

Tourism Service Quality at Smart Tourism Destination: A Case Study of Hue, Vietnam

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Abstract: *The main objective of this study was to evaluate the current situation of tourism service quality in the smart tourism destination of Hue, Vietnam. To achieve the research objective, this study used desk research and surveys to collect data. Then, the data were processed by using SPSS 22.0 software. The research results showed that, among the 5 basic factors used for measuring tourism service quality (Reliability, Tangibility, Sympathy, Responsiveness, and Assurance (Parasuraman et al, 1988)), the factor of assurance of tourism services in Hue is the highest-rated. Based on the results, some practical suggestions to improve the quality of smart tourism services in Hue have been proposed to promote the development of Hue tourism to adapt to the context of the industrial revolution 4.0.*

Keywords: tourism service quality, smart tourism, smart tourism destination

1. Introduction

When industrial revolution 4.0 explodes and has a strong impact on all areas of social life, promoting the application of information technology in all fields becomes increasingly urgent for all nations all over the world. In that context, Vietnam affirmed that to develop tourism into a spearhead economic sector, the most basic task in this period is promoting the application of modern science and technology in the field of tourism (Resolution No. 08-NQ/TW). This is also an increasingly common issue and has been discussed in many national and international forums. However, to develop tourism in general and smart tourism in particular, one of the most basic factors is ensuring the quality of tourism services provided to tourists which would help ensure tourists' satisfaction. Therefore, it is necessary to study the current situation of tourism service quality to propose appropriate solutions to improve the quality of tourism services in smart tourism destinations.

As one of the smart development-oriented tourism destinations in Vietnam, Hue has been gradually technologicalizing the infrastructure system for tourism activities such as: upgrading the electronic information ports, developing tourist-friendly applications, and building shared data management software for the tourism industry (Hue Tourism Department, 2020). Many tourist attractions in Hue have built web portals and developed dedicated applications for smart devices. These efforts have contributed to bringing benefits to all the stakeholders in the tourism industry. However, there are still certain limitations in the progress of smart tourism development in Hue. These limitations affect the quality of tourism services provided to tourists and directly impact the satisfaction of tourists. Therefore, assessing the current situation of service quality in order to find out solutions to improve the quality of tourism services at smart tourist destinations of Hue is an essential requirement.

Developing smart tourism and improving the quality of tourism services are topics that have been discussed at many domestic and international forums. However, within the research scope of the study, the research topic on the quality

of tourism services in the smart tourism destination Hue has not been mentioned in any previous studies.

Because of the above reasons, the topic "Tourism service quality in smart tourism destinations: A case study of Hue, Vietnam" was chosen to study.

2. Literature Review

2.1 Smart tourism

With the development of science and technology, the application of information technology in tourism activities is an inevitable trend. Smart tourism is a social phenomenon arising from the convergence of ICTs with the tourism experience (Hunter et al, 2015). Smart tourism is supported by integrated efforts at a destination to collect and aggregate data derived from physical infrastructure, social connections, government/organizational sources, and human bodies/minds in combination with the use of advanced technologies to transform that data into on-site experiences and business value propositions with a clear focus on efficiency, sustainability, and experience enrichment (Gretzel et al, 2015). Gretzel, Ham and Koo (2018) describe smart tourism as consisting of five layers: 1) a physical layer that includes natural and human-made touristic resources as well as transportation and service infrastructures; 2) a smart technology layer that links to this physical infrastructure and provides back-end business solutions and front-end consumer applications; 3) a data layer that includes data storage, open data clearinghouses, and data-mining applications; 4) a business layer that innovates based on the available technologies and respective data sources; and, finally, 5) an experience layer in which the resulting technology and data-enhanced experiences are consumed.

