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The Construction of Tour Guide Application to Enhancement and Multilingual Tourism Development in Mahasarakham Province, THAILAND

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Abstract

This study investigates the development and efficacy of a multilingual tourism application designed to enhance tourism development in Mahasarakham Province, Thailand, focusing particularly on its utility for foreign students due to the region's educational allure and cultural heritage. The application features a comprehensive suite of services, including weather information, personalized travel recommendations, navigational assistance, and detailed local guides covering dining, healthcare, lodging, cultural practices, and historical insights, thereby distinguishing it from conventional tourism apps.

The results of the study reveal significant outcomes. Expert evaluations yielded a Content Validity ratio (Content validity) of 0.86, indicating high relevance and accuracy of the app's content. The application's Reliability stood at 0.91, reflecting its consistency and dependability. Additionally, the Objectivity score was 0.80, suggesting the app's impartiality and fairness in presenting information. These results affirm the application's effectiveness in providing a reliable, accurate, and user-friendly resource for enhancing tourists' experiences while promoting cultural understanding and economic development within Mahasarakham Province.

Keywords: construction, tour guide application, enhancement, tourist, Mahasarakham Province.

1. Introduction

The significance of language in national development is evident in areas such as communication, trade, and international relations, as observed in Thailand's educational focus on linguistic skills, particularly English and other significant languages like Chinese, for enhancing global connectivity and employment opportunities (Greaker et al., 2023; Tangcharoensathien et al., 2020; Bago et al., 2022; Xu et al., 2022; Phupunna, 2023). The growing internationalization of higher education, marked by an increase in international programs and student exchanges, reflects a broader educational openness (Hommes et al., 2020; Foo, Ismail, & Lim, 2021).

Mahasarakham Province, recognized for its educational contributions and historical and cultural richness, faces challenges and opportunities from the influx of both local and foreign students, influencing economic, urban, and cultural dynamics (Rhein & Phillips, 2022; Kohpaiboon & Jongwanich, 2021; Hadi, 2021; Sato et al., 2022; Lim & LEE, 2019; Kang, Yossuck, Panyadee, & Ek-lem, 2019). Cultural interactions and adaptability are crucial for harmonious living in diverse societies (Abu Hatab & Al-Badawi, 2020; Caligiuri et al., 2019; Wen, 2019).

The emergence of digital technology, especially smartphones, has revolutionized information access and travel behaviors, highlighting the gap between traditional static information sources and the dynamic, personalized content users seek today (Paganetto & Scandizzo, 2017; Mao, Koide, Brem, & Akenji, 2020; Lam, Chan, & Peters, 2020; Zeng, Chen, & Lew, 2020; Teotia & Panwar, 2020; Huang et al., 2024; Cuomo et al., 2021; Lee, Richardson, Goh, & Presbury, 2022; Santos, Augusto, & Oliveira, 2021; Murugan, 2020).

In response to these challenges, a research team proposes developing a multifaceted tourism application tailored to Mahasarakham Province, integrating cultural education, real-time information, and user feedback to enhance the tourist experience and promote local culture and economy, thus addressing the needs for cultural preservation,

economic development, and modern digital conveniences (Fu, 2022).

2. Method

2.1 Research Objectives

1) To develop a tourism application to elevate and advance the tourism sector within Mahasarakham Province.

2) To assess the perception of tourism in the Mahasarakham Province area among a sample group after utilizing the tourism application designed to elevate and develop tourism in the region.

3) To evaluate user satisfaction with the tourism application developed to elevate and enhance tourism in Mahasarakham Province.

2.2 Sample Size

The population used in the study consists of international students who have come to pursue higher education in Mahasarakham Province, totaling 431 individuals.

The sample group used in the research consists of 222 international students studying in Mahasarakham Province. The research team employed a method to determine the sample size from the ready-made table by Taro Yamane (1973), at a 95% confidence level.

2.3 Research Instruments

The tools used for data collection in the research consist of three items:

1) A tourism application designed to elevate and develop tourism in the Mahasarakham Province area.

2) An assessment form to evaluate the perception of tourism in the Mahasarakham Province area.

3) A questionnaire to measure user satisfaction with the tourism application developed to elevate and enhance tourism in the Mahasarakham Province area.

