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### **TOURIST SATISFACTION WITH THE QR CODES ON STREET ART IN SONGKHLA OLD TOWN, THAILAND**

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### **ABSTRACT**

Quick Response code or QR code is a type of bar code that is used widely in many organizations including in tourism to provide various information. This study aims to investigate tourists' expectations of information provided by QR codes and to study tourists' satisfaction with QR codes on Street Art in Songkhla old town, Thailand. Quantitative research design was employed in this study. 100 Thai and non-Thai respondents from each of the two phases of data collection answered each set of two questionnaires. Majority of the tourists responded for the need of QR codes to represent Street Art paintings in Songkhla old town as they would like to know the meaning of the paintings in more detail. The language

used in QR codes should be English and Thai. The majority of the tourists showed satisfaction with QR code as information sources for Street Art paintings in terms of design, codes' easy usage, and its accessibility which is not complicated. The results of this study can facilitate travelers' rapid and easy access to tourism information. The QR codes can improve tourists' experience by giving background information behind each painting related to history, culture and local ways of life. It helps both tourists and locals to discover more information about the cultural heritage they inherited and to enhance their awareness of heritage preservation. Tourism stakeholders and policy makers also benefit from this study as the information can be used to develop the QR codes for other tourist destinations. Additionally, street art plays an important role in creating creativity in the city and contributes in promoting Songkhla Old Town. It is considered as a tool to drive the local economy.

**Keywords:** QR code, Street Art, Songkhla Old Town, Tourist experience.

## INTRODUCTION

Tourism plays a crucial role in driving many countries economically and socially. It has been used as a main development strategy because it can generate massive income for many countries. Today is the era of technology and the 21<sup>st</sup> century is the age of smartphones and digital devices (Toka & Mahmoud, 2016; Kamnerdwam & Yokchawee, 2020). Our society has changed and developed in many ways. Technological advancement has made travel more affordable, accessible, and simpler for many people. Digital innovation will play more important role in our daily life and social businesses. Various technology devices will be able to connect and provide real-time information. Quick Response code or QR code is one of the innovative tools which is extensively used all over the world including in tourism industries. It is a two-dimensional printed code in black and white square shape block that stores information and can be read by readers on mobile devices. The QR codes are generally used in many areas such as historical places, museums, restaurants, and hotels (Toka & Mahmoud, 2016). They can increase tourists' experiences about the special points of the destinations by providing more information that can be fast and easily accessed. The QR codes are now a global standard and most people know how to scan a QR code although they do not

understand the language. If tourists can get information related to the places they visited at the right time and place, it can make their experience more meaningful. This study aims to investigate tourists' expectations of information provided by QR codes and to study tourists' satisfaction with QR codes on Street Art in Songkhla Old Town, Thailand. Although the QR codes are widely used in the museums and for payment in many shops and restaurants, it is hardly found as information sources in the tourist destinations around Songkhla Old Town.

## **LITERATURE REVIEW**

### ***Tourism Interpretation***

Interpretation is generally used in various contexts. Interpretation related to tourism can be found in the form of books, signs, brochures, or be operated by a tourist guide. One of the first scholars to provide a definition of interpretation was Freeman Tilden in 1957 (Svartor, 2017). He described the term interpretation as an educational activity which aims to reveal the meaning of something and the relationship of the environment with the illustrative media such as objects, real image or self- touch (Tilden, 1977). Jittungwathana (2005) claimed that tourism interpretation is the art of communication which can enhance knowledge, understanding about the value and meaning of natural resources and culture that makes tourists appreciate the stories presented. It could also lead to good attitude towards sustainable tourism resources conservation and create interesting stories from personal and non-personal interpretation.

Tourism interpretation also refers to activities that are intended to promote knowledge to people and to strengthen understanding about cultural heritage sites including academic and

general publications, equipment installed in tourist sites, formal and informal educational programs, community activities, educational, and research training. Moreover, tourism interpretation includes creating media about attractions for tourists to gain knowledge about history and the importance of tourist attractions from individual media or sign and easy languages (Amnueyngertra, 2010). In conclusion, tourism interpretation is the art of communication which aims to reveal the meaning, relationship, and understanding about the value of cultural heritage sites and to make the tourists appreciate the stories presented by personal and non-personal interpretations. Cserer et al., (2020) stated that interpretation is used as a medium to enhance the tourists experience, provide site-related information, stimulate the tourists to realize the significance of the places, the objects, and the heritages, and enable the tourists to be aware of heritage preservation. Regarding the principle of interpretation, Dumbraveanu et al. (2016) claimed Freeman Tilden as a key figure in the field of interpretation. His ideas are used as a guiding principle which is frequently being adapted to the present day.

