

การพัฒนาแพลตฟอร์มดิจิทัลเพื่อส่งเสริมการเรียนรู้และการท่องเที่ยวเชิงวัฒนธรรม
ของพิพิธภัณฑ์ท้องถิ่นในกรุงเทพมหานคร

Development of a Digital Platform to Promote Learning and
Cultural Tourism for Local Museums in Bangkok

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งานวิจัยนี้มีวัตถุประสงค์เพื่อรวบรวมข้อมูลพิพิธภัณฑ์ท้องถิ่นในกรุงเทพมหานคร และพัฒนาดิจิทัลแพลตฟอร์มเครื่องมือในการส่งเสริมการเรียนรู้ทางวัฒนธรรมและเพิ่มคุณค่าการท่องเที่ยวอย่างยั่งยืนตลอดจนประเมินความพึงพอใจของผู้ใช้ต่อแพลตฟอร์มดังกล่าว แพลตฟอร์มได้รับการออกแบบและพัฒนาให้รองรับทั้งระบบปฏิบัติการ iOS และ Android พร้อมทั้งบูรณาการ LINE Official Account (LINE OA) เป็นช่องทางหลักในการสื่อสาร การแจ้งเตือน และการมีปฏิสัมพันธ์กับผู้ใช้ นอกจากนี้ ยังได้นำเทคโนโลยีระบุตำแหน่งทางภูมิศาสตร์และแผนที่ดิจิทัล (Google Maps Location Services) มาใช้เพื่อสนับสนุนการแสดงตำแหน่งพิพิธภัณฑ์ การวางแผนการเดินทาง และการเข้าถึงข้อมูลเชิงพื้นที่อย่างมีประสิทธิภาพ ฟังก์ชันหลักของแพลตฟอร์มประกอบด้วยการค้นหาข้อมูลพิพิธภัณฑ์ การแสดงแผนที่ตำแหน่งทางภูมิศาสตร์ ฟังก์ชันการแสดงความคิดเห็นและการมีส่วนร่วมของผู้ใช้ รวมถึงการแบ่งปันข้อมูลผ่านสื่อสังคมออนไลน์ ผลการประเมินความพึงพอใจของผู้ใช้พบว่ามี ความพึงพอใจโดยรวมต่อแพลตฟอร์มอยู่ในระดับสูง (ค่าเฉลี่ยรวม = 4.08) โดยด้านการใช้งานได้ค่าเฉลี่ย 4.03 ด้านการทำงาน ของระบบได้ค่าเฉลี่ย 4.10 และด้านความสวยงามได้ค่าเฉลี่ย 4.10 ผลการวิจัยสะท้อนให้เห็นว่าแพลตฟอร์มดิจิทัลที่ พัฒนาขึ้นสามารถตอบสนองความต้องการของผู้ใช้ได้อย่างมีประสิทธิภาพ และแสดงให้เห็นถึงศักยภาพของการประยุกต์ใช้ เทคโนโลยีดิจิทัลในการสนับสนุนการเรียนรู้ทางวัฒนธรรมและส่งเสริมการท่องเที่ยวอย่างยั่งยืนสำหรับพิพิธภัณฑ์ท้องถิ่น

คำสำคัญ: แพลตฟอร์มดิจิทัล, พิพิธภัณฑ์ท้องถิ่น, การท่องเที่ยวเชิงวัฒนธรรม

Abstract

This research aims to consolidate information on local museums in Bangkok and to develop a digital platform as a tool to promote cultural learning and enhance sustainable tourism value and to evaluate user satisfaction toward the platform. The platform was designed and developed to support both iOS and Android operating systems, with the integration of a LINE Official Account (LINE OA) as the primary channel for communication, notifications, and user interaction. In addition, geolocation and digital mapping technologies, specifically Google Maps Location Services, were employed to support museum location visualization, travel planning, and efficient access to spatial information. The core functionalities of the platform include museum information search, geographical location mapping, user commenting and participation features, and information sharing through social media. The results of the user satisfaction evaluation indicate a high overall level of satisfaction with the platform (overall mean = 4.08). Specifically, the usability aspect achieved a mean score of 4.03, system functionality recorded a mean score of 4.10, aesthetics also recorded a mean score of 4.10. These findings demonstrate that the developed digital platform effectively meets user needs and highlight the potential of applying digital technologies to support cultural learning and promote sustainable tourism for local museums.

Keywords: Digital platform, Local museum, Cultural tourism

1. Introduction

The preservation and sustainable continuation of arts and crafts, culture, and community ways of life are fundamental to maintaining cultural identity and national heritage. Such efforts strengthen community resilience and pride while facilitating the transmission of local knowledge and wisdom to younger generations. At present, the use of digital technology has increased significantly. Smartphones and internet networks have become highly accessible, enabling people to conveniently and rapidly access various services online. Within this context, museums play a crucial role as key institutions for safeguarding and disseminating cultural heritage while adapting to technological advancements.

A museum is defined as a non-profit organization open to the public and operating as a permanent institution that serves society and contributes to its development through the collection, preservation, research, dissemination, and exhibition of objects related to humans and their environment for purposes of research, education, and enjoyment. With advancements in digital technology, the concept of the museum has evolved into a virtual museum, which represents a transformed form of traditional museum exhibitions designed to attract visitors and enhance learning experiences through computer technology, communication systems, and the internet. Virtual museums employ multimedia or mixed media, such as static or animated three-dimensional images, often accompanied by audio narration or brief explanatory texts. Supporting this transformation, a digital platform functions as the underlying infrastructure that enables such services; according to, in this research, Lerdloompheephan (2019) a digital platform is defined as a digital infrastructure that connects providers and users for the exchange of data and services. It enables

