



Journal of Science and Development Economics
Nam Can Tho University

Website: jsde.nctu.edu.vn



Needs and solutions for digital transformation in the tourism sector in Can Tho City

Dao Ngoc Canh^{1*}, Nguyen Van Linh², Tran Thanh Nam², Nguyen Du Ha Long¹, Doan Hoa Minh²,
Tran Van Thien²

¹Faculty of Tourism and Hospitality Management, Nam Can Tho University

²Faculty of Information Technology, Nam Can Tho University

*Corresponding author: Dao Ngoc Canh (email: dncanh@ctu.edu.vn)

Received: November 10, 2023

Revised: November 30, 2023

Accepted: December 5, 2023

Keywords: Can Tho City,
digital transformation, smart
tourism, virtual reality

Từ khóa: chuyển đổi kỹ thuật
số, du lịch thông minh, thành
phố Cần Thơ, thực tế ảo

ABSTRACT

In today's era, the fourth industrial revolution, coupled with the rapid advancement of information and communication technology, has led to a shift towards a digital platform in all aspects of human activities. As a result, digital transformation has become an inevitable and crucial trend for organizations, individuals, and businesses to survive and thrive. This is especially true for the tourism industry, where the need for quick and effective digital transformation to meet customer demands and enhance international cooperation has become urgent. This article discusses the necessity of digital transformation in the tourism industry in the context of the fourth industrial revolution and proposes specific solutions to promote digital transformation in Can Tho City's tourism sector.

TÓM TẮT

Trong thời đại ngày nay, cuộc cách mạng công nghiệp 4.0 cùng với sự phát triển vượt bậc của công nghệ thông tin và truyền thông làm cho mọi mặt hoạt động của con người đều chuyển sang nền tảng số. Vì vậy, việc chuyển đổi số trở thành xu hướng tất yếu, vô cùng quan trọng và cần thiết đối với tất cả các tổ chức, cá nhân và doanh nghiệp để tồn tại và phát triển. Đặc biệt, đối với ngành Du lịch, vấn đề chuyển đổi số nhanh chóng và hiệu quả để đáp ứng nhu cầu khách hàng và tăng cường hợp tác quốc tế đang trở nên cấp thiết. Bài viết này đề cập đến nhu cầu chuyển

*đổi số Du lịch trong bối cảnh cuộc cách mạng công nghiệp 4.0
và đề xuất một số giải pháp cụ thể góp phần thúc đẩy công tác
chuyển đổi số của ngành Du lịch tại thành phố Cần Thơ.*

1. INTRODUCTION

The strong development of information and communication technology requires all activities to move to digital platforms. Therefore, digital transformation has become an inevitable trend, extremely important and necessary for businesses and individuals to survive and develop. "Digital transformation is about rethinking how organizations bring together people, data and processes to create new value" (Microsoft, 2017) [1]. To put it simply, digital transformation means moving from a face-to-face working environment to an online (digital environment) with more data and connections. For example, thanks to the support of digital technology, technology taxi companies such as Grab, Uber... or online businesses are operating in new business methods. They may not own any cars or houses but can rent cars and houses all over the world. For the tourism industry, digital transformation is the process of applying digital technology to business activities and tourist experiences, completely changing the tourism model from traditional to modern. From there, "traditional" activities such as storing documents (personnel list, tour list, customer list etc.) or marketing activities (distributing leaflets, posting advertisements, etc.) will be done using digital technology, thereby making business administration more effective, economical and faster.

Digital transformation also enhances tourist experience activities along the digital value chain. Visitors will experience convenient and

impressive resort and entertainment services. In addition, digital transformation also changes marketing methods, creating online interaction channels between tourists and businesses. The development of the Internet and electronic devices such as mobile phones and computers with network connections, especially wireless networks (wifi), makes it easy for people to find diverse and attractive sources of information, and create travel inspiration through websites or social networks. The smart tourism model also provides suggestions on tourist destinations for guests to choose from and stimulates travel inspiration, while also supporting guests in making a quick and effective trip. However, to meet the needs of digital transformation in the tourism industry, there needs to be coordination from many parties, from researchers, managers, tour guides, marketers, tour operators to tourists and service providers of accommodation, food, transportation and so on. This article analyzes the overall need for digital transformation in tourism in the context of the 4.0 industrial revolution and proposes a number of solutions to contribute promoting digital transformation of the tourism industry in Can Tho City.

