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Social Sciences

DESIGNING TOURISM MARKETING TOOLS WITH GEOTARGETING OF IP ADDRESSES

設計具有互聯網協議地址地理定位的旅遊行銷工具

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Abstract

Information technology is the key to developing the tourism industry with a new motto - smart tourism, which changes tourist marketing and management destinations. Much research on tourism marketing has been conducted through social networking sites to effectively promote events and tourist attractions on brand trust influencing decision-making. This research aims to create a notification or marketing message service system through geographic targeting to improve user experience by sending relevant messages based on the user's location. New knowledge about location-based marketing that requires a geolocation service system or application is geotargeting. The aspect considered in developing marketing tools using geotargeting is the impact of technological innovation, which can make tourism marketing trouble-free and more personalized based on location. This research used the design-based methodology. In this methodological approach, the notification or marketing message service system has a specific purpose. The finding in this research is a marketing service system, namely a segmented marketing tool or notification message. This marketing tool utilizes geolocation and geotargeting APIs to obtain user location data based on city, province, and country via the website and then sends messages to users. The novelty of the research lies in the marketing service system as marketing technology or notification messages through geographic targeting with IP address geolocation. This research thus has significant implications for personalized marketing. It implies that tourism stakeholders must increase their digital competence because understanding data and technology is valuable in modern and contemporary marketing.

Keywords: tourism, geolocation, geotargeting, IP address, notification



摘要 資訊科技是旅遊業發展的關鍵，智慧旅遊將改變旅遊行銷和管理目的地。許多旅遊行銷研究都是透過社交網站進行的，以有效地宣傳活動和旅遊景點的品牌信任影響決策。本研究旨在透過地理定位建立通知或行銷訊息服務系統，透過根據使用者位置發送相關訊息來改善使用者體驗。需要地理定位服務系統或應用程式的基於位置的行銷的新知識是地理定位。使用地理定位開發行銷工具時考慮的方面是技術創新的影響，這可以使旅遊行銷變得無憂無慮，並且基於位置更加個性化。這項研究使用了基於設計的方法。在這種方法中，通知或行銷訊息服務系統有特定的目的。本研究的發現是一種行銷服務系統，即分段行銷工具或通知訊息。該行銷工具利用地理定位和地理定位应用程序编程接口，透過網站取得基於城市、省份和國家的用戶位置數據，然後向用戶發送訊息。該研究的新穎之處在於行銷服務系統作為行銷技術或透過知識產權位址地理定位的地理定位的通知訊息。因此，這項研究對個人化行銷具有重要意義。這意味著旅遊業利益相關者必須提高他們的數位能力，因為了解數據和技術在現代和當代行銷中很有價值。

关键词: 旅遊、地理定位、地理定位、網際網路協定位址、通知

I. INTRODUCTION

Tourists need information about the destinations they will visit, both before they leave home and once they arrive at their destination. Providing clear and informative materials for tourists through websites by the tourism industry is an essential service for potential visitors [1]. The tourism industry needs the Internet as a platform to carry product and service messages directly to users [2]. In the digital era like today, everything has a connection through new technology. Tourists, hotels, rental cars, restaurants, reservations, and attractions have adapted to new consumption models through technology. Information technology is critical in making things troubleless in the tourism sector. There is a change in tourist behavior when searching for and sharing tourism information.

Business in the tourism sector does not stand alone. The tourism business is a valuable addition to other types of business. New technologies and the digitalization of tourism help the process, but it takes time to achieve the big goal [3]. Through careful consideration and thorough execution, influencer marketing can move consumers along the customer journey and increase brand recognition; however, mischaracterized influencers can result in negative promotional results [4]. Therefore, marketers need to adopt new platforms into digital media communication channels to enter the business domain, for example, digitizing cultural heritage as part of tourism [5]. The use of information and communication technology has become a new motto in tourism in the term smart tourism to describe tourist destinations that are perfecting tourism with information technology facilities and have been well understood and have changed the way tourist destinations are managed [6]-[7], as one of the keys that play a critical role in the

development of the tourism industry [8].

Tourism research before 2020 has shown that results have formed a concept about smart tourism destinations [9], but because it is unclear and there is no definition of smart tourism destinations, it is relevant to identify the conceptual and scientific literature consensus [10]. Considering that practitioners and stakeholders in tourism require a more specific explanation to understand this concept in managing tourist destinations [11], there is a need for research to produce a location-based tourism marketing service system to support the development of tourist destinations. As people's demand for tourism increases, the tourism industry develops rapidly and gradually becomes one of the model industries, so tourism research has received in-depth attention [12].