collaboration among stakeholders, supports the sharing economy, and reduces operational and transaction costs. Plungsricharoensuk & Jongwutiwes (2018) explored a participatory lifelong learning model using museums and local learning resources. The results showed that the model effectively promoted creative learning and supported the conservation of local arts and culture. Limpinan (2019) improved the AR Maha Sarakham application using augmented reality to promote five tourist attractions in Maha Sarakham Province. The system included AR markers, animated 3D models, and an Android application, with evaluation results showing high usability and user satisfaction. Related studies indicate that virtual reality (VR) enhances user immersion and improves information understanding through interactive and sensory experiences. Building on this technological foundation, Disara (2019) developed the Thung Wa Prehistoric Elephant Virtual Museum using virtual reality technology. The results showed that the system met the 80/80 efficiency criterion, significantly improved visitors' learning outcomes, and achieved the highest level of user satisfaction. Similarly, supporting the effectiveness of virtual museums, Tammarakkul (2022) investigated the application of Augmented Reality (AR) technology in museums to support sustainable tourism. The findings indicate that AR enhances user engagement, improves learning experiences, and promotes virtual tourism. Beler (2004) examined the use of online communities in learning organizations, particularly museums. It emphasizes the importance of personalization and web-based tools in enhancing user engagement, collaboration, and knowledge sharing. The study concludes that effective community development relies on user-centered design and interactive technologies. Satmune et al. (2019) developed a public relations management support system for an educational institution using the SDLC approach. The system integrates database management, spatial data display, and data processing, with evaluation results indicating high efficiency and effectiveness in supporting data management, decision-making, and public relations operations. Butsaba (2025) developed a tourism recommendation website for attractions in Japan using the SDLC approach. Evaluation results from 30 users indicated a high level of satisfaction (mean = 4.41), suggesting that the system was effective and user-friendly, though improvements in design and information coverage were recommended. Bonis (2008) and Nualsut et al. (2024) improved an online marketing platform to enhance community products by expanding market access and sales opportunities. The platform integrates digital marketing functions to support community entrepreneurs, with results indicating improved product visibility and support for sustainable community economic development.

Existing research has largely concentrated on specific or regional museums, with limited attention given to local museums across multiple districts in a large metropolitan area such as Bangkok, where cultural diversity and community contexts vary significantly.

Recognizing the importance of applying technology to maximize its benefits in promoting the sustainable preservation of culture and community life, as well as the research gap arising from the limited focus on local museums in metropolitan contexts, the researcher develops a digital platform for local museums in Bangkok. To operationalize this platform and ensure comprehensive representation, the study focuses on a wide range of museums across Bangkok. Specifically, this study examines various types of museums across 27 districts in Bangkok. It includes museums related to history and historical sites, such as

Phra Ratchawang Derm Museum (Former Royal Palace Museum) in Bangkok Yai District, as well as the Bangkok Local Museum and the Sunthorn Phu Museum in Phra Nakhon District. In addition, the study examines local museums and community ways of life, which reflect the everyday lives, beliefs, and cultural practices of local communities. These include Bangkok Local Museums located in Thon Buri, Rat Burana, Don Mueang, Nong Chok, Suan Luang, and Samphanthawong Districts, among others. Moreover, the research incorporates museums of art, crafts, and Thai local wisdom, which showcase artistic works, traditional craftsmanship, and local knowledge. Examples include the Benjarong House Museum in Wang Thonglang District and the Thai Kite Museum in Bang Khun Thian District. Furthermore, this study embraces museums of religion, literature, and spiritual culture, which promote learning about religious beliefs, literary heritage, and moral and spiritual values, such as the Sunthorn Phu Museum in Phra Nakhon District and the educational museum at Wat Nang Ratchaworawihan in Chom Thong District. The study also covers museums of science, nature, and technology, which foster learning in science, nature, and technological innovation. These include the Ant Museum in Chatuchak District, the National Aviation and Aerospace Museum of the Royal Thai Air Force in Don Mueang District, and the Public Relations Department Museum and Archives in Phaya Thai District. Finally, the research encompasses specialized museums and contemporary culture, which present specific themes and aspects of modern cultural expression. Notable examples are the Batcat Museum in Bang Kapi District, the Nong Khaem Metropolitan Police Station Museum in Nong Khaem District, and the Suksasom Museum in Thawi Watthana District. In summary, this study investigates a wide range of museum types across Bangkok, reflecting the city's rich cultural, historical, and educational diversity.

2. Materials and Methods

This platform aims to provide inclusive access to knowledge regardless of gender or age, encourage self-directed learning, and stimulate imagination, creativity, and the development of diverse skills, which ultimately contribute to national development. The study is intended to enhance the value of tourism resources in Bangkok by serving as a bridge between the past and the present, thereby fostering public awareness, learning, and the preservation of valuable community heritage.

Figure 1 illustrates the conceptual framework of the proposed digital platform for promoting learning and cultural tourism at local museums. The framework presents a systematic relationship between platform components, user interactions, and evaluation outcomes. At the system level, the Digital Platform (Museum Information Platform) functions as the core infrastructure, providing multiple functional modules, including popular location displays, museum detail presentations, geographical location services using maps and GPS technologies, and a user comment interface. These modules collectively enable comprehensive access to museum-related information and support location-based navigation. The platform integrates a LINE Official Account (LINE OA) as the primary communication and engagement channel. LINE OA facilitates messaging-based interaction, real-time notifications, and user participation, serving as an intermediary layer that connects system functionalities with end-users. Through this integration, users can interact with the platform efficiently and receive updated cultural and tourism-related information. User interaction with the

platform leads to the formation of user interaction and experience, which represents users' perceptions and engagement during system usage. This experience is evaluated through three key dimensions: usability, reflecting ease of use and accessibility; functionality, representing system performance and operational reliability; and aesthetics, indicating visual design quality and interface appeal (Figure 1).

