SIWAKOT APPLICATION: REVOLUTIONIZING TOURISM REVENUE IN BEKASI

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Abstract
The research evaluated the effectiveness of the City Tourism Information System (SIWAKOT) in boosting Bekasi City’s Regional Original Revenue (PAD) through tourism. It analyzed SIWAKOT’s impact on revenue generation and its role in the development of the tourism sector. Methodologically, it employed primary data analysis, stakeholder interviews and surveys focused on Bekasi tourism. The findings indicated that SIWAKOT enhanced tourism information management, expanded promotional reach, and improved tourist experiences, therefore, increasing visitor numbers and economic activities. The research suggested implementing SIWAKOT or similar strategies to leverage Bekasi’s tourism potential for revenue growth. It has contributed to innovative PAD augmentation strategies, emphasizing SIWAKOT’s transformative potential and the importance of utilizing tourism resources for sustainable revenue enhancement in Bekasi.

INTRODUCTION

The Bekasi City tourism office plays a vital role in promoting and developing tourist destinations in the region, in line with the government’s priority of boosting local tourism for economic growth. Bekasi has become a popular tourist destination for local tourists from nearby areas such as Karawang, Cikampek, Bogor, and East Jakarta. Various facilities and services are offered by the community and entrepreneurs, such as MICE (Meeting Incentive Convention Exhibition), education, sports, culinary experiences, shopping, history, culture, and tourism activities (Suharson et al., 2019).

According to the Regional Tourism Development Master Plan (RIPPPDA) of Bekasi 2013-2028, the vision for tourism was to transform Bekasi into a destination for MICE, education, sports, and cultural tourism. However, there was a need for increased promotional activities to raise awareness about Bekasi’s tourism potential among the public. This lack of awareness could hinder the optimization of Bekasi’s tourism potential and its contribution to the Regional Original Revenue/ Pendapatan Asli Daerah (PAD). The tourism sector’s potential contribution to PAD is through levies and taxes, as stated in Law No. 22 of 1999 concerning the
Regional Government. PAD consisted of four components: local taxes, local levies, results from locally-owned companies, and revenue from the management of separated local assets, along with other legitimate local revenues. Government support for PAD can be found in Law No. 32 of 2004 concerning Regional Government and Law No. 33 of 2004 concerning Central and Regional Financial Balance (Sahid, 2020). These laws provided regions with excellent opportunities to effectively manage their natural resources and achieve optimal outcomes (Utami et al., 2019). In the case of Bekasi, the number of tourist visits contributed to the local government's revenue known as PAD. The local government collected payments for tourism site services in the form of retribution, as well as additional revenues from taxes imposed on restaurants, hotels, and other tourism facilities (Putri & Rahayu, 2015). Therefore, economic growth, especially in the tourism sector, played a crucial role in boosting the region's PAD. The more tourists, whether from domestic or international sources, visit Bekasi, the greater the percentage of PAD derived from the tourism sector would be (Jaennuddin, 2019). There are several challenges in the tourism industry in Bekasi. First, there was limited awareness among potential tourists about the various attractions the city has to offer. Second, the absence of a comprehensive tourism information system made it difficult to effectively manage and promote tourist sites. Finally, the existing systems were not fully utilized, preventing the harnessing of the full potential of tourism information and management (F. R. Pratiwi, 2022).

Looking at successful examples, Indonesian cities can learn from Denpasar in Bali, which has already implemented E-Tourism through websites and mobile applications (Wiyanto et al., 2022). This allowed tourists to easily access information and related services (F. R. Pratiwi, 2022). Advances in technology significantly impact the tourism industry, and the growth of mobile applications (apps) was largely driven by the use of smartphones. Among the various categories of mobile apps, travel apps stand out as one of the most popular, with a significant number of downloads. 60 per cent of smartphone users have already downloaded travel apps, and 45 per cent of these users intended to utilize these apps for travel planning and research purposes (Meiliana et al., 2017). Additionally, the majority of travel apps are purchased shortly before or during travel, which indicated their influence on decision-making while on the go.

Given the popularity of tourism apps, both the tourism industry and mobile technology developers needed to understand the current landscape of available apps and identified any areas that needed improvement. It was also valuable, from a theoretical standpoint, to assess whether apps could be categorized based on commonly seen factors that influenced technology use experiences (Chao et al., 2014). Several studies have explored the development of mobile apps for tourism in different regions. For instance, one study focused on a smart travel application for tourism in Indonesia, while another developed an Android app for tourism in Samosir Regency, North Sumatra, Indonesia (Tobing, 2015). Similarly, an Android app was created for Taiwan tourism and cultural education (Tian et al., 2013). Additionally, the authors proposed the use of augmented reality technology in a tourism app compatible with any mobile platform (Kim & Law, 2015). In contrast, a different approach involved implementing a digital signage system to support e-tourism in Indonesia (Bandung et al., 2016).

