Building the tourist experience of visitors to sustainable smart tourist destinations

Alexey Platov[1,*], *Munir* Kalemulloev[2], *Shakhlo* Zikirova[1], and *Elena* Lysoivanenko[1]

[1]Moscow (Senkevich) State Institute of Physical Culture, Sports and Tourism, 125499, Kronshtadtsky Boulevard, 43A, Moscow, Russia
[2]Tajik National University, 73402517, Rudaki Avenue, Dushanbe, Tajikistan

Abstract. The aim of the study is to determine the impact of smart technologies on the formation of a positive experience of visitors to sustainable smart destinations. The aspects of consumer behavior in the context of the "Customer Journey Map" model are considered. A research framework was developed combining three research hypotheses. The proposed model was empirically tested on the basis of quantitative methods. Zaryadye Park in Moscow was chosen as a smart destination for the study. The results obtained demonstrated that smart technologies influence consumer behavior at all three stages of the "Customer Journey". The strongest influence is manifested in the preliminary and active stages; at the reflexive stage it weakens. This study opens up a new understanding of the impact of smart technologies, its results have theoretical and marketing significance of sustainable smart destinations management systems.

1 Introduction

Sustainable socio-economic development of the region, on the one hand, is the result of a common approach to understanding sustainable development, on the other hand, it is a result largely determined by the state of tourism. Tourist spending provides significant revenue to the local budget. The local population accumulates income in the form of wages, rent, etc. which they can spend on the purchase of domestic goods and services, thereby creating a new round of economic activity. The growth of the tourist flow leads to an increase in the demand for labor resources not only in tourism, but also in related sectors of the economy, providing an increase in the employment of local labor resources, including the expansion of effective employment for women and youth. Tourism has a positive impact on sustainable development by contributing to the preservation of national and socio-cultural characteristics of the region.

Tourism and the hospitality industry is an information-rich area, where the collection, transmission and processing of information are of great importance in making decisions at all levels of tourism management.

* Corresponding author: aplatov@yandex.ru

In this regard, the formation of a new trend in the digital economy directly concerns the tourism sector, which is already actively using new information and communication technologies of the digital economy.
Information support for the tourism business is a set of information database on tourism activities and specialized information technologies designed for its processing, which ensure the effective functioning of the tourism system. The digital economy is a unique type of economy in which the most important resource in the field of production, distribution, exchange and consumption is digital information and the corresponding methods of data management.
Information support of tourism acts as the most important factor in its development, which has gained particular importance in recent years in the context of the development and formation of the digital economy.

The Smart concept is used to describe modern processes in society and in many areas of activity. Recently, it has also been applied to the tourist area called smart tourism. Now there is a need to link tourism with information and communication technologies. This is primarily due to changes in tourist consumer behavior. However, it should be noted that the topic has not been worked out at the conceptual level. It is known that Smart is a new quality that arises when two or more components are integrated, one of which is technological innovation and / or the Internet. As the researchers note [1], the word "smart" describes technological, economic and social events based on IT technologies, which are based on certain databases, new ways of connecting and exchanging information. Höjer and Wangel see in this term not only specific technological innovations, but the interdependence of various information technologies[2]. Harrison emphasizes that "smart" is impossible without the exchange of information, data, while using modeling and analysis in making management decisions[3].

The phenomenon of smart tourism can be interpreted as tourism, in which the constant and systematic use of Smart elements leads to the creation of additional travel value for the tourist. This definition focuses on the acquisition of additional value of tourist services for the consumer through the use of Smart-technologies. From a marketing point of view, this is the main advantage of smart tourism.

With the development of artificial intelligence, big data, 5G, and other technologies, intelligent travel attractions (STA) have become widespread in the world. At the same time, the development of STA has shifted the main focus from a technology orientation to a demand orientation. Tourist satisfaction has become a key aspect in STA quality management.