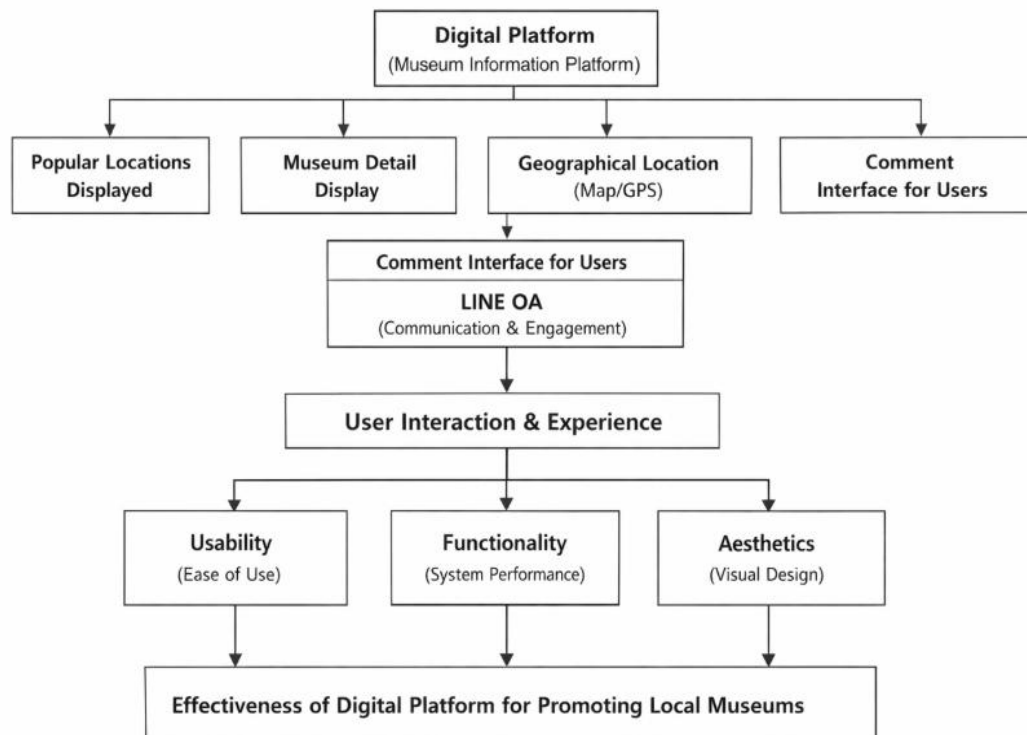


Figure 1. Conceptual framework of the Bangkok Museum Digital Platform and evaluation metrics.

Finally, the combined effects of these evaluation dimensions determine the effectiveness of the digital platform for promoting local museums. The framework demonstrates how technical platform features and communication mechanisms influence user experience, which in turn contributes to the platform's effectiveness in supporting cultural learning and enhancing cultural tourism in a metropolitan context. Based on the research gap and the importance of digital transformation in the museum sector, this study aims to develop a digital platform to promote learning and cultural tourism for local museums in Bangkok and to evaluate user satisfaction toward the developed platform

2.1 Research instruments

This study uses two research instruments: a digital platform for local museums and a satisfaction questionnaire.

1) The digital platform was designed and developed by the researcher following the steps illustrated in the figure below.

The development of the digital platform followed a systematic and structured process. Initially, a user requirement analysis was conducted to identify the platform's functional requirements,

including user registration, information content, location details, and related features. Subsequently, wireframes, mockups, and prototypes were developed to design the user interface, define the database structure, and establish access logic and system workflows.

Figure 2 shows that illustrates the architecture of the digital platform designed to promote learning and cultural tourism at local museums in Bangkok. The system integrates the LINE Official Account (LINE OA) and Google Maps Location Services to enhance user engagement, improve information accessibility, and support location-based services.

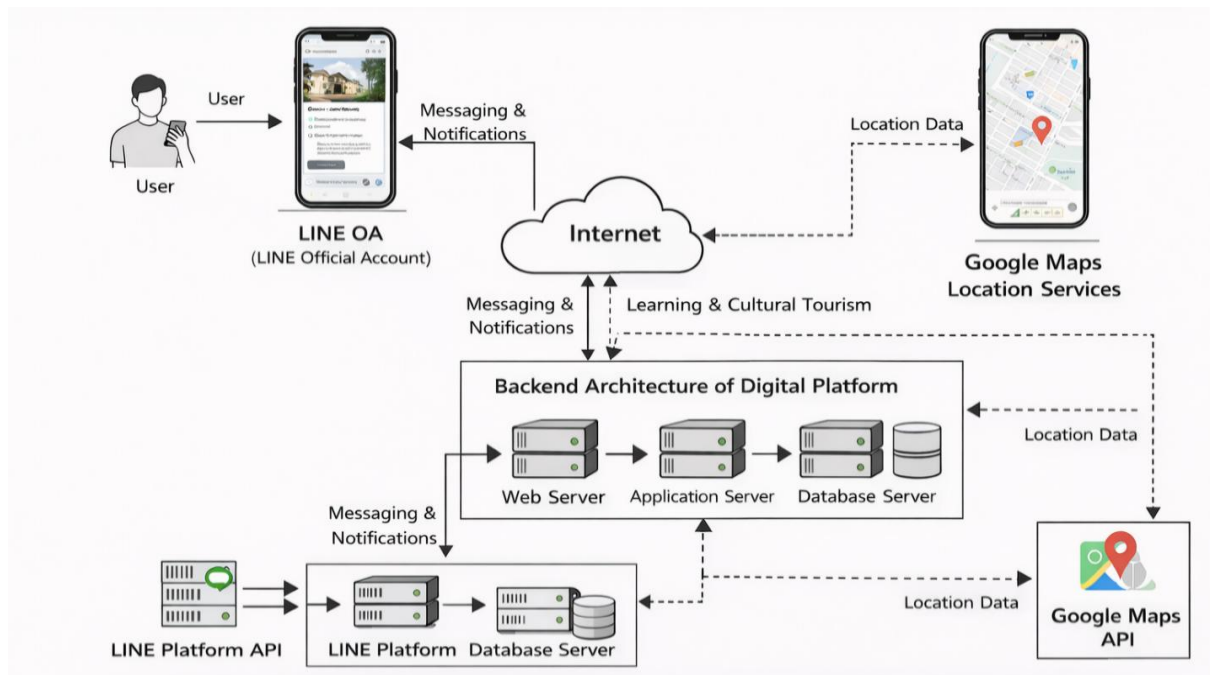


Figure 2. Architecture overview of the digital platform to promote learning and cultural tourism.

At the user interaction layer, users access the platform through their mobile devices via LINE OA. This interface enables users to receive museum information, learning content, cultural tourism updates, and real-time notifications. Communication between users and the platform is conducted through messaging and notification services over the Internet.