However, there was currently no research discussing a tourism application specifically for Bekasi. Therefore, this research aims at addressing this gap by developing a tourist information application system that improved visitor accessibility to Bekasi's attractions. The purpose was to facilitate the dissemination of tourism information and enhance promotional strategies. Furthermore, this research sought to identify weaknesses, opportunities, and barriers to increase PAD through tourism. Overall, the objective was to maximize revenue from the tourism sector, thereby promoting economic growth and improving community welfare. By bridging these gaps and harnessing the tourism potential of Bekasi, the aim was to promote sustainable economic development through increased PAD revenue. The purpose of this research was to provide solutions for the problems that arose. Specifically, the objectives were to develop a tourist information application system to assist tourists in visiting attractions in Bekasi and to promote the use of information applications for more efficient management of tourism promotion. The research also aims at identifying weaknesses, opportunities, and obstacles in efforts to increase the revenue of Bekasi. In addition, the general objective was to maximize resources from the tourism sector by improving the economy and the welfare of the community to increase the percentage of revenue received.

METHODS

The research method involves several phases. First, a preliminary study phase was conducted to identify related literature and evaluate similar implementations in other areas. Next, a policy analysis was conducted to understand the context of tourism policy and PAD in Bekasi. Interviews with key stakeholders such as local government, tourism industry players, and the community were also carried out. Furthermore, this research
would involve the development of the SIWAKOT prototype based on the findings of the survey and interviews. The prototype would be developed by exploring technical and functional specifications. Finally, it would be implemented and tested in a limited environment.

Data for this research was collected by using several methods including literature review, observation, and software development methods. The literature review involved searching for relevant sources such as books, journals, articles, and papers. The observation was done by directly observing the activities between the hotel company and the customer. Software development methods included software requirements analysis, software design, software implementation, software testing by developers, and testing of the software results by respondents. The respondents used in testing were tourists or people who use the Siwakot application.

The flowchart of the research method for the Siwakot Application development process was illustrated in the following figure.

![Flowchart of Research Methodology](image)

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**RESULTS**

Law No. 33 of 2004, concerning the financial balance between the central government and local governments, stated that regional revenue came from several sources. First, there are local taxes, which were collected by local governments such as provinces, regencies, and cities. The collection from these taxes was then used to finance the activities of organizing the local government and regional development. Second, there were local retributions, which were payments made for specific services or permits directly felt by the payer. This was stated in Law No. 34 of 2000. Third, the revenue came from the management of separated regional assets. This included the profit or net profit of regionally owned companies, as well as the proceeds from the sale of regional fixed assets. The details of this income were specified in Law No. 33 of 2004. Finally, there was other legitimate local revenue, as mentioned in Article 6 of the same law.

According to Law No. 10 of 2009 concerning tourism, tourism was defined as a variety of activities supported by facilities and services provided by the community, entrepreneurs, and local governments. Said (2020) described tourism as a temporary journey undertaken individually or in groups, intending to seek balance, harmony, and happiness in the natural and socio-cultural dimensions of the environment. According to Sidiq and Larasati (2021), a tourist attraction was a place that attracted visitors due to its natural and
A Tourism Information System (TIS), which was based on electronic data processing, played a crucial role in managing and supporting tourism decisions. This system benefits tourists in planning their itineraries and aids the tourism industry and government in making informed decisions. However, effectively managing the large and dynamic dataset in the tourism industry was vital to prevent data overlap and data delivery challenges. Constraints such as cost, socio-cultural issues, and security must be considered alongside the benefits that could be achieved (Mulyani et al., 2019). Services that facilitated access from outside could attract more tourists, while management information systems enhanced the accuracy of decision-making. Therefore, the availability of tourism management information systems and the dissemination of tourism information systems were crucial (Shihab & Murtadho, 2012).

Kotler (2009) and Keller (2009) explained that electronic marketing (e-commerce) involved buying, selling, exchanging, and marketing products and services through electronic systems like the Internet. This included electronic data transmission, distribution management, online marketing, online transactions, and automated stock management systems (Kencana et al., 2022). Tourism information systems were a part of electronic marketing, which represented the adoption of information and communication technology by tourists and hotel entrepreneurs to transform processes and value chains in the tourism industry (Komalasari et al., 2020). This information system encompassed electronic information, online booking (hotel, transportation, etc.), and electronic payment (Lupu & Marin-Pantelescu, 2008).

