (9.6%).

2. 3. Data analysis

Data analysis was conducted using structural equation modeling with partial least squares (SEM-PLS). This method was chosen due to its suitability for analyzing complex models with latent variables and relatively small sample sizes. The analysis followed a two-step approach, beginning with the evaluation of the measurement model, followed by the assessment of the structural model. In the measurement model assessment, the reliability and validity of each construct were tested. Internal consistency was evaluated using Cronbach’s Alpha and composite reliability (CR), where values above 0.70 were considered acceptable. Convergent validity was assessed through the average variance extracted (AVE), with a threshold value of at least 0.50. Discriminant validity was evaluated using both the Fornell-Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio, where HTMT values below 0.85 indicated satisfactory discriminant validity between constructs.

Based on **Fig. 1**, the research hypotheses are formulated as follows: The hypotheses developed include:

- H1: digital literacy positively influences behavioral intention;
- H2: digital literacy positively influences digital entrepreneurship;
- H3: behavioral intention positively influences digital entrepreneurship;
- H4: digital literacy positively influences digital entrepreneurship through behavioral intention.

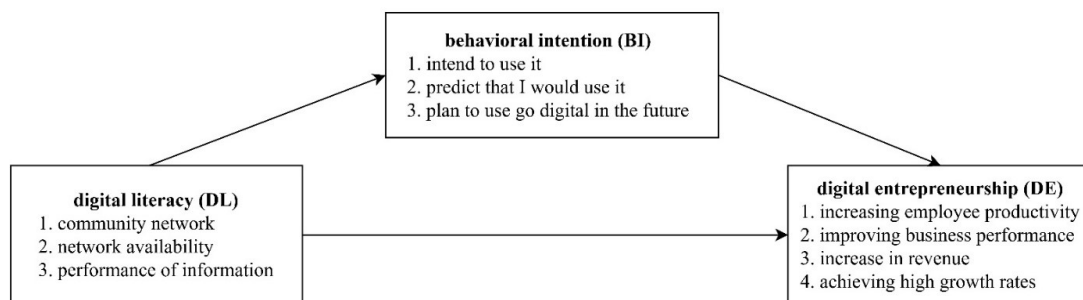


Fig. 1. Research concept

3. Result

3. 1. Measurement model

The results of measurement are presented in **Table 1**.

Table 1
Factor loadings of the constructs

Constructs and Items	Outer Loadings	AVE	Composite reliability	Cronbach’s Alpha	VIF
DL	DL1	0.920	0.834	0.938	2.947
	DL2	0.910			2.816
	DL3	0.910			2.700
BI	BI1	0.866	0.790	0.919	1.941
	BI2	0.918			3.051
	BI3	0.881			2.497
DE	DE1	0.847	0.697	0.902	2.197
	DE2	0.839			2.029
	DE3	0.785			1.715
	DE4	0.867			2.200

The evaluation of the measurement model indicates that all constructs in this study demonstrate satisfactory reliability and validity. As shown in **Table 1**, the factor loadings of all items exceed the recommended threshold of 0.70, indicating strong item reliability and confirming that each observed variable adequately reflects its latent construct. Specifically, the three indicators for digital literacy (DL), DL1, DL2, and DL3, recorded loadings above 0.910, signifying a very high degree of shared variance between the indicators and the construct. The average variance extracted (AVE) for each construct also exceeds the minimum threshold of 0.50. The AVE for Digital Literacy is 0.834, which suggests that more than 83% of the variance in the indicators is captured by the construct rather than by measurement error. Likewise, behavioral intention (BI) and digital entrepreneurship (DE) yielded AVE values of 0.790 and 0.697, respectively, both indicating sufficient convergent validity.

In terms of internal consistency, all constructs exhibit strong reliability. The composite reliability (CR) values for DL (0.938), BI (0.919), and DE (0.902) are all above the accepted cutoff of 0.70, confirming excellent internal consistency. Furthermore, Cronbach's Alpha values are also high, 0.901 for DL, 0.867 for BI, and 0.855 for DE, supporting the conclusion that the items within each construct are consistent in measuring the same underlying concept. To assess multicollinearity, the variance inflation factor (VIF) was examined for each item. All VIF values fall well below the critical value of 5, and none exceed 3.3, indicating that multicollinearity is not a concern and that the constructs are distinct from one another.

