Digital Platform-Mediated Tourism System in Small-Town Destination

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Abstract—This research aimed to design and develop a digital platform-mediated tourism system for self-service information in small-town destinations. It focused on a case study performed in Koh Raet, Surat Thani province, Thailand. The system consists of the Tourism Information Service (TIS) system and a digital game for discovering Koh Raet. The TIS System is designed for self-visiting activities in Koh Raet. Furthermore, the digital game for exploring and discovering Koh Raet was also integrated with a QR code, with the objective of improving tourist experiences. A qualitative approach was conducted, followed by managing the system development, and finally, the system evaluation related to the efficiency of the proposed system was performed. To evaluate the system, we gathered qualitative data from an online questionnaire. Based on the results, we conclude that the participants were highly satisfied with the system's performance. The research contributes to empowering small-town tourism by combining tourism information services and gamification into a digital-platform-mediated tourism system. Another contribution is to provide a self-service experience for travelers in small-town destinations, offering reliable and up-to-date information about the destination. Furthermore, it is intended to foster small-town tourism promotion, and boost tourism activities in small-town destinations in sustainable ways.

Keywords—tourism information service, gamification, digital platform, small-town destination

1 Introduction

Tourism is an industry with key roles in Thai economic development, and has become one of the key industries driving the world economy [1]. The tourism situation has endured the COVID-19 outbreak since early 2019, which has been an extremely serious crisis and caused huge recession in Thailand in 2020 [2], [3]. Since early 2020, when the government announced lockdowns and no travel for domestic and international tourism, there were far fewer international tourists coming to Thailand, with numbers falling from 40 million in 2019 down to 6.7 million in 2020, a reduction of more than 83%. The number of tourists traveling in Thailand fell from 307 million

in 2020 down to 137 million in 2021, a reduction of an additional 56% [4]. According to the current tourism situation, COVID-19 continues to have a huge influence on decision-making related to trips and on tourism tendencies [5].

According to the review of Micro, Small & Medium Enterprises in tourism businesses of 2021 and of tendencies in 2022 [6], a set of surveys on tourist needs by tourism organizations and businesses, it was found that COVID-19 has hugely changed tendencies in global tourism [5] and in tourism in Thailand, i.e., the tendencies related to family trips, trips of a short distance by local inhabitants or tourists who already know about the tourism information of that area, and of avoiding crowded places and staying in more natural environments, particularly in relation to tourism businesses in secondary cities or rural areas that mostly focus on community-based tourism, ecotourism, or agro-tourism [4], [6]. The small-town tourism is becoming more popular. Small towns basically highlight their local identities and charms, including local traditions, tourist attractions, and fascinating traditions, which are unique to their particular area. Small-town tourism showcases unique ways of life, with a focus on understanding the local cultures and nature tourism. It is tourism based on responsibility and a conscious effort to preserve local traditions, cultures, and environmental value [7], [8].

Previous studies [7], [9], [10] have found challenges those small-town destinations face relating to remoteness, isolation, and smallness. Physical remoteness, difficulty of access, and a lack of other tourism facilities nearby present significant impediments to their ability to attract and retain visitors. Isolated attractions may have difficulty drawing visitors, especially if they are located in rural areas. Smaller destinations limit product and experiential appeal needed to draw tourists away from larger, more nearby, and better-known places. Despite these challenges, this tourism has potential to benefit the local identities, and to provide a more authentic, and meaningful experience for visitors [9], [10].

Digital technology continues to change the way we communicate and offer chances to create higher value tourism products and services for the visitors [1], [11]. Digital tools have the potential to provide more opportunities for local communities; to promote tourism resources, build own businesses, develop new products, and contribute to the economic development [11]–[13]. Technologies can also foster micro-enterprise tourism, which supports and promotes local level businesses to help in preserving cultural and natural resources.

The digitalization of tourism has also opened opportunities in small-town tourism [11]–[13]. However, there is limited literature about the role digital technology could play in enabling a self-service tourism information system to be implemented in a sustainable way. In this paper, we propose a digital platform-mediated tourism system for self-services information and self-visiting services, with a case study in Koh Raet, Surat Thani province, Thailand. With the objective of building the efficiency of small-town environment to invite and support tourists that may increase in number, the public and private sectors must give precedence to the use of digital technology to support tourist behaviors in the digital age, and to gain access to target groups of tourists worldwide for promoting small-town tourism in Thailand.

