

Developing Smart Tourism Model - Opportunities and Challenges in Vietnam

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Received 19-08-2024

Revised 20-08-2024

Accepted 15-09-2024

Published 16-09-2024



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Abstract:

Smart tourism is developed on the basis of applying modern scientific and technological achievements, especially information and communication technology, aiming to apply technology to serve the needs of tourists. In particular, the infrastructure is developed with full information related to tourist destinations such as: dining addresses, restaurants, hotels, ticket booking, customer reviews, etc. In addition, there are features that help tourists experience the feeling of traveling with virtual reality technology. In general, many major cities in the world have begun to apply information technology to serve tourists, which meets the inevitable development trend of world tourism in general and Vietnam's tourism industry in particular. Accordingly, within the scope of the research project, the group of authors will focus on clarifying the opportunities and challenges in the process of developing the smart tourism model in the context of developing technology 4.0, and at the same time propose some mechanisms to perfect this model in the future.

Keywords: Tourism Model, Smart Tourism, Smart Destination, Tourism System Development

1. Smart tourism concept

Smart tourism is developed on the basis of applying achievements of modern science and technology, especially information and communication technology, to create the best values, benefits and services, meeting the diverse needs of tourists, tourism businesses, tourism management agencies and the community (Le Quang Dang 2018). Currently, there are many different views on "smart tourism", there is an argument that Smart Travel is a new tourism trend, which focuses on the benefits of tourists but has low costs and is safe. Understanding the problem from this perspective, smart tourism is a method of "smart travel", the connotation is understood that tourists will be the

ones to calculate and plan in detail for the journey of tourism discovery in the smartest way to achieve maximum experience value but the cost is at the most economical level possible. However, there are still opinions that smart tourism is a combination of technological elements. In which: technological tools such as: smart management software supporting management agencies and tourism businesses, smart applications and utilities supporting tourists, etc., will provide maximum support for people who need to travel through automatic explanation utilities, electronic administrative management software, tour guide management software, online ticket booking

software, navigation and search utilities for hotels, entertainment areas, etc.

Compared with previous tourism models such as: sightseeing tourism, resort tourism, sports tourism, MICE tourism, family tourism, medical tourism, rural tourism, urban tourism, etc., the smart tourism model will have its own unique characteristics including experiential services established on advanced technology platforms such as virtual reality tours, 3D - 360° movies, technology entertainment games, etc. Smart tourism includes 3 main components: (i) Smart destinations: built on advanced technology infrastructure, ensuring sustainable development of tourist areas, accessible to everyone, facilitating visitor interaction and integration into the surrounding environment, increasing the quality of experience at the destination, improving the quality of life of people; (ii) Smart experiences: Technology-mediated travel experiences and enhanced information exchange through personalization, context awareness and real-time tracking; (iii) Smart business ecosystem: A complex business ecosystem that creates and supports the exchange of travel resources combined with travel experiences. Participants in this model are also smart travelers. They not only consume but also share and create experiences, and have a management and monitoring role to ensure the perfection of their next journeys and those of other travelers (Pham Thuy Linh, 2020).

2. Opportunities and challenges in the development of smart tourism models in Vietnam in the context of international integration

2.1. About opportunities:

Developing smart tourism will bring many opportunities to the Vietnamese tourism industry. Accordingly, the Ministry of Culture, Sports and Tourism has just issued Decision No. 3570/QĐ-BVHTTDL on approving the Project "Application of technology of Industry 4.0 to develop smart tourism, promoting tourism to become a spearhead economic sector", which is a condition to strengthen digital connectivity and develop smart

tourism. (Le Tuan Anh, 2020). The general goal of the Project is to apply technology of the Fourth Industrial Revolution to develop a smart tourism ecosystem in Vietnam, meeting the increasing needs of tourists in the digital age, supporting effective connections between state management agencies of tourism, businesses, tourists and related entities; Developing smart tourism ensures professionalism, modernity, meets the requirements of innovation, and increasingly effective state management, contributing to improving the development capacity of Vietnam's tourism, making tourism a key economic sector, ensuring sustainable development and international integration. The basic goals by 2025 include: Developing a smart tourism ecosystem to ensure unity and synchronization in sustainable smart urban development

Accordingly, the development of smart tourism has certain advantages such as:

Firstly, institutions and policies have created conditions for promoting the development of smart tourism. In recent years, the Party and the Government have clearly recognized that "information technology is one of the most important driving forces of development, along with a number of other high-tech industries that are profoundly transforming the economic, cultural and social life of the modern world". Therefore, the Politburo has advocated: "All areas of economic, cultural, social, security and defense activities must apply information technology for development". In the spirit of Resolution No. 36-NQ/TW in 2014, it continues to affirm: "Information technology must be widely applied and become an economic sector with a spillover effect on socio-economic development". Following Resolution No. 26/2015/NQ-CP, it emphasized: "Promoting the application of information and communication technology in all sectors and fields to improve the effectiveness and efficiency of state agencies' management and administration, improve the business environment, and enhance competitiveness".

