On Driving Factors and Realization Path of Tourism Industry Transformation and Upgrading: From the Perspective of Data Empowerment

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Abstract: The normalization of the COVID-19 pandemic and the evolution of the digital society have become a new situation for the development of the tourism industry. Based on the changes in macro policies and demands, this study puts forward three factors for the transformation and upgrading of the tourism industry. The three factors are consumers' demand, new digital technology and macro policies. And on this basis, the study puts forward the implementation path for the transformation and upgrading of the tourism industry including demand system and supply system.

1. Introduction

With the wide application of new generation technologies such as big data, cloud computing, mobile internet and artificial intelligence in the cultural and tourism industry, digital technology has also become a new engine for macroeconomic development.

Under the background of digital development, digital transformation is no longer a choice for the tourism industry. According to relevant data, nearly 67% and 50% of the world's top 1000 enterprises and China's top 1000 enterprises respectively take digital transformation as the core of enterprise strategy.

For example, Disney's "Over the Horizon," "Pirates of the Caribbean," Universal Studios' "Harry Potter," "Transformers" and other special theaters are classic examples of how digital technology is skillfully applied to experience the scene, creating an immersive experience for visitors.

The concept of data empowerment comes from Empowerment in human resource management. In order to serve customers better, ADAMS(2008) proposed that in enterprise management, employees should be empowered, which specifically refers to granting additional rights to employees and giving subordinates greater discretion and control over resource allocation [1]. At the same time, GOLDSMITH (2010) further proposed that those members in a weak position in the organizational system need to obtain power distribution and empowerment [2]. SPREITZER (2007)

put forward the realization path of employee empowerment more specifically, that is, how to stimulate employees' active behaviors should be studied from the perspectives of organizational empowerment and psychological empowerment [3]. With the development of information technology, the concept of data empowerment gradually replaces the concept of employee empowerment, and the object of empowerment extends from employees to customers, allowing customers to express their personal needs through network information technology and participate in the process of meeting their needs, so as to achieve value co-creation with enterprises [4]. In terms of fu can means "data resources" is the current "consensus", the data became the basis of production data in the new period [5], data empowerment becomes hot topic of enterprise management, through the use of innovative data scenarios and skills and methods to realize data value, finally drive enterprises to realize agile manufacturing [6], promote the industry to realize value transfer [7].

2. Analysis of Digital Cultural Tourism Development in Shandong Province

Due to the rapid development of digital technology, digital technology has been deeply integrated with various fields of social and economic development, and has become an important force to promote the economic development of various industries. Focusing on the tourism industry, experts and scholars from all circles of industry, university and research are also actively exploring the integrated development of digital technology and the tourism industry. Since the outbreak of the covid-19 in 2020, the development of tour industry has become a new form of products and experience, such as live line, short video, tourism, cloud exhibition, etc.. These refreshing experience form for the change of the national people's feeling also brought convenience to people's life at the same time. Based on digital technology and the fusion of traditional culture tour industry practice. The conceptual framework of digitalization and tourism is needed to propose. Integrated view of numerous scholars, this paper argues that digitalization tourism refers to the industry that make full use of digital information and communication technology, the modification of the original industry to carry out the all-round and whole chain implementation tour industry and the depth of the digital technology integration, formed a new pattern of tourism industry. Digital tourism is not only the basic project of the construction of traditional cultural industry, but also a new driving force for the development of traditional tourism industry. Since the 13th Five-Year Plan, the competent government departments and industry subjects of Shandong Province have taken the initiative to seize the development opportunities of digitalization and continuously promote the digital application and transformation of the cultural and tourism industry, which has achieved obvious results in the integration of culture and tourism.

