Go Najok App: Gamification for Marketing Communication to Promote Ho Chi Minh Trail Tours in Nakhon Phanom in Thailand

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Abstract **- This research employed a mixed-method approach combining qualitative and quantitative analyses. It aims to develop and assess the effectiveness of the Go Najok App and to explore its users' satisfaction. Research methods in education, anthropology, and tourism were applied. The data collection involved 9 IT experts and 400 stakeholders and tourists. Research instruments included the application, the effectiveness assessment form, and the satisfaction survey. Data were analyzed using mean and standard deviation. It was found that the application contains five features: local history, homestay, chic-check-share, cultural styles, and games and challenge, being downloaded both by Android and iOS. Its effectiveness and users' satisfaction were at a high level. The broader findings highlight the potential of gamification-based mobile applications in enhancing tourism marketing communication, engaging diverse user groups, and promoting local cultural heritage. These results suggest that similar digital solutions can be applied in other regions to support sustainable tourism development and stimulate local economies.**

Keywords - Application, gamification concept, local history, ethnic identity.

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1. Introduction

Thailand ranks among the world's top tourist destinations, renowned for its rich cultural heritage, diverse natural landscapes, and dynamic urban centers. The tourism industry is a fundamental pillar of the national economy, contributing significantly to GDP and employment [1]. As a major source of national income, it plays a vital role in driving Thailand's rapid and sustained economic growth [2]. However, the COVID-19 pandemic has had a profound negative impact on tourism businesses worldwide, including in Thailand, as international travel was heavily restricted by government regulations. Consequently, the industry suffered significant revenue losses due to the sharp decline in tourist spending, and it is anticipated that travelers will reassess their priorities once global travel resumes [3].

In response to this challenge, the Thai government and the Tourism Authority of Thailand (TAT) have launched strategic initiatives to decentralize tourism. Key measures include rebranding 55 secondary cities as "Cities Worth Visiting" and implementing policies such as tax incentives to stimulate domestic travel [4].

Located in the upper Northeast of Thailand, Nakhon Phanom Province is regarded as a minor city. For the first half of the year 2022, the city's tourism income is 1,209 million baht, which ranks 57th in the country. Prior to the COVID-19 pandemic, there was a growing trend in the city's tourism [5]. Based on historic and ethnic data, Nakhon Phanom is the city with historic and cultural capital with a number of Vietnamese descents residing in it.

It is also the place where Ho Chi Minh, a national hero of Vietnam, spent his time when he entered the Kingdom of Thailand. At present, there is an important tourist attraction in Nakhon Phanom that is related to Ho Chi Minh.

It is called Ban Najok, which features his house, museum, monument, etc. Furthermore, the city is renowned for its outstanding ethnic identity, including Vietnamese foods, which have become favorite dishes for a lot of Thais. Another factor that contributes to the city's economic growth is its adoption of the 6Ps principle in e-commerce, which includes product, price, place, promotion, personalization, and privacy [6]. Therefore, it is necessary for the city to have its own channel for marketing communication to promote Ho Chi Minh-related tours and routes to potential customers, which will enable them to accept and decide to purchase tourism products and services sold in new formats. The process in which marketing messages are delivered to target customers is known as "marketing communication", which is regarded as a link that connects sellers with their purchasers. This kind of communication is capable of persuading message receivers to embrace and accept their products and services [7].

Moreover, smartphones have become tourism promotional tools that play an inevitable role in promoting tourist attractions, activities, tours and routes and will likely respond to the needs of online users in the future. They can combine information, enable people to communicate anywhere and anytime. Smartphone users can employ various resources for an array of objectives and goals: learning, education, entertainment, and application development. Additionally, smartphone users can use social networking and cloud computing platforms educational tools. These platforms employ criteria and guidelines to disseminate materials for learning in a modern theoretical connection between education and smartphones. For the digital media industry, gamification relies on certain concepts, namely, mechanics, motivation, and aesthetics, that are widely used in games in order to make users more engaged in solving problems and increase their sense of engagement with the activities. The most important goal of gamification is to increase the fun of learning, to have learners engaged in learning based on their interests, and to inspire them to continue learning [8].