In this context, the Prime Minister issued Directive No. 16/2017/CT-TTg on enhancing the capacity to

access the fourth industrial revolution. The Prime Minister requested ministries and branches to "Build a digital transformation strategy, smart governance, prioritize the development of digital technology industry, smart agriculture, smart tourism, and smart cities". Looking at the issue objectively, it can be seen that the system of documents of the Party and the Government has opened up important strategic directions to strongly implement the application of advanced technology in the tourism sector. In this spirit, Clause 4, Article 5 of the 2017 Law on Tourism affirmed that "The State has policies to encourage and support activities applying modern science and technology to serve tourism management and development". This is an important premise to create a breakthrough in attracting international visitors to Vietnam. In order to specify the order and procedures towards modernization in 2017, the Government issued Decree No. 07/2017/ND-CP and Resolution No. 124/2017/NQ-CP to pilot the issuance of electronic visas (e-visas) for foreigners entering Vietnam. In particular, in Directive No. 16/2017/CT-TTg, for the first time the term "smart tourism" was mentioned in a legal document of Vietnam: "... Prioritize the development of digital technology industry, smart agriculture, smart tourism, smart cities".

Second, smart tourism is a potential market trend for Vietnam's tourism development.

Based on statistics from WeAreSocial (wearesocial.com) in 2018, there were about 4.02 billion Internet users in the world (accounting for 53%), nearly 3.2 billion social network users, more than 5.1 billion mobile phone users (accounting for 68%), mainly smartphones connected to and using the Internet. In Vietnam with nearly 100 million people, there are 64 million Internet users (accounting for 67% of the population), 55 million social network users (accounting for 57%), more than 70 million mobile phone users (accounting for 73%).

According to the Google Vietnam Report at the Workshop "Welcoming tourists from the click" held on April 18, 2017, in 2016, Vietnam had up to 975 million online searches for tourism. In

addition, customers not only search for information, but also watch videos (27%); compare reviews of tours and service packages (68%) and read reviews from other customers (44%). These factors are a favorable foundation for Vietnam's tourism to develop in the context of Industry 4.0 (Cao Thi Phuong Thuy & Nguyen Thu Huong 2021). In addition, according to statistics from the Vietnam E-commerce Association (VECOM), the rate of domestic tourists booking hotels online and booking tours online reached more than 60%; the rate of international tourists using these two services reached more than 75%. Another survey of international tourists to Vietnam showed that up to 71% of tourists consulted destination information on the Internet; 64% booked and purchased services online during their trip to Vietnam. This is a great premise for Vietnam to develop smart tourism based on technology (Phung Thi Hanh, Nguyen Ta Nam 2022, 71).

Thus, it can be seen that tourists use the Internet, smart gadgets, smart devices to search for travel information, refer to destinations, compare and choose reasonable travel services, make transactions to buy tours, book rooms, buy airline tickets, pay online... with an increasing trend. They are directly becoming potential "smart tourists" of Vietnam tourism (Le Quang Dang 2018). It can be seen that smart tourism will attract potential customers, however, the online tourism market in Vietnam still has many limitations, when online travel service companies with big brands such as Agoda.com, booking.com, Traveloka.com, Expedia.com are dominating the market with about 80% market share. Meanwhile, there are only about 10 Vietnamese businesses operating online tourism such as Ivivu.com, chudu24.com, mytour.vn, tripi.vn, vntrip.vn (Kim Byeong Du & Nguyen Le Uyen Diem 2023, 78). Promoting the smart tourism model will be a "fertile market" for Vietnamese tourism businesses.