"Hospitality Shandong and traveling Qilu" platform is a flagship project in the field of digital tourism in east China's Shandong province. Building "total exports" and "entrance" is the general objective, and the purpose is to build infrastructure of digital tourism. Shandong digital tourism enterprise in Shandong province plays an important role of digital transformation with wings of science and technology. The concrete construction content is summarized as "one center, four platforms". Specifically, it includes Shandong smart culture and tourism integration big data center, smart service platform for domestic and foreign tourists, comprehensive government supervision and service platform, comprehensive service platform for cultural and tourism enterprises, and global cultural and creative industry platform. So as to realize the comprehensive transformation and upgrading of supervision, operation and service should include the government side, enterprise side and customer side. The construction plan is divided into three periods. In 2021, the overall framework of "one center and four platforms" will be mainly built, and standard interfaces will be established with provincial 3A or above scenic spots, cultural museums and star hotels. Sub-

platforms will be established in cities with mature conditions, which will be preliminarily completed in 2022 with complete functions. The provincial comprehensive cultural and tourism service voucher is convenient for customers to use and enables preliminary data analysis. The intelligent application of the platform will be realized in 2023. There will be better service and government supervision, enterprise operation and guest consumption.

At present, the first stage of the platform is dominated by the user end and the government end, which mainly realizes 12 basic functions, such as online booking, online room booking, cultural venue reservation, intelligent tour, panoramic VR display of scenic spots, health code verification, etc., covering various elements before and after the tour. The platform can book 471 scenic spots in the province, and all 5A and 4A scenic spots in the province have been included. There are 431 cultural and expo venues, 2057 catering businesses, 224 featured villages and 57 hot springs. These numbers are still increasing. At the same time, the design framework of the cultural and tourism big data center has been completed.

According to the relevant statistics provided by the Cultural Heritage Bureau, as a province with large cultural relics resources, Shandong has 216 museums of various types, with a total of 1.82 million pieces of cultural relics, and 12,600 first-grade items. Museum of digital applications has been reflected in Shandong in 2014, the Shandong province museum select 1000 pieces of precious cultural relics collection of digital information collection, online exhibition.

3. Influencing Factors of Transformation and Upgrading of Cultural and Tourism Industry

3.1. Changes in Consumer Demand

Driven by the digital economy, the supply of online malls and live e-commerce has increased rapidly, and online consumption has improved a rapid growth. At present, the reason why mobile consumption has become the main consumption channel is the convenience of digital mobile payment and the popularity of smart phones. At the same time, major changes have taken place in the consumer group. The rise of the new generation accelerates the generational turnover, and the young market group grows rapidly and gradually becomes the main purchasing team in online transactions. They are indigenous people in the era of mobile internet and online social interaction and online consumption have been integrated into their blood as a way of life.

With the empowerment of the tourism industry by big data, cloud computing, 5G, internet of things, artificial intelligence, VR/AR, blockchain, driverless and other scientific and technological wisdom, tourists' travel motivation, psychological demands and consumption behaviors have changed significantly. Tourists pay more and more attention for tourism quality and service experience, and search relevant information before traveling. The comparison and selection of products and the sharing of online experience after consumption have become the usual behaviors of consumers.

In addition, by the influence of the covid-19 outbreak and epidemic control, consumers are often limited in fixed physical space activities. Consumers' online shopping habits are formed. At the same time, affected by the epidemic "areas", tourism industry under reversed transmission has carried out a industry adjustment. With the help of technology, the industry promote precise marketing, product innovation, quality and efficiency improvement, and provide online tourism products for guests through high-quality online tourism services. So, new consumption growth points are created, and tourists' online travel consumption has gradually increased.

3.2. The Drive of Digital Technology

In recent years, with the wide application of digital technologies such as big data, 5G mobile