### ***Tourist satisfaction***

Tourist satisfaction is one of the factors that determines the success of tourism businesses (Asmelash & Kumar, 2019). The term 'tourist satisfaction' in the research of tourism originated from 'customer satisfaction' in marketing since the 60s (Chen et al., 2013). Mukhles (2013) proposed the meaning of tourist satisfaction as the feeling of happiness or unhappiness after the tourist received the services or products. It is a result of the comparison before and after the experience. If the tourist's expectation does not meet the perceived performance, the tourist will not be satisfied. Showkat et al., (2021) described tourist satisfaction as the visitors' feelings of enjoyment from visiting a tourist attraction. The study

related to customer satisfaction in tourism began in 1960s (Sawant, 2020). However, the meaning of this term is still vague because there is no universal scale to evaluate customer satisfaction. Sawant (2020) claimed that tourist satisfaction or dissatisfaction is acquired from the experience the tourists obtained from the tourist destination. A visitor seems to be satisfied when the derived experience produces a feeling of enjoyment compared to expectation (Mukhles, 2013). Nifaosan et al. (2021) studied tourist satisfaction in Nakhon Si Thammarat Province, Thailand and it was claimed that the tourist demographic characteristics are the essential factors which have been used to assess tourist satisfaction. For example, 'age' is one of the demographic variables that play a crucial role in the travel experience of the tourist. Nifaosan et al. (2021) claimed that age difference has a powerful impact on the relationship between the destination image and tourist satisfaction. Other demographic characteristics which play a crucial role in tourist satisfaction assessment are gender, marital status, educational level, occupation, and place of residence. In this study gender, age, occupation, and purpose of travelling were used as independent variables to investigate tourists' expectations of information provided by QR codes and to study tourists' satisfaction with QR codes.

### ***Quick Response (QR) codes***

Quick Response or QR code is a type of bar code. A barcode is a small box with a small collection of black parallel lines of differing widths (Ashish, 2021). It is used to contain information in the horizontal direction such as manufacturer name, price or type of product and it can be read only by special barcode reader. Moreover, QR code is a two- dimensional bar code that can be read with camera- enabled smartphones with installed QR reader software and web applications. It is used in many types of products such as books, boxes, bottles,

labels, brochures or even billboards. Compared to traditional bar codes, QR codes have many advantages. Firstly, it can be created with free software and can be used without a license. Secondly, more information can be stored in QR code than in a bar code. Finally, it can be decoded by using a smartphone equipped with a camera (Cox & Shiffler, 2014). Kamnerdwam and Yokchawee (2020) claimed that the QR codes can contain more information and have more potentiality to store information in a smaller space compared to barcodes. Moreover, even if the printed code is damaged, the QR codes still work.

QR code was invented in 1994 and was developed by Densa- Wave which is a subsidiary company of Toyota in Japan (Anita et al., 2017). Originally, it was widely used for fast encoding and decoding of data in automotive industries. Currently, QR codes have become popular all over the world including Thailand in advertising and packing products. Ishak et al. (2013) claimed that QR code is used widely as a new identity. The feature of the QR code looks like a small box which includes random series of black and white pixels which can perform various actions such as opening a website link, sending a short text message, dialing a phone number, and playing an mp3 file. Although it is a tiny symbol, lots of information such as websites, addresses, specifications of particular products or personal information can be stored in this symbol. QR code is made up of different sections such as version info, format info, coded data, quiet zone, timing pattern, alignment pattern and position detection pattern (Singh and Singh, 2016: 1955). The decoding process starts from the smartphone and the code is scanned via the phone camera. After that, the QR code is decoded and redirected to the information such as website, phone number, map, and video (Cinnioğlu, 2019). To decode the QR codes, a smartphone with QR code reader application is required. After scanning by using the camera on the smartphone, the content stored in the QR code will be displayed on the phone screen.

Originally, QR codes were used widely in advertisements, product packing, and subway billboards. Later, people increasingly used QR code in their daily life such as in magazines, shopping, and travel leaflets. QR codes began to be used by several companies in France, U.K. and Switzerland to promote products and to inform the customers about daily rates. Toka and Mahmoud (2016) claimed that between 2012 and 2016, the number of QR code users around the world increased from 18 to 104 million which indicates that the popularity of using the QR codes is increasing quickly. Moreover, QR code applications are highly used in many other countries around the world. Ozkaya et al. (2015) stated that QR code is an information technology which is widely used in various business organizations to promote online marketing. The widespread use of the QR code is the consequence of the increasing popularity of smartphones with internet connectivity. Regarding service industry, QR code is used globally in various services such as food services, transport, entertainment, tourism and hospitality. Many areas and tourist attractions are currently using the QR codes to provide information for the tourists. In tourism, various stakeholders such as restaurants, hotels, and transports are using the QR code to enhance tourists' experiences.

The QR codes are now being used in hotel brochures, feedback forms, and access cards to provide helpful information for the tourists in hotel. In the restaurants, QR codes are used for various purposes for example, to give information about calories and nutrition of a particular food, or to show videos of dish preparation. QR codes are also used as a coupon for the customers to scan and receive the discount. Many cities across the world use the QR codes to provide information at various public areas such as in the parks, bus stops, and heritage sites. Many museum exhibitors are using QR codes to give presentations, to provide guidelines and instructions about the museums. In this study, QR code is used as a non-personal interpretation to provide information about street art painting because it is a simple way to

access the information which comprises both text and photos. Tourists can get detailed information at the place without needing a tour guide.

