

Tourists' Perceptions towards Smart Tourism Applications in Bangkok, Thailand: An Exploratory Study*

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Abstract

Smart tourism applications (STAs) are becoming a new trend in Thailand as a result of the rapid growth of smartphone users. Bangkok, the capital city of Thailand, and Hong Kong are the top two most visited cities worldwide in 2023, but these two countries are completely different in terms of technology development. Thailand had limited innovative technology improvement for tourism even though Thailand is considered one of the countries having the highest revenues from mobile applications. The main objective of this paper is to present the findings of an initial analysis carried out to assess the features of smart tourism applications, perceived value and the current level of satisfaction and loyalty among tourists towards Bangkok. The five attributes of smart technologies in order to enhance tourists' satisfaction and destination loyalty consist of informativeness, accessibility, interactivity, personalization, and security. In addition, the analysis considers the differences in demographics. Data from a total of 234 completed questionnaires were analyzed utilizing t-tests.

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The results showed that accessibility is the most satisfying element affecting the smart tourism application experience, while security was the least. The study found that certain variables of STAs produced different results based on the personal characteristics of the participants. According to the study, respondents' perceived value differed based on gender, while tourist destination loyalty varied based on prior experience. This study provides theoretical and practical contributions to the development of smart tourism in the future.

Key Words: Smart Tourism Applications, Perceived Value, Tourist Satisfaction, Destination Loyalty, Bangkok

I. Introduction

Since the outbreak of COVID-19, changes in travel habits have been challenged in the tourism industry to meet the demands of travelers from different age groups. Tourists have started to rely more on mobile apps. The greater tourism applications will influence increasingly individualized travel tourist satisfaction and destination loyalty. As tourism is the main economic sector for several countries in the world, many countries use tourism as a key driver for creating job opportunities and infrastructure enhancements. COVID-19 has severely affected tourism in 2020 (UNWTO 2020). To overcome this crisis, technology has received attention to bring new adaptive developments for tourism recovery. Tourists are generally concerned about their inexperience with the destinations, especially during post-pandemic; they are particularly seeking relevant information and recommendations. The concept of smart tourism is given in several definitions. The European Union (EU) described the smart tourism

concept as a destination facilitating access to tourism and hospitality products, services, spaces, and experiences through ICT-based tools. Additionally, the World Tourism Organization (UNWTO) stated clean, green, ethical, and high-quality tourism. In tourism content, smart tourism is designed to engage more locals and tourists' relationships and is customer-centric to fully satisfy gastronomic, accommodation, travel, shopping, and entertainment needs. Technological advances and the widespread use of the internet cause tourism information to be more accessible to tourists. Smart devices, including wearable and portable, are currently necessary for tourists, especially smartphones, due to smart tourism applications (STAs) becoming more popular (Jeong and Shin 2020). Tourists can use their smartphones to manage their trip plans and receive information from others for decision-making. With the rapid growth of mobile internet and smart device users, the integration of tourism and smart technologies can provide interconnectivity among tourism stakeholders by using advanced information and communication technologies (ICT). The STA refers to a type of software that tourism providers use operating in their own platforms for facilitating tourists' all stages of traveling. Travelers use the STAs for tourism information search to help make better travel decisions and touchless commercial transactions anywhere and at any time by obtaining real-time information and making mobile payments through QR codes and apps.

Bangkok, Thailand's capital city, has ranked the second top of the world's most visited cities in 2023. The Mastercard's Global Destinations City Index (Mastercard 2023) revealed their analytical

studies and reports by counting the number of international visitors spent at least overnight once in a city but not exceeding a year. Hong Kong was the top of the most visited city, surpassing Bangkok. Not only researching the number of international arrivals can benefit travelers in terms of interest in the destination decision, but the Smart City Index (SCI) also can demonstrate the economic and technological aspects of each city. The SCI 2023 has gauged the smartness of 141 cities globally. Hong Kong, the most visited city, has climbed up the ranking of smartness in its city every year from 2019 to 2023 with 38th, 34th, 33rd, and 19th, while Thailand unfortunately stepped back from 75th, 78th, 86th till 88th in 2023. The city of Thailand, Bangkok, receives a high number of visitors but is not considered a smart city. Improvements are necessary to enhance travel quality. Worldcitiesranking.com also rated 107 tourist destination cities by 14 criteria and researched an overview of the sights in each ranked city. Bangkok was in the 28th in this ranking with poor scores of ease of travel (World Cities Ranking 2023/02/25).