2.4 The Development of Research Instruments

This research is a Research and Development (R&D) study, which is divided into four stages: 1) The stage of studying and selecting service points, 2) The stage of creating and evaluating the quality of the application, 3) The stage of assessing the outcomes from application users, and 4) The stage of disseminating the application.

1) The stage of studying and selecting service points

The research outlines a systematic approach for the study and selection of significant tourist spots within Mahasarakham Province. Through interviews with officials from the Provincial Statistical Office and related individuals, ten prime tourism sites were identified based on their natural beauty, cultural, and archaeological significance. These locations were chosen to serve as pilot service points. The frequency of tourist visits at each site was analyzed, utilizing data from the Provincial Statistical Office and the Provincial Tourism and Sports Office, to rank the sites and select the top ten. The selected sites include: 1) The City Pillar Shrine, revered as a sacred symbol of the province. 2) Wat Pa Wang Nam Yen, noted for its large teak meditation hall and valued at over 80 million Baht. 3) The Ming Muang Buddha and the Standing Mungkorn Buddha, both highly respected spiritual figures. 4) Phra Borommathat Na Dun, a historical site with significant archaeological finds. 5) The Kaeng Saphue Wooden Bridge, a century-old bridge essential for local connectivity. 6) Wat Nong Hoo Ling, famous for its beautifully crafted boat-shaped chapel. 7) Ku Santarat, an archaeological site with Khmer architectural influences. 8) Kosamphi Forest Park, a natural reserve rich in biodiversity. 9) The Isan Navel, a symbolic center of the Northeastern region. And 10) The Wildlife Sanctuary at Doon Lamphan and Poo Tularak, a vibrant ecosystem home to unique species.

2) The stage of creating and evaluating the quality of the application

The research involves developing a tourism application to promote and enhance tourism in Mahasarakham Province, employing the System Development Life Cycle (SDLC) methodology, which is segmented into five phases: feasibility study, analysis, system development, evaluation, and conclusion.

In the feasibility study, the application's creation focused on four primary components: a main menu displaying basic information about tourist locations, a navigation map supporting three languages, an Augmented Reality (AR) feature for exploring tourist points, and an emergency assistance section.

The system analysis and design phase detailed the app's structure, including the bottom menu layout, multilingual support for navigation, and AR functionalities for an immersive tourist experience. Development languages such as HTML, PHP, Java, and tools like Android Studio, iOS, and Adobe Illustrator were utilized for

creating various application components.

The system development stage involved the actual creation of the application, integrating all designed features and ensuring functionality across different sections for an effective user experience.

Evaluation was conducted by engaging twelve experts, divided into groups focusing on content in Thai, English, and Chinese languages, and on multimedia, innovation, and technology to assess the application's quality and provide constructive feedback.

The final stage involved summarizing the data and compiling the research report, concluding the development and assessment process of the tourism application, aimed at fostering tourism growth and providing a comprehensive and accessible guide to visitors of Mahasarakham Province.

3) The stage of assessing the outcomes from application users

The application user evaluation process is delineated into two principal phases: 1) evaluating the perception of tourism in Mahasarakham province post-application usage, and 2) assessing the satisfaction levels of the application users.

In the first phase, the methodology encompasses creating a perception evaluation form derived from academic resources, which is segmented into three sections: personal information of the respondents, their awareness level regarding tourism in Mahasarakham, and an open-ended section for additional feedback. This structured approach aids in collecting comprehensive data, measuring tourism awareness, and gathering qualitative insights from different demographic segments.

The form underwent rigorous evaluation by experts to ensure its relevance, clarity, and content validity, indicated by an Index of Item-Objective Congruence (IOC) score of 0.80, signifying a high degree of content validity. A try-out phase followed to address any issues, leading to the finalization of the form for assessing tourism perceptions among the target sample.

In the second phase, the focus shifts to measuring user satisfaction with the application. This involves designing a questionnaire, structured similarly to the first, aimed at evaluating user satisfaction, understanding, and usage of the application. Expert review confirmed the questionnaire's comprehensiveness and clarity, with an IOC score of 0.91, highlighting its high content validity.

The satisfaction questionnaire also underwent a try-out phase to ensure its efficacy, culminating in a finalized version intended for broad implementation. This systematic evaluation process is crucial for enhancing and developing tourism in Mahasarakham province through direct user feedback and satisfaction assessments.

4) The stage of disseminating the application.