### ***QR codes in tourism***

QR codes have spread rapidly into tourism and service sectors because they have more storage capacity than traditional bar code and can be read easily and quickly (Cinnioğlu, 2019). In tourism, the QR codes can be used by various stakeholders to add value to the services to the guests. They are used widely in museums, restaurants, airlines, hotels, and train stations. QR codes are generally used to provide further information on local history, culture, accommodation, promotion, and tourism marketing. Additionally, they can be used to transform the forms of tourism information and provide instant and area-sensitive interaction for tourists. The use of QR codes benefits a variety of tourist and service industries. The QR code application provides quicker and easier services to the guests to increase customers' satisfaction. Mall (2016) stated about the use of QR code in a hotel to provide room service to the guests. The guests can access the hotel's menu in different languages by scanning the QR codes. They can directly order food via the QR code application and the order will be sent to the kitchen and the food will be prepared and served directly from the kitchen to the guest rooms.

Furthermore, QR code application can be used to provide information related to the hotel such as the location, telephone number, or services. QR code is also used as a promotional tool to offer discount in the restaurants, spa, and other services (Cinnioğlu, 2019). Haworth and Williams (2012) claimed that this mobile technology has particular interest for museums seeking to broaden visitors' engagement. Many museum exhibitors are using the QR codes to

store images, show videos, or give presentations. The advantage of using the QR codes is varied for example, it is convenient when the information is updated or added, it can save printing cost and it can provide guidelines and instructions. Manwicha et al. (2016) stated the use of QR code to accommodate the visitors of Hat Yai Museum. The evaluation of 100 visitors revealed that they were quite satisfied with the completeness of the information and the ease of utilizing the QR code.

Regarding the benefit from using the QR codes in the restaurant business, it is clear that the competition in the restaurant business has increased. To increase customers' satisfaction, the idea of creating a menu using the QR code technology was introduced. Kartik and Karekar (2019) claimed that since the size of the QR code is very small, the restaurants can still keep the original design of their menus and integrate the QR code technology with low cost. Customers can use the QR code reader equipped in their mobile phones by hovering over the QR codes. As soon as the code is read, the web application will be launched for the customers to select the dishes from the menu and order the food. Selected dish will be stored in a server database which can be accessed by the admin directly from the kitchen. Moreover, the use of QR codes can reduce the work that the waiters need to do. It will help the restaurants to save cost for hiring waiters and will also reduce miscommunication between the waiters and the customers. Furthermore, the QR codes can help to minimize the difficult communication between the servers and the customers in case the customers cannot speak the local language. This technology will increase quality and speed of service (Kumar et al, 2021).

Klinmuenwai (2018) investigated the guidelines for supporting cultural destinations in Tama - O community, Muang district, Lampang province. It was found that Tama - O community has the potential to be promoted as a cultural site because the community has ancient cultural

attractions and identity that are different from other communities. However, Tama - O community lacks the potential in services and participation from local people. The community does not have enough people who can describe various information about the community and tourism promotions both in English and Thai languages. The suggestion for this study is that there should be training to provide the knowledge about history, people's way of life, traditions, and local culture to the people in the community to be able to pass on knowledge to tourists who travel to study or visit the community. The government and travel agencies also play an important role in public relations and promoting cultural tourism activities diversely and continuously.

The result of this study is consistent with the results from the study of Pathomkanjana (2015) which investigated the guidelines for participation of Bangluang community in cultural tourism promotion, Banglen district, Nakhon Pathom province. It was found that to develop tourism in the community, local people should be trained to be tourism volunteers and financial support should be supported by sub district administration organizations or local agencies. There are numbers of studies which examined interpretation in cultural tourism and one of those is the study of Tanakit (2014) which studied forms of interpretation for cultural tourism; a case study of Pakho temple in Sating Phra district, Songkhla province. It was found that most of the interpretation boards in Pakho temple do not provide the information related to the temple because of language barriers, unsuitable locations and lack of interests. Furthermore, the form of interpretation which served the need of the tourists was the interpretation by people. The forms of interpretation in Pakho temple could be divided into 6 forms; local guides, young guides, tour guides, direction signs, interpretation boards, and websites. All 6 forms were required to use English as a medium of communication and giving information to the international tourists.