Developing smart tourism will help form a tourism ecosystem aligning with the development trend of science and technology and create mutual benefits between stakeholders participating in tourism activities. Specifically: (i) for tourism destination management organizations, the application of smart tourism will help increase the efficiency of tourism industry management, ensure security and order,

and especially collect tourism data to make accurate forecasts and decisions; (ii) for tourists, smart tourism will enhance the quality of tourists' experiences by supporting them in looking up, receiving and capturing information quickly, saving time and costs for visitors, creating an outstanding difference, safety, friendliness of the tourism destination... (iii) for tourism businesses, deploying business activities on the modern technology platform not only makes them easier to reach customers but also helps them to improve the quality of tourists' experiences, contributing to the improvement of the tourism destination's competitiveness.

2.2 Smart tourism destination

The concept of a "smart tourism destination" is a topic of debate at many national and international forums. Many concepts of "smart tourism destination" have been mentioned and discussed by different organizations and researchers. According to Spain's Institute for Innovation Development (Segittur) and National Standardization Agency Aenor (2015), a smart tourism destination is "An innovative tourism area accessible to everyone and built on modern technological infrastructure, ensuring the sustainable development of the territory, facilitating the interaction of visitors and their integration with the surrounding environment and enhancing the quality of their experience in the destination and the quality of life of the people". In his research, author Tomas Gajdosik (2017) has shown that the idea of a smart tourism destination originates from the concept of a smart city, where intelligence is combined in movement and living, people, governance, economy, and environment. The word "smart" not only encompasses various features such as technology and interoperability but also implies sustainability, comfort, attractiveness, and safety (Borsekova, Vanova, Vitalisova, 2016). According to Coca-Stefaniak (2019), "smart places are shaped by the impact of new and disruptive technologies on the spaces we live in, including cities, regions, and countries".

The development of ICT is opening new avenues for innovative branding of destinations. This includes social networks, open data, mobile marketing, the Internet of Things (Vicini et al., 2012), urban sensors, and other mechanisms (Haubensak, 2011). Boes, Buhali,s and Inversini (2016) argue that the use of information technology at the destination is defined as "hard intelligence". Interoperability and pervasive computing ensure that people are connected and processes integrated to create value, through dynamic co-creation, sustainable resources, and dynamic personalization.

The destination should take advantage of the Internet of Things, Cloud Computing, and End User service systems (Zhang et al., 2012), to stimulate information sharing, automation, controlling, and connecting. Furthermore, the destination also needs to exercise hard intelligence by implementing the right travel apps and tools. These can include apps, new technologies such as augmented reality, sensors, NFC, QR codes, or Wifi (Buhalis, Amaranggana, 2013, Smith, 2015). Information technology should enhance the tourist experiences by providing all relevant real-time information about the destination and its services during the

planning phase, enhancing access to information to assist travelers in discovering trip destinations, and prolonging engagement to relive the experience by providing original post-trip feedback (Buhalis, Amaranggana, 2015).

Thus, the above concepts have initially clarified the concept of a "smart tourism destination" as well as the basic difference between an ordinary tourism destination and a smart tourism destination which is a tourism space associated with the application of information technology to all activities and stakeholders in the field of tourism.

2.3 Tourism service quality

There have been many different concepts of service quality proposed by scholars and research organizations. According to the American Society for Quality (ASQ), "Quality refers to the superiority of goods and services, especially to the extent to which one can satisfy all needs and satisfy the customer." According to Armand Feigenbaum (1945), "Quality is a customer decision based on actual experience with a product or service, measured against customer requirements, these requirements can be stated or unstated, consciously or simply perceived, purely subjective or technical, and always representing a dynamic target in a competitive market". Parasuraman (1988) stated that: "Service quality is determined by the difference between customers' expectations and their evaluation of the service they receive". Thus, service quality will be measured by the gap between customers' expectations about the service and the actual service quality they receive during service consumption.