The results in **Table 2** demonstrate that each construct achieves satisfactory discriminant validity according to the Fornell–Larcker criterion. In this approach, the square root of the AVE for each construct (shown on the diagonal) should exceed that construct's correlations with all other constructs (shown off-diagonal). For behavioral intention (BI), the square root of AVE is 0.889, which is greater than its correlations with digital entrepreneurship (DE; 0.747) and digital literacy (DL; 0.835), indicating that BI shares more variance with its indicators than with those of the other constructs, confirming that it is empirically distinct.

Similarly, as shown in **Table 2**, digital entrepreneurship (DE) shows a square root of AVE of 0.835, which exceeds its correlations with BI (0.747) and DL (0.757). Thus, DE reliably measures a separate concept distinct from both BI and DL. Digital Literacy (DL) has the highest square root of AVE at 0.913, well above its correlation with BI (0.835) and DE (0.757). This further corroborates that DL is uniquely captured by its indicators and does not overlap excessively with the other constructs.

Table 2
Discriminant validity

Symbol	BI	DE	DL
BI	0.889	–	–
DE	0.747	0.835	–
DL	0.835	0.757	0.913

3. 2. Hypotheses testing

Last stage of analysis statistical inference is hypothesis testing. Testing the hypothesis was formed by comparing the t-statistic and t-table values derived from the connection between variables, as shown in **Table 3**.

Table 3
Hypotheses testing

Symbol	Path coefficients	T statistics	P values	Decision
DL → BI	0.835	33.908	0.000	Significant
DL → DE	0.439	5.713	0.000	Significant
BI → DE	0.380	4.892	0.000	Significant
DL → BI → DE	0.318	4.979	0.000	Significant

The results of the hypothesis testing demonstrate that digital literacy plays a pivotal role in shaping both the intention to use digital tools and the actual decisions to engage in digital entrepre-

neurship. First, the relationship between digital literacy and behavioral intention is exceptionally strong ($\beta = 0.835, t = 33.908, p < 0.001$), indicating that entrepreneurs with higher levels of digital literacy are far more likely to form a clear intention to adopt digital marketing tools in their business strategies. This finding confirms H1 and underscores the importance of building foundational digital skills as a precursor to any further digital engagement.