Gamification have a positive and significant effect on customer engagement. The immersion aspects of gamification have a positive impact on emotional aspects of customer engagement, the achievement aspects affect the cognitive aspects of customer engagement, and the social aspects of gamification also have a stronger positive impact on the social aspects of customer engagement [9]. Tourists will absorb the content through tourism activities along the Ho Chi Minh Trail. The mechanism of gamification is to play and learn while traveling at the same time, called play and learn, taking into account the equal sharing of benefits for all parties.

The expected outcomes from these tourist attractions are all captivating as they are new tourist attractions that are not yet well-known among Thai, Vietnamese and foreign tourists. Scattered in Nakhon Phanom, these tourist attractions have high potential to attract Thai tourists and especially Vietnamese tourists, whose numbers are increasing day by day due to the opening of flight routes between Thailand and Vietnam in various regions, which provide more convenience for travelers. In addition, many Vietnamese tourists traveling through land transport routes in the Northeast can also travel to Nakhon Phanom via the Third Thai-Lao Friendship Bridge.

As such, this current study was undertaken in order to enhance the potential of existing tourist attractions, aiming to attract a larger number of Thai and Vietnamese tourists, as well as to add value to various tourist attractions. It is part of the grant promoting research and innovation activities, the Thailand Challenge Fund for Managing Knowledge for Community-Social Use (Community Cultural Capital Development) from the National Research Council of Thailand (NRCT) under the project name "Play, Learn, Travel: Following Ho Chi Minh's Footsteps and Visiting Nakhon Phanom". With respect to the human research ethics, this study has been approved as required.

2. Literature Review

This section reviews key research and theoretical foundations relevant to application development, gamification, and marketing communication in tourism.

An application is an applied program developed for mobile devices and peripherals. The way it operates is controlled through a user interface (UI). [10] investigated the development of applications using the Flutter framework, a cross-platform development tool that is capable of creating native mobile applications for both Android and iOS. It was found that various types of widgets could increase the development effectiveness. In the same vein, [11] analyzed user interface design for travel applications and found that UI design that is flexible and in line with native design guidelines contributes to its effectiveness and success, considering several factors, including user-friendliness, systematic layout, rapid response system, and attractive design. [12] explored user experience (UX) after using tourism apps and found that UX design needs to be clearly separated, paying attention to users' behavior, fast access to functions, device-friendly display, and stable operation. In addition, it was also found that the development of tourism applications must integrate both technical and user experience aspects, taking into account ease of use, system stability, responsiveness to user needs, and continuous improvement.

This literature review shows that the development of effective tourism applications must focus on both UI and UX design.

Gamification is the application of game mechanics in a non-game context. [13] explored essential components of gamification in tourism, which comprise three main parts, including game mechanics (e.g., points and rewards), game dynamics (e.g., competition and challenges), and game aesthetics (e.g., emotion and enjoyment). These components form the foundation for crafting activities that foster engagement and motivation among target groups. They also promote learning processes and problem-solving skills. The application of gamification in tourism is widely popular, as it plays a crucial role in responsibly promoting tourism behavior in a sustainable way through rewarding several activities that are environment- and community-friendly and designing competitive activities using rewards to activate tourists' participation and learning effectively [14]. The uses of this tool include marketing destinations for tourism [15].

Marketing communication is a marketing process that adopts a variety of persuasion techniques, such as public relations, sales promotion, advertising, direct marketing, sales by employees, and other activities, to communicate and convey information to target groups through media in order to raise awareness, recognition, liking, and ultimately purchase decisions. In their analysis of the use of digital technology in tourism marketing communication, [16] discovered that communication through digital platforms, especially social media and content marketing, is effective in reaching target groups. A study of the use of mobile technology in promoting tourism found that communication through applications helps increase tourist participation and decision-making. This is in line with findings from a study [17] study which highlights that technology helps create engaging experiences and stimulate travel decisions, which is crucial to promoting cultural and community tourism. Ban Najok's local history is of high importance as it is a historic place that strengthens Thailand-Vietnam relations, especially during the period of Vietnamese independence movement. Regarding Ho Chi Minh's movement in the late 1920s, he resided in Thailand under the name of Nguyễn Ái Quốc and chose Ban Najok in Nakhon Phanom as an important base for his mission against the French. It was also found that Ban Najok community was founded by Vietnamese immigrants who fled French repression and settled in Thailand after the end of the Cold War. The area has been developed into a symbol of Thai-Vietnamese friendship [18].