Previous studies found the most mentioned keywords in current tourism research composed of NFC (Near Field Communication), mobile devices, smart technology, and open innovation in the articles during 2015-2020 (Yen 2020). Furthermore, the number of smartphone users in Thailand by 2026 is also expected increasing whereas little smart tourism research was conducted in developing countries, including Thailand (Statista 2022). Therefore, the technological development of smart tourism applications (STAs) in Thailand needs to be more effective and enhance its tourism industry following the global trend. While mobile applications and smart

devices have become indispensable in daily life and smart tourism development is underway in Bangkok, there has not been much effort made to evaluate or understand tourists' perception of this new environment. This is mainly because the concept of smart tourism is still in its infancy in this country. To fill this gap, the main objective of this paper is to present the findings of an exploratory analysis carried out to assess the attributes of smart tourism applications and the current level of tourist satisfaction and destination loyalty in Bangkok, taking into account demographic variations in these aspects. The findings of this study would be useful in order to further enhance the quality of STAs and meet the right demands of differences among tourists. The findings of this paper also provide several managerial implications. The importance of smart tourism applications benefits tourists in facilitating more efficient and smoother processes of planning trip decisions, reducing the time and effort of decision-making, and enhancing their travel experiences. Thus, tourism authorities and involved stakeholders must see the upgrading and improving of the tourism facilities as important to meet tourists' expectations and promote tourist destinations. This research structure consisted of this section for the introduction of this study. Section 2 describes the literature reviews of conceptual variables in this study. Section 3 presents research methodology, which is composed of questionnaire design, sampling, data collection, and methodology. Section 4 is the results of this study. Lastly, Section 5 is the conclusion, limitations, implications, and future research.

II. Literature review

1. Overview of Tourism and Smartness in Bangkok

A smart city is an innovative city of information and communication technologies to improve the quality of life for citizens and tourists. The smart city consists of a smart economy, smart environment, smart government, smart living, smart mobility, and smart people. The concept of smart tourism is an outcome of the smart city concept. Smart tourism is considered a part of smart living, which is an element of a smart city. Smart tourism refers to a phenomenon in which tourism destinations, stakeholders, and tourists depend on ICTs in order to generate, store, and retrieve big data that serve various tourism purposes, such as tourist experience enhancement, destination competitiveness, and sustainability improvement (Ye et al. 2020).

The Mastercard's Global Destination Cities Index 2023 has revealed the most visited cities in the world based on overnight visitors and cross-border spending in <Table 1>. Surprisingly, Hong Kong jumped to the top of most visited destinations with the reason of a flux of travelers from mainland China in late 2022 and surpassed by Thailand, which has been the top-ranked for many consecutive years. Hong Kong dethroned Thailand in 2023, which used to be the most visited city five times and is expected to reach at least 31 million tourists in the near future. Whereas tourism in Thailand abruptly stopped in March 2020, no travelers were allowed to enter Thailand due to the raging Covid-19 pandemic except only under exceptional

and stringent conditions.

<Table 1> List of The Most Visited Cities in The World 2023

City	Country	No. of Visiting Arrivals (Million)
Hong Kong	China	26.6
Bangkok	Thailand	21.2
London	United Kingdom	19.2
Singapore	Singapore	16.6
Macau	China	15.4
Dubai	United Arab Emirates	14.9
Paris	France	14.4
New York	America	12.7
Shenzhen	China	12.6
Kuala Lumpur	Malaysia	12.3

Source: Wagecentre (2023).

In 2019, the International Institute for Management Development (IMD) launched a Smart City Index (SCI), which gathers hard data and surveys on the residents' perceptions of their smart city's technology application to assess the economic and technological aspects. The SCI also includes the Human Development Index (HDI), both at country and city levels, provided by the United Nations Development Programme (UNDP) to disclose an overview of the socio-economic environment of specific cities. The last update in 2023 was the fourth edition of this Index. The SCI Report revealed the expansion of the number of smart cities worldwide by 20 per cent, from 118 in 2019 to 141 cities in 2023 distributed across the world. Bangkok, Thailand's capital city, was rated 88th out of 141 with the B class of technological aspect. Compared to Hong Kong, an Asian country similar to Thailand, developed technology advances to boost the tourism sector after the COVID-19 pandemic. However, it was

shown that Thailand has fallen from 75th, 78th, 86th, and 88th in every year since 2019 till now (IMD 2023). This demonstrates Thailand has lagging development in technology and no intention to deploy new efforts to encourage diversity and smart strategies to its potential capital city, Bangkok.