The SIWAKOT (city tourism information system) application had already included features such as online advertising, electronic mail, electronic messaging, and search engine optimization. It allowed easy interaction with consumers, was cost-effective, and had a fast lead time for promoting products/services. It enabled businesses to reach a wide range of consumers through the use of technology and offered the potential for viral marketing. It facilitated interactive communication and allowed for immediate responses and reviews (Mastika et al., 2019).

The SIWAKOT application has emerged as an innovative solution to increase local income, particularly in the tourism sector, which contributed significantly to regional income generation. Research has shown that implementing SIWAKOT improved efficiency in managing tourism information, expanded promotional reach, and enhanced the tourist experience. Consequently, it has a positive impact on increasing local income by attracting more visitors and stimulating economic activities related to tourism, especially in Bekasi. Research findings demonstrated that the implementation of the SIWAKOT application increased efficiency in managing tourism information, expanded promotional reach, and improved the overall tourist experience. These positives have directly contributed to an increase in local income. This was particularly evident in Bekasi, where income from the tourism sector could be boosted by attracting more visitors and encouraging economic activities related to tourism.

The research presented offered a valuable contribution to developing innovative strategies for enhancing local revenue through tourism. The implications of these findings could guide local governments and other stakeholders in considering the adoption of SIWAKOT or similar strategies to tap into the tourism potential of Bekasi and increase local income.

Observations provided objectives to gain a profound understanding of social life that was often difficult to achieve through other research methods. Conducted to explore and provide insights, observations helped analyze and comprehend problems more clearly, potentially offering clues for finding solutions. Therefore, the purpose of the observation was to directly obtain concrete data from the field or research site.

Informal interviews conducted with the community using the SIWAKOT application have identified problems and limitations in the current marketing and introduction of tourist destinations. The information provided by the application lacked completeness, particularly regarding tourist attractions, health facilities, and protocols, rendering it an incomplete source of information for tourists interested in exploring Bekasi. Moreover, an analysis of the SIWAKOT application revealed limitations in its promotion of tourism. It failed to offer descriptive information related to tourist attractions, facilities, and travel agents and only features videos of tourist attractions linked to YouTube. To address these issues, the authors proposed implementing an electronic tourism system via a website. This website would provide comprehensive information to tourists, including details about tourist attractions and supporting factors such as tour guides, accommodations, culinary options, transportation, and social media platforms in the Bekasi areas. Consequently, the authors recommended developing software that incorporated eTourism and included detailed information on all aspects of tourist attractions and related services. As explained in the methodology, the next step after completing stages 1 to 6 according to the process described was to create the software based on the previously designed system. Users

man-made features, such as beautiful landscapes, mountains, beaches, flora, fauna, zoos, historic buildings, monuments, and traditional dances. Putri and Rahayu (2015) stated that having numerous tourist attractions could positively impact the regional revenue generated from the tourism sector, including local taxes and levies.
needed to prepare system software requirements and system hardware requirements to support the application running process before implementation. The running application was divided into several stages:

Admin Login: This page allowed access to the admin dashboard. Access rights on the Login page were limited to users with authorization. Figure 2 showed the user login display. The Login page required the username and password to be filled in. After entering the username and password, the user pressed the sign-in button and would then be directed to the user registration page (Figure 3). If the entered username and password were correct, the user would be redirected to the dashboard page.

Dashboard page: The dashboard page contained menus for managing the tourist destination process. The contents of the dashboard page included a list of tourist information, culinary places, and bus stops. Figure 4 showed the admin dashboard display. Tourist Attractions Page: Before visiting tourist attractions, tourists must search for their desired destinations by filling out the search form as shown in Figure 5. This page was used to manage tourist master data, including ID number, guest name, address, and telephone number. Figure 3 presented the ability to add both tourist data and culinary destination data on the admin page. After inputting the ID number, guest name, address, and telephone number, the data would be immediately stored in the guest database. To make changes or delete data, the user could select the edit or delete icon in the action column of the guest data table. System Evaluation: At the system evaluation stage, the application was tested using the black box testing method.
Black box testing is a test method where the functions in the system are tested whether they work properly and according to the previously designed flow: a). Login Test; The login test explained how to test and process the output which can be seen in Table 1. b). User Registration Test; The User registration test explained how to test and process the output which can be seen in Table 2. c). Dashboard Page Test; The dashboard page test explained how to test and process the output which can be seen in Table 3. d). Test Tourist Attractions Page; The tourist spot test explained how to test, and the process to the output which can be seen in Table 4. e). Test Report Generation; Test report generation explained how to test and process the output which can be seen in Table 5. f). Analysis of Trial Results; From the results of the trial and evaluation of the system, an analysis of the results of the trial and evaluation of the system would be carried out. The analysis of the trial results could be explained as follows (1. The application could store tourist data, in the admin master about the destination of the tourist location to be visited as needed. 2. The application could display tourist attractions, and culinary and bus stops that would be used by tourists to visit. 3. User admin could validate or check the visits made by tourists. 4. The application could generate and display financial reports as needed).