The backend architecture consists of a web server, an application server, and a database server. The web server manages incoming requests, while the application server handles business logic, including content management, learning activities, and tourism-related services. The database server stores museum information, user interaction data, and location-related data. This backend layer serves as the core of the digital platform, ensuring data consistency, reliability, and efficient system performance.

Integration with the LINE Platform API enables seamless message delivery, user interaction management, and automated notifications. This functionality allows the platform to disseminate learning materials and cultural tourism information effectively through LINE OA.

For location-based functionality, the platform connects to the Google Maps API and Google Maps Location Services, enabling users to view museum locations, access geographical information, and receive navigation support. Location data flows between the backend system and Google Maps services, supporting spatial visualization and enhancing the cultural tourism experience.

The platform was then implemented using cross-platform and native development approaches to ensure compatibility with multiple operating systems, including iOS and Android. Following implementation, testing was conducted to verify that all system functions operated correctly, efficiently, and in accordance with the specified requirements. After successful testing, the application was deployed for actual use by end users. Finally, ongoing maintenance and improvement were carried out to ensure system stability and to enhance functionality based on user feedback and performance evaluation.

Overall, the system architecture demonstrates how the integration of messaging platforms (LINE OA) and geographical services (Google Maps) within a digital platform can effectively support learning and promote cultural tourism at local museums in Bangkok.

Figure 3 shows that the framework is structured into four main layers. Flutter is an application development framework developed by Google, with Dart as its primary programming language. It enables developers to build application user interfaces (UIs) for both iOS and Android operating systems using a single codebase. This cross-platform development approach allows a single development process to support multiple platforms, thereby reducing development complexity, time, and cost. Flutter also provides a wide range of plugins and packages that assist developers in creating diverse, visually appealing, and highly customizable user interfaces efficiently. These features enhance flexibility and efficiency in application design and development. In addition, a cloud-based database developed by Google Cloud and integrated within the Firebase platform is utilized. Cloud Firestore is a NoSQL, document-oriented database that stores data in collections of documents. Each document is represented as a JSON-like object consisting of key-value pairs, allowing it to handle both structured and unstructured data. Due to its flexibility and scalability, Cloud Firestore is well-suited for applications that require diverse data structures and real-time data management.



Figure 3. Framework of the LINE Official Account integrated with system development and the database.

2) The satisfaction questionnaire was developed to collect user feedback and focused on three aspects: functionality, usability, aesthetics, and performance metrics. A five-point Likert scale was employed, where 5 represented very high satisfaction, 4 high satisfaction, 3 moderate satisfaction, 2 low satisfaction, and 1 very low satisfaction. The interpretation of the mean scores was defined as follows: mean scores ranging from 4.50 to 5.00 indicated very high satisfaction; 3.50 to 4.49 indicated high satisfaction; 2.50 to 3.49 indicated moderate satisfaction; 1.50 to 2.49 indicated low satisfaction; and 1.00 to 1.49 indicated very low satisfaction.

2.2 Research Procedure

To achieve its objectives, this research followed the procedures below:

- 1) The researcher studied and collected information related to museums to preserve objects, artifacts, and valuable information of historical, artistic, cultural, scientific, and natural significance for future generations.
- 2) The researcher constructed the digital platform.
- 3) The researcher distributed a satisfaction questionnaire to evaluate the digital platform.

3. Results

This study was framed by two research objectives: 1) to develop a digital platform to promote learning and cultural tourism for local museums in Bangkok, and 2) to evaluate user satisfaction toward the platform.

3.1 The Digital Platform

With careful consideration of users' functionality, usability, and aesthetic needs, the researcher developed the digital platform as presented below.

The digital platform is delivered through a LINE Official Account (LINE OA), an official business communication platform provided by LINE that enables organizations, enterprises, and institutions to communicate with users in an efficient and structured manner. The platform incorporates two key functions. First, it features a location map function that supports navigation by displaying geographic information within the mobile interface. This function integrates location-based services (LBS) with digital mapping technology to assist users in identifying destinations and navigating to selected locations. Second, the platform provides a social media connectivity function, allowing users to share information from the application directly to external platforms such as LINE and Facebook. This function enhances communication, information dissemination, and user engagement by enabling content to be shared easily with others.

The platform's features and functions include the following:

1) Platform Installation and Access

To use the platform, users are required to install the LINE application on their smartphones. The application can be downloaded from the Google Play Store or the Apple App Store and is compatible with both iOS and Android operating systems. The platform requires minimal storage

space and features a simple and modern user interface. Alternatively, users may access the platform by scanning a QR code (Figure 4).



Figure 4. QR code for platform installation.

2) Log in to Access the Platform

After users have completed downloading and installing the platform on their devices, the system will display the “Add Friend” screen. At this stage, users will be directed to the login screen, where they can log in to access the platform (Figure 5).

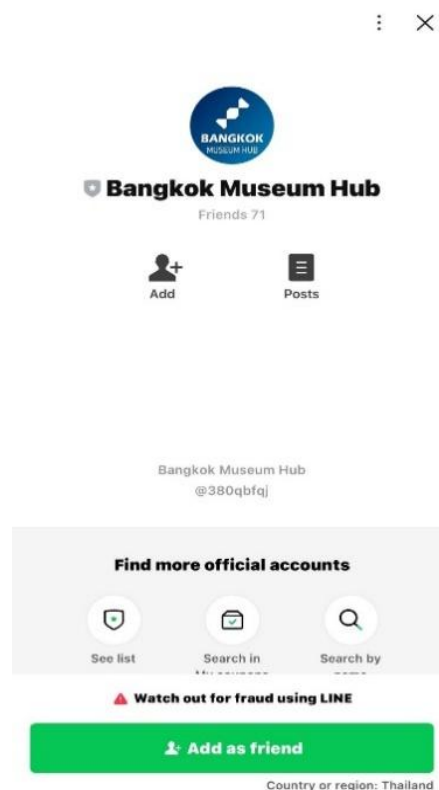


Figure 5. Adding a friend to access the platform.

3) User Registration

When users register, they complete the required registration process to access and use the platform (Figure 6).