<Table 2> The Scores of Bangkok in the Best Cities to Visit in 2023

Criteria	Score (Out of 10)
Sights	7.55
Location	7.5
Pedestrian Zones	3.75
Affordability	6.5
Safety	6
Cleanliness	4
Shopping	8.75
Climate	4
People	6
Nightlife	7.75
Cuisine	7.5
Transport	5.5
Ease of Travel	5
Size	8.5

Source: World Cities Ranking (2023)

The World Cities Ranking has assessed the Best Cities in the World to Visit in 2023. This assessment was conducted by travel experts to solve the lack of material on the Internet in comparison of cities based on criteria for traveling decision-making. Every city is thoroughly rated by 14 criteria and presented an overview of the 107 ranked cities with scores of each criterion comparable throughout other cities. <Table 2> demonstrates there were four criteria of Pedestrian Zones, Cleanliness, Climate, and Ease of Travel, that were below 5 out of 10, respectively.

Nevertheless, the Ease of Travel is the most relevant criterion in this study. The score of these criteria could definitely manifest that Bangkok needs to take more actions to enhance tourism with more smart strategies to meet travelers' demands.

2. Overview of Smartphone Users and Tourism Applications in Thailand

Mobile technology plays a significant role in the tourism experience. It has evolved and transformed the tourism experience through smartphones that can be accessed via reliable and unlimited Internet anytime and from anywhere. As a result, mobile phones have developed gradually in the past few years with a variety of input capabilities and large screens to support a wider range of information services of mobile applications (apps). The increased capabilities of mobile phones assist tourists at every tourism experience stage throughout the pre-trip or anticipatory stage, on-site or experiential stage, and post-trip or reflection stage. Smart tourism applications (STAs) are mobile applications that emerge of many concepts such as smart tourism, smart destinations, smart hotels, and smart applications, which allow users to access all types of travel-relevant information and activities more efficiently at all stages of pre, during, and post-travelling. The STAs can also provide location-based services (LBSs), and tourists can share their tourism experiences almost instantaneously (Patil et al. 2022). Tourists are able to use smartphones, which have extended the functionality of location awareness, information search, online booking, commercial

transactions, and social networks through the STAs to make informed decisions on their trip itineraries. Thailand is rated as the 15th country with a high revenue of travel apps worldwide and the highest for Southeast Asia country (Statista 2023). Therefore, Thailand is a country that has attention in the STAs because these apps positively impact the number of tourists to a particular tourist site. Importantly, the STAs can be considered for opportunities in marketing, sales, and promotion for the destination via its online platforms.

The growth of smartphone users in Thailand is increasingly expected to reach approximately 60 million of its total 70 million population within 2026 (Statista 2022). It has been shown that the forecast lines of its population and smartphone users grow in the same direction (Statista 2022). The percentage of the comparison of smartphone users divided by population demonstrates that almost everyone uses smartphones, especially in 2022 at the beginning of the pandemic, with over 80%. The population rate in Thailand has risen steadily, while the number of smartphone users dramatically increased from 42 to 60 million within ten years from 2017 to 2026. The STAs offer tourists tourism services through smartphones, tablets, or other mobile devices. Moreover, the statistics of internet traffic distribution by devices in 2022 reveal the smartphone is the most popular device, with 68% followed by laptops, desktops, and tablets (Statista 2021).

3. Five Attributes of Smart Tourism Applications

Smart technologies used in tourism are classified into two categories:

traditional online platforms and new technologies. Previous studies have summarized the conceptualization of the five attributes of smart technologies. There are informativeness, accessibility, interactivity, personalization, and security respectively (Pai et al, 2020). The prior study also concluded the three most expected and preferred information quality attributes of tourism websites were the ease of website accessibility and reliable information, including less response time (Chaiprasit et al. 2011). This research has emphasized the study of smartphone applications in tourism, a type of smart technology which enhances tourists' satisfaction and destination loyalty. Mobile technology has rapidly growth and caused online platforms and social media to be popularly used because people can use smartphones, tablets, and other mobile devices to interact and share experiences with any person at any time from anywhere. The definitions of five user-required attributes for smart tourism applications are stated in the following. Informativeness refers to the degree of the quality, frequency, credibility, and accuracy of the information about the destination provided by the STAs to travelers. Accessibility is defined as the degree of difficulty of tourists accessing the tourist information about the destination provided by the STAs. Interactivity represents the attribute that helps tourists take immediate action, such as active two-way communication and real-time feedback. Personalization is described as the ability to provide specific information and personalized service to suit the tourists' requirements through using the STAs. Security refers to the degree to which the STAs can prove themselves trustworthy in protecting users' personal information (Zhang et al. 2022). There are few prior studies on the relation of

ICT and tourism in Thailand. The existing study targeted the Eastern Economic Corridor (EEC) zone in Thailand and found the relationship between smart tourism destination perceiving, tourism experience, satisfaction, and loyalty through revisiting intention. The research findings informed that perceiving components, informativeness, accessibility, personalization, and security influenced the travel experience, affecting tourist satisfaction and behavioral revisiting intention (Suanpang et al. 2021).