Several models of service quality assessment have been proposed. Among them, the Servqual model (Parasuraman, 1985) to evaluate service quality based on the perception of service customers is a widely used model. The scale of this model is recognized as having high reliability and proven accuracy in many different service industries such as hotels, restaurants, hospitals, schools, bankings, airlines... In general, the Servqual model offers 10 general evaluation criteria for all service industries, including Reliability, Responsiveness, Service capacity (Competence), Accessibility, Courtesy, Communication, Credibility, Security, Understanding of customers, and Tangibility. To improve the Servqual model to become more optimal, in 1988, Parasuraman and his colleagues shortened the Servqual model to evaluate service quality to 5 factors and called it the RATER model (Parasuraman et al, 1988). Accordingly, the service quality can be measured by five criteria:

- Reliability: Reliability shows the ability to provide services accurately, on time, and credibly (Parasuman et all 1985). This requires consistency in the implementation of services and respect for commitments as well as keeping promises to customers (Business Bliss Consultants FZE, 2018).
- Tangibility: Tangibility is shown in the images of the facilities, equipment, machines, attitude of staff, materials, manuals, and information systems (Parasuman et all 1985). It can be seen in the effect of the physical facility, equipment, personnel, and communication materials on customers (Sureshchandar, Rajendran, and

Kamalanabhan, 2001).

- Assurance: This element creates credibility and trust for customers, which is considered through professional services, excellent technical knowledge, attitude courtesy, and good communication skills so that customers can believe in the quality of the firm's services (Business Bliss Consultants FZE, 2018).
- Sympathy: Sympathy is the caring, consideration, and the best preparation for customers, so that they can feel warmly welcome at any time, anywhere.
- Responsiveness: This criterion measures the ability to solve the problem fast, deal with customers' complaints effectively, and the willingness to help customers as well as meet the customers' requirements (Parasuraman et al, 1988).

The RATER model both includes the advantages and improves the limitations of the original 10-variable SERVQUAL model. This model includes 5 variables with 22 clear key questions and was used to measure the current situation of tourism service quality in the smart tourism destination of Hue in this study.

2.4 Research methods

The object of this study is the quality of tourism services in the smart tourism destination of Hue. The study used information from secondary data collected from reliable sources (the database system of the National Library of Vietnam, books, electronic newspapers, newspapers, scientific journals, specialized scientific articles, and previous research...) to build a theoretical background for the research. Then, a survey was implemented to collect the evaluations of tourists who had directly used tourism services at the destination.

The main part of the questionnaire consists of 22 questions corresponding to 22 observed variables belonging to 5 groups of factors (Reliability, Tangibility, Sympathy, Responsiveness, and Assurance). The general assessment section provides general questions about each factor for the survey respondents to make general judgments and assessments about the quality of tourism services in the smart tourism destination of Hue. And finally, the General Information section collects some pieces of demographic information from the respondents.

The study used SPSS 22.0 software to process the coded data with the following steps: (1) Testing the reliability of the scale through Cronbach's Alpha coefficient; (2) Performing exploratory factor analysis (EFA) to evaluate the convergent value and discriminant value of the scales; (3) Performing Pearson correlation analysis to examine the linear correlation between the dependent variable and the independent variables; (4) Finding out the average value of each factor to determine the current status of tourism service quality at the smart tourism destination of Hue.

3. Results

3.1 Respondents' characteristics

The subjects of the survey are tourists traveling to Hue

during the period from 2018 until March 31st 2022. A total of 250 questionnaires were distributed. Among them, 15 questionnaires were invalid. The survey was encrypted and processed using SPSS for Windows version 22.0 software. The main demographic characteristics of the survey's respondents are shown in Table 1.

Table 1: Survey respondents' characteristics

n = 235	Frequency	Percentages
Gender		
Male	113	48,09%
Female	122	51,91%
Others	0	0,00%
Age		
20 – 29	38	16,17%
30 – 39	56	23,83%
40 – 49	52	22,13%
50 – 59	37	15,74%
Above 60	52	22,13%
Origin		
Vietnam	142	60,43%
Foreign countries	93	39,57%
Education		
High School	35	14,89%
Diploma/Bachelor's Degree	161	68,51%
Master/ Doctor Degree	39	16,60%
Employment		
Employed	185	78,72%
Unemployed	2	0,85%
Retired	48	20,43%
Marital status		
Married	152	64,68%
Single	83	35,32%
The last time visited Hue		
2018	61	25,96%
2019	54	22,98%
2020	23	9,79%
2021	15	6,38%
2022	82	34,89%