The research question we sought to answer is "How to design and develop a digital-platform-mediated tourism system for self-service information in small-town tourism?". The objective was to design and develop a digital platform for self-service information in a case study on Koh Raet, Surat Thani province, Thailand.

The contributions of this study are threefold. The research contributes to empowering small-town tourism by combining tourism information services and gamification into a digital-platform-mediated tourism system. Another contribution is to provide a self-service experience for travelers in small-town destinations, offering reliable and up-to-date information about the destination. Furthermore, it is intended to foster small-town tourism promotion, and to boost tourism activities in small-town destinations in a sustainable way.

2 Literature review

2.1 Small-town tourism

Small-town tourism is becoming more popular. This trend has arisen from the desire to avoid monotony in a chaotic society and to make trips to tourist attractions that are not regarded as being part of overtourism, or destinations with an excessive number of tourists [7], [14]. Additionally, the trend in tourism is towards family trips, trips that are short in distance by local inhabitants or nearby tourists who already know some information about the tourism destinations in that area, and a tendency to avoid crowded places and staying in more natural settings [6]. The character of small-town tourism varies widely due to the differences in each particular area in terms of the local ways of life, cultures, and backgrounds. Therefore, a universal small-town tourism pattern does not exist.

Small-town tourism refers to tourism activities centered around small towns (with a population $\leq 15,000$) which are located close to forests, rivers, the sea, or the mountains with a peaceful and fascinating atmosphere. These towns usually contain local cultures and unique ways of life. Tourists can engage in activities for relaxation and enjoy the creative works, art, and folk wisdom of the local people. These tourists tend to understand the value of local cultures and are conscious of the responsibility to preserve the local cultural heritage and valuable environment. Small-town tourism creates experiences that relieve stress from work and personal life by visiting these small-town destinations [7], [8], [14].

This case study was conducted in Koh Raet in Surat Thani province, with an area of approximately 0.08 km^2 and a population of 300 people. Koh Raet is a small town with land-based and maritime tourist attractions. Unfortunately, the destination is not very popular due to several factors that affect tourist decision-making on whether or not to make a trip to this town, i.e., its small size, not being a widely or well-known destination, a lack of public relations, and a lack of information management [7]–[9]. Even so, the town is significant because of its local identity which clearly demonstrates a unique combination of Thai and Chinese cultures. The natural environment of this town still remains in good condition because inhabitants' way of life is attached to

nature, e.g., the Gulf of Thailand that affects the way of life and occupations of those living in the communities on Koh Raet. Creating experiences in small-town tourism is based on the integration of the local service providers (the private and public sectors), users (tourists), tourist attractions, products and services, and tourist information. If all the components can be connected by digital technology, tourism information service for small-town tourism can efficiently respond to and meet the tourists' needs.

2.2 Exploitation of digital technology for small-town tourism

Digital technology is used as a tool to build relationships between tourists and tourism destinations [15]. The study of [16], a survey conducted between 2016 and 2019 based on the data about behavioral changes in tourists due to smartphones, found that the effects of the devices on tourism and applications/technology that helped tourism were significant. It was also found that tourists were interested in pre- and post-tourism digital technology, with the most interest being related to on-site activities. Moreover, previous studies found that digital technology changed pre-trip, on-site, and post-trip tourist behaviors [17], [18]. Another prior study found that those adapting digital technology to tourism should consider the unique characteristics of each particular area or territory because they are what would generate the greatest value and highest benefits for the people involved [19]. However, there are still only a few studies on the adaptation of digital technology to facilitate the adoption of a self-service tourism information system in small towns [20]–[23]. In order to bridge this gap, this study implemented a proposed system that integrates tourism information ser-vices and gamification, such that targets facilitating the self-service information and the self-visiting tourism activities in a sustainable way.

Tourism information services are basically associated with the collection, prcessing, and publicizing of data to tourists so they can access various sources of information in order to answer tourists' questions, generate and respond to user/tourist needs [20], [24]. The development of an information service system must take components such as the products and tourism services, service providers, users, management, and service environments of the locations into consideration [20], [24].

Tourism products and services are different from other service products and related information is usually divided by trip stages. Most tourists usually seek information about the types of on-site tourist attractions amenities available during their trips [20], e.g., accommodations, attractiveness, events, and food. Information service providers' jobs are to manage and provide information services that respond to users' wants and needs, based on data collection and processing, so that this benefits the users in achieving their objectives [25]. The key roles of information service providers are to perform their duties as mediators between users and information, and as motivators to promote the use of information. The users are a key component because responding to users and managing the systems to facilitate users' access to their desired information are the key objectives of information services. The target user groups of these services are tourists, anyone interested in or in need of tourism information, tourism agents, entrepreneurs supplying tourism related products, and those in charge of tourist attractions and services. Each target group usually has different information needs [20].