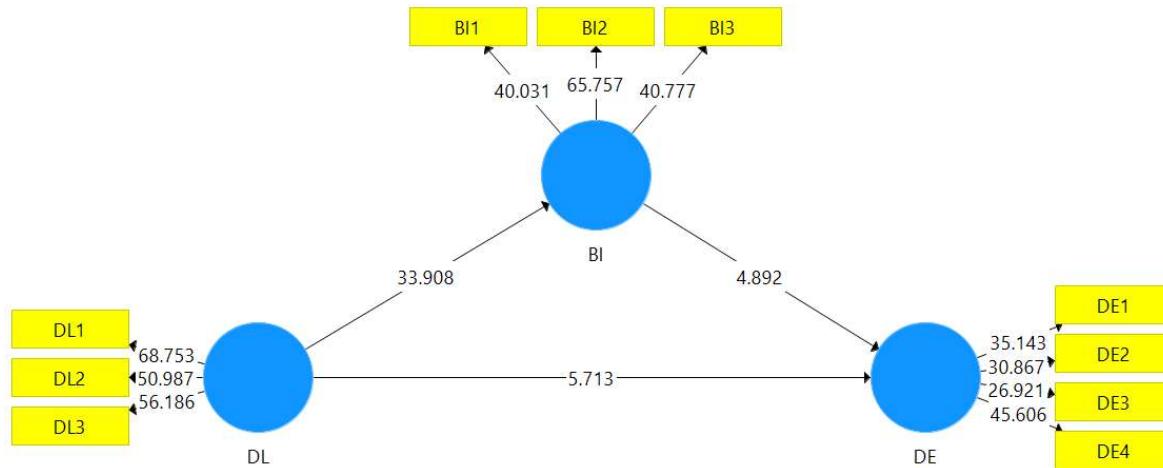


Fig. 2. SEM output bootstrapping analysis

In addition to its impact on intention, digital literacy also exerts a significant direct influence on digital entrepreneurship decisions ($\beta = 0.439, t = 5.713, p < 0.001$), supports H2, and shows that digitally literate entrepreneurs not only plan to use digital tools but also follow through with concrete actions such as selecting e-commerce platforms, allocating marketing budgets online, and implementing digital payment systems. Behavioral intention itself independently predicts digital entrepreneurship decisions ($\beta = 0.380, t = 4.892, p < 0.001$), lending full support to H3; entrepreneurs who intend to use digital marketing tools are indeed more likely to carry out digital business activities.

Finally, the indirect effect of digital literacy on digital entrepreneurship via behavioral intention is both positive and significant ($\beta = 0.318, t = 4.979, p < 0.001$), confirming H4. This mediation result reveals that part of digital literacy’s influence on entrepreneurial decision-making is channeled through the enhancement of behavioral intention. In sum, digital literacy not only directly empowers entrepreneurs to make strategic digital choices but also does so indirectly by strengthening their intention to engage with digital technologies.

The model explains a substantial proportion of variance in both endogenous constructs, with digital literacy accounting for nearly 70% of the variance in behavioral intention ($R^2 = 0.697$; adjusted $R^2 = 0.696$); this indicates that entrepreneurs’ level of digital literacy is the primary driver behind their intention to adopt digital marketing tools. For digital entrepreneurship decisions, the combined predictors (digital literacy and behavioral intention) explain approximately 62% of its variance ($R^2 = 0.617$; adjusted $R^2 = 0.614$), reflecting a strong overall explanatory power for the model.

Effect-size (f^2) analysis further clarifies the relative impact of each predictor. The path from digital literacy to behavioral intention yields an extraordinarily large effect size ($f^2 = 2.300$), far exceeding the conventional “large” benchmark of 0.35, underscoring that improvements in digital literacy translate directly into stronger entrepreneurial intentions. In predicting digital entrepreneurship decisions, digital literacy has a medium effect ($f^2 = 0.153$), just above the 0.15 threshold, indicating a meaningful direct influence on strategic digital choices. Behavioral intention exerts a smaller but still relevant effect on digital entrepreneurship decisions ($f^2 = 0.114$), denoting that while intention matters, its incremental contribution is more modest compared to the foundational role of digital literacy.

4. Discussion

The present study set out to elucidate the role of digital literacy in shaping both the intention to adopt digital marketing tools and the actual decisions to engage in digital entrepreneurship among MSE owners in DKI Jakarta. Consistent with H1, our finding that digital literacy strongly predicts behavioral intention ($\beta = 0.835, p < 0.001$) extends prior technology acceptance research [18–21] by demonstrating the foundational importance of digital skills in small, survival-oriented enterprises. In contrast to models that privilege motivational drivers alone, these results reveal that entrepreneurs must first possess a minimum threshold of competency in navigating digital environments before they form concrete intentions to use those environments.

Beyond intention, digital literacy exhibits a significant direct effect on digital entrepreneurship decisions ($\beta = 0.439, p < 0.001$), supporting H2 and corroborating assertions that experience and skills drive digital business behavior [22–24]. Entrepreneurs with higher digital literacy not only plan to adopt online channels but also translate those plans into actions selecting e-commerce platforms, allocating budgets for social media campaigns, and integrating digital payment solutions. This direct pathway underscores that skill acquisition can yield immediate strategic benefits without complete mediation by intention a novel nuance relative to strictly behavioral intention-based frameworks.

Moreover, the behavioral intention itself remains a significant predictor of digital entrepreneurship decisions ($\beta = 0.380, p < 0.001$), confirming H3 and aligning with the theory of planned behavior [25–27]. However, the smaller effect size for the BI→DE path ($f^2 = 0.114$) compared with the DL→DE path ($f^2 = 0.153$) suggests that while the intention is necessary, it is not sufficient. Stakeholders should, therefore, complement motivational interventions (e.g., awareness seminars) with hands-on digital literacy training to ensure that intentions materialize into measurable business actions.