A study analyzed the development of Ban Na Jok as a Thai-Vietnamese Friendship Village and found that the governments of both countries jointly developed this area, with the official establishment of the Ho Chi Minh Museum in 2004, which enables Ban Najok to become an important historical tourist attraction in the Northeast. [19]. In addition, the presentation of cultural and historical heritage through tourism must take into account community participation and the preservation of traditional identities [20].

3. Research Methodology

This section describes the procedures and research methods adopted in this study, including participant selection, instrument development, and data analysis.

3.1. Participants and Samples

Informants for the first research objective consisted of experts and application developers, IT technicians, and educational technologists, all of whom were selected by using a purposive sampling method [21]. Semi-structured interviews and application assessment forms were employed for the analysis and design of the the Go Najok App.

Informants for the second objective (n=400) consisted of representatives from different organizations: Nong Yat Subdistrict Municipality, Nakhon Phanom University, school networks, the Thailand-Vietnam Association at Nakhon Phanom, all being selected by using a stratified sampling method [22].

3.2. Research Instruments

This section outlines the main tools used to collect and analyze data in this study, including the effectiveness assessment of the Go Najok App and a user satisfaction survey.

- Go Najok App and the effectiveness assessment form,
- Application user satisfaction survey.

3.3. Development of Research Instruments

The research instruments were developed in several phases, focusing on app creation, validation, and survey refinement to ensure accuracy and relevance. Details of each step are provided below.

Application Formulation: To formulate and develop the Go Najok App, the researchers followed the following steps:

1. **Analysis:** In this initial phase, the researchers explored data on the context of historical tourist attractions, culture, community management in Ban Najok, including Nong Yat Subdistrict Municipality, Nakhon Phanom University, school networks, Thai-Vietnamese Association of Nakhon Phanom, Ban Najok Community, Nakhon Phanom, entrepreneurs in Ban Najok area, tourist representatives, application developers, academics, in order to develop it into an application.
2. **Design:** In the second phase, the researchers designed the application, using research methods in varying fields, namely education, gamification and anthropology, history, tourism, and marketing communication. The application content was designed and divided into 5 categories: 1) tracing the history of Ban Najok, 2) homestay, 3) chic check share, 4) cultural styles, and 5) Najok games and challenge.
3. **Development:** In the development phase, the researchers followed the following steps:

   3.1. The researchers employed several research methods, namely education, gamification and anthropology, history, and tourism. The application content was designed and divided into 5 categories: 1) tracing the history of Ban Najok, 2) homestay, 3) chic check share, 4) cultural styles, and 5) Najok games and challenge. Flutter, a cross-platform framework used in developing Native Mobile Application (Android/iOS) developed by Google Inc, and Dart programming language, similar to C# and Java, were used as primary tools for developing the application. The application helps facilitate tourists to study and learn about local history and homestays. In the chic, check, share section, it can be an additional source of learning for tourists, which is in line with cultural learning activities. In addition, the Najok games and challenge section boosts the users' enjoyment based on the concept of gamification, making it more enjoyable and challenging to learn.

   3.2. Construction of Effectiveness Evaluation Form: A questionnaire with five-point rating scales and open-ended questions was used to scrutinize opinions and suggestions of the application users.

   3.3. Subsequently, the developed application was tested for content validity and then adjusted following the experts' suggestions. Content validity analysis was used during the questionnaire development process to ensure that the questionnaire's quality and accuracy in measuring the intended objectives. In this phase, five experts in the field assessed each questionnaire item for its alignment with the research objectives, using a rating scale from -1 to 1. The value of index of item objective congruence (IOC) was between 0.60-1.00. Having been adjusted as advised by the expert, the questionnaire was submitted for human research ethics certification, which resulted in certification number 36/65 Exp. The researchers took the completed assessment form to the experts to evaluate the efficiency of the developed application.

   3.4. The scores obtained from 9 experts were analyzed to examine the suitability of the application by using the following criteria:
   - Average 4.51-5.00 means most appropriate,
   - Average 3.51-4.50 means very appropriate,
   - Average 2.51-3.50 means moderately appropriate,
   - Average 1.51-2.50 means low appropriateness,
   - Average 1.00-1.50 means least appropriate.