The last issues are the management and service environments, which consist of the physical and technological environments. Examples of physical environments are tourism locations and facilities. As for technological environments, they are the information technology tools used for adding value, creating differences in tourism destinations, motivating the need for trips, and inspiring the drive for tourism [20].

In this study on tourism information service, the main focus was on: (1) Tourism products and services in regard to small-town tourism destinations, i.e., Ban Koh Raet, that generally consist of natural tourism resources, traditions, culture, the Chinese way of life, and fishermen's communities. (2) The information service providers for tourism in Koh Raet, which consist of the public sector, the private sector, and inhabitants. (3) Information users, which consist of the tourists and anyone interested in visiting Koh Raet who needs information pre-trip, on-site, and post-trip [25]. (4) Helping management use information technology to facilitate a one-stop service and to create tourism experiences in Koh Raet for potential tourists on-line with their information search behavior. This was a key objective, and it was necessary to reduce limitations of tourism information services for small town destinations like Koh Raet so that potential tourists would be able to plan and facilitate their trips easily.

Gamification applies the concept of playing games to content that is not directly associated with games, normally to create attractiveness and to motivate participation [26]. More specifically, gamification is applied as a motivation technique that uses enjoyment to get people to follow along to the desired objectives. It is also used to improve user experiences, to build relationships among players, and to generate good interactions through the included activities using different strategies, e.g., rewarding successful players with points, achievement badges, or levels of competency [27]–[29].

The use of gamification helps to take the joy and excitement of playing a game and applies it to boring content or context, to improve user experience [28], [30]. It can be said that gamification is generally adapted to create user experiences with products or services [31], [32]. In tourism, gamification promotes tourism in the sense that tourists can participate in the game's activities to have interactions with the tourist attractions, and transfers the essence of those experiences into entertainment. Using gamification can build engagement and long-term relationships between tourist and tourist attractions and stimulate more revisiting behaviors. No matter what, success in using gamification mechanics is usually up to presenting the information by including it in an entertaining manner that motivates the players [20], [30]. This approach can enhance tourist experiences in a new way on a variety of targets for tourism.

In this study, gamification was based on the MDA Framework design (Mechanics-Dynamics-Aesthetics Framework) proposed by [33], which was used as the framework and primary tool for gamification analysis and design. This framework consists of game dynamics, rules set by the game designers, interaction platform, and responses to the games. Game dynamics here refers to the actions, behaviors, and controls while playing the game; and game aesthetics refers to game's design in terms of its appearance and the joy from playing the game [28], [31].

This digital game was also aimed at increasing satisfaction by generating challenges and excitement in solving the mysteries contained in the game. It built good impressions throughout the pre-trip, on-site, and post-trip phases of tourism. It is hoped that, when

potential tourists interact with the system, it would generate good memories/experiences, get the tourists to spend more time on the system, and inspire revisiting behavior while generating interest that would attract tourist visits to the small-town destinations.

3 Designing the digital-platform-mediated tourism system

A digital-platform-mediated tourism system was designed under the consideration of a tourist's experience phases [25], [32].

The pre-trip phase aimed to provide information services related to decision-making for tourism and planning [34], [35]. According to previous studies, small-town tourism is confronted with several challenges in the pre-trip phase of tourism [36]. Two of the greatest issues small-town tourism faces are attracting visitors to, and generating interest in, the tourist attractions in that specific area. As a result, only a few tourists visit the destinations because they neither perceived the significance of the tourist attractions nor their value. Thus, the research framework (Figure 1) for the pre-trip phase aimed to create impressive experiences, attract tourist interest, and increase the motivation of those who would like travel to a small-town tourism destination. The data consisted of tourism products (tourism spots, activities, accommodations, restaurants, transportation, and traditions as well as festivals); service providers (accommodation, restaurant, souvenir shop, tour, and boat/bus businesses); and management and service environments (e.g., information service systems, social media). Moreover, gamification would be used to provide information services and motivate tourists to visit the destination in question. The gaming platform would be used to make the tourism sites more attractive. Tourists would be motivated by receiving rewards such as points, badges and/or collectibles. Thus, digital technology and gamification could well meet the study objectives regarding the tourist's pre-trip experience phase.