Regarding the use of QR code technology in agriculture, Kanyarat (2018) conducted a study employing the QR codes to encourage learning about the types of plants in the botanical garden of Phijit agriculture and technology college. The data was collected from 30 QR code users. The result of this study showed that the QR code technology could be used to collect a large amount of data regarding vegetation and the users would get more convenient service. Moreover, the QR code users showed satisfaction with the design, the content, and the presentation. The QR code technology is extensively used all over the world and there are numbers of studies which investigated the use of QR codes in tourism outside of Thailand. Anitha et al. (2017) conducted a studied on the use of QR codes in tourism industry which focused on providing information about tourist attractions. It was clear that the QR codes were used for encoding and decoding information instantly because the QR codes can be scanned using the users' smartphones. The use of the QR codes in tourism is widespread for example, in museums, restaurants, hotels, bus and train stations.

In another study, Chen and Weng (2010) developed a mobile guide map system with the QR codes and using mobile barcode technology to provide automatic maps for scenic locations and travel service centers in Taiwan. The result from this study can help to improve and reduce the existing system defects through mobile devices. Data about tourist attractions were collected through QR codes and the tourists can scan photos of 2D barcode using 3G mobile phones. The QR codes can offer multimedia data and accurate information about interesting points of tourist attractions as in the study by Kanchanawong and Kanchanawong (2017) which claimed that the result from the 250 questionnaire surveys from the tourists who used QR code application for receiving information at various points around Doi Suthep Temple, Chiang Mai province, Thailand, showed that overall tourists' satisfaction toward the use of QR codes was high. They were satisfied with the information received from the QR codes

because they found that it was useful. Furthermore, it was easy to access the information and easy to use the sign at the point of service and the number of service points was sufficient.

Ishak et al., (2013) created a mobile plant tagging system for urban forest eco-tourism in Malaysia. The study aimed to create tags for plants using the QR codes. Even though the visitors are in the forest, they can scan barcodes and access information using their mobile devices. The suggested system, however, is still only being used as a model. Before being put to use, it needs to be upgraded in terms of safety and system functionality, and it must also pass real-world user testing. Therefore, these additional improvements and additional considerations will need to be considered for future development. To conclude, using the QR codes to provide the information for the tourists is advantageous because users can easily, quickly, and directly access the information through their electronic devices.

### ***Street Art in Songkhla Old Town***

Street Art was previously known as post-graffiti (Nomeikaite, 2019). In the past, spray-painted works in the classic graffiti style made up the street art. Modern Street art has evolved to incorporate both traditional graffiti and modern styles. Graffiti from the past has been found on carved rocks in places like Pompeii, Italy, and Abu Simbel, an ancient Egyptian town (Lian, 2009). Besides, graffiti in the past included advice on friendship and love, as well as message on the enjoyment of food. On the other hand, the contemporary graffiti is unique in that it is more literate and self-aware, frequently reflecting current events. Historically, people view street art as a defiant protest against the state and the capitalist system (Charbel, 2015). It currently serves as a counterpoint to commercial advertising's attack on customers. Street art is also used as an economic driver. In Penang, street art helps to promote Penang in a positive

way to improve its standing internationally in the world tourism business (Chang, 2014). In the same way, Street Art in Songkhla old town is used as a new tourism product which plays a crucial role in promoting tourism in Songkhla.

Street Art in Songkhla old town is a part of street art campaign in Songkhla Fun Tourism Campaign aimed at promoting cultural tourism in order to boost the economic growth and the regional connectivity. Mr. Songphol Swadtham; the Songkhla provincial governor at that time revealed that the city walls on the 3 main roads in Songkhla Old Town namely Nakhon Nok Road, Nakhon Nai Road, and Nang Ngam Road would become street art displays, designed by students from Silpakorn University, Thaksin University, and staff from 3D Magic Eyes Museum. The artworks aim to attract more tourists to visit Songkhla Old Town and portray the identity of Songkhla through 12 Street Art paintings which represent the local lives and cultural diversity between Thai, Malay, and Chinese residents (NNT, 2016). However, apart from the paintings, there is no other information describing the story behind them. Thus, it was thought that the inclusion of information in the QR code would enhance tourists' experience. In this case, the QR codes are used to provide information about all the 15 paintings. The details of each picture are presented in Table 1.

Table 1

*Street Art paintings around Songkhla Old Town*

<b>Name of Art</b>	<b>Description</b>
<b>1) The tradition of shrimp rice crackers</b>	The picture illustrates the production of shrimp rice crackers which is a highly recommended product of Songkhla
<b>2) Khao Yam, the Southern Thai</b>	The painting shows how to cook Budu which is a rice salad sauce made with fermented fish. Budu is