The reliability of the scale

Table 2: Reliability Statistic

Factors	Numbers of items	Cronbach's Alpha
Reliability (REL)	05	0.809
Tangibility (TAN)	04	0.728
Sympathy (SYM)	05	0.890
Responsiveness (RES)	04	0.827
Assurance (ASSU)	04	0.824

The scale of factors measuring the situation of tourism service quality at smart tourism destinations consists of 5 components with 22 observed variables. According to the results of the Cronbach Alpha analysis, after testing the reliability level through the Cronbach Alpha coefficient, none of the variables were excluded. The Cronbach's Alpha value of the observed variables as follows: Reliability - REL (0.809), Tangibility - TAN (0.728), Sympathy - SYM (0.890), Responsiveness - RES (0.827), Assurance - ASSU (0.824).

Exploratory factor analysis

For the independent variables:

Table 2: Rotated component matrix

	Component				
	1	2	3	4	5
REL 2	,867				
REL 5	,854				
REL 3	,748				
REL 1	,737				
REL 4	,630				
SYM 1		,806			
SYM 2		,771			
SYM 3		,699			
SYM 5		,674			
SYM 4		,542			
ASSU 3			,810		
ASSU 4			,787		
ASSU 2			,750		
ASSU 1			,744		
RES 3				,787	
RES 2				,728	
RES 1				,709	
RES 4				,632	
TAN 1					,850
TAN 2					,762
TAN 3					,602
TAN 4					,561
Extraction method: Principal Component Analysis Rotation Method: Varimax with Kaiser normalization a. Rotation converged in 6 iterations.					

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,847
Bartlett's Test of Sphericity	Approx. Chi-Square	2666,839
	df	231
	Sig.	,000

According to the analysis results of KMO and Bartlett's Test:

- $0.5 \leq KMO = 0.847 \leq 1$: factor analysis is accepted with the research data.
- Sig Bartlett's Test = $0.000 < 0.05$: factor analysis is appropriate.
- The EFA results obtained all components. Hence, the scale is accepted, 22 observed variables are grouped into 5 factors.

Thus, through the results of Cronbach Alpha coefficient analysis and exploratory factor analysis, the original research model with 5 proposed components is satisfactory (no variables are excluded) and statistically significant. The above variables will be used in the next analysis.

For the dependent variables:

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,870
Bartlett's Test of Sphericity	Approx. Chi-Square	451,039
	df	15
	Sig.	,000

- $0.5 \leq KMO$ coefficient = $0.870 \leq 1$. This result showed that the observed variables were correlated with each other and the EFA analysis was accepted with the research data.
- Bartlett's test (Sig. = $0.000 < 0.005$), factor analysis is appropriate.
- The EFA result showed that only one component was extracted, and the solution cannot be rotated. It means that the scale ensured unidirectionality, and the observed variables of the dependent variable had good convergence.

Pearson correlation test

Pearson correlation Sig values (REL, TAN, SYM, RES, ASSU) with the dependent variable (General assessment - GA) are all less than 0.05. Thus, there is a linear relationship between these independent variables and the dependent variable. In which, there has the strongest correlation between the factor of General assessment and the factor of Responsiveness with an R coefficient of 0.597; there has the weakest correlation between the factor of General assessment and the factor of Assurance with an R coefficient of 0.470.

Besides, the pairs of independent variables have a relatively weak correlation with each other. Thus, there is a high probability that no multicollinearity will occur.