4. Perceived Value

The concept of perceived value is the root of consumer behavior and satisfaction. The perceived value is the most cited of the customer satisfaction study. Its definition represents the consumer's overall assessment of the required attributes of products and services in the whole process of travelling based on the perceptions of what benefits they get and what cost they lose (Yang and Peterson 2004). The common characteristics for customers who would evaluate the value of products and services are not only pricing but psychological factors that influence purchasing decisions, such as quality, emotional response, and product or service reputation. Customer satisfaction can emerge from two classifications of value perception (Uzir et al. 2020), starting with the ideal value (IV), which is the customers' expectation of the product quality or service performance that individuals have before purchasing, while the actual value (AV) is the value that customer perceived from the product quality or service performance provided to them. Finally, the difference between these two categories

of perceived value is called perceptual discrepancy (PD).

5. Tourist Satisfaction, and Tourist Destination Loyalty

Tourist satisfaction with the tourism content means the emotional response of tourists when they use tourism products or services while traveling. The feeling could be pleasure and disappointment from comparing the perception of product or service performances with what the tourism providers promised early at the initiate tourism stage of traveling (Zhang et al. 2022). Additionally, tourist satisfaction can result from comparing the tourists' expectations with their actual consumption experience from the destination. Positive tourist satisfaction is considered as the output from the judgment of the product or service performance that meets their requirements and preferences. Prior studies have mentioned several factors affect satisfaction. They mainly are tourist expectation, pricing, value perception, tourism destination image, nervousness, and remembrance. In the field of tourism research, it has been investigated that infrastructures and amenities in tourism destinations could affect tourist satisfaction (Rajesh 2013). Tourist satisfaction has an important role in predicting behavioral intention, known as loyalty to the tourism destination. Destination loyalty is composed of the intention of recommending to others and revisiting. Recommendation to others refers to word of mouth of tourists; if they are highly satisfied with the destination, it positively influences the recommendation intention to others. Moreover, destination loyalty also refers to revisit intention, which is the degree of the tourist' willingness to revisit the destination.

The measurement items were adopted from the previous literature in <Table 3> and modified for this study.

<Table 3> Research Constructs and Measurement Items

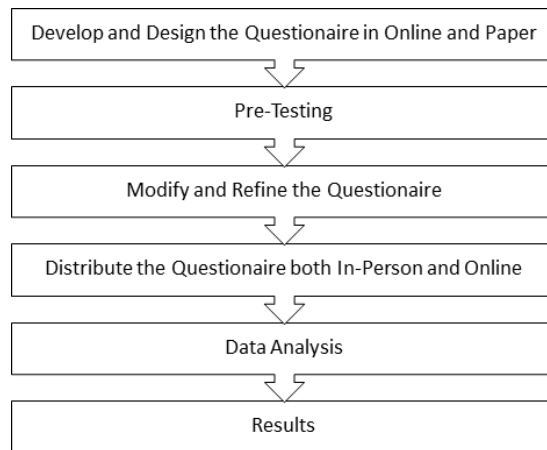
Variables	No. of Items	Measurement Item(s)	Reference (s)
Informativeness	4	Smart tourism apps provide me with helpful information about traveling in Bangkok. Smart tourism apps contribute to minimizing my travel concerns. Smart tourism apps enable me to complete my trip in Bangkok with the reliable and detailed information provided. Smart tourism apps can provide all the information of Bangkok that I need.	Pai et al. (2020), Zhang et al. (2022)
Accessibility	3	I can use smart tourism apps anywhere and at any time during my trip in Bangkok. Smart tourism apps are easily accessible during my trip in Bangkok. I can easily find smart tourism apps without complicated processes when traveling in Bangkok.	Pai et al. (2020), Zhang et al. (2022)
Interactivity	4	Smart tourism apps are highly responsive to me during my traveling in Bangkok. I can find many others' questions, answers, and feedback in tourism content of Bangkok from the apps. Smart tourism apps are interactive while I am traveling in Bangkok. It is easy to share tourism information and content on smart tourism during my traveling in Bangkok.	Pai et al. (2020), Zhang et al. (2022)
Personalization	3	I can receive customized information on smart tourism apps when I am traveling in Bangkok. I can get personalized information through interaction with smart tourism apps while traveling in Bangkok. Smart tourism apps provide me with easy-to-follow links and tips while traveling in Bangkok.	Pai et al. (2020), Zhang(2022)