Tourism is an essential income-generating industry that empowers and increases sustainability among residents. Therefore, a strategic media platform is necessary for a promotion that is easily accessible. Concluding from the research on sustainable tourism destinations on social media platforms will increase the visibility and accessibility of the destination to visitors. In digital marketing, there is a close relationship between the use of social media and socially sustainable tourism in economically underdeveloped areas [13]. Tourism represents an economic sector with primary implications for sustainable development in underdeveloped spheres. Digital marketing will bring tourists' perceptions of the image of tourist destinations as the primary requirement that must be taken into account by tourism stakeholders [14]. Digital marketing in tourism has changed many types of operations and affected many services, but there are challenges for the tourism industry. Trends in digital

marketing from the tourism industry perspective can be as changes in social media, future expectations, human touch, and connected services. Implementing the concept of tourism digital marketing relies on digital data, which requires an integrated and quality system for management [15].

International tourism is a phenomenon that is developing very dynamically in modern practice. Developing countries will be able to distribute their tourism products toward tourism flows with differences in recipients by improving the digital divide. Therefore, development strategies must be an integral part of all policies related to the tourism industry [16]. It is critical to manage online distribution channels in tourism marketing.

Online distribution channels have changed the existing traditional tourism marketing, especially sharing services in a short period. Tourism distribution channels have become very complex with the development of social media, reviews, and online sites, which have become new business models [17]-[18]. This digital media has replaced traditional business models because it can share service systems. One of the best-known service systems is the website, which has become a marketing channel for tourist destinations using different approaches to target potential visitors designed purely to inform tourist destinations to trade-oriented ones [19] and as a platform for sharing information about tourist experiences [19], [20].

An attractive tourism website that can influence users must fulfill essential elements in developing a tourism website. Several important elements of a tourism website are completeness of information, credibility, likeability, and influence [21]. The role of websites in building the image of a tourist destination is not trivial, and tourist destination website information needs to motivate and convince potential tourists to visit the destination [22].

In carrying out tourism marketing, it is necessary to manage website users according to the user's location. An attractive and suitable method for website applications accessible from several geographic locations is to know the user's internet protocol (IP) address [23], to know the exact geographic location of the internet host by limiting access to certain areas [24], so that marketing tourism can run effectively. Effective marketing relies on knowledge of customer behavior, especially for location-based marketing [25], according to specific cultural and geographic backgrounds [26]. The location-appropriate marketing with personal target-relevant results has more purchases than non-

location-aligned marketing [27]. Location is a more precise term than place of a specific point or object location. The absolute location of a place on Earth is in the form of latitude and longitude [28]-[29].

Geotargeting is a technology for determining the location of website users to provide messages to users in different places for location-based marketing. One method used for geolocation is using the IP address of a website user to determine their location, such as country, state, and city [30]. Most IPs are in cities, with geolocation results being city or coordinates based on latitude and longitude to determine accurate location retrieval [24].

Location-based marketing has become an ideal technique for understanding tourists in planning visits [31], which can gain knowledge for company marketing decision-making actions [32]. Location-based marketing is a combination of marketing using information technology and geographic location [33], which is defined as a tool, application, or geolocation system [34]-[37]. Therefore, it is essential for marketers and companies that provide location-based services to develop application interfaces that are easy to use [38]-[40] and reach users at their location. Users can be targeted according to the right time and location through software applications [41] to search and get what they need. Searches online will shorten the user's stages in finding their needs [42], which helps users move more quickly [43] with a variety of available digital technologies [44].

The problem is how to conduct personalized tourism marketing to users based on location through marketing tools or service systems. This research is essential for producing location-based marketing services and implementing them to change customer attitudes [45]. Digitally marketing the travel and tourism industry by offering personalized content is critical and benefits businesses [46]. This action then generates drives for business people to think about business strategies by considering different dimensions by aiming at marketing technology with geographic targeting [47]. Therefore, this research builds a location-based Tourism Marketing Service System with geotargeting in cities, provinces, and countries.