The on-site phase was aimed at providing during-trip information services. Previous studies have found that small-town tourism destinations are confronted with the following problems during the on-site phase [36]. (1) Tourists might not be aware of the story or background behind the tourism attractions. Thus, the research framework sought to make them aware of important stories and create an immersive virtual world surrounding the tourist attractions. This research presented the stories, including the historical background of each tourist attraction, by connecting the sites with related stories appropriately. (2) Some attractions are overcrowded while others lack tourists. Thus, the research used the concept of gamification to motivate visiting less crowded destinations and attractions, e.g., playing games to inspire tourists to visit all the interesting tourist attractions within one day and obtain scores or rewards from playing. (3) Tourists usually disregard, or walk past some interesting tourist attractions quickly without paying attention to them, because of being unaware of their stories or back-grounds. Thus, this research sought to attract tourists by playing digital games where they search for a treasure or solve a mystery, through which they would discover the backstories of the attractions which, in turn, would make them interested in each place and inspire them to spend more time visiting and exploring these unique attractions.

Fig. 1. Digital Self-Service Platform for Small-Town Tourism

According to the research framework in Figure 1, the goal in this phase was to provide tourism information on a digital platform combined with games and QR codes. In this phase, tourists could search for information about the area [37], [38] including activities, tourist attractions, restaurants, accommodations, and homestays. Gamification was also used to create an enjoyable and impressive interactive experience spotlighting the tourism locations or activities. The games were pleasure tools used to create virtual tourism experiences for real sites. They included things such as puzzle activities, answering questions, and taking photos of tourism spots, and participants were rewarded by accumulating points and displaying the names of the players with the highest scores. Players could share their comments through a site survey or by playing the games based on each attraction. Thus, it could be regarded as directly providing useful, real-time information to service providers during the on-site phase because tourists could share their experiences by updating information and uploading photos from the tourist attractions on the digital platform as they were enjoying their visit to the attractions.

The post-trip phase aimed to share tourists' experiences and memories after they had completed their trips. Previous studies find some limitations in this phase [36]. For example, (1) tourists might not perceive any reasons to visit tourist attractions that are, or appear, similar to others they have previously visited. Thus, the digital platform in this research could attract them to visit based on the principles of digital game achievement in different situations, e.g., visiting early or coming to less-known tourist attractions to receive rewards or acknowledging their achievements with points and/or badges. (2) Tourists might not perceive how visiting each spot would help them obtain complete story of the area and its attractions or have more fulfilling experiences. Thus,

this study made them feel the significance of all the tourism locations. The developed system could provide complete information about all spots the tourists had visited, including their tourism levels and the latest scores/badges they had earned. It could also provide tourists with progress bars displaying their progress towards completing levels/badges or leaderboards that showed the best players (i.e., the highest level, highest points, and most badges). In the research framework in Figure 1 the goal of this phase was to share real-time post-trip experiences, i.e., sharing experiences from activities, uploading photos, and reviews. Engaging in these activities would help embed the experiences in the tourists' memories and create the desire to revisit [39]. Therefore, these activities could affect future tourism by them or friends, when they share their memories, or by other potential tourists who see the photographs, reviews, and comments of prior tourists on the digital platform.

4 Research methodology

This research was conducted using a qualitative approach, with Koh Raet selected for a case study to design and develop a system. The methods of data collection comprised document analysis and interviews, and the data were analyzed and developed into a system, and, finally, system evaluation related to the efficiency of the proposed system was performed.

4.1 Participants

The total number of participants was 200 people of whom 52.5 % were aged between 25 and 44, and 58.5 % had no experience of visiting Koh Raet. Of the participants 89.5 % had used the mobile phone to assess tourism destinations, while 62.5 % had experience in using Facebook to search information. Participants had used tourist information from websites (47.50%), travel map (40.50%), travel guide book (36.50%), or a tourist information center (19.00%).

4.2 Procedures

The research tasks consisted of data collection, system development, and system evaluation. The data were collected through a field trip, by using questionnaires, and by interviewing the participants, i.e., local community members, local business owners and staff, tourists, and local government officers, to obtain in-depth data about the tourist attractions in Koh Raet, i.e., details about the tourist attractions, activities, accommodations, local foods, etcetera, which were analysed using content analysis. The data obtained were analyzed and adapted to create a tourism information service and to develop a digital game so that tourists could plan their own trips and tourism activities.

This research applied the software development lifecycle [40], consisting of the following stages.