   3.5. The researchers considered the level of appropriateness in comparison with the experts' guidance. Overall, the result regarding the application effectiveness was at a high level ($\bar{X}$ = 4.09, S.D. = 0.71). The developed application was then put into actual use, and the research results were summarized.

4. To develop a survey on the satisfaction of application users, the researchers took the following steps:

   4.1. The researchers investigated documents, textbooks, and research studies related to the study of application users' satisfaction, aiming to determine the main points of the study. The questionnaire items were to be comprehensive, covering all the content required.

   4.2. The researchers drafted a questionnaire on the application users' satisfaction, covering various issues, and presented it to the research advisors to consider whether the content, key points, and questions on the issues to be studied were appropriate, and to provide suggestions for further improvement.

   4.3. The questionnaire was presented to five relevant experts to check its appropriateness and provide guidelines for improvement. Then, the experts checked the congruence between the questions and the assessment objectives by evaluating the Index of Item Objective Congruence (IOC). The result was between 0.60-1.00, and then the survey was adjusted based on the experts' suggestions. Subsequently, the revised questionnaire was tried out with 30 non-sample tourists.

The index of discrimination of each item was found by using the Pearson's Correlation Coefficient. The items with r values of .30 and above were selected. Twenty-four items with r values of 0.45-0.92 were analyzed for reliability using Cronbach's alpha coefficient of 0.97 [23].

4.4. The researchers created an online questionnaire using Google Forms.

4.5. The researchers employed the online data collection method by creating an online version of the developed questionnaire using Google Forms. The collection period was from January to March 2022. When the required number of questionnaires was collected, the accuracy and completeness of the data were examined and incomplete data was eliminated.

4.6. The questionnaire has five-point rating scales as follows:

- 5 means highest satisfaction
- 4 means high satisfaction
- 3 means moderate satisfaction
- 2 means low satisfaction
- 1 means lowest satisfaction

The criteria for interpretation are as follows:

- 4.51 – 5.00 means very satisfied
- 3.51 – 4.50 means satisfied
- 2.51 – 3.50 means neutral
- 1.51 – 2.50 means unsatisfied
- 1.00 – 1.50 means very unsatisfied

4.7. Subsequently, the researchers notified the Department of Intellectual Property, literary category, computer program type in order to register for the copyright. The application was registered under the name of 'App Go Najok,' with the reporting number 447650.

3.4. The Procedures of Data Collection Using the Go Najok App

- The research team requested the research project certification to get approval from the Human Research Ethics Committees. The committee approved the research project and issued the approval number (No. 36/65 Exp.). March 21, 2022. Then, the researchers contacted and coordinated with relevant parties, including representatives of government and private agencies in the relevant areas, including Nong Yat Subdistrict Administrative Organization, Nakhon Phanom Province, Nakhon Phanom University, Ho Chi Minh Museum, representatives of private sector agencies, including the Thai-Vietnamese Association of Nakhon Phanom, tourists visiting Nakhon Phanom and tour companies, etc., and the public, including community leaders and community representatives, to conduct in-depth interviews on March 27, 2022.
- The research team summarized the overall results in the following issues.
  1) Application design: A range of research methods in the following fields were applied (i.e., education, gamification and anthropology, history, and tourism). The application content was divided into 5 categories, namely tracing the history of Ban Najok, homestay, chic check share, cultural styles, and Najok games and challenge.
  2) The Go Najok App was drafted.
  3) The researchers contacted the target group to organize a workshop and conducted a focus group discussion (FGD) where the researchers presented the overall results of the study and asked the participants to share their opinions on the development of the application.
  4) After brainstorming, the researchers summarized data obtained from all parties for the use of application development.
  5) The application was developed.
  6) The application's effectiveness was assessed by the experts.
  7) The assessment result was analyzed and summarized on August 27, 2022.
  8) The researchers registered the application for the copyright with the Department of Intellectual Property, literary category, computer program type, being registered under the name of 'App Go Najok,' with the request number 447650, issued on October 15, 2024.
- Data were analyzed by using descriptive statistics (i.e., mean and standard deviation).

4. Results

This section presents the key findings from the development and evaluation of the Go Najok App. The results are organized to reflect the effectiveness of the application and user satisfaction, based on the integration of gamification and marketing communication principles. Quantitative and qualitative data are summarized to highlight the application's core features, performance, and broader impacts.