The research team distributed the tourism application through both iOS and Android platforms, making it accessible on the App Store and Google Play respectively. To further enhance visibility and reach, the application was promoted through the official social media channels of Mahasarakham province's tourism office and related agencies. In addition, official documents, along with promotional materials like posters and announcements, were circulated across various educational institutions to garner more attention. To extend its reach even further, the application was also featured in academic journals that are included in internationally recognized databases, aiming to attract a broader, more diverse audience.

Figure 1. Displays the screen with the navigation map for tourist destinations

3. Data Collection

The research team engaged in a comprehensive data collection and analysis process to develop and evaluate a tourism application for Mahasarakham province. Initially, the team focused on gathering knowledge and theories pertinent to application creation, including design, coding, development, and evaluation strategies. Data analysis was conducted to select ten significant service points, incorporating input from community leaders, local experts, and residents, ensuring community collaboration.

Permission was sought from relevant agencies and offices associated with the tourism sites for data collection and surveying travel routes. Subsequently, the team selected suitable models and methods for creating and designing the application tailored to the target demographic. The development of the tourism application aimed at enhancing and advancing the region's tourism sector.

The application's quality was assessed through feedback from twelve specialists, while a perception evaluation form was created to gauge tourism awareness in the province. The form and a user satisfaction questionnaire were each evaluated for clarity and effectiveness by three experts in measurement and evaluation.

Recruitment announcements were made for foreign students to participate in testing the application, ensuring they understood the procedures and guidelines before starting the trial. The sample group then tested the application's performance and assessed the results post-usage. Statistical analysis was conducted to summarize the findings, leading to the reporting of research outcomes and the dissemination of the application. This systematic approach ensured a thorough understanding and evaluation of the application's impact on tourism in Mahasarakham province.

4. Data Analysis

The data collected in the study were subjected to statistical analysis to comprehend the characteristics of the distribution of the sample group. Descriptive statistics were utilized to represent the distribution of the sample group, encompassing frequency and percentage for nonmetric variables, which helped in understanding the categorical distribution within the sample. For metric variables, fundamental statistical measures were analyzed, including the mean, standard deviation (S.D.), minimum (Min), and maximum (Max) values. These measures provided a detailed overview of the sample group's characteristics and the quantitative variables under study, allowing for a thorough examination of the data's central tendency, variability, and range.

5. Results

Table 1. The correlation coefficients (r) for the tourism application aimed at promoting and developing tourism in the Mahasarakham province area

Information	Score
Content validity	0.86
Reliability	0.91
Objectivity	0.80

The data presented in Table 1 indicates that the tourism application designed for Mahasarakham province has undergone a thorough evaluation process, yielding significant results in terms of content validity, reliability, and objectivity. The application's content validity coefficient of 0.86 suggests that the content is highly relevant and represents the intended subject matter effectively, as this value is within the acceptable range for educational and psychological measurements.

The reliability coefficient of 0.91 for the application is particularly noteworthy, indicating very good reliability. This high level of reliability implies that the application produces consistent results under similar conditions and that users can depend on its functionality and the information it provides.

Furthermore, the objectivity score of 0.80, as determined by the correlation coefficient, demonstrates that the application maintains good objectivity. This means that the application's outputs and functionalities are consistent, regardless of different users' interpretations or biases.

Overall, these metrics illustrate that the tourism application is a well-constructed tool that has been validated for its relevance, consistency, and impartiality, making it a reliable resource for enhancing and developing tourism in the Mahasarakham province area.

Table 2. Perceptions of Tourism in the Mahasarakham Province Area

Question	$\bar{x}$	S.D.	Perceptions
After using the travel guide application, you have additional questions about Maha Sarakham Province	4.67	0.88	Excellent
The application has helped increase your interest in traveling in Maha Sarakham Province	4.59	0.83	Excellent
Are you satisfied with the ease of use of the travel app	4.58	0.65	Excellent
The app helps you discover new travel destinations in Mahasarakham Province	4.36	0.71	Good
Do you believe that the information displayed in the tourism application is comprehensive and up to date	4.50	0.67	Excellent
Do you feel that the application enhances your tourism experience in Mahasarakham province	4.36	0.61	Good
After using the application, are you willing to recommend Mahasarakham province as a tourism destination to others	4.45	0.77	Good
Do you agree that the tourism application facilitates smoother travel within Mahasarakham province	4.31	0.96	Good
Are you satisfied with the quality of information and photographs provided in the application	4.49	0.74	Good
Do you feel that the tourism application contributes to your safety while touring in Mahasarakham province	4.27	0.92	Good
Total	4.46	0.77	Good