— Stage 1: Literature review – Information about tourist attractions in Koh Raet in Surat Thani province was studied along with a review of other relevant literature.
— Stage 2: Requirement gathering and analysis – The research team went to the target tourist attractions in Koh Raet to conduct surveys and to collect data from entrepreneurs operating tourist attractions and from tourists by using interviews and questionnaires, between March and July 2022. Then, the data were compiled into a document defining the functional requirements for system development in the future.
— Stage 3: System design and development – The system was developed to enhance tourism in Koh Raet, in Surat Thani province. The information integration was divided into two aspects, the "Tourism Information Service System" and the "Digital Game for Koh Raet Discovery". The system was designed so that it could operate on the web and mobile devices, and could be used with QR codes. The last stage was the system evaluation by the population of interest (tourists visiting small-town destinations) and the participants, i.e., Thai tourists visiting Koh Raet, entrepreneurs (in the public and private sectors), and Koh Raet's community leaders. The questionnaire consisted of 2 main parts, specifically, a section on the demographic characteristics of the tourists; and one on their opinions about the system's efficiency in terms of use, design, information services, QR codes, and system overview. You may mention here granted financial support or acknowledge the help you got from others during your research work.

5 Results

5.1 Digital-platform-mediated tourism system in Koh Raet destination

Digital-platform-mediated tourism system for self-service information consists of the Tourism Information Service (TIS) system and the Digital Game for Koh Raet Discovery. The TIS system used a responsive design that works on web-based and mobile devices. As for the digital game for Koh Raet discovery, it was designed and developed using the MDA Framework (Mechanics-Dynamics-Aesthetics Framework). The digital games can be operated using QR Codes to play games while at the actual tourist attractions. The system consisted of tourists as users (front-end system) and data management (back-end system) systems. The TIS system, represented in Figure 2, was designed so that its data and functions were congruent with the conceptual framework (Figure 1) and the tourist's experience phases. By using the system that was developed and QR codes, tourists could perform self-visits (e.g., self-guided tours) in Koh Raet, thus meeting the framework's objective to increase tourism and improve tourist experiences using various types of technology. The TIS system connected the components of tourism information service and the tourist attractions to make them smart destinations. System design correlates with the tourist experience phases as follows:
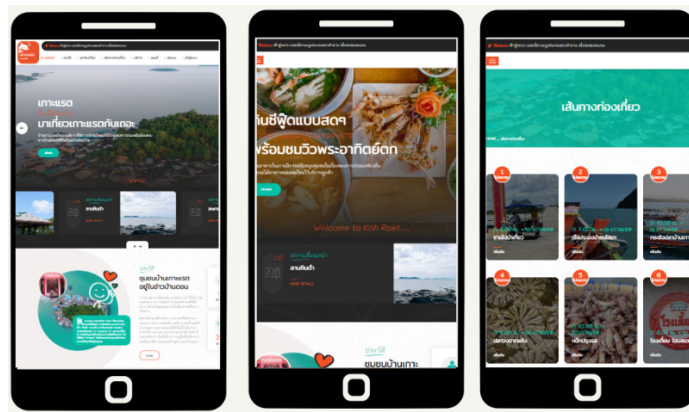
Fig. 2. Example of Front-ended system (TIS system)

1. Pre-trip phase: This phase refers to activities tourists engage in before trips, to access tourism information services about Koh Raet. This section of the system consists of Koh Raet tourism information services and an avenue for tourists to share their stories and memories. Gamification was also employed to allow tourists to interactively preview pre-trip activities (play before you arrive).

2. On-site phase: This phase refers to activities that happen at the actual tourism sites. The TIS system was employed directly, or through using QR codes, to access information associated with particular tourism spots, along with gamification, to enhance onsite tourist experiences, engagement, and entertainment. Moreover, this system allows tourists to share and submit their memories and experiences in real-time.

3. Post-trip phase: This phase refers to activities that are engaged in after returning from a tourism experience. This system can be used to impress visitors, motivate revisiting, and create word-of-mouth promotion. It also contains functions for tourist to review, rate, and share their experiences and memories related to visiting the tourism destination.