Finally, the significant indirect effect of digital literacy on digital entrepreneurship via behavioral intention ($\beta = 0.318, p < 0.001$) confirms H4, indicating partial mediation and highlighting a dual mechanism: digital literacy fosters intention, which in turn propels the action, even as literacy retains a direct influence. This nuanced finding advocates for a two-pronged approach in program design: build both the cognitive foundations (skills, knowledge) and the volitional drivers (intent, strategic planning) that jointly empower entrepreneurs to navigate the digital economy.

Limitation. While the study provides robust empirical evidence for the role of digital literacy in digital entrepreneurship, several limitations must be acknowledged. First, the research employed a cross-sectional design, which restricts the ability to infer causality between variables. While significant associations were found, the directionality of influence, especially between behavioral intention and digital entrepreneurship decisions, cannot be definitively established. Second, the sample was geographically limited to entrepreneurs in DKI Jakarta, a region with relatively strong digital infrastructure and government support. As such, the findings may not be generalizable to rural or less digitally connected areas where access and literacy levels vary significantly. Third, the study relied solely on self-reported data, which may be subject to social desirability bias or common method variance.

Recommendations. Based on the findings, several practical recommendations can be proposed for stakeholders. For government agencies and entrepreneurship support organizations, integrating digital literacy training into existing micro- and small-enterprise development programs is essential. Training should focus not only on basic ICT skills but also on applied digital entrepreneurship practices such as e-commerce platform management, online marketing, and digital financial tools. Additionally, efforts should be made to create mentorship or peer support systems that can reinforce digital knowledge through practical application and experiential learning. For educational institutions, incorporating digital entrepreneurship modules into vocational and continuing education programs could help cultivate a digitally competent and opportunity-oriented entrepreneurial culture.

Suggestions for further studies. Future research could extend the current study in several directions. First, longitudinal studies are recommended to observe how changes in digital literacy over time influence entrepreneurial intention and decision-making, which would provide more definitive insights into causality and the dynamics of digital adoption. Second, future studies could

employ a comparative design to explore how the digital literacy-entrepreneurship relationship varies across different regions, business sectors, or levels of urbanization. Including contextual moderators such as access to infrastructure, business support ecosystems, or digital policy environments could enhance the explanatory power of the model. Finally, expanding the scope to include additional outcomes such as innovation capability, financial performance, or market expansion could provide a more comprehensive understanding of the broader impacts of digital literacy on business growth and sustainability.

5. Conclusion

This study examined the influence of digital literacy on entrepreneurs' behavioral intention and their decision-making in digital entrepreneurship among micro and small enterprises in DKI Jakarta. Using a structural equation modeling approach, the results confirm that digital literacy is a critical enabler of both the intention to adopt digital technologies and the strategic decisions that follow. Digital literacy was found to significantly influence behavioral intention and directly impact decisions related to digital entrepreneurship, such as the selection of platforms, marketing investments, and the use of digital payment systems.

Furthermore, behavioral intention serves as a partial mediator between digital literacy and digital entrepreneurship, suggesting that skill development not only equips entrepreneurs with technical capabilities but also shapes their motivation and readiness to act. The model demonstrates strong explanatory power, with R^2 values of 0.697 for behavioral intention and 0.617 for digital entrepreneurship decisions, indicating that digital literacy and behavioral intention together account for a substantial portion of the variance in entrepreneurial digital adoption.

The findings provide theoretical contributions by validating digital literacy as an independent, measurable construct with direct and indirect effects in entrepreneurship models. It also advances practical understanding by demonstrating how foundational digital competencies can be leveraged to support strategic business transformation.

Despite the strengths of this study, several limitations must be acknowledged. These include its cross-sectional design, regional focus limited to Jakarta, and reliance on self-reported measures. Future research should consider longitudinal and comparative approaches to generalize findings and capture the evolution of digital entrepreneurship behavior over time. Digital literacy is not merely a technical skill but a strategic asset for entrepreneurs in the digital economy. By strengthening digital capabilities, fostering intention, and enabling informed decision-making, stakeholders, including policymakers, training institutions, and development agencies, can play a pivotal role in accelerating the digital transformation and long-term competitiveness of small businesses.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

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Data availability

Data will be made available on reasonable request.