There is a technique for determining the geographic location of an internet host, namely by IP address, so that it can find out the location of the end user and send information to the user according to the targeted location [48], and thus marketing can be done through geographic targeting (geotargeting). Geotargeting means

marketing to a specific set of users based on their more general location such as by city, or country [49], using geolocation [50]. The problem-solving approach focuses on creating a tool or Tourism Marketing Service System based on geotargeting locations and implementing it openly for users through a beta test approach [51]. Application design using geolocation technology has been carried out by [52] by conducting geolocation in the company environment where the system checks the physical location of the device and matches it with permitted locations. Geolocation design for searching for blood donors in the city of Lampung was carried out by [53], geolocalization of panoramic images on maps [54], geolocation predictions on social media data [55], Twitter [56] by finding words that implicitly or explicitly encode associations with specific locations. However, this study does not use geotargeting technology to send notification messages to users based on their location.

II. LITERATURE REVIEW

This research is closely related to the location-based targeting research stream, where most of the research is empirical studies that characterize location factors based on the distance between places. Location is the most basic aspect of geotargeting technology to determine where the user uses the service. Geotargeting is location-based targeting that offers sweet interaction with users, and users can find out where they are geographically.

Several studies exist to test the effect of marketing or notifications through location-based targeting, such as targeting by paying attention to physical density on consumer responses [57], mobile coupon issuance strategies [58], [59], mobile advertising responses through consumer movements [60], and mobile recommendations through consumers' physical movement trajectories [61]. Physical outreach can be done locally and nationally, such as at city and provincial levels, and international outreach with targeting based on countries. Geographic targeting aims at the website visitors by IP address content allocated based on the user's physical location.

Websites are a marketing channel for tourist destinations to target potential visitors designed purely for tourist destination information [62] and as a platform for sharing information about tourist experiences [63]. The essential elements of a tourism website can consist of completeness of information, credibility, usefulness, and persuasiveness [64].

Websites have influenced the way the travel industry conveys information and communicates with tourists [65], who must consider navigation behavior for information search and increase the usability of websites [66]. The role of a website in building the image of a tourist destination must be to motivate and convince potential tourists to visit the marketed tourist destination [22]. Marketing performed through websites is online marketing using internet technology, which acts simultaneously with other activities [67]. In this research, notifications to targeted users used the website designed to ensure users see relevant, location-based notifications. Thus, it is essential to implement geotargeting with notification or marketing ads that significantly influence the behavior of potential tourists [68].

III. METHODS

A. Targeting Location

This research uses data from the tourist destinations of the Yogyakarta Palace and the Borobudur Temple Area as materials marketed by targeting the users' geographic location in China and Singapore via the website www.pesonajawa.com. Targeting in Indonesia occurred in the Special Capital Region of Jakarta and West Java using tourism promotion data from Kampung Batik Kauman and Kraton Yogyakarta. The system can geotag (geographically tag) the location of users who access the website in real time via the user's IP address.

B. Methods

When tourists are searching online for tourist destination information, personalized information to increase relevance to tourists requires appropriate algorithms or methods [69] through geotargeting by sending offers to users [70]. The methodology used in this research is design-based. This methodological approach is in line with the conducted research, where the notification or marketing message service system is designed with a specific purpose [71]. There is a technique for determining the geographic location of an internet host, namely by IP-Address, so that it can determine the location of the end user and send information to the user according to the targeted location [72]. Thus, marketing can be done by targeting the user's location through geotargeting. Tourism marketing that uses digital marketing techniques has adapted targeting methods to reach the user's location. Users should be targeted as efficiently as possible with the right messages at geographic

locations [49]. Marketing with geographic targeting (geotargeting) is one way to improve the digital experience for website users because it allows content to be sent to users according to the marketer's needs and the criteria of the targeted users.

The way to determine the location of end users and send marketing messages is by geolocation [50], and the method used for geolocation is the IP addressing method for website users to determine their location, such as city and country [30]. Most IPs are located in cities with the results of geolocation map coordinates based on latitude and longitude with the aim of determining accurate location retrieval [24]. In this research, the method used to perform geotargeting is the IP addressing method [73]. The method used for data collection is the fact finding method [74], which is a formal process that uses data recording techniques for users who access websites.

IV. RESULTS

A. IP-Address Identification

The Internet Assigned Numbers Authority (IANA) has the function of managing protocol parameters, internet number sources and domain names on behalf of the global internet community. The IANA function is to coordinate key elements that keep the internet running smoothly [75]. IANA delegates blocks of contiguous IP addresses (netblocks) to Regional Internet Registries (RIRs). Each RIR distributes the Internet numbers allocated to it to operators in its region according to its own regional policy. RIR delegates netbooks to National Internet Registries (NIRs), then NIR delegates or distributes Internet resources to Local Internet Registries (LIRs) or Country level. The RIR for the Asia Pacific region is the Asia Pacific Network Information Center (APNIC), which is responsible for the distribution of public internet address space, namely Address Space Internet Protocol version 4 (IPv4) and Address Space Internet Protocol version 6 (IPv6). Policies in the Asia Pacific region are jointly determined and implemented by APNIC, NIR, LIR throughout the region [76], and APNIC functions to maintain a public Whois database for the Asia Pacific region.