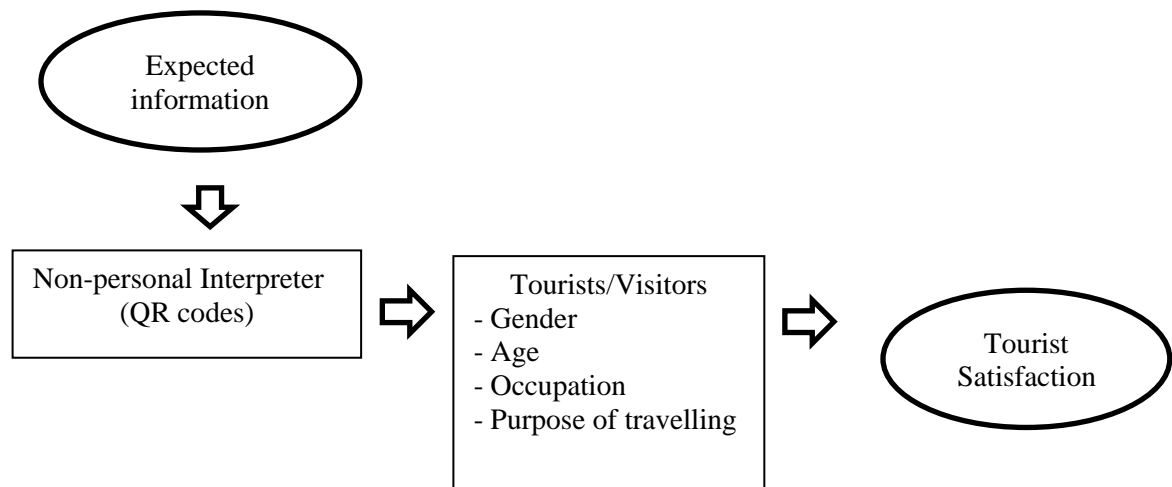
- served with Khao Yum, a southern Thai rice salad which is a popular local dish.
- 3) Everlasting friends** The picture represents the mixture of ethnic groups living peacefully together in Songkhla province. The groups are Thai Buddhists, Thai Muslims, and Thai Chinese.
- 4) Let's play** The picture depicts games being played at school and so the painting is on the school's wall. In the picture the children play chair ball, seesaw, and shuttlecock kicking.
- 5) Playful fishers** The painting is on the wall of Sak Sith Jetty on Nakhon Nok Road. The dog in the picture relates to the fishing industry in Songkhla province. In the past, fishermen used dogs to watch over the fishing boats when they enter the port.
- 6) Chinese opera performer waiting for love** The picture illustrates a Chinese opera performer sitting on a bench. The picture was painted on the wall of the Songkhla City Pillar Shrine where Chinese opera is performed annually as part of the City Pillar Shrine Festival.
- 7) The past** It is a picture of a senior couple. The picture represents the life of Thai Chinese people in Songkhla Old Town. The old woman is sitting leisurely, and the man is playing the fiddle. The picture is on Nakhon Nai Road.
- 8) Kotun Kopi** The picture depicts an old-style coffee cart. Kotun was a coffee seller who sold coffee at Nakhon Nok Road. In the past, the workers in Hub Ho Hin Red Rice Mill came to drink coffee here for breakfast and coffee break.
- 9) Fish delivery** The picture reflects the lifestyle of people on Nakhon Nok Road. The road is close to Songkhla Lake, and the locals make a living from the fishing industry.
- 10) Safety first** The picture shows an old man holding a helmet. It

- was painted in order to urge people to be aware of road safety issues. The picture is on Nakhon Nok Road.
- 11) Piak's noodles** It is a picture of an old-style noodle shop. It is known as Piak's noodles. A large amount of noodles is fried in a big pan and when it is served, some customers get many pieces of sliced pork while others get very few.
- 12-13) The Teng** It is a set of two paintings on the wall of Thai Farmers Bank. They are a parody of the Beatles. The figures in the picture are part of the shadow play tradition called Nang Talung. Four shadow puppets dressed like the Beatles walk towards an automatic teller machine (ATM). In the picture, Teng; the joker among the shadow puppets is withdrawing money from the (ATM) of Thai Farmers Bank.
- 14) City of trading** The picture represents Songkhla province during ancient time. In the past, Songkhla province played an important role as a trading port. The painting is at the back of Hub Ho Hin Red Rice Mill, facing the lake.
- 15) Three women and tablets** It is a picture of three women using their mobile phones and tablets near a big jar painted in the local style. The women in the picture wear a southern style *Sarong*. The painting illustrates the lifestyle of the locals in current times.
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### ***Research framework***

Based on the literature reviews, the research framework for this study is developed to investigate tourists' use of QR codes and their satisfaction with the QR codes on Street Art in Songkhla old town, Thailand. The framework has four independent variables which comprise

of gender, age, occupation, and purpose of travelling.



*Figure 1. Research framework*

## **METHODOLOGY**

This paper presents the results based on quantitative research approach whereby a survey method was employed, and the data collection procedures were divided into two phases. The first phase was conducted to find out the tourists' expectations of the information provided by the QR codes. The first set of questionnaires was launched to 100 Thai and non-Thai tourists who came to view Street Art around Songkhla Old Town. Thai and non-Thai tourists were selected because both are groups of tourists who visit Songkhla Old Town. Additionally, the languages used in the QR codes are English and Thai. The data was collected at the weekend because it was assumed that the number of tourists will be the highest. Regarding the number of the participants, in fact, there is no official records about number of tourists visiting Songkhla Old Town but based on the estimation of Songkhla Heritage Trust, there are around 150-200 tourists per month during the pandemic of COVID-19. Therefore, based on Krejcie and Morgan's sample size table, the sample size should be around 108-132 people. Moreover,

the number of the participants was adopted from the study by Manwicha et al. (2016) which investigated the application of QR Code technology in the museum of Hatyai city, Songkhla province and the data derived from 100 visitors was analyzed. For this study, all 200 participants (100 per each phrase) were yielded using convenience sampling method.