Third, to develop smart tourism requires initiative. smart tourism approach of the tourism industry. Accordingly, tourism management agencies in Vietnam have coordinated with domestic and foreign agencies, organizations and units to organize seminars, conferences and discussions at

provincial, industry, national and international levels around this topic. At the same time, the tourism industry has also actively supported the provision of tourism information. The most popular form of tourism information provision today is through website systems, information portals, electronic information pages, and electronic newspapers. Currently, 100% of tourism management agencies and most tourism businesses in Vietnam have their own websites. Nowadays, with the development of web programming technology, it allows programmers to design and integrate many diverse features and utilities on the web platform to support tourism activities such as: Electronic tourism maps, online booking functions, online payment, online consulting, online customer care, currency conversion functions, weather forecasts, ... can even create direct interaction of tourists such as suggestions, reflections, comments on tourism events. Besides website systems, social networks are also one of the important channels in sharing information, tourism experiences and contributing to tourism promotion.

Fourthly, to support tourism activities in recent years, localities in Vietnam have researched, produced and put into use many smart software and utilities. The most prominent of these are large provinces and cities such as Hanoi, Da Nang, and Ho Chi Minh City. In 2018, Hanoi put into use two smart software utilities to support tourists, including an automatic explanation system at the Temple of Literature - Quoc Tu Giam and a tour guide software for visiting the Imperial Citadel of Thang Long; a number of other utilities on maps, finding directions, bus stations, and travel guides have also been researched, produced and put into use for a long time. Ho Chi Minh City has also actively promoted the application of IT-TT to the tourism industry with the goal of turning the city into a smart tourism city such as: Putting into use a number of smart tourism information stations; Put into use the smart travel software "Vibrant Ho Chi Minh city" and some other useful software such as "Sai Gon Bus", "Ho Chi Minh City Travel Guide", "Ho Chi Minh City Guide and Map".

Da Nang is also one of the leading localities in applying IT to the tourism industry, developing smart tourism models. In addition to regularly using electronic marketing methods to promote tourism, Da Nang is very interested in building software systems and utilities to support tourists such as "Da Nang Tourism", "inDaNang", "Go! Da Nang", "Da Nang Bus".

Notably, in 2018, Da Nang City of Vietnam put into use the Chatbot application "Da Nang Fantasticity", this is the first technology used in Vietnam and Southeast Asia (along with Singapore). In addition, some other localities such as: Hai Phong, Quang Ninh, Ninh Binh, Hung Yen, Thanh Hoa, Quang Binh, Can Tho, etc., also actively cooperate with telecommunications corporations to deploy smart tourism projects, produce smart software and utilities for the tourism industry (Cao Thi Phuong Thuy & Nguyen Thu Huong 2021).

Fourth, the active approach to the Industrial Revolution 4.0 to keep up with new business trends, meeting the diverse travel needs of tourists of Vietnamese tourism businesses. Many businesses are renewing themselves to become smart businesses with business activities mostly implemented online, such as: marketing, product promotion; market expansion research; customer consulting and care; purchase - sale transactions, payments, etc. In 2016, the first online travel trading floor (Tripi) appeared in Vietnam, allowing transactions of package tours, hotels and airline tickets (Phung Thi Hanh & Nguyen Ta Nam 2022, 76).

In particular, Tripi also allows customers to search, compare prices of tourism products and update product status accurately 24/7. IVIVU (ivivu.com) is also one of the major tourism trading floors, allowing tourists to search for information, compare, select and make transactions to book tours, buy airline tickets, book hotel rooms with more than 300 tours, more than 5,000 hotels in Vietnam and 345,000 hotels worldwide for tourists to choose from (Pham Thuy Linh, 2020). Thus, it can be seen that smart tourism is an inevitable development trend of world tourism in general and Vietnam's tourism industry in particular. However, to develop smart tourism, Vietnam needs to continue to improve policy institutions, identify models and pilot implementation, develop human resources with technological qualifications and strengthen international cooperation in science and technology, promote propaganda work, and raise awareness of smart tourism development.

2.2. Challenges in the development of smart tourism

Applying modern technology to the tourism industry and developing smart tourism is a major policy of the Party and the Government. In recent

times, although the tourism industry in Vietnam has been making great efforts to implement solutions to develop smart tourism, there are still many shortcomings and limitations. Specifically: Specific policies on smart tourism: Although there are currently many legal documents on promoting the application of information and communication technology to socio-economic development in general and tourism development in particular, there are still no specific documents regulating or guiding the implementation of smart tourism development in Vietnam. Some localities have policies to develop smart tourism, but the implementation process still has many shortcomings. In recent times, many localities have implemented measures to develop smart tourism. However, these activities are localized, lacking scientific basis, legal basis and especially lacking a " smart tourism model " to ensure synchronous effectiveness. Specifically: despite promoting the development of tourism according to the smart model, environmental pollution in Vietnam is still an issue that needs to be thoroughly resolved. According to the annual report on environmental indicators (EPI) conducted by the US environmental organization, Vietnam is among the 10 countries with the highest API air pollution in Asia. Ranked 36th out of 177 countries with the highest air pollution level in the world, exceeding 4.9 times the allowable threshold (Phuong, NT, Khoe, TT, & Van, TTT 2024). In addition, the problem of environmental pollution control in tourist villages or industrial zones has not been resolved, so this is a problem that makes the

implementation of smart tourism models less effective in Vietnam (Van, TTT, & Phuong, NT 2024).