The Whois database is a TCP-based transaction-oriented query or response protocol that provides information services to Internet users whose content can be read [77]. Queries that comply with the WHOIS protocol can access a database that contains information about blocks of IP addresses that have been allocated and that

can be accessed are ownership and country codes that can be used for geolocation [78]. A basic and popular approach in identifying IP addresses to find out where website visitors come from and get latitude, longitude, province, and country can be done using commercial and free databases: such as <https://ipgeolocation.io/>, <https://www.iplocation.net/>, <https://ipregistry.co/>, <https://www.hotip.info/>, <https://db-ip.com/>, <https://ipinfo.io/>, <https://www.maxmind.com/>, and <https://ipwhois.io/>.

In this research, IP Address geolocation is carried out via <https://ipwhois.io/>, which provides real-time geolocation API services.

B. Controlled Test

In this study, online controlled tests or experiments were used. Many large websites have used it to send marketing messages by running experiments every year to test the user interface, improving content management for ads, recommendations, and search. In today's times, online controlled experiments have become an indispensable tool for startups and smaller websites. Controlled experiments are very suitable for use in software development using agile methods or strategies [79]-[82]. We integrated and tested the gotargeting location-based marketing service system that we produced in this research through the tourism website www.pesonajawa.com. We built this website with an agile strategy in previous research [83]. The website has been liked and has influenced users who access it [84] with a level of influence on users of 76.07% and a level of user liking of 74.40%.

The controlled test, known as the A/B test [85], is a randomized experiment using more than two variants of the same page. Variant A is the original page, whereas variant B is a page whose appearance or content has been modified from the original page. In this research, a test was conducted on marketing messages as invitation messages with variations based on the location of the user who accessed them according to targeting. Marketing messages are displayed as small windows (pop-ups) that appear containing information according to the target audience. In this pop-up section, a test was carried out by making certain changes to the pop-up page in three countries and languages and two provinces in Indonesia. The appearance of pop-ups occurs unexpectedly, and the user is forced to interact with the information displayed as a way to attract the user's attention before moving on to other information [86]-[88].

A controlled test was carried out to determine

the process of geotargeting occurring in each session or each step running in the system, as described in Table 1.

The mechanism includes a user or client and server through a connection to asynchronously send notification from the server to the user's

browser. The integration is implemented to process the marketed tourism data load if the user approves the notification message. In simple terms, the mechanism for sending notification is illustrated in Figure 1.

Table 1.
Description of each geotargeting process session (The authors)

Session	Description
User	Visitors can come from various provinces in Indonesia and other countries.
Access to the website	Access to the website, which in this test uses www.pesonajawa.com
Obtain IP address	Get the IP address of a public website user to find out where the user lives (province and country)
Send to the server	Sends an IP address to the server
Convert IP address to location (country, province)	Convert or change the IP address to the user's location address within the country and province.
Match the user location with the data location	Matching user locations with targeted locations to deliver marketing messages.
Location data	Targeted location data (province and country)
Tourism marketing data	Tourism data are marketed based on targeting visitors' IP addresses
Tourism data for the website	Tourism data displayed on www.pesonajawa.com
Suitable location	User locations that match the targeting locations for marketing
Location does not match	The user's location does not match the targeting location for marketing
Send to user with notification	Marketing messages are sent to users or visitors in the target location via a pop-up window on the main website.
Send to user without notification	Marketing messages are not sent to users or visitors whose locations are not targeted.
DOM (document object model)	Interface on website pages (pop-ups) whose appearance and content can be changed according to variations.

Figure 1 depicts the framework based on the description of each session of the geotargeting process shown in Table 1.