Figure 3 displays the development of the digital game for Koh Raet discovery using the MDA Framework, which consists of three facets related to mechanics, dynamics, and aesthetics. Mechanics in the game that was developed was mainly focused on the challenges and activities, which were in the form of quizzes and missions for players. Each mission that was successfully completed would be scored (receive points). These points would accumulate as you completed more challenges and would be displayed on scoreboards.
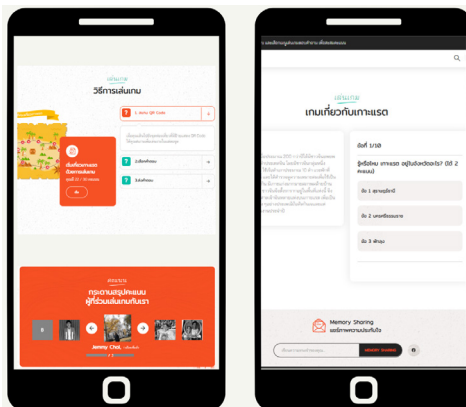
Fig. 3. Example of Digital Game for Koh Raet Discovery

Game related to the dynamic aspect was developed with the following parameters in mind. (1) To successfully complete the game, participants must visit each place included and complete the activity for that location, so that tourists would be motivated to visit all the sites and complete all of the activities. This was combined with (2) the need for competition, to provide additional motivation to the tourist to complete the game. Providing a competitive environment in a game where successfully completing each mission gains the player points and their scores are displayed on scoreboard alongside the player with highest score is an efficient way to generate motivation and a competitive atmosphere. The last aspect deals with aesthetics of the game for Koh Raet discovery. The game was designed for pleasure and to be a challenge where players were required to travel to, and complete specific activities at interesting tourism spots using QR codes, to obtain data and play games that are mainly focused on enhancing their enjoyment and experiences while earning points for the competition. When a mission is successfully completed, the player is rewarded by scoring points and the cumulative score is displayed on the scoreboard. The goal of this is to make the players (tourists) feel proud about their accomplishments and motivate them to visit different tourism spots to increase their scores and improve the probability of deciding to revisit Koh Raet and generate word-of-mouth promotion through playing the game.

5.2 System evaluation

System evaluation was performed by a sample group consisting of 200 participants. The questionnaire was divided into usability, system context, content, information service by QR code, and digital game for Koh Raet Discovery [11], [41]–[43]. The evaluation tool was a questionnaire completed by the participants who rated the system's abilities on a 5-point Likert scales anchored by "1" as strongly disagree to "5" being strongly agree.

The results showed that the overall level of user satisfaction had an average score $\bar{x}$=4.18. From the result of system evaluation, participants gave high scores to usability

($\bar{x}$=4.41), system context ($\bar{x}$=4.41), content ($\bar{x}$=4.34), information service by QR code ($\bar{x}$=3.98), and digital game for Koh Raet Discovery ($\bar{x}$=3.78), with the following details.

The system evaluation in regard to usability (shown in Figure 4) was at a high level of satisfaction ($\bar{x}$=4.41). The results indicate that participants were highly satisfied in responsive system design ($\bar{x}$=4.53), system's ease of use ($\bar{x}$=4.42), learnability ($\bar{x}$=4.41), and system security ($\bar{x}$=4.28).
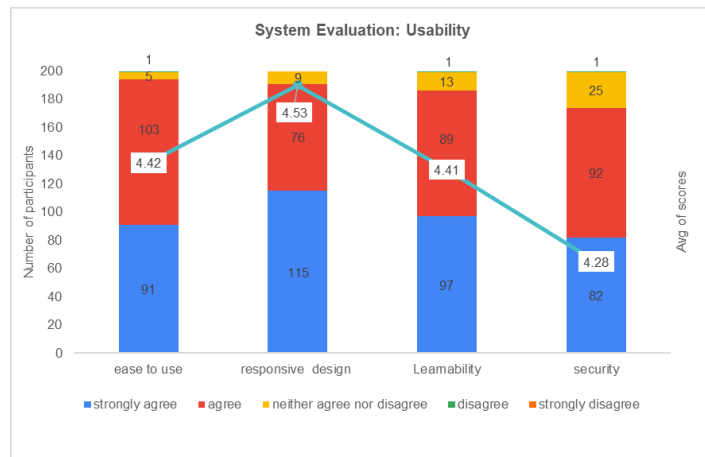
Fig. 4. System evaluation: Usability