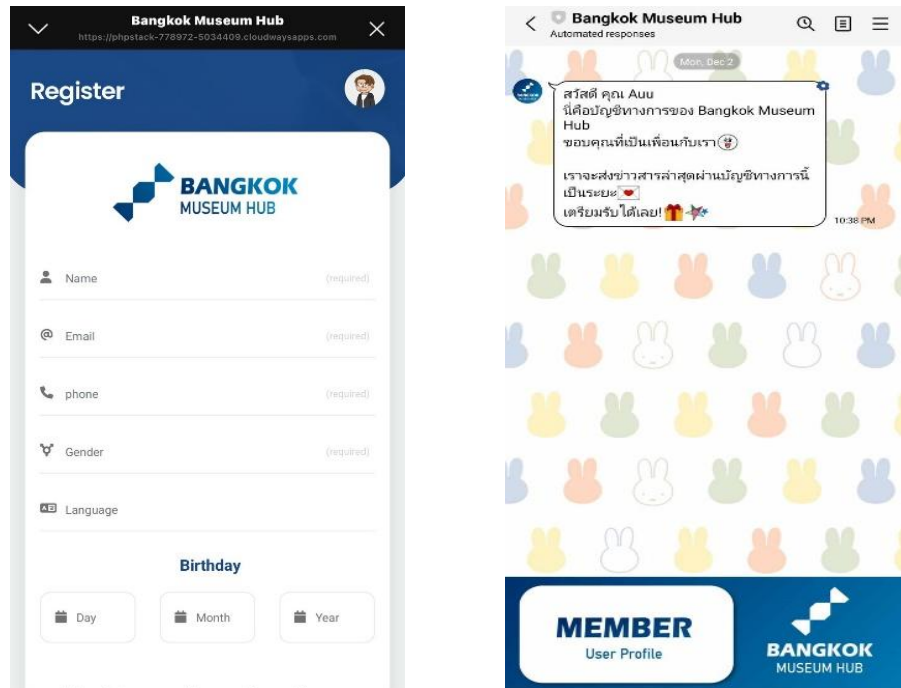


Figure 6. Main registration screen.

After users have completed downloading and installing the platform on their devices, the system will display the login interface. At this stage, users will encounter the login screen to access the platform. For first-time use, users are required to complete a registration process, referred to as user registration, by selecting the Member User Profile menu. This initial registration is conducted to collect essential information necessary for system usage, such as the user's full name, email address, and phone number. As shown in Figure 7.

To use the Register menu, users are required to provide a username, email address, and phone number, as well as select their gender and preferred application language. Both Thai and English language options are available. Users must then create a password and confirm it to complete the registration process. After selecting the SUBMIT button, the system will display the initial application screen, indicating that the platform is ready for use (Figure 8).

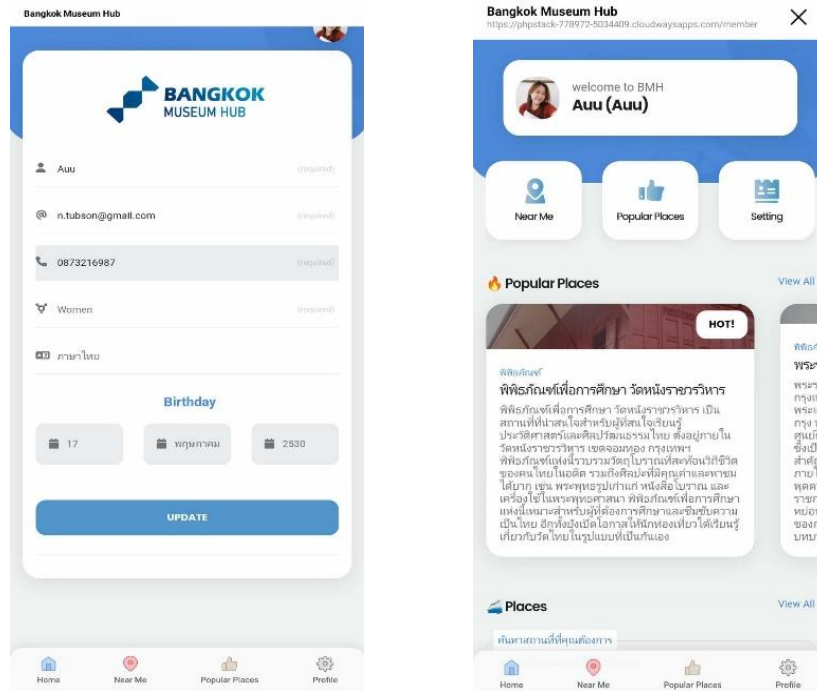


Figure 7. Accessing the Platform.

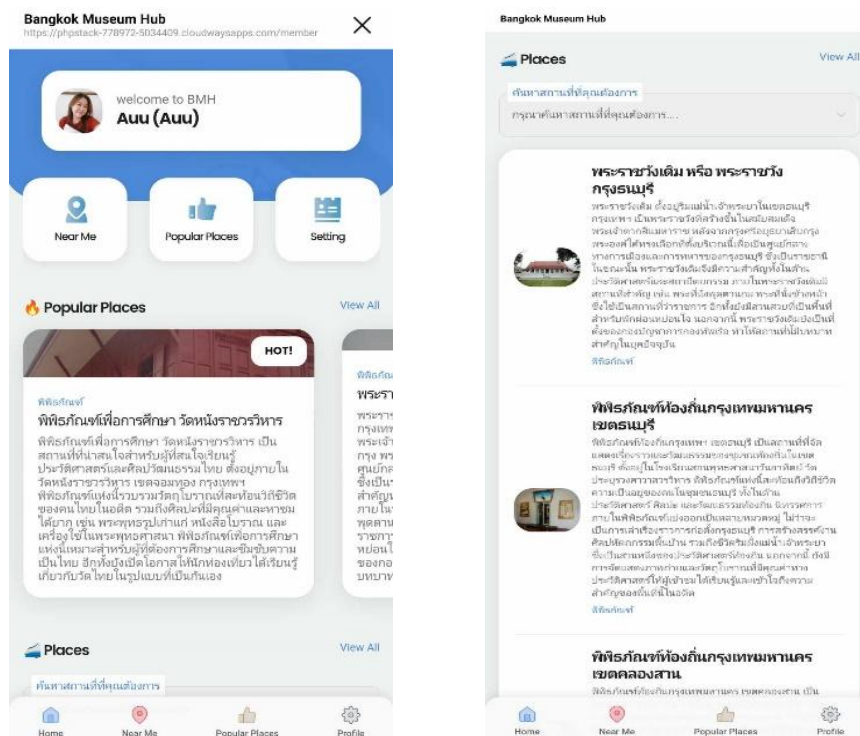


Figure 8. Main system interface.