Security	3	Smart tourism apps are trustworthy and reliable. Smart tourism apps respect my privacy and the safety of my transactions. I am confident in the security offered on smart tourism apps.	Pai et al. (2020), Zhang et al. (2022)
Perceived Value of Smart Tourism Applications	3	I have a very good feeling about my experiences with smart tourism apps. The use of smart tourism apps is pleasant and entertaining. I use smart tourism apps to explore attractions and activities in Bangkok.	Zhang et al. (2022)
Tourist Satisfaction	3	Gaining unique experiences via smart technology apps is one of my ideals and makes me happy. I think using smart tourism apps in Bangkok meets my expectations. I am satisfied with the experience and service quality provided by smart tourism apps in Bangkok.	Zhang et al. (2022), Torabi et al. (2022)
Tourist Destination Loyalty	4	I want to experience smart tourism apps in Bangkok in the future. I will post positive reviews and comments about smart tourism apps in Bangkok on social media. I will recommend smart tourism apps in Bangkok to my family, friends, and peers. If I visit Bangkok again, one of my main motivations is to use smart tourism apps again.	Lee and Xue (2020), Zhang et al. (2022)

III. Method

The objective of this research is to present the results of an initial analysis conducted to assess the features of smart tourism applications, perceived value, the level of satisfaction and loyalty among tourists towards Bangkok. To achieve this, tourists who had

visited Bangkok and used tourism applications on their smartphones were chosen as the target population. The survey was conducted in English and a pre-test was performed to ensure the respondents understood the questionnaire and to eliminate any confusing word mistakes. Ten questionnaires were distributed to lecturers and experts in the tourism and technology field for the pre-test. Minor changes were made based on their feedback and the finalized survey was implemented, as shown in <Figure 1>.



<Figure 1> Questionnaire Survey Process

Between January and February 2023, 400 paper questionnaires were distributed in the Bangkok Municipal Area, while an online questionnaire was posted on Facebook group pages focused on tourism in Thailand. Both local and international tourists were included in the distribution. Out of the 400 questionnaires, 234 were returned and analyzed, yielding a response rate of 58.5%. The

questionnaire was divided into two parts. The first part gathered demographic information such as gender, age, race, education level, previous travel experience, length of travel, and travel party. The second part utilized a five-point Likert scale, with responses ranging from strongly disagree (1) to strongly agree (5), to measure the respondents' perception on STA's attributes, perceived value, satisfaction, and destination loyalty. The questions in the second part were adapted from various relevant literature studies. Descriptive statistics were used to analyze the demographic profiles of the respondents in terms of gender, age, academic degree, length of travel, travel party. In addition, the study utilized the IBM SPSS Statistics version 29 to conduct t-tests to determine any significant differences in the perceived value, satisfaction, and destination loyalty based on the demographic profile of the respondents.

IV. Results

The descriptive analysis of demographic data is shown in <Table 4>, over 50% of them (53.8%) were men born in generation Y or known as millennials generation during the year of 1981 – 1996 aged between 27 and 42 years (54.7%) followed by the ones in Gen Z between 1997 – 2012 (44.9%) and only 1 person in Gen X between 1965 – 1980 (0.4%). In term of education level, 80.3% of the total respondents had a university education background and 17.9% of them were postgraduates followed by few high school and junior school students respectively. A total of 159 respondents (67.9%) had

first time experience travelling in Bangkok while 75 respondents (32.1%) visited repeatedly in Bangkok. Among all the subjects were 130 foreigners (55.6%) and 104 Thais (44.4%). From the total of 234, 92 travelers spent 4-5 nights traveling in Bangkok (39.3%) as majority and most came with friends (42.7%).