As regards the context (Figure 5), the participants expressed their overall satisfaction with a score of $\bar{x}$=4.41, with the individual rating results as follows: language use ($\bar{x}$=4.41), navigation design ($\bar{x}$=4.39), visual layout design ($\bar{x}$=4.36), search function ($\bar{x}$=4.29), and multimedia design ($\bar{x}$=4.26).
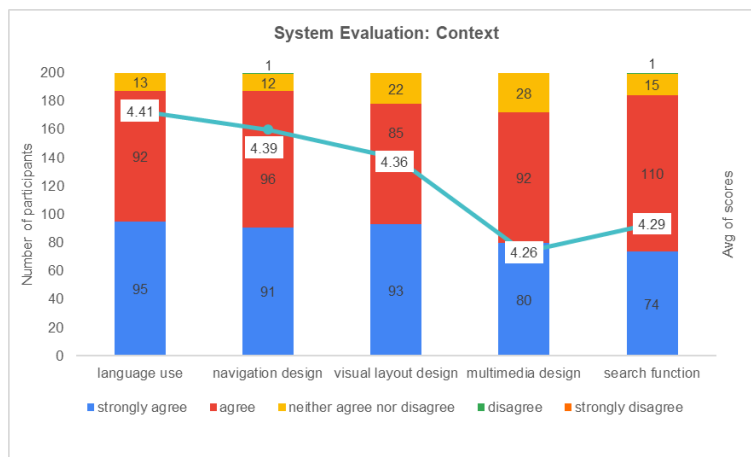

Fig. 5. System evaluation: Context

Content was evaluated and rated for overall satisfaction at a high score $\bar{x}$= 4.34, (Figure 6) with the following components: content accuracy ($\bar{x}$=4.42), up-to-date content ($\bar{x}$=4.38), content structure ($\bar{x}$=4.31), and content being comprehensible ($\bar{x}$=4.25).
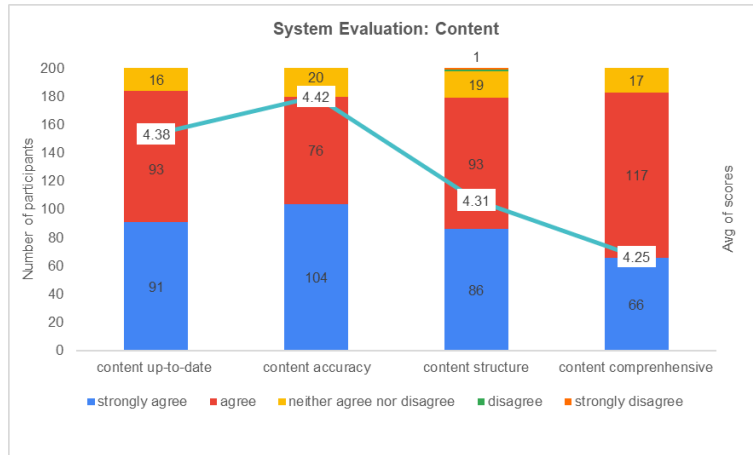

Fig. 6. System evaluation: Content

Information service by QR code was evaluated for overall satisfaction at score level $\bar{x}$=3.98 (Figure 7), with the component rating results: ease of using QR code ($\bar{x}$=4.09), perceived useful information from QR code ($\bar{x}$=4.07), ease of accessing information with QR code ($\bar{x}$=4.06), and the number of QR code service points at destination ($\bar{x}$ =3.71).
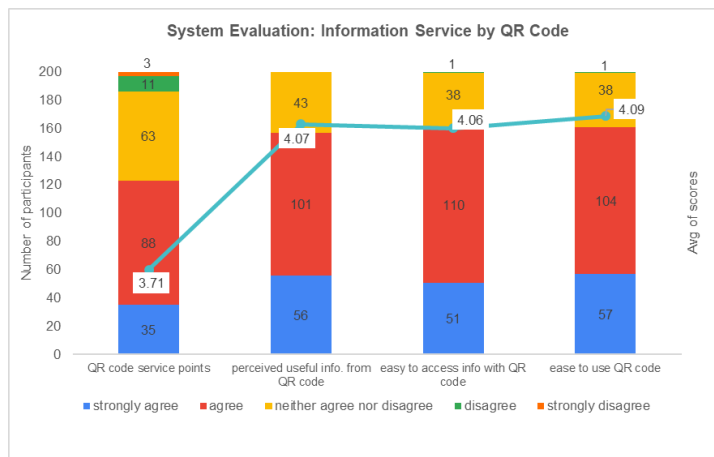