Smart technologies (ST) are specific products and services that add value to the travel experience by fostering higher levels of interaction, co-creation and personalization [4]. Smart technology today serves as an ambiguous umbrella term for many advanced technologies, including near-field communication (NFC), augmented and virtual reality (AR & VR), ubiquitous communication over Wi-Fi and other networks, the use of mobile technologies, iBeacons and other smart tags, mobile apps, smart cards, latest generation websites and social networks, chat bots, etc.[5, 6]. The application of these technologies depends on strategies for promoting tourist destinations and attractions. These smart technologies serve as potential amplifiers of travel experiences, especially in smart destinations [7].

The concept of smart tourism builds on the widespread use of sustainability, as a destination cannot be considered smart if it is not sustainable. Therefore, smart technologies used in a tourist destination are designed to solve the main problems of its sustainability, improving the quality of life of all its residents. For smart destinations to become sustainable, a system of production and consumption of tourism services, coordinated by smart technology, is needed. The main areas of work of such a system will be to ensure

social and economic justice; information management; and the formation of a positive travel experience. The approach to smart tourism in the context of sustainable development presupposes the convergence of technology and tourism experience [8]. Smart destinations must be able to meet expectations and increase the satisfaction of new types of tourists.

At the same time, a number of studies indicate the need for more conceptual and empirical research in the field of STA governance structure to understand the consumer behavior of tourists in general and the impact of Smart technologies on the consumer experience in specific contexts and conditions. The aim of our research is to try to close the knowledge gap in this area. The main idea is that tourist attractions should take an appropriate approach and make adequate use of Smart technologies to meet the needs of visitors and make their visit more attractive, interesting and memorable.

2 Methods

The "Customer Journey Map" model was used as a theoretical basis. This model was first presented in the work Shostack [9], devoted to the visualization of service components, and then was further developed in subsequent studies. The services provided by tourist attractions are empirical in nature. They focus primarily on the consumer experience, and only then on their functional benefits. Experiential services should be viewed as a "path to purchase," not as a single product or transaction.

The Customer Journey Map model assigns the main role to the consumer. It suggests that the formation of consumer experience is a long process, consisting of three stages: the preparatory stage before the trip, the stage of active tourism and the stage of reflection after the trip. The preparatory stage (before the trip) is represented by the processes of information search, decision-making and purchase. At the active stage, the consumer is in the destination itself, actively interacting with its elements. Moreover, value is created through participation and involvement. Finally, the reflective stage includes recalling the experience, information exchange, and the provision of recommendations. It is obvious that all three stages can and should be controlled.

Thus, from the point of view of the presented model, the cycle of interaction with the consumer includes waiting, arriving, the visit itself, leaving, remembering and sharing experiences.

We believe that the Customer Journey Map model is the most appropriate for the study of Smart tourism objects, since it refers to the empirical services that are provided by tourist attractions. It is able to provide a comprehensive approach to the study of consumer behavior, taking into account all three stages of the path to purchase.

Recently, tourists have been using a lot of smart technologies at all stages of the trip. This study explores the impact of smart technology on the travel experience using the Customer Journey Map model.

Preliminary stage: before visiting, tourists use intelligent technologies to search for information about tourist services and select tourist attractions, as well as to book tourist products and services necessary for making a trip. When searching, comparing and planning, tourists primarily rely on reviews of real experiences and recommendations on social networks, since the purchase of a tourist product is associated with a certain risk. An increasing number of tourists are using user-generated content (UGC) posted on digital platforms to find information and make decisions. This information about tourist attractions is the result of real experience and is very useful in minimizing risk when making decisions.

Smart technologies allow tourist attractions to make their offers more convenient and affordable and, thus, increase the attractiveness of their business. Smart attractions must use

appropriate integrated marketing communications to convey a consistent, relevant and effective message without creating high expectations.

It can be argued that smart technology can have an impact in the preliminary stage.

Hypothesis 1: Smart technology has a positive impact on the preliminary stage of customer journey by providing up-to-date and reliable information about the attraction.

Active stage: mobile tourist guides, mobile recommendation systems, navigation systems, cashless and contactless payment systems, congestion management systems are the most frequently used intelligent technologies in tourism activities. Such technologies increase the ability of tourists to manage their visit, providing more emotion and activity, thereby increasing the degree of tourist attraction. In turn, this leads to the formation of positive emotional reactions during the visit, thereby improving the sense of pleasure of tourists. Electronic guides maximize their ability to move freely while providing accurate and timely information. Mobile devices are used to provide access to information and communication while traveling.