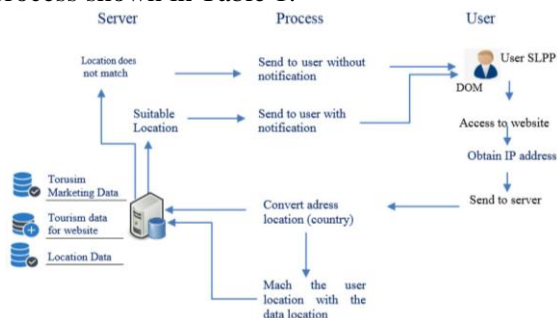


Figure 1. Notification message delivery architecture (The authors)

C. Targeting Test

Tourist destinations used as examples of geotargeting location-based notification message content in test include: the Borobudur Temple tourist area which is targeted at users in China, the Yogyakarta Palace tourist area which is targeted at users in Singapore. The reason these two countries, namely China and Singapore, were

used as examples of areas targeted for receiving notification is because they had the most visitors to Central Java and Yogyakarta Provinces in 2019 as recorded by the Indonesian Central Bureau of Statistics, so these two countries are countries with potential tourists visited Yogyakarta and Central Java [89].

Furthermore, geographical targeting to users in Indonesia was performed by targeting users on the jasajawa.com website based on IP addresses in the Jakarta and West Java areas. The content sent to users in Jakarta is a tour of Kampung Batik Kauman in Solo City. The message sent to users in West Java is from the Yogyakarta Palace tourist area. Table 2 in rows 1–3 is an example of tourist destination data in the database used as notification message content based on targets in China, Singapore, and Sweden. Meanwhile, Table 2 rows 4 to 6 show examples of tourism data as notification message content in the Special Capital Region of Jakarta and West Java provinces.

Table 2.

Travel data as notification message content (The authors)

ID	Target province	Target country	Promoted city	Promoted province	Tourism site	Poster	URL
F01	Null	China	Magelang	Central Java	Borobudur Temple	borobudur.jpg	a
F03	Null	Singapore	Yogyakarta	Yogyakarta	Kraton Yogyakarta	kraton1.jpg	b
F07	Null	Sweden	Magelang	Central Java	Borobudur Temple	borobudur.jpg	c
D01	Jawa Barat	Indonesia	Yogyakarta	Yogyakarta	Kraton Yogyakarta	kraton2.jpg	d
D05	Special Capital Region of Jakarta	Indonesia	Solo	Central Java	Kampung Batik Kauman	kauman.jpg	e
D06	Special Capital Region of Jakarta	Indonesia	Solo	Central Java	Taman Sriwedari	sriwedari.jpg	f

Notes:

^a <https://borobudurpark.com/en/event/the-legend-of-ro-ro-jonggrang-2023-calendar-of-event/brosur-ro-ro-jonggrang-2023-2/>^b <https://symposium.kratonjogja.id/>^c <https://borobudurpark.com/en/event/the-legend-of-ro-ro-jonggrang-2023-calendar-of-event/brosur-ro-ro-jonggrang-2023-2/>^d <https://www.kratonjogja.id/>^e <https://pariwisatasolo.surakarta.go.id/>^f https://www.instagram.com/p/CyniGE0PYQ3/?img_index=1

Experimental elements to determine the success of sending notification to users according to their geographical area were carried out with different treatment control versions. In this study, a controlled experiment was run on the website www.pesonajawa.com. On this website, researchers added a feature that allows marketers to advertise tourism products targeted at certain users according to the user's geographical area when accessing. This method improves the quality of notification or advertising messages by providing information to users according to marketing targets. Marketers who advertise tourism products geographically targeted in China, the notification message will only be displayed to users via the Chinese IP address. Figure 2 shows the display of notification to

users who have accessed geotargeting from Beijing City, China. The geolocation results of the device used to access the website with notification via geotargeting originating from Beijing City are stored in the database as shown in Table 3, which is stored in line 14160 in the `geo_id` column.



Figure 2. Display of notification accessed from Beijing, China (The authors)

Table 3.

Geolocation results of users accessing the service (The authors)

geo_id	geo_date	geo_ipaddress	geo_city	geo_province	geo_country
14160	2023-09-17	123.126.50.50	Beijing	Beijing	China
14161	2023-09-17	49.7.21.121	Beijing	Beijing	China
14162	2023-09-17	49.7.21.89	Beijing	Beijing	China
14163	2023-09-17	103.79.244.233	Bandung	Jawa Barat	Indonesia
14164	2023-09-17	192.36.109.116	Stockholm	Stockholm County	Sweden
14165	2023-09-17	112.215.170.53	West Jakarta, Indonesia	Special Capital Region of Jakarta	Indonesia

Different notifications by different marketers were tested with experiments on users who accessed geotargeting notifications on the Pesonajawa website originating from Singapore. The display of the notification message to users accessing from Singapore is shown in Figure 4. In the notification message, a link to the site that is the object of marketing is also added. The reason for providing links is to improve the quality of marketing by providing users with complete and correct information about notifications provided by the messenger's website

and allowing navigation to the advertiser's site.