The development and effectiveness assessment of the application was based heavily on the incorporation of relevant principles and theories. To illustrate, data were synthesized to formulate essential components following gamification concepts and marketing principles (6Ps), relying on research methods in several fields: education, gamification, anthropology, history, and tourism, consisting of 5 main features, namely tracing the history of Ban Najok, homestay, chic check share, cultural styles, and Najok games and challenge [24], [25], [26], [27], [28].

Figure 1. Go Najok App

In Figure 1, the Go Najok App is available for free download on iOS and Android smartphones. The application provides local tourism information in the Ban Najok community, and offers exclusive discounts when purchasing locally produced goods, food, and beverages It also features games to amuse and motivate its users.

Step 1: Following President Ho Chi Minh's footsteps in Ban Najok:

1. Exploring the long history of Ban Najok, Ho Chi Minh's monument, museum, and house.
2. Homestay in Ban Najok area, reflecting local lifestyles and cultural identities.
3. Chic check share, visiting local souvenir shops, aesthetic cafés (e.g., Great Grandfather's House and Anna & the Natt Cuisine Café'&Roaster).
4. Cultural styles, including vegetable farming, Đại Vươn Shrine, Vietnamese cuisine (e.g., Ché Xanh, a remarkable Vietnamese green tea)
5. Najok games and challenge, playing games in each tourist attraction to make learning more entertaining.

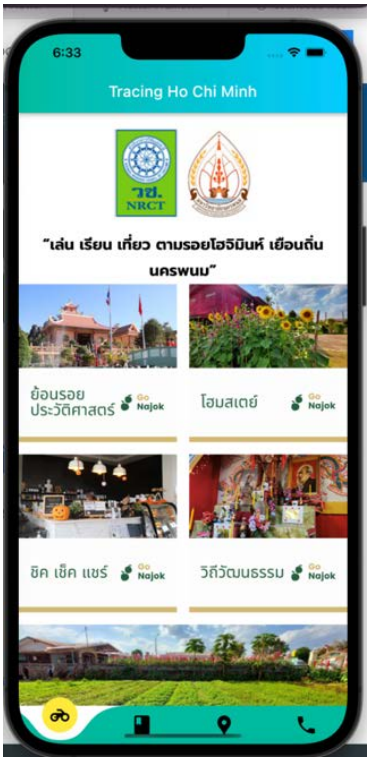

Figure 2. Access to historical and cultural knowledge

Figure 2 shows the feature that enables application users to explore the long history of Ban Najok, Ho Chi Minh's monument, museum, and house.

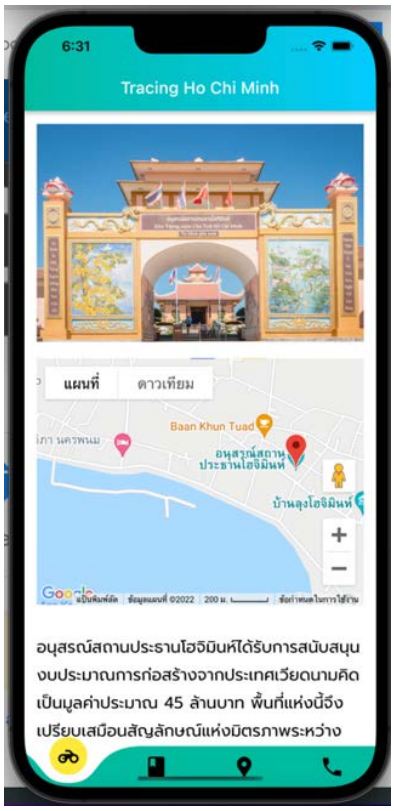

Figure 3. Najok Games and Challenge

In Figure 3, The above feature offers several activities that are attractive for those interested in playing games via the application. There are 2 types of games. The first entails games generated from Google Forms. It is particularly designed for testing tourists' knowledge about attractions in Ban Najok, consisting of 15 questions with 4 alternatives to choose. If players can answer 60% of the questions correctly, they will get a passing certificate to certify that they have taken part in the project 'Play, Learn, Travel to Follow President Ho Chi Minh's Footsteps in Nakhon Phanom'. The second type includes games created from Wordwall. It is designed for playing, learning, and traveling in various attractions in Ban Najok for fun and enjoyment (e.g., Figure matching, similar location finding, and questions games).