All of the paintings are displayed on the city walls along the three main roads in Songkhla Old Town which comprise of Nakhon Nok Road, Nakhon Nai Road, and Nang Ngam Road. As a result, it was hard for the research team to distribute the questionnaires at each point where the paintings are displayed. Thus, the questionnaires were distributed to the tourists at the Hub Ho Hin Rice Mill, situated on Nakhon Nok Road where it is considered as a check-in point for every tourist after walking around the old town area. The first set of questionnaires comprises of 3 parts: Part 1 is participants' demographic information, Part 2 is the level of participants' expectation about information provided by the QR codes to represent Street Art in Songkhla Old Town such as names of the paintings, locations, and the artists' name, where the respondents were required to rate each item on a 5-point Likert scale specifying their level of agreement with; 1 strongly disagrees; 2 disagree; 3 neither agree nor disagree; 4 agree; 5 strongly agree. The third part is the open-ended question about the respondents' suggestions. The results from the first set of the questionnaires were used as a guidance to develop the information or content provided by the QR codes. The second set of questionnaires was distributed only a month later.

The second phase of data collecting procedure was conducted to investigate the tourists' satisfaction with the QR codes on Street Art in Songkhla Old Town. The second set of the questionnaire was distributed to 100 Thai and non-Thai tourists using the same process as the first phrase of the data collection procedure. The second set of the questionnaires comprises 3

parts: Part 1 is participants' demographic information and Part 2 is participants' satisfaction towards using QR codes. In the second part, the participants were required to respond on a 5-point Likert scale specifying their level of agreement: 1 strongly disagree; 2 disagree; 3 neither agree nor disagree; 4 agree; 5 strongly agree. The third part is the open-ended question about the respondents' suggestions. After the respondents were asked to use their mobile phone to scan the prepared QR codes and read the information about all Street Art paintings, they filled in the questionnaires. The data collection was again conducted at Hub Ho Hin Rice Mill at the weekend. Using SPSS software, the first and second sets of questionnaire data were analyzed, and the outcomes were displayed as percentages, means, and standard deviations (S.D).

## **RESULTS**

### ***Expected information provided by the QR codes***

The data about tourists' expectations of the information provided by the QR codes were derived from 100 tourists which comprised of 50 Thais and 50 non-Thai tourists. The gender distribution of the respondents is shown in Table 2.

Table 2

*Gender*

<b>Gender</b>	<b>Percentage %</b>
Male	33
Female	67
Total	100

It was discovered that female respondents made up 67% of the sample, while male

respondents made up 33%.

Table 3

*Age*

<b>Age</b>	<b>Percentage %</b>
Under 20 years old	13
21-30 years old	37
31-40 years old	29
41-50 years old	12
51-60 years old	4
Over 60 years old	5
Total	100

Young adults, or those between the ages of 21 and 30, made up the majority of respondents, followed by those between the ages of 31 and 40. The majority of them were over 60 and in the age range of 51 to 60.

Table 4

*Occupations*

<b>Occupation</b>	<b>Percentage %</b>
Student	27
Office worker	23
Government officer	21
Own business	25
Others	4
Total	100

Regarding the occupation of the respondents, the result revealed that most of the respondents (27 percent) were students. The number of other professions was not significantly different, though. Among them, 25% ran their own business, 23% worked in offices, 21% were

government employees, and 4% did other jobs, respectively.

Table 5

*Purposes of Travelling*

<b>Purpose of Travelling</b>	<b>Percentage %</b>
On holidays	64
On business	12
Visit friends/relatives	16
Travel as hobby	8
Total	100

The majority of tourists (64 percent) were travelling for vacation-related reasons. Only a small percentage of them (8%) travelled as a hobby. About 16 percent of travel was for visiting friends or family, while 12 percent was for business. The respondents were questioned about their understanding of the meaning of the Street Art paintings at the conclusion of the first section of the questionnaires, and the results are shown in Table 6.

Table 6

*Knowledge about the paintings*

<b>Knowledge about the paintings</b>	<b>Percentage %</b>
Know all paintings	2
Know some paintings	17
Do not know all paintings	81
Total	100

The majority of survey participants were unaware of the significance of the Street Art paintings. Just 17 % of them knew some paintings, and only % knew every single one. Table 7 displays the results of the respondents' expectations regarding the information provided by QR codes to represent street art in Songkhla Old Town.