Hypothesis 2: Smart technology has a positive effect on the active stage of travel, increasing flexibility, providing convenience, and contributing to an engaging and memorable travel experience.

Reflective stage: Once the visiting experience is complete, smart technologies will be used by tourists to reflect their experiences on social media sites. Publication of experiences helps tourists shape the travel experience, while also influencing the decision-making behavior of potential tourists. Tourists present their experiences on digital platforms in various formats, and this content helps to plan future travel plans and influences consumer behavior. Thus, we hypothesize that smart technology can assist tourists in identifying and solving problems, providing their feedback and presenting their visiting experience.

Hypothesis 3: Smart technology has a positive effect on the reflective stage of travel, providing tourists with platforms to share their knowledge and information, and to evaluate their experiences.

In this study, quantitative methods were used. Due to the limitations associated with the spread of Covid-19, the online survey method was chosen, which was the only feasible and realistic in the current environment. The questionnaire consisted of three sections: the first section on opinions about the use of smart technologies during the visit; the second section containing research constructs (the impact of smart technologies on all stages of the customer journey) and the third section of demographic indicators. In the second section of the questionnaire, research constructs and their indicators were measured using a 5-point Likert scale).

Zaryadye Park in Moscow was chosen as a smart attraction for research. The Zaryadye City Cultural and Educational Center was built in 2014-2017 by a consortium led by the New York architectural bureau Diller Scofidio + Renfro with landscape architects Hargreaves Associates. Time magazine included Zaryadye Park in the list of the best places in the world in 2018. The park was also awarded the Popai Award “The First in Digital Marketing Technologies”, which partly determined its choice as an object of research. The concept of Zaryadye Park is based on the principles of landscape urbanism. On the territory of 13 hectares, four landscape zones characteristic of Russia have been recreated: flood meadows, steppe, forest and northern landscape. Hidden under the surface of the park are pavilions equipped with a complex engineering and IT infrastructure.

The central information and entertainment facility of the park is the media center. It contains a tourist center with an interactive area, an exhibition hall and souvenir shops, as well as two independent attractions "Flight over Moscow" and "Time Machine". A detailed map of the park is presented on an interactive video wall in the main lobby of the media center. It consists of nine LCD displays with FullHD-resolution and is based on Christie Pandoras Box Widget Designer solutions. The wall allows park guests to control the

panorama of the park for maximum immersion. The Time Machine attraction allows visitors to feel like a direct participant in the most important events in the history of Moscow. The immersive experience is provided by 22 3DLP projectors and an interactive floor. The system for tracking and interactive interaction of viewers with media content is implemented using specially developed software and 26 IR video cameras. The Flight over Moscow media complex, a cinema with an acoustically transparent hemispherical projection screen, allows visitors to get a bird's eye view of the city's main attractions. The Discovery Center "Zapovednoye Embassy" is designed for laboratory experiments, conferences, master classes, lectures and seminars. More than 200 items of the most modern equipment are involved in it; the AMX control system is responsible for managing the entire multimedia complex. To navigate the park, visitors can use touch-sensitive interactive kiosks developed in Russia. The kiosks help visitors to the park to navigate in it, study the history of Moscow, choose exhibitions and attractions of interest, and immediately buy tickets for events in the park.

The selection of respondents was carried out on the condition that they have visited Zaryadye Park at least once in the past 12 months. 416 questionnaires were collected from visitors aged 18 and over who had experience of visiting Zaryadye Park over the past 12 months. The survey was conducted from February 2019 to August 2020.

Statistical analyzes of the data were performed using SPSS (Statistical Package for the Social Sciences) version 25.0.

3 Results

The demographic profile of the respondents is presented in the Table 1.