Data were analyzed and synthesized to generate bodies of knowledge relevant to Ban Najok, Đại Vươn Shrine, Ho Chi Minh's house, museum, monument, Vietnamese cuisine, and agritourism, then were assessed by the experts, academics, scholars, and community leaders. The data were then used for designing the application based on gamification concepts and marketing principles (6Ps) to enhance local products' values and generate income for those involved in community enterprise groups.

Step 2: Award Winner Annoucement.

Figure 4. Award winner annoucement

In Figure 4 entails the announcement feature, used for announcing award recipients, checking in on social media, snapping Figures at local attractions.

Step 3: Promoting Tourism.

Figure 5. Promoting tourism

In Figure 5, this feature involves the promotion of tourism activities in the Ban Najok community.

Step 4: Checking in at Ban Najok Attractions.

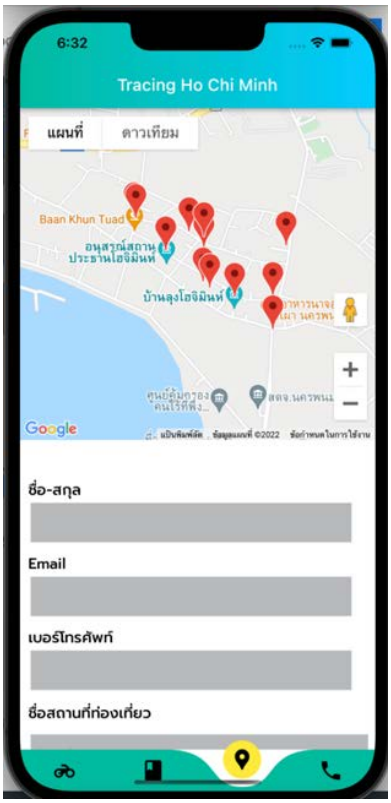

Figure 6. Check in to Get Awards

In Figure 6 shows the feature particularly designed for those who love taking photos. Furthermore, two prizes are awarded each month for the best photos.

Table 1. Go Najok App's effectiveness assessment

No.	Statement	$\bar{X}$	S.D.	Level of Suitability
Functions				
1	It can be downloaded conveniently and quickly.	4.33	0.50	high
2	It can be downloaded by App Store and Play Store.	4.22	0.44	high
3	It can be easily and quickly accessed.	4.11	0.33	high
4	It has clear content that blends well with images and videos that reflect local history and culture.	4.88	0.33	highest
5	The content is clearly organized, accessible, suitable for learning about Ho Chi Minh trail tours in Nakhon Phanom.	4.55	0.52	highest
6	Data can be downloaded into files with ease.	4.44	0.52	high
7	There is access to various game activities through various channels that are suitable for playing.	4.33	0.50	high
8	It provides clear and accurate routes and information that is suitable for travel.	4.00	0.86	high
9	Tourists can check, post their photos with tourist attractions via the application.	3.33	0.50	moderate
10	There is a channel for promoting tourism in Ban Najok.	3.55	0.72	high
11	There is a channel for announcing winners via the application.	4.00	0.86	high
12	There is a channel for promoting community products, souvenir shops, and coffee shops.	3.88	0.92	high
13	Tourists can access the Najok Game Challenge, answer questions online and receive a certificate to show that they have taken part in the project.	4.22	0.83	high
14	Overall performance of the application	4.33	0.50	high
15	Appropriate font size	4.00	0.86	high
16	Attractive letters	4.00	0.86	high
17	The background color is easy on the eyes.	4.44	0.72	high
18	Clear and beautiful images that reflect local history and culture.	4.22	0.83	high
19	Appropriate videos	3.55	0.52	high
20	Overall quality of application graphics	4.00	0.70	high
Benefits				
21	Tourists gain knowledge about Thai-Vietnamese history, culture and relations that are accurate, accessible and easy to understand.	4.66	0.50	highest
22	It helps generate income for people in Ban Najok community.	3.88	0.92	high
23	Travel routes can be requested via the application.	4.00	1.00	high
24	It can disseminate tourism information and promote tourism in Ban Najok.	3.60	0.50	high
25	It is free to access.	4.33	0.50	high
26	It is easy to use, convenient, suitable for all ages.	4.00	0.86	high
27	There are games to play, learn and promote tourism in Ban Najok.	4.11	0.92	high
28	It creates new forms of play, learning and travel.	4.44	0.72	high
29	There is a way to contact the community through the application.	3.77	0.44	high
30	Overall benefits of the application	4.22	0.44	high
The application's overall effectiveness		**4.09**	**0.19**	**high**