Table 5: Correlations

		REL	TAN	SYM	RES	ASSU	GA
REL	Pearson Correlation	1	,329**	,463**	,461**	,306**	,494**
	Sig. (2-tailed)		,000	,000	,000	,000	,000
	N	235	235	235	235	235	235
TAN	Pearson Correlation		1	,392**	,460**	,287**	,484**
	Sig. (2-tailed)			,000	,000	,000	,000
	N		235	235	235	235	235
SYM	Pearson Correlation			1	,538**	,348**	,583**
	Sig. (2-tailed)				,000	,000	,000
	N			235	235	235	235
RES	Pearson Correlation				1	,417**	,597**
	Sig. (2-tailed)					,000	,000
	N				235	235	235
ASSU	Pearson Correlation					1	,470**
	Sig. (2-tailed)						,000
	N					235	235
GA	Pearson Correlation						1
	Sig. (2-tailed)						
	N						235

** . Correlation is significant at the 0.01 level (2-tailed).

*Average value of observed variables***Table 6:** Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
REL	235	2,00	5,00	38,179	,57366
TAN	235	2,00	5,00	38,415	,60899
SYM	235	2,00	5,00	37,574	,66522
RES	235	2,00	5,00	38,777	,62033
ASSU	235	2,00	5,00	38,872	,64305
Valid N (listwise)	235				

The average value of the observed variables is from 3 to 4, which shows that most of the respondents evaluated the quality of tourism services at the smart tourism destination of Hue at a high level. The difference between the mean values of the variables is not large. In which, the factor of service Assurance was rated the highest (mean = 3.8872) and the factor of Sympathy was rated the lowest (mean = 3.7574).

Management Implications

From the process of collecting and processing data, the research identified the current situation of 5 main factors constituting tourism service quality at the smart tourism destination of Hue. Among 5 factors, the factor Sympathy was rated the lowest (mean = 3.7574). Although the difference with other factors is not large, the research results of this study show that it is necessary to have more research to find out solutions to improve the satisfaction of tourists. In particular, tourism businesses and tourism destination management organizations need to continue to improve their ability of understanding and caring customers, making them feel welcome at any time, anywhere. To do it, Hue must focus on building the capacity of exploiting and applying smart technologies to collect customer data to create the customers' insights to build and implement the development plan. Apart from the factor of Sympathy, the factor of Reliability also needs to be considered in the progress of improving the quality of tourism services at Hue. According to the survey results, the majority of respondents feel satisfied with the services provided by tourism business organizations. The commitments were done right from the first time, on time as specified. Most tourism business organizations have effective ways to solve problems arising in the process of customers using the service. However, besides, many tourists still feel unsatisfied as expected when directly experiencing tourism services at the destination. This situation stems from many reasons, which mainly comes from the fact that some information about tourism services that tourists approached before arriving at the destination did not match reality. Therefore, to improve the credibility of tourists, tourism destination management organizations need to have specific policies to limit the posting of inaccurate information about the destination. In particular, both tourism destination management organizations, tourism businesses, and local people need to be responsible for the content of information conveyed to visitors, especially information provided on online information channels. To do it, all of them have to be responsible for practicing tourism activities at the destination. Hence, organizing training courses to raise awareness of responsible tourism for all the stakeholders in the tourism industry is necessary.

Although other factors in the models are highly evaluated by

tourists, the tourism destination management organizations in Hue still need to make more efforts by applying smart modern technologies to improve the quality of tourism services in the future.

4. Conclusion

The study has contributed to systematizing some theoretical backgrounds of tourism service quality as a basis for assessing the current status of tourism service quality in the smart tourist destination of Hue. Based on the research results, tourists' evaluation of the 5 factors constituting the quality of tourism services at a smart tourism destination are arranged in descending order as follows: Service Assurance, Responsiveness, Tangibility, Reliability, and Sympathy.

From the research results, it can be seen that to improve the quality of tourism services at Hue smart tourism destination, it is necessary to focus on improving the sympathy and credibility of tourists. At the same time, it is necessary to focus on applying information technology in the process of providing services to improve the quality of tourism services as well as enhance the quality of tourists' experiences during their stay at the destination. It can be seen that early recognition of the need for digital transformation to adapt to the context of the industrial revolution 4.0 plays an important role in improving the quality of tourism services and acts as a premise for Hue to focus its resources on building and developing a smart tourism system to improve and enhance the quality of tourism services at the destination, contributing to the satisfaction of domestic and foreign tourists, and especially contributing to the stimulation of tourism demand in this current post-Covid-19 period.

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