Figure 4. Display of notifications accessed by users in Singapore (The authors)

In a controlled experiment conducted on September 17, 2023, users who accessed a website in the Special Capital Region of Jakarta

received a notification message, as shown in Figure 5. The geolocation results of users from Jakarta were stored in the database, as shown in Table 3, listed in row 14165. Meanwhile, users who access websites in West Java get different notification as shown in Figure 6, and the resulting user geolocation results are shown in Table 3 listed in line 14163.



Figure 5. Display of notification messages for users accessing from Jakarta, Indonesia (The authors)



Figure 6. Display of notifications for users accessing from West Java, Indonesia (The authors)

Test results on the success of notification to targets in Jakarta and West Java show results that have a match between the user's location and the geolocation results. Meanwhile, users who access the website without using an IP address in areas in Jakarta and West Java will not receive a notification message. The appearance of the website page being accessed is shown in Figure 7. The location of this user is identified by the public IP address that they use.



Figure 7. Website display without notification message, accessed from outside the provinces of Jakarta and West Java (The authors)

Test of geotargeting-based marketing services by conducting experiments based on Indonesian provincial targets and targets outside Indonesia is important to ensure that geolocation based on user IP addresses runs correctly according to the scenario. Experimental tests were also carried out across browsers to ensure that the test functions properly in all browsers used. This is done because geolocation-based transactions can yield different results without the user realizing it. The method used to determine the results of the test is by experimenting by contacting people who have

the desire to make a tourist visit to Indonesia, especially to the Joglosemar tourist area. Based on the experimental results with the results shown in Figures 4 to 7, the results obtained are relevant to the user's location.

The test of notifications aimed at users as described above shows that geographic targeting allows tourism business owners to display relevant advertising to customers based on their specific region. Geotargeting notification via websites will be a practice that appears to be more specifically aligned with the cultural sensitivities of the targeted location. When users who live in certain provinces in Indonesia or in certain countries see the resulting personalized notification content, they are more likely to convert to this content.

This research contribution reaffirms that websites should be designed by presenting tourism content that attracts the curiosity of potential tourists [90]-[91]. This research provides new insights and knowledge about the use of technology in a smart marketing approach to increase the reach of notification messages to users, namely potential tourists.

V. CONCLUSION

This research finding is a marketing service system, a segmented marketing tool, or a notification message. This marketing tool uses geolocation and geotargeting APIs to obtain user location data based on city, province, and country via the website and then sends him messages. Previous research has produced application designs for geolocation, such as geolocation of panoramic images on maps, location prediction on social media, Twitter, and geolocation in the company environment. This previous research was limited to obtaining user geolocation data, where users do not receive notification messages on their devices. However, the results of this study produce segmented marketing tools that help marketers send notification messages to reach users in the actual locations.

This research thus has significant implications for personalized marketing, implying that tourism stakeholders must increase their digital competence because understanding data and technology is valuable in modern and contemporary marketing. Another implication is that this marketing tool has emerged as an essential platform in location-based marketing; therefore, marketing management must create competent resources.

The novelty of this research lies in the marketing service system as a marketing technology or notification message through

geographic targeting with IP address geolocation. Experiments involved providing notification messages to users via IP address geolocation, which runs correctly, and the results between the target and geolocation are relevant. Experiments controlled by the system via the *jasajawa.com* website can display messages, provide different landing pages, and call to action at each target location.

The results of this research also have certain limitations related to the rapid development of information technology. In the long term, these marketing tools will have limitations because they will be left behind by innovation and technological evolution. Another limitation lies in its implementation, which can only be integrated into website pages. Based on the results of this research, future research should focus on exploring the impact of tourist acceptance and behavior on this marketing tool. The following research recommendation is to contextually investigate tourists' habits when visiting tourist destinations, which apply to improving geolocation.

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DECLARATIONS

Author Contributions

Conceptualization, W.; methodology, W.; software, W.; validation, W., D.E.H. and I.R.S.; formal analysis, W.; investigation, D.E.H. and I.R.S.; resources, W.; data curation, W. and D.E.H.; writing—original draft preparation, W.; writing—review and editing, W., D.E.H. and I.R.S.; visualization, W.; supervision, D.E.H. and I.R.S.; project administration, W.; funding acquisition, W., D.E.H. and I.R.S. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

Restrictions apply to the availability of these data. Data was obtained from a third party and are available from the authors with the permission of the third party.

Conflicts of Interest

The authors declare no conflict of interest.

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