4) Main Platform Interface

On the main interface of the platform, the top section displays the username of the logged-in user. The main screen of the application consists of the following key menus and functional features, as shown in Figure 9.



Figure 9. User status screen.

5) Near Me Menu Function

This function displays geographical location information. The system shows the locations of all museums in Bangkok. Users can search for a desired museum through the search menu, which displays all available locations within the system. If users do not know the name of a specific museum, they may select a location directly from those displayed on the platform (Figure 10).

6) Popular Place Menu

This function displays the top 10 most popular places. The menu presents locations that are widely favored by tourists and visitors—places they have previously visited and rated positively. The system collects and stores data on popular locations based on user ratings within the Bangkok Museum Hub. This feature helps users who have not yet decided by providing useful information that can support their travel planning (Figure 11).

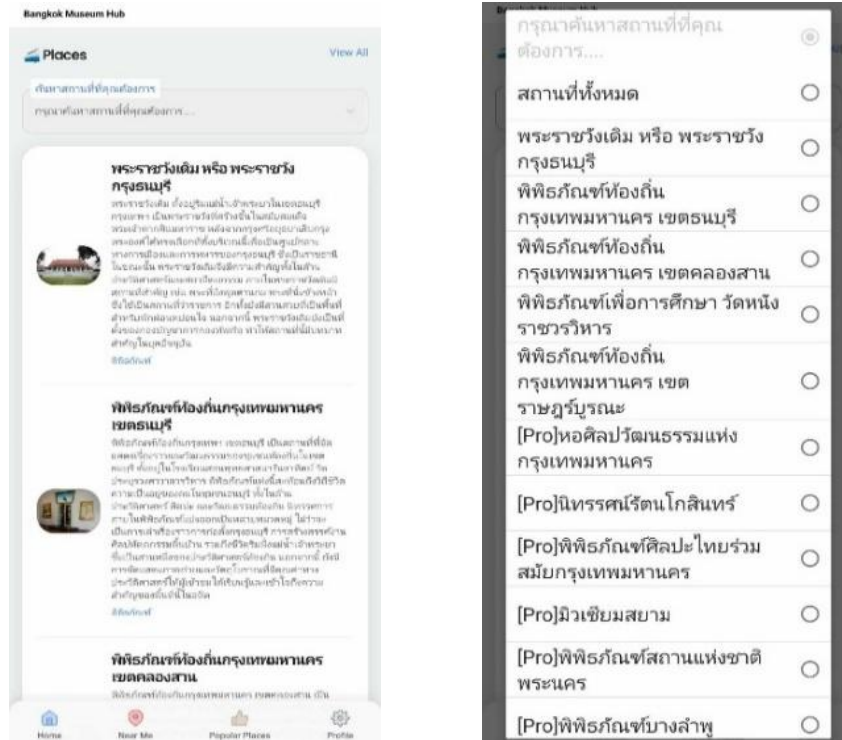


Figure 10. List of museum locations displayed.

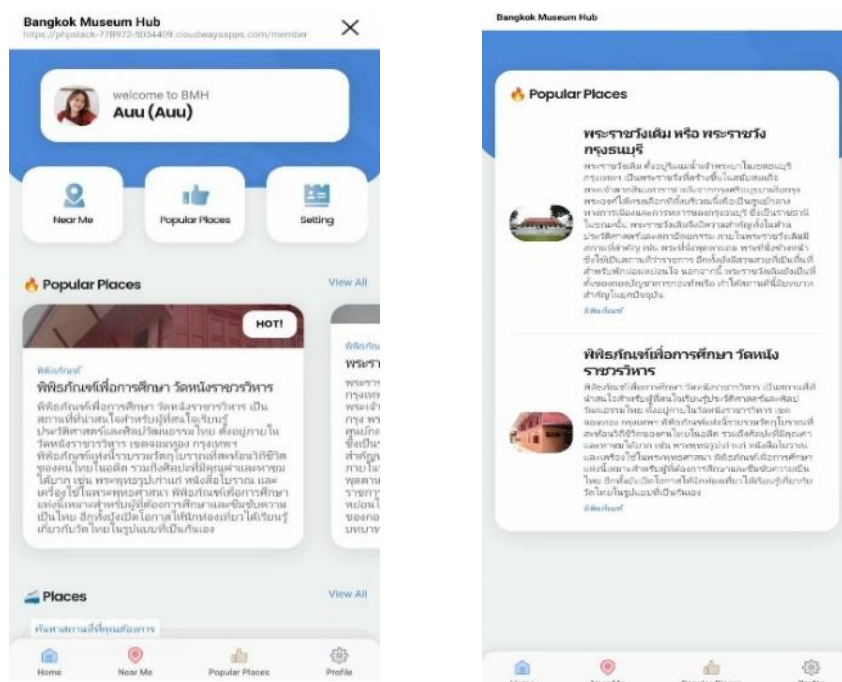


Figure 11. Popular locations displayed.

7) Museum Information Display Function

This function is a key component of the system, allowing users to view detailed information about each museum. The information can be accessed in both Thai and English. In addition to essential details such as the museum's background, history, opening hours, and directions, users can share museum information via other platforms, including the LINE application and Facebook. Furthermore, if users are impressed by a particular museum, they can express their appreciation by selecting the “like” option represented by a heart icon (Figure 12).