This leads to investing only in promoting smart tourism without focusing on solving environmental problems, which is a lack of focus, lack of synchronization, and low efficiency. The reason for this problem is that smart tourism is a new trend, not yet formed and unprecedented in Vietnam, no locality has successfully built it to serve as a learning model for other localities. Smart tourism is developed on the basis of applying science and technology, information and communication technology, this is considered a prerequisite condition. However, the level of technological readiness to develop smart tourism in Vietnam is not high. Statistics from the Ministry of Information and Communications, Vietnam Association for Information Technology (2018), Summary Report on the Readiness Index for the Development and Application of Information and Communications Technology in Vietnam (VN ICT Index 2018) show that: the ranking index on the readiness level for the application and development of information and communications technology of the Ministry of Culture, Sports and Tourism in the past few years has been ranked at a fairly average position, from 4th to 7th in the ranking of 19 ministries and branches. In particular, the indicators on technical infrastructure and the information technology application index have been ranked at a weak average position for many years (Table 1).

Table 1. Ranking of the Ministry of Culture, Sports and Tourism of Vietnam on the readiness index for development and application of Information Technology.

Ranking index	2015	2016	2017	2018
Overall ranking index	7	4	6	5
Technical infrastructure index	11	4	11	8
Human Infrastructure Index	4	3	6	4
IT application index	11	9	10	5

(Source: Ministry of Information and Communications, Vietnam Association of Information Technology, 2018)

At the local level, except for 5 localities with developed tourism including Hanoi, Da Nang, Ho Chi Minh City, Quang Ninh, Thua Thien - Hue, which are at the top of the rankings in terms of readiness for application and development of

information and communication technology (Table 2), many localities with developed tourism have very low rankings such as: Hai Phong, Ninh Binh, Quang Binh, Thanh Hoa, Nghe An, Khanh Hoa, Lam Dong, Lao Cai.

Table 2. Ranking of readiness index for development and application of Information and Communication Technology of 5 localities with developed tourism in 2018

Province/City	Overall ranking index	Infrastructure ranking	Human Infrastructure Ranking	IT Application Ranking
Hanoi	3/63	4	4	9
Hai Phong	29/63	20	22	12
Ninh Binh	39/63	51	13	26
Thanh Hoa	22/63	13	11	46
Quang Binh	49/63	27	42	37
Khanh Hoa	15/64	9	8	29

(Source: Ministry of Information and Communications, Vietnam Association of Information Technology, 2018)

Science and technology level: Compared to other countries in the world, Vietnam is a country with limited science and technology level. Therefore, the research and production of technology products applied to tourism are still limited. For example, Thailand has researched and applied virtual reality technology (VRT) to produce virtual tours and put them into use in the capital Bangkok since 2015 and 2016; Singapore has researched the Internet of Things (IoT) to design smart rooms and smart hotel management in some modern hotels since 2010; South Korea has produced a fairly complete system of software, applications, and smart utilities for the tourism industry, and Taiwan has developed an electronic card system, electronic travel tickets, built many smart tourism centers (i-Centers) and smart tourism information stations to support tourists, but in Vietnam, it is still very limited. Enterprises' access to smart tourism is still weak: In the main tourism business areas such as: travel, accommodation, tourism transportation, food and beverage, entertainment, shopping, etc., the ability to access technology and develop smart tourism is

mainly in some branches such as international travel, air transport, high-end accommodation facilities. In which, only leading enterprises with potential have the ability to promote technology application and access smart tourism. The main reason is that Vietnamese tourism enterprises are mainly small and medium enterprises, with little capital and small-scale business, so the financial capacity to pay for investment in technology application is not high; domestic travel enterprises, accommodation enterprises (1-2 star hotels and motels) account for a large number, the target customers are mainly domestic customers, the demand for customers to use smart and online services is not large, so the ability to access smart tourism of these enterprises is still low.

4. Some solutions for developing smart tourism in Vietnam

First, continue to perfect the policy institutions for smart tourism development.