<table>
<thead>
<tr>
<th>No.</th>
<th>Process Stages</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Testing Name</td>
<td>Login</td>
</tr>
<tr>
<td>2</td>
<td>Testing Method</td>
<td>In this login test, tourists entered their full name, address, and telephone number, and then pressed the login button.</td>
</tr>
<tr>
<td>3</td>
<td>Process</td>
<td>Data was saved to the admin master table and tourist table.</td>
</tr>
<tr>
<td>4</td>
<td>Output</td>
<td>After all fields were filled in correctly, the system would display a notification if the login is successful.</td>
</tr>
</tbody>
</table>

Table 2. User Registration Test

<table>
<thead>
<tr>
<th>No.</th>
<th>Process Stages</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Testing Name</td>
<td>User Registration</td>
</tr>
<tr>
<td>2</td>
<td>Testing Method</td>
<td>In user registration, tourists filled in data according to the available fields and according to the needs that would be carried out as in the following figure.</td>
</tr>
<tr>
<td>3</td>
<td>Process</td>
<td>This registration was stored in the admin master table.</td>
</tr>
<tr>
<td>4</td>
<td>Output</td>
<td>After all fields were filled in correctly, the system would display a notification if the visit booking is successful.</td>
</tr>
</tbody>
</table>
### Table 3. Test Dashboard Page

<table>
<thead>
<tr>
<th>No</th>
<th>Process Stages</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Testing Name</td>
<td>Dashboard Page</td>
</tr>
<tr>
<td>2</td>
<td>Testing Method</td>
<td>On the Dashboard Page, guests selected the needs that would be carried out as shown below.</td>
</tr>
</tbody>
</table>

3  | Process | This requirement option would be stored in the admin master table. |
4  | Output  | If the data entered was correct, it would display the following image. |

### Table 4. Test Tourist Attractions

<table>
<thead>
<tr>
<th>No</th>
<th>Process Stages</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name Stages</td>
<td>Test Tourist Attractions</td>
</tr>
<tr>
<td>2</td>
<td>Testing Method</td>
<td>The user pressed the tourist attractions button then the destinations would appear</td>
</tr>
</tbody>
</table>

3  | Process | Data Saved into the admin master |
4  | Output  | Tourist attractions would appear according to the destination along with other data information. |
DISCUSSION

It was well-known that one of the main advantages of using mobile applications was easy, fast, and could be used regardless of distance and time in managing a tour trip (Phuthong et al., 2022). The shift from using computers to using smartphones further enhanced the smoothness of a tourist’s journey (Wang et al., 2012). Interactive mobile applications that allow for two-way communication are developed to provide assistance and consultation when needed. These applications are based on automation technologies and reduce the dependency on human resources, thereby reducing maintenance costs. Some of the latest mobile apps that facilitate travel more smoothly include Traveloka. These apps served as manuals for travelers, eliminating the need for manual registration processes at the airport and making tasks easier to complete (Tussyadiah et al., 2008; Tussyadiah & Zach, 2012; Verkasalo et al., 2010; Wang et al., 2012). With the availability of mobile applications, travelers can make online arrangements for accommodation, mobile wallet (Ompusunggu & Anugrah, 2021), navigate to destinations, book transportation and flight tickets, and purchase entry tickets to tourist or recreational destinations. Transportation bookings within travel destinations can also be made through mobile applications, destination information is easily accessible, and food can be ordered online without visiting restaurants. Mobile applications also allow for sharing information, even when parties are thousands of miles apart. In Indonesia, some of the trending mobile apps used for these purposes include Go-Car, Grab Car, GrabFood, Google Maps, Waze, and others. In the past, a major problem in the tourism sector was the language barrier between tourists and the hosts of destinations. However, the presence of mobile applications like i-Translate, Google Translate, Duolingo, and others has gradually resolved this issue. Some mobile applications function as interpreters and dictionaries. Some apps can interpret signage by capturing photos and converting them into audio or text. However, there was still a scarcity of applications focusing on tourism destinations, especially those that could support regional tourism and help increase the PAD like SIWAKOT.