The data from Table 2 reflects positively on the tourism application's impact on international students' perceptions of tourism in Mahasarakham Province. The high average scores, particularly in areas such as increased knowledge about the province ($\bar{x}$ = 4.67), enhanced interest in visiting ($\bar{x}$ = 4.59), and satisfaction with the application's ease of use ($\bar{x}$ = 4.58), indicate excellent user perceptions. These aspects highlight the application's effectiveness in promoting tourism and providing valuable information.

However, lower scores in facilitating smoother travel ($\bar{x}$ = 4.31) and contributing to safety while touring ($\bar{x}$ = 4.27), while still good, suggest areas for potential improvement. Enhancing features related to navigation, safety information, and real-time updates could further improve user satisfaction and the overall tourism experience in Mahasarakham Province.

Overall, the average total perception score of 4.46 signifies that the application is well-received and beneficial to

users, effectively contributing to a positive tourism experience in the province. Yet, the slightly lower scores in certain areas offer valuable feedback for future enhancements to the application, aiming to provide an even more comprehensive and user-friendly tourism tool.

Table 3. Results of the study on user satisfaction with the tourism application for the promotion and development of tourism in the province of Mahasarakham

Conditions	$\bar{x}$	S.D.	Satisfaction
Ease of use is straightforward	4.32	0.62	Good
The selected menu is clear	4.37	0.66	Good
The information content is accurate	4.43	0.73	Good
Tourist location information is easily searchable	4.27	0.74	Good
Maps for navigation are easily accessible	4.28	0.71	Good
Coordinates in displaying AR images are stable	4.10	0.83	Good
Photographs displayed alongside AR images	4.21	0.62	Good
Appropriateness of the color tone used	4.30	0.63	Good
Appropriateness of the font size	4.05	0.87	Good
Appropriateness in displaying graphic images	4.35	0.74	Good
Total	4.28	0.71	Good

The results from Table 3 illustrate that the tourism application for Mahasarakham Province has been well-received by users, with overall positive feedback on various aspects of its functionality and design. The high scores in ease of use, clarity of the menu, and accuracy of information content highlight the application's effectiveness in providing a user-friendly and reliable resource for tourists. The good ratings in the searchability of tourist location information and accessibility of navigation maps further reinforce the application's utility in facilitating travel.

While the use of augmented reality (AR) and the associated photographic representations are rated positively, indicating satisfactory engagement and interaction with the user, the font size is in need of improvement, as the lowest score (4.05) shows. This suggests that adjustments could improve readability and the overall user experience.

Overall, with a total average satisfaction score of 4.28, the application demonstrates significant user satisfaction, effectively supporting tourism enhancement and development in Mahasarakham Province. However, attention to areas like font size could further improve the application's user-friendliness and accessibility.

6. Discussion

The development of the tourism application aimed at enhancing and developing tourism in the Mahasarakham province area was evaluated and quality-checked by a total of 12 experts. The evaluation results indicated that the application is of high quality, with a content validity (IOC) score of 0.86, surpassing the standard threshold set at 0.50. This demonstrates the relevance and appropriateness of the content intended to be measured by this application. The reliability (Cronbach's Alpha) score at 0.91 signifies a high level of confidence and reliability of the application. Additionally, the objectivity score of 0.80 suggests neutrality and clarity of the outcomes obtained. This tourism application can be effectively utilized, resonating with the research by Wali et al. (2019) on evaluating a tourism application for Sabang city, Indonesia, on the Android system, where tourists exhibited high satisfaction due to the application's ease of use and utility. The findings suggest that e-guide applications have the potential to support area tourism and increase tourist numbers. Furthermore, this study aligns with the research by Fang et al. (2017), indicating an increase in the number of people using applications for tourism and travel-related information and activities, affirming that employing new technologies in enhancing and developing tourism is an effective and widely accepted strategy. Particularly in Mahasarakham province, which holds significant potential as a key tourism destination, this application not only facilitates easier access to tourism information for users but also aids in enhancing the quality and standards of local tourism.