<Table 4> Tourist Respondent Profiles

Respondent Characteristics	No. of Respondents	(%)	Respondent Characteristics	No. of Respondents	(%)
Gender			Previous Experience		
Male	126	53.8	First-time visitors	159	67.9
Female	108	46.2	Repeat visitors	75	32.1
Age			Length of Travel		
Gen Z (1997 - 2012)	105	44.9	1-3 nights	77	32.9
Gen Y (1981 - 1996)	128	54.7	4-5 nights	92	39.3
Gen X (1965 - 1980)	1	0.4	6-7 nights	26	11.1
			8-9 nights	16	6.8
Race			Over 10 nights	23	9.8
Thai	104	44.4			
International	130	55.6	Travel Party		
			Alone	39	16.7
Education Level			Couple	31	13.2
Junior school	1	0.4	Family	42	17.9
High school	3	1.3	Friends	100	42.7
University	188	80.3	Colleagues	22	9.4
Master and above (Postgraduate)	42	17.9			

The <Table 5> shows that five attributes for perceived smart tourism application in Bangkok had similar averages which meant

most of respondents have perception of each attribute in alike levels. Accessibility was the element that had highest satisfactory with mean 3.76 compared to others with slightly lower. According to the result of mobile internet access analysis in Thailand since 2011 (Srinuan et al. 2012), its finding supported to this paper that accessibility and availability of Wi-Fi hotspots were fully covered in populated areas then people in that area can access the Internet through mobile Internet devices effectively. On the other hand, security had the lowest minimum at 1.67 out of 5 compared to other elements which meant the respondents distrusted in the application security. Similarly to the study of Internet banking in Thailand (Subsorn and Limwiriyakul 2012), some Thai banks were still deficient in providing internet banking security to their customers. The recommendation was to strengthen at least a minimum of 8 characters in password security requirement.

<Table 5> Respondents' Perception of Five Attributes

	Informativeness	Accessibility	Interactivity	Personalization	Security
Mean	3.69	3.76	3.69	3.69	3.62
S.D.	0.605	0.583	0.473	0.653	0.623
MIN	2.00	2.00	2.25	2.00	1.67
MAX	5.00	5.00	5.00	5.00	5.00

<Table 6> presents the T-test results of each of the five attributes for perceived smart tourism applications in Bangkok: accessibility, informativeness, interactivity, personalization, and security. This analyses them based on the users' characteristics: gender, age, race, education level, and previous experience. The results showed that

accessibility and security have no difference among the users' features, while education level has an influence on informativeness, interactivity, and personalization.

<Table 6> T-Test of Differences across Respondent Characteristics on Five STAs Attributes

Accessibility		N	Mean (M)	SD	t	p
Gender	Female	108	3.77	0.634	0.115	0.053
	Male	126	3.76	0.539		
Age	Before 1996	129	3.78	0.533	0.436	0.476
	1997 and beyond	105	3.75	0.624		
Race	Thai	104	3.69	0.567	-1.762	0.753
	International	130	3.82	0.592		
Education Level	University or below	192	3.75	0.570	-0.404	0.311
	Master and above (Postgraduate)	42	3.79	0.646		
Previous Experience	First-time visitors	159	3.83	0.556	2.689	0.283
	Repeat visitors	75	3.61	0.615		
Informativeness		N	Mean (M)	SD	t	p
Gender	Female	108	3.62	0.630	-1.725	0.189
	Male	126	3.75	0.577		
Age	Before 1996	129	3.70	0.573	0.205	0.157
	1997 and beyond	105	3.68	0.633		
Race	Thai	104	3.67	0.587	-0.471	0.837
	International	130	3.71	0.621		
Education Level	University or below	192	3.70	0.576	0.471	0.021*
	Master and above (Postgraduate)	42	3.64	0.727		
Previous Experience	First-time visitors	159	3.72	0.593	1.202	0.331
	Repeat visitors	75	3.62	0.628		
Interactivity		N	Mean (M)	SD	t	p
Gender	Female	108	3.66	0.637	-0.843	0.026*
	Male	126	3.72	0.513		
Age	Before 1996	129	3.72	0.516	0.662	0.030*
	1997 and beyond	105	3.67	0.617		
Race	Thai	104	3.77	0.579	1.735	0.460
	International	130	3.64	0.564		