Use of artificial intelligence

The authors have used artificial intelligence technologies within acceptable limits to provide their own verified data, which is described in the research methodology section.

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References

- [1] Sisay, K., Molla, S., Mekonnen, L., Gadisa, Z. (2025). Nexus between business development service and women entrepreneurs' performance: Implication for MSMEs growth and inclusive economic development in Ethiopia. *Journal of Open Innovation: Technology, Market, and Complexity*, 11 (1), 100514. <https://doi.org/10.1016/j.joitmc.2025.100514>
- [2] Maniendaran, S. K., Ahmad, A. R., Mohamad, A., Abu Seman, N. A., Rashid, U. K., Mohamad, A. (2025). Managing Workplace Conflict for Enhancing Employee Satisfaction in MSMEs. *Procedia Computer Science*, 253, 636–643. <https://doi.org/10.1016/j.procs.2025.01.125>
- [3] Moravec, V., Hynek, N., Gavurova, B., Rigelsky, M. (2024). Who uses it and for what purpose? The role of digital literacy in ChatGPT adoption and utilisation. *Journal of Innovation & Knowledge*, 9 (4), 100602. <https://doi.org/10.1016/j.jik.2024.100602>
- [4] Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management*, 63, 102466. <https://doi.org/10.1016/j.ijinfomgt.2021.102466>
- [5] Paul, J., Alhassan, I., Binsaif, N., Singh, P. (2023). Digital entrepreneurship research: A systematic review. *Journal of Business Research*, 156, 113507. <https://doi.org/10.1016/j.jbusres.2022.113507>
- [6] Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J. et al. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, 59, 102168. <https://doi.org/10.1016/j.ijinfomgt.2020.102168>
- [7] Feliciano-Cestero, M. M., Ameen, N., Kotabe, M., Paul, J., Signoret, M. (2023). Is digital transformation threatened? A systematic literature review of the factors influencing firms' digital transformation and internationalization. *Journal of Business Research*, 157, 113546. <https://doi.org/10.1016/j.jbusres.2022.113546>
- [8] Vu, T. H., Do, A. D., Ha, D. L., Hoang, D. T., Van Le, T. A., Le, T. T. H. (2024). Antecedents of digital entrepreneurial intention among engineering students. *International Journal of Information Management Data Insights*, 4 (1), 100233. <https://doi.org/10.1016/j.jjimei.2024.100233>
- [9] Duong, C. D., Nga Ngo, T. V., Thu Nguyen, T. P., Tran, N. M., Pham, H. T. (2024). Digital entrepreneurial education and digital entrepreneurial intention: A moderated mediation model. *Social Sciences & Humanities Open*, 10, 101178. <https://doi.org/10.1016/j.ssaho.2024.101178>
- [10] Ismail, M. N., Wan Hussain, W. M. H. (2024). Mapping digital entrepreneurial intention: A comprehensive bibliometric study. *Heliyon*, 10 (20), e38988. <https://doi.org/10.1016/j.heliyon.2024.e38988>
- [11] Chakraborty, S., Bhatt, V., Chakravorty, T., Chakraborty, K. (2021). Analysis of digital technologies as antecedent to care service transparency and orchestration. *Technology in Society*, 65, 101568. <https://doi.org/10.1016/j.techsoc.2021.101568>
- [12] Mhlongo, S., Mbatha, K., Ramatsetse, B., Dlamini, R. (2023). Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An iterative review. *Heliyon*, 9 (6), e16348. <https://doi.org/10.1016/j.heliyon.2023.e16348>
- [13] Kelly, S., Kaye, S.-A., Oviedo-Trespalacios, O. (2023). What factors contribute to the acceptance of artificial intelligence? A systematic review. *Telematics and Informatics*, 77, 101925. <https://doi.org/10.1016/j.tele.2022.101925>
- [14] Mothafar, N. A., Zhang, J., Alsoffary, A., Masoomi, B., AL-Barakani, A., Alhady, O. S. (2024). Digital social responsibility towards digital education of international higher education students' institutions: Digital culture as mediator. *Heliyon*, 10 (17), e36442. <https://doi.org/10.1016/j.heliyon.2024.e36442>
- [15] Adeel, S., Daniel, A. D., Botelho, A. (2023). The effect of entrepreneurship education on the determinants of entrepreneurial behaviour among higher education students: A multi-group analysis. *Journal of Innovation & Knowledge*, 8 (1), 100324. <https://doi.org/10.1016/j.jik.2023.100324>
- [16] Ipsmiller, E., Dikova, D., Brouthers, K. D. (2022). Digital Internationalization of Traditional Firms: Virtual Presence and Entrepreneurial Orientation. *Journal of International Management*, 28(4), 100940. <https://doi.org/10.1016/j.intman.2022.100940>
- [17] Rangaswamy, A., Moch, N., Felten, C., Van Bruggen, G., Wieringa, J. E., Wirtz, J. (2020). The Role of Marketing in Digital Business Platforms. *Journal of Interactive Marketing*, 51 (1), 72–90. <https://doi.org/10.1016/j.intmar.2020.04.006>
- [18] Mahmood, M., Batool, S. H., Rafiq, M., Safdar, M. (2021). Examining digital information literacy as a determinant of women's online shopping behavior. *Information Technology & People*, 35 (7), 2098–2114. <https://doi.org/10.1108/itp-05-2021-0397>
- [19] Desmaryani, S., Soleh, A., Irmanelly, Wiarta, I. (2024). Integration of technology acceptance models and government support to improve digital literacy. *Heliyon*, 10 (14), e34086. <https://doi.org/10.1016/j.heliyon.2024.e34086>
- [20] Wang, K.-H. (2025). Beyond digital finance: The impact of internet banking adoption on subjective life satisfaction. *Finance Research Open*, 1(2), 100012. <https://doi.org/10.1016/j.finr.2025.100012>
- [21] Mihailova, I. (2024). A learning-based explanation of the time properties of the international scaling of digital entrepreneurial ventures. *European Management Journal*. <https://doi.org/10.1016/j.emj.2024.11.006>