2. METHODS

In this study, the researchers mainly used secondary data collection and analysis methods. Data were collected from research projects, statistics and summary reports of Can Tho City. These data were analyzed and synthesized to serve the research topic. At the same time, the research team also conducted consultation with experts including scientists, tourism industry

managers and tourism businesses in Can Tho City.

3. RESULTS

3.1 Some issues about digital transformation in tourism

3.1.1 Digital transformation in tourism

Previously, traditional tourism business mainly focused on the intrinsic value of the business, with businesses and tourists transacting directly with each other. The advent of the Internet has led to the stage of e-commerce. During this period, the enterprise's internal business activities have been supported by information technology and have developed further, enhancing the connection between businesses and tourists through online transactions: business and marketing activities via the Internet. The current digital transformation period is a new step of development compared to the previous period, notably the smart tourism model with the ability to connect and use services with "smart" elements to offer. Assessments for businesses about potential tourists, predicting tourists' needs and preferences. On the other hand, tourists can also enhance their travel experience with smart services such as suggestion systems, real-time systems, online connections, etc.

Optimizing user experience and business operations by allowing customers to seamlessly access diverse data to understand products and services will help businesses meet customer requirements. in the most convenient and time-saving way. On the basis of digital transformation, modern tourism business models and online travel agency channels with the appearance of a series of "big players" such as Booking, Agoda, Expedia, Traveloka, Klook, ect., shows that the tourism market is extremely

competitive and new changes and trends that help streamline the apparatus will play a decisive role in the survival of tourism businesses in the future.

3.1.2 Benefits of digital transformation in tourism

The most noticeable benefits of digital transformation for businesses are cutting operating costs, reaching more customers for a longer period of time, and leaders being able to make timely and accurate decisions. more accurate thanks to a timely and transparent reporting system, optimizing employee productivity, etc. These things help increase operational efficiency and enhance the competitiveness of organizations and businesses. Smart tourism helps interaction and close connection between management agencies, businesses and tourists, to improve the quality of tourist service, and at the same time help businesses operate more effectively. Smart destinations and tourists are core issues in the smart tourism concept. Thanks to a large amount of data on information about tourist destinations and tourism businesses, tourists can easily choose the travel method that suits them and experience interesting forms of tourism. improve product quality of the tourism industry. In addition, smart tourism based on new technology platforms will increase the attractiveness of tourism products, improve efficiency in promoting and marketing tourism products, and contribute to changing tourist behavior. These are important benefits that smart travel brings.

Modern travelers always tend to seek convenience to save time. Therefore, an interactive experience and convenient booking of travel services anytime, anywhere is their desire. They can sit at home but can book

services in advance at any tourist destination they want to visit around the world, from hotel reservations, tour bookings, airline ticket purchases, electronic payments and so on. Thus, tourists just need to "pack their suitcases and go", without even needing to bring cash. That is also a way to change the travel mindset of tourists, contributing to improving the tourist experience. Imagine today if traditional hotels did not have advertising, did not appear on social networks, did not apply new business models, or hotels did not accept electronic payments, would anyone? know or come to stay? At famous tourist destinations where tourists have to stand in line for hours to buy tickets, without an Internet ticket booking system or online ticket sales, how many people are waiting? In fact, there are large tourism businesses in the world that could not adapt to the digital age and had to close, including Thomas Cook Group (considered the "father" of the travel industry) in 2019, after more than 178 years of existence. Meanwhile, many online travel agents (Online Travel Agents - OTA) have grasped the trend and have quickly dominated the market providing travel services through online channels, all transactions from booking services to paying, everything is online. With this lesson, if tourism businesses do not want to be turned away by tourists and go bankrupt, they must carry out digital transformation quickly and effectively.

3.2 New technology platforms serve tourism digital transformation

3.2.1 Big Data

Big data (Jones, 2019) [2] is a term used to refer to very large data sets that cannot be processed or analyzed using traditional methods. Big data has 3 basic characteristics:

Volume - Volume of data, Velocity - Speed, data generation speed and data processing speed. Variety – The variety of data from structured, semi-structured and unstructured. Big data in the tourism industry is data about tourist information, tourist needs, habits and behaviors of tourists. This data can be collected from the business itself, originating internally. or outside, from large data warehouses in the world such as Data Warehouse, Data Lake or tourism businesses can provide free services for tourists to use in exchange for information and data from tourists.