Table 7

*Expected information provided by QR code*

Assessment	$\bar{X}$	S.D.	Level of agreement
1. I'd like to know the meaning of the Street Art paintings in Songkhla old town.	4.32	0.58	High
2. I think the content about the Street Art paintings should be written both in Thai and English.	4.30	0.73	High
3. I'd be glad to use QR code to find information about the Street Art paintings.	4.22	0.76	High
4. I'd like to know the name of Street Art paintings	4.12	0.67	High
5. I'd like to learn about culture and people's way of life in Songkhla old town from Street Art paintings.	4.01	0.82	High
6. I'd like to receive clearly and easy information to understand about Street Art paintings.	3.98	0.75	High
7. I'd like to know the background of the Street Art paintings.	3.97	0.64	High
8. I'd like to know the artists' name of the Street Art paintings.	3.93	0.74	High
9. I'd like to know more interesting information about Street Art paintings.	3.86	0.70	High
10. I'd like to know the location of Street Art paintings.	3.73	0.50	High
<b>Average</b>	4.04	0.68	High

The majority of the tourists agreed on overall aspects of expected information provided by QR codes at high level ( $\bar{X} = 4.04$ ) as well as each aspect of the expected information. The information about the meaning of Street Art paintings and languages which are Thai and English should be used seems to be the most expected item ( $\bar{X} = 4.32$  and  $\bar{X} = 4.3$ ). The respondents accepted the use of QR codes as the information sources of Street Art paintings ( $\bar{X} = 4.22$ ). The information such as the names of the paintings ( $\bar{X} = 4.12$ ), culture and people's way of life ( $\bar{X} = 4.01$ ), should be added in a clear and easy way to understand ( $\bar{X} = 3.98$ ). Other details such as background of the paintings ( $\bar{X} = 3.97$ ), the artists' name ( $\bar{X} = 3.93$ ), more interesting information about Street Art paintings ( $\bar{X} = 3.86$ ), and the location ( $\bar{X} = 3.73$ ) should be added as well.

#### ***Satisfaction on using QR code as tourism information sources***

The data about tourists' satisfaction on using QR code as tourism information sources were derived from 100 tourists comprising of 50 Thais and 50 non-Thai tourists.

Table 8

#### ***Gender***

<b>Gender</b>	<b>Percentage %</b>
Male	36
Female	64
Total	100

It was discovered that women made up the majority of respondents (64%) while men made up 36%.

Table 9.

*Age*

<b>Age</b>	<b>Percentage %</b>
Under 20 years old	3
21-30 years old	43
31-40 years old	32
41-50 years old	16
51-60 years old	6
Over 60 years old	-
Total	100

The majority of respondents were between the ages of 21 and 30. They were followed by those between the ages of 31 and 40. The majority of them were under 20 years old and in the age range of 51 to 60. Table 10 displays the findings regarding the respondents' occupations.

Table 10

*Occupations*

<b>Occupation</b>	<b>Percentage %</b>
Student	19
Office worker	26
Government officer	17
Own business	32
Others	6
Total	100

The results of the survey regarding the respondents' occupations showed that about 32% of the respondents were self-employed. Office workers made up 26% of them, students made up 19%, government employees made up 17%, and other occupations made up 6%. Table 11 displays the findings regarding the reasons for travelling.

Table 11

*Purposes of Travelling*

<b>Purpose of Travelling</b>	<b>Percentage %</b>
On holidays	62
On business	15
Visit friends/relatives	17
Travel as hobby	6
Total	100

The majority of tourists (62%), when asked about their travel objectives, stated that they were on vacation. About 6% of them, a small group, had traveling as their hobbies. About 17% of trips were for visiting friends or family, and 15% were for business. The result is displayed in Table 12 with regard to the degree of satisfaction with using QR codes as sources of information about street art paintings in Songkhla's old town.

Table 12

*Satisfaction on using QR code as Tourism information sources*

<b>Assessment</b>	<b><math>\bar{X}</math></b>	<b>S.D</b>	<b>Level of satisfaction</b>
<b>QR code design</b>			
1. Easy for using	4.6	0.5	Highest
	6	1	
2. Easy to access and it is not complicated	4.6	0.4	Highest
	4	8	
3. Suitable front size	4.5	0.5	Highest
	5	6	
4. Intelligible languages	4.5	0.6	Highest
	2	1	
Total	4.5	0.5	Highest
	9	4	

<b>Content in QR code</b>			
1. Content is interesting	4.4	0.6	High
	2	5	
2. Providing knowledge about people ways of life in Songkhla old town	4.3	0.6	High
	9	8	
3. Content is suitable	4.3	0.6	High
	8	3	
4. Order of the content is suitable	4.3	0.6	High
	3	8	
Total	4.3	0.6	High
	8	6	
<b>Accessibility and advantages</b>			
1. Save the time	4.7	0.4	Highest
	6	2	
2. Convenient to use	4.7	0.4	Highest
	0	6	
3. Save resources and budgets	4.6	0.5	Highest
	1	9	
4. The information responds to the needs	4.3	0.7	Highest
	3	1	
Total	4.6	0.5	Highest
	0	4	