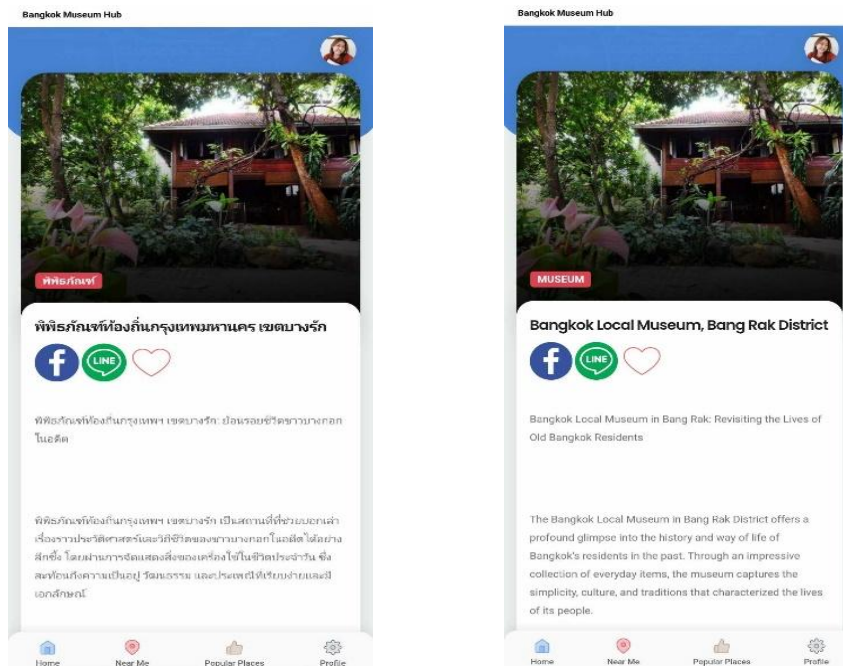


Figure 12. Museum detail display.

8) Geographical Location Display via Google Maps

This function displays the geographical location of each museum. Users can select the option to connect to Google Maps to view an enlarged map and independently search for travel routes to the museum location (Figure 13).

9) Comment Function

This function allows users to write comments to share their opinions, feelings, and relevant information with other users. Comments on museum sites may serve as a source of accurate information and provide motivation and inspiration for others who view the content to visit the museums as shown in Figure 14.

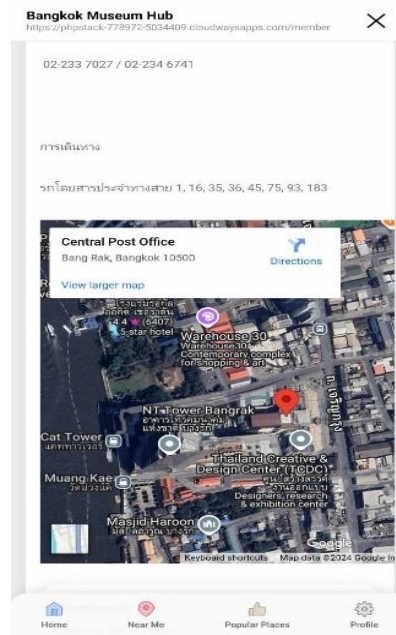


Figure 13. Geographical Location Display.

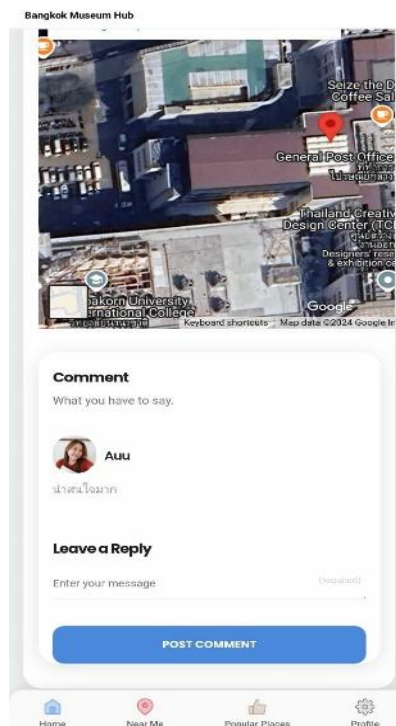


Figure 14. Comment interface for users.

3.2 User Satisfaction

User satisfaction was evaluated using a 5-point Likert scale questionnaire, in which responses were classified into five levels: strongly agree, agree, neutral, disagree, and strongly disagree, with corresponding scores ranging from 5 to 1, respectively. The questionnaire covered three main dimensions:

usability, system functionality, platform aesthetics and performance metrics. Data were collected through an online survey using Google Forms and analyzed using descriptive statistics, including the mean ($\bar{x}$) and standard deviation (SD). The evaluation results indicate a high overall level of user satisfaction, demonstrating that the developed digital platform effectively meets user needs across all evaluated dimensions.

The sample group consisted of 100 platform users who had experience using the digital platform and completed the questionnaire via Google Forms. The participants were selected through purposive sampling, specifically targeting users who accessed the platform through the LINE Official Account and responded to the user satisfaction survey. The research instrument was a satisfaction questionnaire comprising four dimensions: usability, functionality, aesthetics, and performance. The reliability of the questionnaire was assessed using Cronbach's alpha coefficient, yielding values of 0.716 for usability, 0.711 for functionality, 0.713 for aesthetics, and 0.713 for performance, indicating acceptable internal consistency.

Table 1. User Satisfaction toward the Use of the Digital Platform

Order	Item	$\bar{x}$	S.D.	Level of Satisfaction
Usability		4.03	0.8	High
1.	The platform's menus and icons are easy to use.	4.28	0.73	High
2.	The platform's main functions and operations are appropriate.	4.04	0.88	High
3.	The platform provides accurate search functions and information access for museums.	3.76	0.77	High
4.	The platform processes data quickly.	4.04	0.88	High
5.	The platform provides accurate and reliable system performance.	4.04	0.84	High
6.	The platform provides useful information.	4.36	0.75	High
Functionality		4.1	0.76	High
1.	The platform is user-friendly.	4.36	0.75	High
2.	The platform features simple, user-friendly menus.	4.04	0.78	High
3.	The platform has an appropriate overall display.	3.92	0.75	High

Table 1. User Satisfaction toward the Use of the Digital Platform (Cont.)