Education Level	University or below	192	3.70	0.548		
	Master and above (Postgraduate)	42	3.65	0.683	0.494	0.004**
Previous Experience	First-time visitors	159	3.67	0.553		
	Repeat visitors	75	3.74	0.616	-0.835	0.254
Personalization		N	Mean (M)	SD	t	p
Gender	Female	108	3.60	0.668	-1.811	0.665
	Male	126	3.76	0.633		
Age	Before 1996	129	3.77	0.617	1.738	0.361
	1997 and beyond	105	3.62	0.678		
Race	Thai	104	3.72	0.683	0.760	0.293
	International	130	3.66	0.629		
Education Level	University or below	192	3.71	0.625		
	Master and above (Postgraduate)	42	3.57	0.766	1.123	0.005**
Previous Experience	First-time visitors	159	3.71	0.693		
	Repeat visitors	75	3.65	0.561	0.629	0.067
Security		N	Mean (M)	SD	t	p
Gender	Female	108	3.61	0.632	-0.259	0.283
	Male	126	3.63	0.617		
Age	Before 1996	129	3.70	0.590	1.651	0.478
	1997 and beyond	105	3.57	0.636		
Race	Thai	104	3.60	0.603	-0.578	0.606
	International	130	3.64	0.639		
Education Level	University or below	192	3.65	0.623		
	Master and above (Postgraduate)	42	3.48	0.608	1.688	0.778
Previous Experience	First-time visitors	159	3.64	0.597		
	Repeat visitors	75	3.60	0.676	0.454	0.170

*p<0.05

<Table 7> presents the perceived value, tourist satisfaction and destination loyalty between genders; males and females have different perceived values with a p-value of 0.036, which is lower than 0.05. In prior studies, gender influences perceived value due to different gender roles of socialization, information processing, and risk avoidance. Men tend to enjoy technology perception, have higher

computer self-efficacy and are perceived as easier to use (Zhang et al. 2014), whereas women tend to have difficulty accurately judging the quality of online products and services, leading to higher functional risk (Fang et al. 2016).

<Table 7> T-Test of Differences across Respondent Characteristics on Perceived Value, Tourism Satisfaction and Tourist Destination Loyalty

Perceived Value of STAs		N	Mean (M)	SD	t	p
Gender	Female	108	3.688	0.690	-2.107	0.036*
	Male	126	3.868	0.613		
Age	Before 1996	129	3.713	0.673	-1.869	0.063
	1997 and beyond	105	3.873	0.623		
Race	Thai	104	3.814	0.660	0.610	0.543
	International	130	3.762	0.651		
Education Level	University or below	192	3.800	0.648	-0.722	0.441
	Master and above (Postgraduate)	42	3.714	0.685		
Previous Experience	First-time visitors	159	3.784	0.630	-0.028	0.977
	Repeat visitors	75	3.787	0.707		
Tourist Satisfaction		N	Mean (M)	SD	t	p
Gender	Female	108	3.642	0.606	0.183	0.855
	Male	126	3.627	0.640		
Age	Before 1996	129	3.664	0.666	0.820	0.413
	1997 and beyond	105	3.597	0.567		
Race	Thai	104	3.644	0.649	0.226	0.821
	International	130	3.626	0.604		
Education Level	University or below	192	3.606	0.615	1.473	0.142
	Master and above (Postgraduate)	42	3.762	0.651		
Previous Experience	First-time visitors	159	3.639	0.606	0.196	0.844
	Repeat visitors	75	3.622	0.663		
Tourist Destination Loyalty		N	Mean (M)	SD	t	p
Gender	Female	108	3.919	0.610	-0.695	0.488
	Male	126	3.972	0.561		
Age	Before 1996	129	3.892	0.611	-1.639	0.103
	1997 and beyond	105	4.017	0.543		
Race	Thai	104	3.887	0.586	-1.425	0.155
	International	130	3.996	0.579		

Education	University or below	192	3.948	0.579		
Level	Master and above (Postgraduate)	42	3.646	0.608	-0.015	0.988
Previous	First-time visitors	159	4.017	0.563		
Experience	Repeat visitors	75	3.800	0.601	2.095	0.008*

*p<0.05

In this study, the result in <Table 7> further shows no differences in age range for the perceived value, tourist satisfaction, and destination loyalty. Additionally, both Thais and international visitors had no difference of perceived value, tourist satisfaction, and destination loyalty. The finding of this study has also shown no difference in perceived value, tourist satisfaction, and destination loyalty according to educational background, even though the previous study mentioned that the educational level of respondents could influence the behavioral intention toward technology (Hashim 2008). This paper has revealed that first-timers and repeat visitors had the same direction in perceived value and tourist satisfaction except for destination loyalty, in that they show difference. <Table 7> presented the p-value of 0.008, which is lower than the required 0.05.

V. Conclusion

Even though Thailand is one of the top countries for highest number of smartphone users including a country with high revenue of apps as well, but this paper revealed that internationals also use tourism apps commonly during their traveling. Whereas the prior study revealed that Thai people increasingly use mobile technology

compared to the past (Chayomchai et al. 2020) but currently foreigners would rather increasingly surf an application that offers them updated search, booking, and hotels including points of interesting especially among those who never had experience with traveling in Bangkok as before. They are able to get all information readily available in travel apps on their devices with seamless services in 24/7 availability and there is no need to visit an agent. Moreover, foreigners prefer to use STAs for the simplification of transactions and payment methods in overseas.