As illustrated in Table 1, in relation to the application effectiveness, it was found that the overall suitability was at a high level ($\bar{X}$ = 4.09, S.D.=0.19). For the application's functions, the most appropriate aspect was the content clarity, correctness, and good blending with images and videos that reflect local history and culture ($\bar{X}$ = 4.88, S.D.=0.33). The second most appropriate aspect was the organization of data into categories, clarity, and easy access for learning about Ho Chi Minh trail tours in Nakhon Phanom. ($\bar{X}$ = 4.55, S.D.= 0.52). The data could be easily downloaded as a file ($\bar{X}$ = 4.33, S.D.=0.50). The overall suitability of the application functions was at a high level ($\bar{X}$ = 4.33, S.D. =0.55). The suitability of application graphics was at a high level, including the background color that is easy on the eyes ($\bar{X}$ = 4.44, S.D. =0.72), followed by Clear and beautiful images that reflect local history and culture. ($\bar{x}$= 4.22, S.D.=0.83) and appropriate font size, attractive fonts ($\bar{X}$ = 4.00, S.D.=0.70). Overall, application graphics are at a high level of suitability ($\bar{X}$ = 4.00, S.D.=0.70). The most appropriate level regarding the application's benefits is to gain knowledge about history, culture, and Thai-Vietnamese relations that is correct, accessible, and easy to understand ($\bar{X}$ = 4.66, S.D. = 0.50), followed by creating new forms of play, learning and travel ($\bar{X}$ = 4.44, S.D. = 0.72) and having games to play, learn and promote tourism in Ban Najok ($\bar{X}$ = 4.11, S.D. = 0.92). The overall suitability of the application's benefits was at a high level ($\bar{X}$ = 4.22, S.D. = 0.44).

4.2) In relation to the application users' satisfaction, it was found that it was at a high level with a mean of 3.86 and a standard deviation of 0.12. When considering each item, two questionnaire items were rated at the highest level: 1) easy to apply and convenient search; 2) readily accessible ($\bar{X}$ = 4.44, S.D. = 0.50), followed by the availability of games, learning activities, and travel information ($\bar{X}$ = 4.23, S.D. = 0.78), the availability of tourist spot recommendation service ($\bar{X}$ = 4.06, S.D. = 0.35), respectively. The item that was rated least was 'The application offers discounts from various stores'/ The application promotes discount sales from various stores' ($\bar{X}$ = 2.78, S.D. = 0.61). This is possibly due to the spread of Covid 19, which caused the application users to avoid going shopping and eating at restaurants.

5. Discussion

This section discusses the main findings of the study in relation to existing literature and theoretical frameworks. The interpretation of the results highlights the significance of the Go Najok App's development, its effectiveness, and user satisfaction, while also addressing the implications, limitations, and potential contributions to the field of tourism marketing and gamification.

The investigation of the application development and its effectiveness assessment relied primarily on research methods in varying fields (i.e., education, gamification, anthropology, history, tourism, and marketing communication). The application content consisted of 5 main features: tracing the history of Ban Najok, homestay, chic check share, cultural styles, and Najok games and challenge. The findings were in line with previous thoughts on the subject [29], stressing that to enable target users to realize the benefits of information technology, the system must be flexible and easy to use. Regarding this point, the researcher team collected data on tourist attractions, analyzed, designed, developed and tested the application, using the System Development Life Cycle (SDLC). The team worked collaboratively with experts to ensure that the research instruments were of quality. The experts' assessment in three aspects revealed that the instrument quality was at a high level, possibly because the researchers had explored several research studies on the application development and the effectiveness evaluation thoroughly. This is in accordance with [30], in which an augmented reality tourism app was developed based on the user-centered design. In this study, the application uses domain analysis, tourist observation, and interviews to gather data. The application was evaluated by 20 users in a UK city. Users found the system usable and intuitive, suggesting further customization. The findings of this current study are also closely associated with [31] discovered. In their study, they developed a mobile application using augmented reality for guiding visitors on hiking trails on Santa Maria, Azores, and evaluated its effectiveness. The application provides an interactive and recreational experience, allowing visitors to navigate the trails without additional marks in the physical space. It was tested with 77 participants, resulting in an average System Usability Scale score of 83 and positive results in the User Experience Questionnaire.