- [22] Peng, Y., Tao, C. (2022). Can digital transformation promote enterprise performance? – From the perspective of public policy and innovation. *Journal of Innovation amp; Knowledge*, 7 (3), 100198. <https://doi.org/10.1016/j.jik.2022.100198>
- [23] Barba-Sánchez, V., Meseguer-Martínez, A., Gouveia-Rodrigues, R., Raposo, M. L. (2024). Effects of digital transformation on firm performance: The role of IT capabilities and digital orientation. *Heliyon*, 10 (6), e27725. <https://doi.org/10.1016/j.heliyon.2024.e27725>
- [24] Chatterjee, S., Chaudhuri, R., Vrontis, D., Giovando, G. (2023). Digital workplace and organization performance: Moderating role of digital leadership capability. *Journal of Innovation & Knowledge*, 8 (1), 100334. <https://doi.org/10.1016/j.jik.2023.100334>
- [25] Boubker, O. (2024). Does religion raise entrepreneurial intention and behavior of Muslim university students? An extension of Ajzen's theory of planned behavior (TPB). *The International Journal of Management Education*, 22 (3), 101030. <https://doi.org/10.1016/j.ijme.2024.101030>
- [26] Cao, G., Duan, Y., Edwards, J. S., Dwivedi, Y. K. (2021). Understanding managers' attitudes and behavioral intentions towards using artificial intelligence for organizational decision-making. *Technovation*, 106, 102312. <https://doi.org/10.1016/j.technovation.2021.102312>
- [27] Nurtanto, M., Nawanksari, S., Sutrisno, V. L. P., Syahrudin, H., Kholifah, N., Rohmanto, D. et al. (2025). Determinants of behavioral intentions and their impact on student performance in the use of AI technology in higher education in Indonesia: A SEM-PLS analysis based on TPB, UTAUT, and TAM frameworks. *Social Sciences & Humanities Open*, 11, 101638. <https://doi.org/10.1016/j.ssaho.2025.101638>