To evaluate the usage of the SIWAKOT application and user satisfaction with smart travelling, this research had conducted white box and questionnaire evaluations after completing the application development process. White box testing was an evaluation method that depended on the internal structure of the application and executed during actual system operation (“Encyclopedia of Software Engineering,” 1994). Here, the white box evaluation would be done not only for the front-end system but also for the back-end component that had been implemented in the web-based application. The results of these white box evaluations are depicted in Table 6.
The development and implementation of application-based city tourism information systems, such as SIWAKOT, represented a significant advancement in leveraging technology to enhance the tourism experience. In this discussion, the authors delved into several key aspects surrounding the utilization and implications of SIWAKOT. First, SIWAKOT demonstrated the potential of technology to bridge the gap between tourists and local attractions, providing a seamless interface for accessing pertinent information. By offering real-time updates on points of interest, events, dining options, and accommodations, SIWAKOT empowered tourists to make informed decisions, thereby enhancing their overall experience within the city. This aspect aligned with the growing trend towards personalized and immersive tourism experiences, where travellers were seeking authentic interactions with local culture and heritage (Neuhofer et al., 2014). This was different from previous application research done by Andreanto et al. (2012), Udayana et al. (2015), and Smirnov et al. (2014), which mostly focused more on general application usage. The results of other studies also showed that the use of mobile guiding applications could provide information and education for tourists (Kusniyati & Pangondian Sitanggang, 2016; M. R. Pratiwi, 2013; Rahmat et al., 2020). Although many similar studies had been conducted, our findings supported the expansion of the novelty of mobile guiding devices, particularly in the field of tourism information. In addition, the flexibility of using mobile devices allowed tourists to use the application anytime and anywhere (Kenteris et al., 2009; Schneider et al., 2018).

Furthermore, the integration of features such as GPS navigation and augmented reality within SIWAKOT presented exciting opportunities for enhancing spatial awareness and engagement. By overlaying digital information onto the physical environment, users could gain deeper insights into the historical significance and cultural context of their surroundings. This immersive approach not only enriched the tourist experience but also fostered a deeper appreciation for the city’s heritage sites and landmarks (Mar et al., 2018). Additionally, SIWAKOT had served as a valuable tool for destination management and marketing. By analyzing user interactions and feedback, tourism stakeholders can gain valuable insights into visitor preferences, behaviour patterns, and areas for improvement. This data-driven approach enabled more targeted marketing campaigns and strategic resource allocation, ultimately contributing to the sustainable growth of the tourism sector (Liu, 2021).

However, it was essential to acknowledge the challenges and limitations associated with the implementation of SIWAKOT. One such challenge was ensuring universal access and inclusivity, particularly for users with limited digital literacy or access to smartphones. Efforts must be made to address these disparities through user-friendly interfaces, multilingual support, and community outreach initiatives. Moreover, the reliance on technology within the tourism sector raised concerns regarding data privacy and security. As SIWAKOT collected and processed sensitive user information, robust safeguards must be implemented to protect against potential breaches and misuse. Transparency regarding data collection practices and clear consent mechanisms were crucial in fostering trust and confidence among users (Mostafa et al., 2017; Zufferey et al., 2012).

**CONCLUSIONS**

Through strict black box testing, the SIWAKOT application has demonstrated its capacity to significantly enhance the tourism experience. It simplified tourist ticket reservations and location bookings, offering convenience irrespective of the traveller's location. Additionally, SIWAKOT efficiently organized tourist show schedules, providing comprehensive information for itinerary planning. Its ability to generate insightful reports on tourist visitation and financial performance for each tour empowered stakeholders with valuable data for strategic decision-making. Furthermore, customizable PDF reports based on user-defined time
ranges had added flexibility and convenience. To further augment SIWAKOT's utility, recommendations included continuous UI/UX development for enhanced user engagement, mobile application development for seamless access across platforms, and integration of SMS gateway features to improve communication during reservation transactions. By implementing these suggestions, SIWAKOT could continue to revolutionize city tourism information systems, fostering seamless experiences for travellers while driving sustainable growth for destination communities.

In conclusion, SIWAKOT had represented a valuable asset in the realm of city tourism information systems, offering innovative solutions to common challenges faced by travellers and destination stakeholders alike. By implementing the suggested recommendations and building upon its existing strengths, SIWAKOT had the potential to further revolutionise the tourism industry, facilitating seamless experiences for tourists and driving sustainable growth for destination communities.

**REFERENCES**