3.2.2 Machine Learning

Machine learning (El Naqa & Murphy, 2015) [3] is a branch of artificial intelligence (AI), a field of research that allows computers to improve themselves based on training data sets. Training Data, based on what has been learned, the computer can analyze itself to make predictions or decisions without needing to be specifically programmed. Machine learning will use algorithms to analyze large data in the tourism industry into specific data that is useful for each business, thereby identifying a large amount of information about tourists, travel experiences, reviews, traveler preferences, favorite destinations. The combination of machine learning and big data will benefit tourism businesses in particular and the tourism industry in general by being able to accurately predict future tourist needs and optimize pricing strategies, more precisely targeted marketing and improved visitor experiences.

3.2.3 Internet of Things (IoT)

The Internet of Things (Rose et al., 2015) [4] has the potential to make a huge impact on businesses, automating processes without the need for any human-computer or human-to-

human interaction. People rely on the ability to provide modern connectivity and communication between devices, between systems and services via the Internet. IoT is expected to thrive in the Tourism industry. IoT technology such as tablets in smart hotel rooms will enable personalization to customer needs, such as turning lights on and off, adjusting room temperature, controlling TVs, elevators and air conditioning, schedule an alarm by call. This will bring convenience to travelers similar to their home, making them want to return to the hotel again. Or after a traveler successfully books and pays electronically, the hotel can automatically send an electronic key card to the traveler's smartphone, allowing them to check in without anyone's assistance. Smart locks with NFC readers will ensure security by allowing guests to personally restrict access to amenities as required.

3.2.4 Cloud Computing

Cloud computing technology or virtual server computing is a service model that allows users to easily, anytime, anywhere and on-demand access to shared computing resources (networks, servers, storage) and services) through a network connection. Currently, cloud computing is the application platform of large corporations such as Google, Microsoft and so on. Solutions from cloud technology will help tourism businesses technologize and handle tasks faster with a more professional and coherent process. Communication and collaboration of a tourism business with many branches and offices in many geographical regions is no longer a barrier when using cloud technology. Cloud technology also has the ability to allow thousands of people to collaborate, share data, access information, and

make voice or video calls at the same time. With this feature, tourism businesses not only save on training and human resource management costs but also enhance connection, promotion, and information sharing with a series of customers at the same time. Cloud technology also gives businesses the ability to reach tourists, shorten search time and connect with suitable visitors. This will help businesses coordinate, schedule and advise according to the best interests of the business and visitors.

3.2.5 Virtual Reality

Virtual Tour or Interactive Tour has been around since 1994 and has become more popular among tourists in many countries around the world. Virtual tours or interactive tours aim to simulate tourist destinations through images, videos, sound effects, music or reports, introductions, texts, etc. Factors that make virtual tours attractive for tourists, modern technologies such as 360 photos, 360 videos, Panorama photos, Flycams and so on help tourists better understand the place they are about to visit and stimulate inspiration for their travel.

3.3 Current status and solutions for digital transformation of tourism in Can Tho City

3.3.1 Current status of tourism digital transformation in Can Tho city

Can Tho is a centrally-run city, the center of the Mekong Delta region, a focal point connecting the southwestern provinces with the whole country and the world. Can Tho has potential for development in agriculture, industry, trade and services. In particular, Can Tho tourism industry is being invested in and developed, acting as a driving force center to promote the development of the Mekong Delta tourism industry. The Government's decision

approving the Master Plan for tourism development in the Mekong Delta to 2020, with a vision to 2030, has set the goal: "Striving to make Can Tho City become a tourism center and coordinate visitors for the entire the Mekong Delta is one of the tourism development centers of the country." Resolution 10-NQ/TU dated December 29, 2021 of the Can Tho City Party Committee also emphasized: "People must exploit and maximize the city's potential, advantages, and tourism resources, especially the role Regional center, gateway position of the lower Mekong River region associated with promoting the strengths of roads, waterways and airways."

Can Tho has rich tourism resources with a gentle climate, interlaced rivers and canals associated with the typical cultural features of the river region, lush and rich fruit gardens, along with many festivals, folk craft villages, scenic spots, historical and cultural relics and so on. In addition, Can Tho's friendly and hospitable people have created favorable conditions to become an attractive tourist destination and attracting more and more domestic and international tourists to this land rich in tourism development potential.