Table 1. Demographic profile of the respondents

Characteristic	Percentage
Gender	
Women	62
Men	48
Age	
18-30	64
31-50	26
51+	10
Employment	
Student	36
Employed	54
Unemployed	2
Retiree	8

The study used regression analysis to determine the impact of smart technology on travelers at three stages of the customer journey. Statistical analysis was used to identify the role of each of the three stages (independent variables) in predicting the impact of smart technology on a positive visiting experience (dependent variable). Confirmatory factor analysis was performed to test whether the constructs are related. Cronbach's alpha and composite reliability were used to check the reliability of the measurements. The results are shown in Table 2. Cronbach's alpha in the constructs ranged from 0.710 to 0.785. At the same time, the composite reliability ranged from 0.777 to 0.828, which was above 0.700, the minimum level. The mean variance (AVE) of all constructs ranged from 0.576 to 0.529, which was above the minimum value of 0.500. The results demonstrate that the convergence is sufficient. It can be concluded that the measurement scale had sufficient internal consistency.

Table 2. Demographic profile of the respondents.

Constructs and Indicators	Mean	Standard Deviation	Standard Loading	T-Test	Composite Reliability	Average Variance Extracted	Cronbach's Alpha
Preliminary Stage							
Search and Collection of Information	4.21	0.638	0.713	6.247	0.818	0.529	0.769
Minimization of Risk	4.03	0.714	0.727	1.288			
Formation of Interest	4.04	0.767	0.729	1.227			
Belief Formation	4.12	0.708	0.727	2.822			
Active Stage							
Providing Navigation and Communication	4.31	0.676	0.665	0.774	0.828	0.547	0.710
Providing Convenience	4.16	0.694	0.778	1.508			
Providing Flexibility, Involvement, and Fun	4.41	0.691	0.777	1.554			
Making Short-Term Decisions	4.08	0.745	0.827	5.923			
Accumulation of Memories	4.15	0.733	0.678	4.011			
Reflective Stage							
Appeal to the Memories	4.08	0.786	0.787	2.969	0.777	0.539	0.775
Exchange of Experience	4.12	0.765	0.721	3.940			
Estimation	3.96	0.711	0.712	0.309			
Positive Experience of Visiting							
Preliminary Stage	4.13	0.555	0.764	4.315	0.804	0.576	0.785
Active Stage	4.28	0.517	0.782	14.295			
Reflective Stage	4.05	0.686	0.723	0.854			

The results of the exploratory factor analysis are presented in table 3. Varimax with Kaiser normalization was chosen as the rotation method. Rotation converged in 5 iterations The factor load of each measurement element was in the range from 0.588 to 0.801, which exceeds the standard value of 0.500. Thus, it is obvious that the measurement scale is characterized by a high level of internal consistency and reliability.

Table 3. The results of the exploratory factor analysis.

Indicators	Preliminary Stage	Active Stage	Reflective Stage
Search and Collection of Information	0.713		
Minimization of Risk	0.635		
Formation of Interest	0.751		
Belief Formation	0.728		
Providing Navigation and Communication		0.698	
Providing Convenience		0.705	
Providing Flexibility, Involvement, and Fun		0.743	

Continuation of Table 3

Making Short-Term Decisions		0.571	
Accumulation of Memories		0.794	
Appeal to the Memories			0.754
Exchange of Experience			0.711
Estimation			0.772

The presented results show that the hypotheses put forward by the study are confirmed. To test a research model, the relationship between constructs must be meaningful. The correlations of the product of Pearson's moments were determined to reveal the relationships between the constructs (Table 4). The results showed that Pearson's correlation coefficient (R) ranged from 0.348 to 0.601, n = 503 ($p \leq 0.01$), indicating a strong correlation. Thus, there is a significant correlation between all factors.

Table 4. Pearson's correlation coefficient

Indicators	**Preliminary Stage**	**Active Stage**	**Reflective Stage**	**Positive Experience of Visiting**
Preliminary Stage	1	0.586	0.541	0.439
Active Stage	0.586	1	0.546	0.406
Reflective Stage	0.541	0.546	1	0.337
Positive Experience of Visiting	0.439	0.406	0.337	1

The table 5 shows the results of the regression analysis.