Fig. 7. System evaluation: Information service by QR code

Regarding the Digital Game for Koh Raet Discovery (Figure 8), the users expressed overall satisfaction score $\bar{x}$=3.78, with the component ratings: this game helps memorizing and recall ($\bar{x}$=3.90), this game extends the duration of visit for staying longer at the destination ($\bar{x}$=3.84), this game is fun and helps enjoy sight-seeing ($\bar{x}$=3.83), this game encourages visitors to participate in activities ($\bar{x}$=3.81), and this game motivates visitors to explore the destination ($\bar{x}$=3.78).
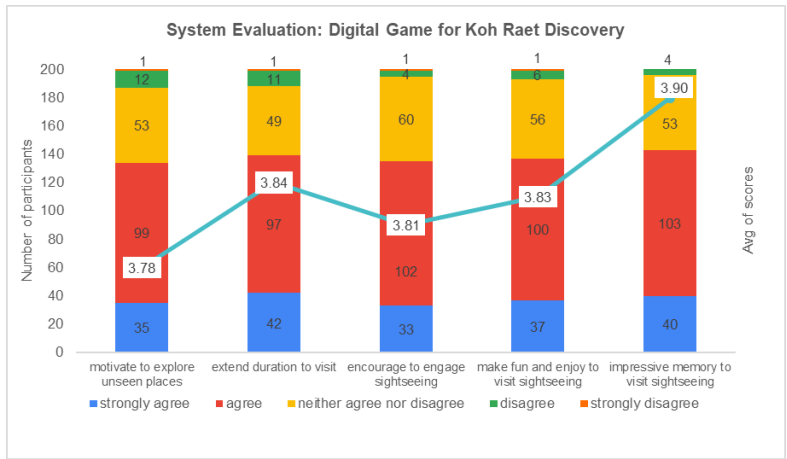

Fig. 8. System evaluation: Digital Game for Koh Raet Discovery

Accordingly, the results of the usability evaluation indicate that the participants highly appreciated the responsive design. This system allows users to benefit from the website without having to worry about screen size and resolution. In terms of content, the results demonstrate that participants were highly satisfied with the precise and clear language. According to the content evaluation, the results indicate that participants were highly satisfied with the content accuracy, referring to the reliability, truthfulness, and correctness of the content. In the evaluation of information services by QR code, participants agreed that it was easy to use QR codes for information services. Finally, participants were pleased that the digital game provided them with pleasant memories of Koh Raet tourism.

6   Discussion and conclusions

Tourism in small-town environments has arisen from the desire to avoid monotony in a chaotic society and to make trips to tourist attractions that are not regarded as being part of overtourism, or destinations with an excessive number of tourists [7], [14]. The trend in tourism is towards family trips, trips that are short in distance by local inhabitants or nearby tourists who already have some information about the tourism destinations in that area, and who tend to avoid crowded places and prefer staying in more natural settings [4], [6]. The destinations face some challenges that affect tourist decision-making on whether or not to make a trip to this town, i.e., small size, not being

a widely or well-known destination, lack of public relations, and lack of information management [7]–[9]. Digital technology can reduce the challenges faced by small-town tourism destinations, e.g., remoteness, smallness, and isolation. It is also an efficient tool for overcoming geographic obstacles, economic survival, and competitiveness issues in the global market [11]–[13].

Previous works [21], [22], [44] focused on the development of tourism information services for tourism business. [23], [45] applied data analysis and processing means. However, there is limited literature about the role that digital technology could play in facilitating self-service tourism with an information system in a sustainable way. Researchers can help improve practices in tourism businesses and serve tourists better. In this paper, we applied quantitative research to propose a digital-platform-mediated tourism system for self-service information, and took the Koh Raet, Surat Thani province, Thailand as subject of a case study in order to figure out how to implement the self-service information and self-visiting service in the small-town destination. This digital platform consists of Tourism Information Service (TIS) system and digital game for discovering Koh Raet. The TIS System is intended to promote tourism in Koh Raet using self-visiting activities. The digital game for exploring and discovering Koh Raet was also integrated with QR Code technology, the objective being to improve the tourist experiences.

The research helps empower small-town tourism by combining tourism information services and gamification into a digital-platform-mediated tourism system. Another contribution is to provide a self-service experience for travelers in small-town destinations, offering reliable and up-to-date information about the destination. Furthermore, it fosters small-town tourism promotion, and boosts tourism activities in small-town destinations in sustainable ways. There are some limitations to this study, which may provide guidance for future research. First, at this early stage of the development of this system, the results described relate only to a prototype, which will be further developed into a final system, which will then be evaluated by potential users. Second, the research used a convenience sampling approach. Therefore, interpretation and drawing general conclusions from the findings should be done with caution, and they may not generalize to other populations or circumstances. Future research should include a larger, more varied sample to validate the results of this study.

7 Acknowledgment

8 References

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