The study's main purpose was to investigate the most productive STAs' attributes among the application users, including the unsatisfied ones that need to be enhanced. Additionally, the demographic profiles have been assumed to have different attitudes toward perceived value, tourist satisfaction, and destination loyalty. Among the five attributes of STAs, accessibility was found to be the strongest satisfied element; similarly, the existing study concluded accessibility was the most important aspect of tourists' movement at the destination (Virkar and Mallya 2018), whereas security was poorly rated as unsatisfactory. In recent, Thailand has reported millions of baht in damages from money-siphoning gangs. There are several mobile app users who unknowingly installed harmful apps that siphoned money from their accounts a, result in the lowest score of security that needs to be improved and protect users from criminal gangs. This study's findings are consistent with those of previous studies. Tourists can easily access and stay connected to the STAs anytime and anywhere with Wi-Fi hotspots provided in Bangkok. Smart tourism applications should be provided more security as it

relates to users in commercial transactions; then, trustworthiness and effectiveness of security are required from application users in order to protect their sensitive information.

In the study conducted, it was discovered that certain variables of STAs (i.e., informativeness, interactivity and personalization) yielded varying results, depending on the personal characteristics of the respondents. Furthermore, the study found that there was a distinction in perceived value among respondents based on their gender, and that tourist destination loyalty differed depending on previous experience. In particular, regarding the findings which demonstrated that gender and age differences affect interactivity, prior studies have found the role of gender has influenced online consumer behavior on interactivity and advertising effectiveness, and Generation Y has considerable power in online communications as they are considered computer savvy (McMahan et al. 2009).

The above-outlined findings of this study have both theoretical and practical implications. From an academic perspective, this study provides researchers with the attributes of smart tourism applications. The findings allow us to acquire a better understanding of mobile application perception in the tourism field. Practically, the study provides insights that could benefit the tourism department, stakeholders in tourism, and tourism app developers to enhance the tourism experience and increase visitor satisfaction in Bangkok. This research has its own limitations. The first limitation is the data collection and survey technique, which was affected by social distancing measures during the COVID-19 pandemic. For future research, the study should be sampled in more respondents. The

second limitation is that the research area focused only on Bangkok. Other popular tourism areas in Thailand, such as Phuket and Chiangmai provinces, may need to be further studied in the future.

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<국문초록>

스마트 관광 애플리케이션에 대한 방콕 관광객의 인식에 대한 탐색적 연구

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스마트 관광 애플리케이션(STA)은 스마트폰 사용자가 증가함에 따라 태국에서 새로운 트렌드로 자리 잡고 있다. 2023년 전 세계 관광객이 가장 많이 방문한 도시는 태국의 수도 방콕과 홍콩이지만, 이 두 나라는 기술 발전 측면에서 전혀 다른 양상을 보여주고 있다. 태국은 모바일 애플리케이션에서 높은 수익을 올리는 국가임에도 불구하고 관광 부문과 관련한 기술 혁신이 여전히 제한적인 것으로 드러났다. 본 논문은 스마트 관광 애플리케이션의 주요 속성과 인지된 가치, 방콕에 대한 관광객의 만족도 및 충성도를 탐색하는 것을 목적으로 한다. 관광객의 만족도와 관광지 충성도를 높이기 위한 스마트 기술의 5가지 속성은 정보성, 접근성, 상호작용성, 개인화, 보안으로 구성하였다. 분석에서는 인구통계의 차이도 고려하였다. 수집된 총 234개의 설문지 결과는 t-테스트를 활용하여 분석되었다. 분석 결과, 스마트 관광 애플리케이션의 주요 속성 중 접근성이 가장 만족스러운 요인인 반면, 보안성관련 인식이 가장 낮은 것으로 나타났다. 또한 STA의 일부 변수가 응답자의 개인적 특성에 따라 달리 인식되는 것으로 나타났으며, 응답자의 인지된 가치는 성별에 따라, 관광지 충성도는 응답자의 이전 방문 경험 유무에 따라 다르게 나타났다.

다. 본 연구는 향후 스마트 관광 발전을 위한 이론적, 실무적 시사점을 제시한다.

주제어: 스마트 관광 애플리케이션, 인지된 가치, 관광 만족도, 관광 목적지 충성도, 방콕