The Government and the Ministry of Culture, Sports and Tourism need to have specific

mechanisms and policies and issue specific documents, regulations and detailed instructions on smart tourism development to guide the tourism industry and localities in implementation. Tourism management agencies at all levels need to develop strategies, plans and schemes for smart tourism development, with appropriate roadmaps and steps. In addition, it is necessary to further improve the institutional policies related to the application of information technology to socio-economic development in general, such as policies on e-Government development, e-administrative procedures, e-commerce, smart transport development, smart cities, to synchronize with the institutional policies on smart tourism development.

Second, identify the model and pilot implementation

Developing smart tourism is a consistent strategic orientation of the Party and the Government, in line with the reality and general development trends of the world. However, it is not necessary for every locality to develop smart tourism. Based on socio-economic conditions, technical facilities, infrastructure, technology level, human resources and tourism development potential, etc., identify a number of key localities to pilot the smart tourism model. At the same time, link smart tourism development with related fields such as smart cities, smart transportation, smart agriculture, smart energy management, etc. It is possible to choose 3 or 5 localities with developed socio-economic conditions, which are at the top of the rankings in terms of readiness for information technology application and development, including: Hanoi, Da Nang, Ho Chi Minh City, Quang Ninh, Thua Thien - Hue as pilot models for smart urban development and smart tourism. Clearly defining the model and implementing the pilot will help the Central and local governments focus resources on developing smart tourism, avoiding scattered, fragmented, ineffective implementation and wasting resources. The results of some of these pilot models will be valuable lessons for the tourism industry and other localities to learn from.

Third, focus on developing science and technology, especially information and communication technology, towards application in the tourism industry, creating a technological foundation for smart tourism.

The Government and the Ministry of Culture, Sports and Tourism need to have mechanisms and policies to prioritize and encourage research activities on the application of science and technology for the tourism industry. It is necessary to identify and prioritize investment in important technology items to support the development of smart tourism, including: building industry databases; investing in developing technology infrastructure; investing in the production of software, systems, programs, applications, and smart utilities for the tourism industry; researching the application of advanced technologies to produce smart tourism products and services; researching the application of advanced technologies for destination management and development; applying technology to tourism statistics; applying technology to the conservation and restoration of heritage values and relics for tourism (Phung Thi Hanh & Nguyen Ta Nam 2022, 57)

Fourth, develop human resources with technological qualifications and promote international cooperation in science and technology.

Promote international cooperation in science and technology with developed countries to learn from experience, improve research capacity and apply science and technology to develop smart tourism; cooperate, transfer technology and cooperate in investment in technology development for Vietnam. In addition, the tourism industry needs to focus on training, fostering and developing human resources, ensuring that human resources in addition to tourism expertise must be able to meet the requirements of using and operating technology, ready to access and adapt to smart tourism. Attract highly qualified technology talents to work in the tourism industry (Khoe, TT, Phuong, NT, Nhien, NTK, & Dat, THT 2024).

Fifth, promote propaganda work and raise awareness about smart tourism development.

Raise people's awareness of smart tourism, widely propagate to raise community awareness of online tourism activities, its advantages and shortcomings, so that tourists and people understand, have positive, "smart" activities, avoid being exploited and scammed. Encourage tourism businesses to innovate, apply technology in business, approach smart tourism. Promote the application of technology in state management of tourism, improve management efficiency, gradually modernize the tourism industry (Le Quang Dang, 2018).

Sixth, invest in completing the information technology infrastructure system,

This is the foundation for developing smart tourism. It is necessary to fully prepare the conditions of network infrastructure, hardware infrastructure, software infrastructure, human resources infrastructure, capital and technology before implementation to ensure rationality and efficiency. When the world is following the trend of technology 4.0, the facilities serving tourism training cannot be equipped like traditional training, but require training facilities to have equipment to keep up with the trend.

3. Conclusion:

Smart tourism is a model built on the foundation of information technology and tradition, in which the integrated data infrastructure is developed synchronously, ensuring timely interaction between the three parties: managers, tourism businesses and tourists. Further expanding is the connection with the industry. Destinations in the model are also smart destinations with advanced technology infrastructure, ensuring sustainable development, convenient access to tourists, helping to increase the quality of experience and improve the quality of life of people. Participants in this model are also smart tourists. They not only consume but also share and create experiences, have a management and monitoring role to ensure perfection for their next journeys and other tourists. In the article, the authors pointed out the

advantages and disadvantages when implementing this model in practice, and at the same time proposed a number of solutions to promote the development of smart tourism in Vietnam in the context of international integration trends.

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