Majority of the respondents showed the satisfaction on the QR codes' design ( $\bar{X}$  =4.59), accessibility and advantages at the highest level ( $\bar{X}$  =4.60) while the content in the QR codes was satisfied at the high level ( $\bar{X}$  =4.38). The satisfaction on accessibility and advantages aspects includes time saving ( $\bar{X}$  =4.76), convenient usage ( $\bar{X}$  =4.70), resources and budgets save ( $\bar{X}$  =4.61) as well as the capacity to respond to the tourists' need about expected information ( $\bar{X}$  =4.33). Regarding the QR codes' design, the respondents admitted that they are satisfied on the QR codes' easy usage ( $\bar{X}$  =4.66), and the accessibility which is not complicated ( $\bar{X}$  =4.66). The suitable front size ( $\bar{X}$  =4.55) and the intelligible languages ( $\bar{X}$  =4.52) are satisfactory at the highest level as well. In relation to the aspect of the content appeared in the QR codes, the respondents agreed that the content in the QR codes is

interesting ( $\bar{X}=4.42$ ). They are satisfied with the knowledge about people's ways of life ( $\bar{X}=4.39$ ) which is arranged in an appropriate order ( $\bar{X}=4.38$ ) and the content is suitable ( $\bar{X}=4.33$ ).

## **DISCUSSION AND CONCLUSION**

This study aims to investigate the tourists' expectations of information provided by QR codes which represent Street Art paintings in Songkhla old town and to study tourists' satisfaction with QR codes. The results showed various aspects of information expected by the respondents. Diverse information such as the names of Street Art paintings, culture and people's way of life, the background and the interesting information are expected to be provided by the QR codes. The results from the first set of the questionnaires were used as a guideline to create QR codes models which later were evaluated to investigate the tourists' satisfaction. The results from the second set of the questionnaires revealed the highest satisfaction of the respondents on the QR codes' design, accessibility and advantages as when tourists want to access the information, Chen and Weng (2010) claimed that it is simply a matter of scanning the 2D barcode using a smartphone.

The ease of using QR code is supported by many previous studies (Cinnioğlu, 2019; Chen & Weng, 2010; Ishak et al., 2013; Mall, 2016; Kanchanawong & Kanchanawong, 2017; Kanyarat, 2018; Kumar et al., 2021;). The QR codes can be used to collect a large amount of data such as text, personal information, website, and addresses because they have more storage capacity compared to the traditional barcode (Cinnioğlu, 2019). They can also provide multimedia data and accurate information about tourist attractions (Kanchanawong & Kanchanawong, 2017). Furthermore, the users can access the information easily at anytime

and anywhere whether in the forest (Ishak et al., 2013), or even in sensitive areas. Because of its convenience, QR codes are used in various ways in the tourism industry. When information is updated or added, it is simple and can reduce printing costs (Haworth & Williams, 2012).

There are numbers of previous studies which support the satisfaction of the users on the QR codes' usage (Manwicha et al., 2016; Kanchanawong & Kanchanawong, 2017; Kaiyarat, 2018; Kumar et al., 2021). As a result, the use of the QR codes in tourism is widely spread (Anita et al., 2017). In many museums, QR codes are used to store images, show videos, or give presentations to the visitors. From the study by Manwicha et al. (2016) it was found that the visitors were highly satisfied when receiving complete information and the simplicity of using the QR codes.

On the contrary, although QR code application was invented many years ago, the potential has not been realized in full today. Pillai et al., (2017) claimed that the greatest benefit of using the QR code application was the customers' satisfaction by providing faster information easily and conveniently. The disadvantage of using QR codes has not been found but the customers' insufficient knowledge about QR code application has been considered as a disadvantage. The result from the study of Pillai et al., (2017) is supported by the study of Kanchanawong and Kanchanawong (2017) which investigated the use of QR codes to provide information at tourist destinations. The results showed that although overall, tourist satisfaction was high, many tourists did not realize the existence of the QR code service at the point of interest. Furthermore, the findings from Gutierrez and Rodriguez's (2020) study, which looked at how much QR codes can help preserve local memory and culture, also corroborate those from earlier research. The study revealed that majority of the tourists are familiar with QR codes and have used this technology atleast once in their life. Although visitors showed the willingness to use QR code, it was less frequently used in tourist visits. QR code technology is

still not widely used to promote more access to tourism information in the city of Bragança, Portugal. However, this study which investigated the expected information provided by the QR codes to represent Street Art paintings in Songkhla old town and to study tourists' satisfaction on interpretation with QR codes did not investigate in-detail about the disadvantages or limitations of using QR code. Therefore, future research is recommended to investigate both advantages and disadvantages of using QR code.

### **CONFLICT OF INTEREST**

The authors declare no conflict of interest.

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