Order	Item	$\bar{x}$	S.D.	Level of Satisfaction
Aesthetics		4.1	0.77	High
1.	The platform features a modern and visually appealing interface.	4.12	0.88	High
2.	The platform employs readable and aesthetically pleasing font sizes and styles.	4.24	0.66	High
3.	The platform appropriately uses icons or images to convey meanings clearly and easily.	4.04	0.78	High
Performance metrics		4.16	0.76	High
1	Response time	4.20	0.75	High
2	System stability	4.12	0.78	High

4. Discussion

This research is grounded in the premise that a digital platform can be effectively utilized to promote learning and cultural tourism for local museums. In alignment with the first research objective, the platform was developed through a systematic process encompassing user requirement analysis, UI/UX design, and mobile application implementation. The system was operationalized through a LINE Official Account (LINE OA) to enhance accessibility and communication efficiency, enabling users to access cultural and tourism-related information conveniently via a widely adopted messaging platform.

The discussion of the research findings is presented in two key dimensions: technological implications and policy and museum management implications, as outlined below.

4.1 Technological Implications

From a technological perspective, the findings demonstrate that the integration of LINE Official Account with a cloud-based backend infrastructure effectively supports the development of an interactive and scalable digital platform. The use of LINE OA as the primary user interface reduces barriers to access by eliminating the need for separate application installation, while maintaining compatibility across iOS and Android devices. This approach highlights the potential of leveraging existing messaging platforms as alternative digital service infrastructures for information systems.

The incorporation of application programming interfaces (APIs) enables seamless integration between the communication layer, backend services, and external systems, facilitating real-time data exchange, automated messaging, and personalized user interaction. In addition, the integration of location-based services (LBS) with digital mapping technology supports navigation and travel planning by providing accurate geographic visualization and route guidance. These functionalities enhance system usability and improve the overall user experience, as reflected in the high user satisfaction ratings across usability, functionality, aesthetics, and performance metrics.

Furthermore, the inclusion of social media connectivity features transforms the platform from a static information repository into an interactive digital environment. Features such as commenting, content sharing, and user engagement mechanisms support participatory system design principles and enable the platform to function as a small online community. This finding aligns with previous studies emphasizing the role of interactivity and social participation in enhancing the effectiveness and sustainability of digital platforms for cultural tourism and learning.

4.2 Policy and Museum Management Implications

In terms of policy and museum management implications, the proposed digital platform offers a practical tool for enhancing the management, promotion, and accessibility of local museums, particularly in metropolitan contexts characterized by cultural diversity. The platform enables museum administrators and local authorities to disseminate information efficiently, reduce reliance on traditional promotional methods, and reach broader audiences through digital communication channels.

The use of a centralized digital platform supports data-driven decision-making by allowing museums to monitor user interactions, popular locations, and engagement patterns. Such information can be utilized to inform cultural tourism policies, improve resource allocation, and design targeted promotional strategies. Moreover, the platform supports sustainable tourism management by encouraging informed travel planning and fostering public awareness of local cultural heritage.

From a broader policy perspective, the findings suggest that integrating digital platforms into museum and cultural tourism management can contribute to the development of smart tourism ecosystems. By linking cultural learning resources with digital infrastructure, local governments and cultural institutions can enhance lifelong learning opportunities, promote community participation, and strengthen the role of museums as dynamic learning hubs in the digital society.

5. Conclusion and recommendations

Overall, the results confirm that the proposed digital platform aligns with contemporary technological development trends by integrating accessibility, interactivity, and social participation. The platform demonstrates strong potential for supporting museum information dissemination, promoting cultural tourism, and fostering digital learning communities. This research contributes to digital platform development and offers insights for technological innovation and museum management. Future studies should further enhance platform features, expand content coverage, and examine long-term user engagement and system effectiveness.

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7. References

- Belser, A., Borda, A., Bowen, J. P., & Filippini-Fantoni, S. (2004). The building of online communities: An approach for learning organizations, with a particular focus on the museum sector. arXiv preprint cs/0409055.
- Bonis, B., Stamos, J., Vosinakis, S., Andreou, I., & Panayiotopoulos, T. (2008). A platform for virtual museums with personalized content. *Multimedia Tools and Applications*, 38(1), 1–26. <https://doi.org/10.1007/s11042-008-0231-2>
- Butsaba, T., & Suwannasri, P. (2025). Development of a Website for Recommending Tourist Attractions in Japan. *Science and Technology to Community*, 3(4), 94–108. <https://doi.org/10.57260/stc.2025.1049>
- Disara, T. (2019). The Development of Virtual Museum on Thungwa Ancient Elephant, Satun Province. *e-Journal of Education Studies*, Burapha University, 1(4), 55–68 <https://so01.tci-thaijo.org/index.php/ejes/article/view/211120>
- Lerdloompheephan, P. (2019). Platform: Change Business Strategy. *Journal of Humanities and Social Sciences Thonburi University*, 14(1), 150–157. <https://so03.tci-thaijo.org/index.php/trujournal/article/view/230604>
- Limpinan, P. (2019). Promoting Mahasarakham Tourism by using Augmented Reality. *Journal of Technology Management Rajabhat Maha Sarakham University*, 6(1), 8–16. <https://ph02.tci-thaijo.org/index.php/itm-journal/article/view/199288>
- Nualsut, S., Promkum, S., & Srinounpan, B. (2024). The Development on Online Marketing Platform to Enhance Community Products. *Journal of Roi Kaensarn Academi*, 9(7), 1417–1432. <https://so02.tci-thaijo.org/index.php/JRKSA/article/view/271858>
- Plungsricharoensuk, P., & Jongwutiwes, K. (2018). The development of a lifelong learning activities model with community participation on museums and local learning resources to promote creative learning. *Journal of Education*, Silpakorn University, 12(1–2), 106–123. <https://so02.tci-thaijo.org/index.php/suedujournal/article/view/95005>
- Satmune, J. & Boriruk, S. (2019). The Supporting Development of the Public Relations Management System for the Educational Institution. *Journal of Information Technology Management and Innovation*, 6(1), 60–68. <https://ph02.tci-thaijo.org/index.php/itm-journal/article/view/165065>
- Tamarakkul, J., & Asawasakulsorn, A. (2022). A study of sustainable tourism using information technology with augmented reality: A case study of Sgt. Maj. Thawee Folk Museum, Phitsanulok Province (Master's thesis). Naresuan University. <https://nuir.lib.nu.ac.th/dspace/handle/123456789/5790>