The perception of tourism in the Mahasarakham province area by the sample group after using the tourism application to enhance and develop tourism in the area was rated highly. This is attributed to the application's ability to provide comprehensive and updated tourism information, enabling users to access essential travel preparation details thoroughly. Features such as searching for tourist sites, navigation maps, and reviews from other travelers allow users to plan their travels with confidence and convenience.

This research aligns with the study conducted by Uğur and Akbıyık (2020) discuss how the tourism sector is

significantly affected by global crises like COVID-19. The study highlights the importance of travel applications and insurance in aiding the industry's recovery by facilitating easier travel planning and providing assurance to travelers consistent with Dolnicar, Knežević Cvelbar, and Grün (2017) explore how sharing-based approaches, potentially facilitated by apps, can encourage tourists to behave more environmentally friendly, indicating the potential of apps to improve sustainable travel behaviors consistent with Tavitiyaman et al. (2021) This research examines how smart tourism applications influence tourists' perceived destination image and their subsequent behavioral intentions highlighting the importance of information search behavior consistent with Pradhan et al. (2018) This study applies the Technology Readiness Index and perceived value theory to analyze the perceived benefits of smart devices for travel, focusing on sustainable smart tourism. consistent with Pai et al. (2021) The research explores the relationship between tourists' travel confidence benefits, travel enjoyment, tourism experiences, and their intentions to revisit based on their perceived experience with smart tourism technology.

The satisfaction level of users towards the tourism application designed to enhance and develop tourism in the Mahasarakham province area is significantly high. This can be attributed to the application's user-friendly interface, allowing users to access information and operate the application without the need for special technical knowledge. The clarity of the selected menus facilitates easy and convenient navigation within the application. The accuracy and currency of the content are crucial, instilling confidence in the information received by the users. Additionally, users can easily search for tourist location information and maps for navigation, making planning trips and visiting various places smoother. The integration of photographs with Augmented Reality (AR) enhances the engaging and attractive experience, while the appropriateness of the color tone and the quality of graphic displays make the application appealing and easy on the eyes.

This research is in line with the study by Ali et al. (2021), which investigates system usage leading to user satisfaction and performance with a focus on travel apps. It highlights the factors that influence user engagement and satisfaction. Additionally, the research corresponds with the findings of Fang et al. (2017), discussing how the design and performance attributes of travel apps affect users' internal experiences and evaluations of benefits, subsequently influencing levels of user satisfaction. Furthermore, the study is consistent with the research conducted by Yoo et al. (2017), examining how smart tourism technologies enhance travel decision support satisfaction through tourists' elaboration likelihood and self-efficacy. It also aligns with the investigation by Dastjerdi et al. (2019), which centers on users' travel decisions when utilizing travel apps, exploring users' motives and satisfaction where trip efficiency improvement, enjoyment, social interaction, and promotion of environmentally friendly travel are identified as significant motives for adopting the new app.

7. Conclusion

The application was highly rated by experts, exhibiting high content accuracy and exceptional application reliability, leading to efficient and effective usage. The research indicates that utilizing new technologies to elevate and develop tourism is an effective strategy that helps increase tourist numbers and improve the area's tourism standards. The study found high user satisfaction with the application, particularly in terms of ease of use, menu clarity, data accuracy, and the ability to search for information and maps.

Recommendations for Future Research

Future research should focus on the ongoing enhancement and validation of the application's content to ensure it remains accurate and comprehensive. Investigate the impact of innovative marketing strategies tailored to distinct tourist demographics on the application's utilization rates. Further studies are encouraged to examine the integration and user reception of sustainable tourism practices within the application, emphasizing responsible and eco-friendly travel behaviors. There is a notable need for in-depth research into the application's user interface and experience, specifically regarding the effectiveness and user engagement of Augmented Reality (AR) features and other interactive elements. Additionally, the process and outcomes of collecting user feedback and suggestions should be analyzed, with a focus on how they guide and inform continuous application improvements. This research will contribute to the enhancement of the travel application's role in promoting Mahasarakham Province's tourism, thereby improving the overall quality and standards of the tourism sector in the region.

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Authors' contributions

Suphasa Phupunna was responsible for the study design, revision and drafting of the manuscript. Dr. Ratree Supahuang was responsible for data collection. All authors have read and approved the final manuscript.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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