Table 5. The results of the regression analysis

ParameterTest					
Correlation Coefficient	**Coefficient of Determination**	**Adjusted Coefficient of Determination**	**Standard Error of the Estimate**	**Durbin-Watson Coefficient**	**Sig.**
0.783	0.620	0.615	0.677	1.846	0.000
Regression Model					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Standard Error**	**β**		
Positive Experience of Visiting	0.439	0.275		1.587	0.107
Preliminary Stage	0.431	0.069	0.296	5.748	0.000
Active Stage	0.301	0.071	0.198	3.965	0. 000
Reflective Stage	0.081	0.058	0.061	1.385	0.153

The value of the Durbin-Watson Ratio was 1.846, thus keeping within the required range of 1.00 - 2.00. The results showed that the three stages of the “customer journey” (the impact of smart technologies on tourist consumer behavior) had a significant correlation with the quality of the visiting experience.

A simple linear regression was established between the impact of smart technology on tourists at three stages of a customer's journey (Table 5). The results obtained indicate that the model is quite workable. Obviously, the dependent variable (positive visitation experience) is influenced by all three stages of the customer journey; the most influential were the preliminary and active stages. In two stages, the significance level Sig. equals 0.000, which indicates that the use of smart technologies has a significant impact on the level of quality of service for visitors. At the reflexive stage, the influence is also noticeable, but it is lower.

It can be concluded that the proposed model is predictive. Intelligent technology impacts all three phases of the customer journey to create a positive travel experience.

4 Conclusions

The research results may be of interest to practitioners in the tourism industry. It was found that intelligent technologies used by tourists provide the conditions for the formation of a positive experience of visiting tourist attractions. It is very important for travel service providers to understand the needs and expectations of existing and potential tourists. Tourists have high hopes for a high quality experience. These expectations are technology driven and are amplified by technological advances. Consequently, tourist attractions should create value propositions for their visitors, implement appropriate intelligent infrastructure and services based on the principles of the concept of service dominant logic (SDL) [10]. Smart technologies are tools that can help meet the needs of tourists, confirm their expectations, provided they are properly designed. These technologies can be used effectively by travel service providers to create compelling, visually compelling value propositions and create a positive and memorable visit.

Smart technology is a valuable marketing tool that should not be underestimated, so tourism industry actors need to actively respond to the opportunities they offer. The mission of tourism attractions is to efficiently and efficiently manage intelligent infrastructure, technology and services. Obviously, their influence begins long before actually visiting the attraction. Therefore, the results obtained can be useful in organizing the work of marketing communications, whose task is to consistently transmit the correct messages, to form adequate not overestimated expectations. Understanding the motives and goals of tourists is essential, and this knowledge should form the basis for developing attractive value propositions.

Thus, the results of the study indicate the directions for the adequate design and use of intelligent technologies for tourist attractions for marketing purposes in accordance with the expectations and requirements of tourists. The correct use of smart technology can help create an engaging and memorable experience, which is beneficial for everyone involved in smart tourism management.

References

1. U. Gretzel, M. Sigala, Z. Xiang,C. Koo, Electron Markets,**25** (2015)
2. M. Höjer, J. Wangel, *ICT Innovations for Sustainability, Advances in Intelligent Systems and Computing* (2015)
3. C. Harrison, B. Eckman, R. Hamilton, P. Hartswick, J. Kalagnanam, J. Paraszczak, P. Williams, IBM Journal of Research and Development,**54(4)** (2010)
4. B. Neuhofer, D. Buhalis, A. Ladkin, Electronic Markets, **25**(2015)

5. U. Gretzel, S. Reino, S. Kopera, C. Koo, Smart Tourism Challenges. Journal of Tourism, **16(1)** (2015)
6. C.D. Huang, J. Goo, K. Nam, C. Woo Yoo, Information and Management, **54(6)** (2017)
7. P. Buonincontri, R.Micera, Information Technology & Tourism, **16(3)** (2016)
8. W.C. Hunter, N. Chung, U. Gretzel, C. Koo, Asia Pac. J. Inf. Syst., **25** (2015)
9. G.L. Shostack, Harv. Bus. Rev., **62** (1984)
10. D. Wang, X.R. Li, Y. Li, J. Destin, Mark. Manag., **2**(2013)