With its potentials and advantages, tourism activities in Can Tho City have had many changes and achieved positive results. In 2022, the total number of Can Tho tourist arrivals will reach 5,134,605, an increase of 142% over the same period. Accommodation businesses served 2,508,305 visitors, an increase of 179% over the same period. Total tourism revenue is estimated at 4,117 billion VND, up 199% over the same period. In 2023, the tourism industry of Can Tho City sets a goal of welcoming 5,200,000 visitors, with total tourism revenue

reaching 4,580 billion VND (Department of Culture, Sports and Tourism of Can Tho City, 2023) [5].

In the general trend of digital transformation worldwide, digital transformation in the tourism industry of Can Tho City has been focused on implementation and achieved positive results, especially in information activities and promoting tourism. In particular, the Can Tho City Tourism Development Center, with its tasks and functions, has become a leading unit implementing digital transformation in tourism. Currently, the Center is managing two electronic information portals that regularly post and update news and articles related to events, tourism information, destinations, and tours in the city. They are tourism information portal: <https://tourismcantho.vn> with integrated service of Audio Guide technology (automatic voice-over) to help visitors grasp information without reading text and smart tourism information portal with <https://canthotourism.vn> with a service integrating 3D map technology, through which visitors can view 360-degree images of some tourist destinations. Notably, the smart travel application: "Can Tho Tourism" is run on both Android and IOS platforms to help tourists update and look up travel information in the fastest and most accurate way. In addition, a social network ecosystem including: Facebook, Zalo, Tiktok, Youtube, Instagram "Can Tho Tourism - Can Tho Tourism" is also being built to widely promote the image of people and culture, destinations, and cuisine of the city to domestic and international tourists.

Since 2019, Can Tho City's tourism industry has signed a tourism development cooperation program with Ho Chi Minh City

and 13 provinces and cities in the Mekong Delta, in which digital transformation is one of the key contents. to create motivation to promote tourism development. On July 11, 2023, in Can Tho City, the Digital Transformation Festival in Tourism took place with the theme "Digital Transformation - Driving force for sustainable development". The event once again identified digital transformation as a key factor in creating a breakthrough for tourism links between Ho Chi Minh City and 13 provinces and cities in the Mekong Delta. At the conference, Mr. Nguyen Thac Hien, Vice Chairman of Can Tho City People's Committee, said that for the tourism industry, Can Tho has deployed the Smart Tourism Information Portal and Can Tho City Smart Tourism Application on mobile devices gradually contributing to promoting the effectiveness of its role in supporting the management of tourism activities, connecting people, tourists and businesses. These applications have attracted more than 8 million visitors and interactions, with an average daily visit of more than 7,000 (Ai Lam, 2023) [6].

3.3.2 Some proposed solutions for digital transformation of tourism in Can Tho City

Electronic payment using QR Code:

Electronic payment is one of the features that brings users many conveniences and a convenient and safe experience. Building digital transformation solutions can start from the simplest things like electronic payments. Electronic payment helps tourists use travel services conveniently, flexibly, safely and securely, helping to save time and limit financial risks, contributing to enhancing professionalize tourism in Can Tho City.

Smart travel mobile application:

Smart tourism mobile application uses 4.0 technologies such as Big Data, Machine Learning to provide information about tourist destinations in Can Tho such as scenic spots, restaurants, hotels, and recommendations for visitors to dining and entertainment locations, recommend suitable means of transportation, shop for online specialties with door-to-door delivery, and integrate electronic payment features such as hotel reservations and sightseeing ticket purchase online, automatic check-in, check-out, etc. In addition, through the application, visitors can report tourism businesses, hotels, locations and so on to receive support and guidance on resolving and protecting their legitimate rights, contributing to ensuring a healthy and increasingly civilized tourism business environment.



Figure 1. Smart tourism mobile application in Can Tho City

Building a Semantic tourism website in Can Tho city:

Semantic Web is a new generation of Web, also known as Semantic Web or Web 3.0, helping users find information smarter, faster and more accurately than traditional search engines. Applications related to the Semantic Web allow computers to understand information on the web, support smarter searches, support information extraction, data integration and automate some tasks for people.

With the Semantic Web tourism application in Can Tho, visitors can search for tourist destinations according to their needs in the most accurate and effective way, suggesting suitable specific destinations and detailed information about their needs. Destination location such as suggested means of transportation to get there, distance and time to get there, opening times, types of products or business specialties all are searched in detail.