In relation to the application users' satisfaction, it was found that overall satisfaction on the effectiveness of the Go Najok App was at a high level ($\bar{X}$ = 4.09, S.D.=0.19). This is due to that fact that learning activities using gamification techniques plays a vital role in promoting group collaboration through games that foster interaction among users. These findings are in line with a previous study [32]. In their study, customer satisfaction in a mobile application of a national e-commerce travel company was analyzed. It found that user happiness is significantly influenced by content, format variations, ease-of-use, perceived usefulness, and service. However, the study rejects the accuracy variable and timing variable. The study also found a strong relationship between content, service, and perceived cost factors with student satisfaction in mobile learning applications.

The findings of this current study are also in congruence with [33], which reveals a strong correlation between trait factors (content, service, and cost) and student satisfaction with mobile learning application quality, while perceived cost, innovation, and advantages also positively affect satisfaction.

6. Conclusion

This section summarizes the main findings of the study and outlines implications and suggestions for future research.

This research scrutinized the development of the Go Najok App, its effectiveness assessment, and users' satisfaction. The application content was broken into five sections, namely 1) Tracing the history of Ban Najok, 2) Homestay, 3) Hic check share, 4) Cultural styles, and 5) Najok games and challenge. In the development process, Flutter, a cross-platform framework used in developing Native Mobile Application (Android/iOS) developed by Google Inc, and Dart programming language, which is similar to C# and Java, were used as primary tools for developing the application. With diverse functions and engaging activities, the application helps facilitate tourists to explore local history and strengthens local enterprises. The chic, check, share section serves as an additional source of learning for tourists, which blends well cultural learning activities. Besides, the Najok games and challenge section offers enjoyable activities based on the concept of gamification to create challenging and fun learning. It also develops the potential of existing tourist attractions, enabling them to draw a larger number of tourists, and also adding added value to various tourist attractions. In addition, the 6Ps principle in e-commerce, namely product, price, place, promotion, personalization, and privacy, was also incorporated. **Product**: Improve and develop services and products to be of quality and unique, offering new experiences that tourists have never experienced before. **Price**: Set appropriate prices, including having promotions or special discounts during peak tourist times. **Place**: Create an application or website that is easy to use and makes it convenient to book tours or other services. **Promotion**: Use a variety of marketing media, such as social media, to publicize tourist attractions. **People**: Develop employees to have good service skills and be able to impress tourists.

Process: Improve the service process to be efficient and fast in order to publicize tourism along the Ho Chi Minh Trail to customers in order to create acceptance of the services offered for sale in a new form of tourism. Additionally, this application aims to provide tourists with a channel that enhances learning through interaction and participation, taking into account the equal sharing of benefits for all parties.

The findings, drawn from the application development, showed that the use of gamification in promoting tourist attractions is of interest as it has positive impacts on tourist motivation before deciding to travel. If the motivation is created by using marketing principles, such as giving prizes or rewards, it will be a good indirect form of public relations. To create maximum benefit, it is necessary to employ tourist attraction information and rewards, including promotions to motivate target groups. This requires rapport from all parties concerned, both public and private, to develop the application. Additionally, there needs to be someone responsible for maintaining the system and updating public relations information regularly. More tourist attractions in the town area should be included in the application so that it will cover various tourist attractions, as well as accommodations and food. In developing an application, there are costs for maintaining the system and rental fees for hosting both Google Play and App Store systems, which are quite high costs. If the system maintenance costs are not paid, the data in the application cannot be downloaded, and it is important to have expenses to support at least three to five years. The application must be continuously developed to have a new and up-to-date version of the system. Added to this, there must be a system administrator to update information about the Ban Najok community. Overall, this study highlights the broader potential of gamification-based mobile applications in enhancing tourism marketing communication, promoting local cultural heritage, and supporting sustainable regional development.

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