Figure 2. Semantic Can Tho city tourism website

Building tourism business management software for Can Tho City:

For tourism service businesses, tourism business management software supports updating tourism news, serving business operations and management. At the same time, it is software that serves electronic payment and electronic ticket checking quickly and conveniently between travel service businesses and customers - those who use digital platforms.

4. DISCUSSION

4.1 Difficulties of digital transformation in tourism

- *Difficulties in lack of resources:* For businesses conducting digital transformation, they will have to apply new technologies,

leading to large initial investment costs, in addition to maintenance costs. Along with the situation where businesses use too much software with separate features, data is not synchronized, costs increase, each unit uses its own software, causing internal communication to become limited.

- *Difficulties in finance and management:* Businesses or localities need a certain investment, both to regularly update the digital transformation system and to train human resources to use the software, digital transformation equipment in tourism. Digital transformation in tourism is still not synchronized between localities. Areas with good conditions for digital transformation in

tourism are mostly in large provinces and cities. Requires more synchronous investment attention from functional sectors. Digitalization activities in the tourism industry are still sporadic, fragmented, and have not been successfully connected and built on a database. This will cause a lack of data (including reports and information analysis), so the process of management, control, reporting and data statistics in the industry faces many difficulties.

- *Difficulties in habits due to business practices*: The majority of Can Tho people in the western region of the river are familiar with the typical traditional tourism model such as direct cash transactions for products and specialties; therefore, wanting to change people's habits is not easy.

4.2 The issue of training for tourism digital transformation

When new technology is born, it will impact human resources, leading to the risk of losing jobs or some training fields will no longer be necessary (for example, if the smart hotel model develops strongly, it will replace for hotel receptionists, travel consulting hotline staff, etc.). Therefore, digital transformation of the tourism industry is also facing difficulties in human resources. To successfully transform digitally, it is necessary to have good human resources and a team of competent experts in both Information Technology and Tourism. However, Vietnam's current training system still has many shortcomings in keeping up with the trend of nurturing talent and developing digital tourism human resources. It will take a lot of time to train a person who is both good at the Tourism industry and has good knowledge of Information Technology. On that basis, a

solution proposed by the group is to build a project to open the "e-Tourism" industry with a combination of teaching from lecturers from the Faculty of Tourism and the Faculty of Information Technology to equip students with both knowledge of the Tourism industry and good knowledge of Information Technology after their graduation.

5. CONCLUSION

Digital transformation in general, and tourism digital transformation in particular, have become an inevitable development trend, determining the existence and development of tourism businesses in all countries and localities. In Vietnam, applying information technology to digital transformation is a major policy of the Vietnamese Party and State expressed in many resolutions, policies, programs, plans and so on. In particular, to deploy digital transformation of Tourism industry, the Prime Minister issued Decision No. 1671/QĐ-TTg dated November 30, 2018 approving the "Master plan for applying information technology in the field of tourism in the period 2018-2020, defining towards 2025" which emphasizes the priority of developing digital tourism and smart tourism. Can Tho City, as a tourism center in the Mekong Delta region, the need for digital transformation in tourism has both intrinsic significance and contributes to promoting the digital transformation process in the Mekong Delta region. The article has outlined a number of solutions as a foundation for digital transformation in tourism in Can Tho City, helping individuals and tourism businesses in Can Tho city to easily access and implement. Digital transformation is faster.

REFERENCES

- [1] Microsoft. (2017). *A Strategic Approach to Digital Transformation in Manufacturing Industries*.
- [2] Jones, M. (2019). What we talk about when we talk about (big) data. *The Journal of Strategic Information Systems*, 28(1), 3–16.
- [3] El Naqa, I., & Murphy, M. J. (2015). *What is machine learning?* Springer.
- [4] Rose, K., Eldridge, S., & Chapin, L. (2015). The internet of things: An overview. *The Internet Society (ISOC)*, 80, 1–50.
- [5] Department of Culture, Sports and Tourism of Can Tho City. (2023). *Report summarizing tourism activities*.
- [6] Ai Lam (2023). *Chuyển đổi số tạo đột phá liên kết du lịch*.
<https://baocantho.com.vn/chuyen-doi-so-tao-dot-pha-lien-ket-du-lich--a161885.html>.