network, cloud computing, internet of things and blockchain in all walks of life, the social economy has been comprehensively developed. The tourism industry is no exception. The physical characteristics of digital technology make it possible to bring about many changes in the cultural tourism industry and its products. Traditional characteristics of tourism products is long distance space, and cannot be stored. But by the means of digitization, the characteristics of tourism products will be to reinterpret. For example, with the digital information technology tourism products can be assigned and time space limit also easily is broken. And product formats will be innovated and developed. For example, digital technology is used to build digital twin scenic spots matching offline physical scenic spots. That will realize the dependence on the inherent space and the online storage of products. At the same time, new experience modes such as "cloud viewing", "cloud tourism" and "cloud viewing" are developed for customers to enrich the sightseeing mode and experience of tourists. It can also cultivate relevant digital scenic spots, as well as online reading, smart tourism, digital culture center, digital art museum, digital museum and other new forms of "online sports, sports and entertainment", and constantly upgrade the digitalization of cultural tourism resources, services and activities. In addition, digital information technology also makes the integration of online and offline possible, and tourism enterprises can create a new mode of tourism consumption based on data analysis for tourists to carry out immersive experience. For example, making use of 5G, artificial intelligence, big data, virtual reality, augmented reality, and other advanced technology, the Flying pigs and Meituan OTA platform of consumer experience conduct data collection, data cleaning and intelligent analysis in order to abstract and refine key points of the consumer market demand. According to the valid user demand, the digital immersive scenic spot with a framework that meets their needs is designed to realize the interaction between consumers and the theme content through the combination of real and virtual scenes. That will enrich the supply level, and meet the growing needs of tourists for personalized and in-depth experience.

3.3. The Macro Policy Promotion

Because digital technology can improve the efficiency of traditional industries, reduce transaction costs, and improve economic and social benefits, the government is also actively promoting the digital application and transformation of industries. In order to promote the digital transformation and development of cultural and tourism industry, Shandong Provincial Department of Culture and Tourism, Shandong Provincial Development and Reform Commission and other 12 departments jointly issued the Implementation Opinions on promoting the Digital Development of Culture and tourism in Shandong Province on September 18, 2021.

Policy declare that the concept of integrated system including digital empowerment, sharing economy, safety and order is important. In order to reform the supply side, tourism industry should use science and technology innovation application. By means of "Internet +", the abundant supply of digital tourism expand online consumption space, enhance the level of public service informatization and make tour market supervision system effectively. That will build a digital government in Shandong Province and work together to create a new situation in building a strong province of cultural tourism in the new era.

According to the Opinions, by 2023, the development mechanism of "Internet + cultural tourism" will be more perfect, and the level of Internet application of cultural and cultural facilities and tourist attractions will be greatly improved. By 2025, the province will foster 10 culture and tourism science and technology leader enterprises, 50 culture and the integration of science and technology demonstration bases, 150 digital cultural experience halls, more than 4 tourism scenic areas.

4. The Realization Strategy and Path of Digital Transformation and Upgrading

4.1. Based on Consumer Demand, a Data-Enabled Demand Insight System is Constructed

With the rise of middle-income groups in the future, one-stop digital user identity management will be the key to the understand the needs of consumers. For many users' information offline breakpoint is effective in optimization and demand gap. And by the middle of enterprise information, integration of user data will be unified for each channel of user information. During the whole process including before consumption, in consumption and after consumption, through the intelligent management system and the digital way, there will be more tourists contact digital labels, and formation of both individual and group common user data labels. In order to improve service quality, refined product structure and optimized service process will be provided by data support. In addition, the interaction between products and services can be formed at many tourist touch points.

China hotel group sets a good example in this aspect. During the guest's stay stage in hotel, it puts forward the 30 seconds check-in and 0 seconds check-out as service commitment. At the same time, based on the demand for the diversification of the room for guests, the hotel has developed a APP which can let the customer choose self-help room function. Therefore, the hotel reform traditional hotel reception check-in process that lead to the guest's booking stage. And the work contents are transferred to the client after check in. And operation by the guest improve service granularity, effectively reduce the customer cost in the check-in and check-out. The workload of the front desk staff and labor costs are reduced. The service efficiency is improved. In the current epidemic prevention and control period, the non-contact service also contributes to the epidemic control.

"In the past, before a business trip, when you make a phone call to book a room, you have to ask the room type of the front desk room and ask for reservation. Occasionally, there will be a situation that does not meet the demand. Now you can choose not only the room type but also the floor through the APP". Resident Jiang LAN said. That managers and China hotel carry out the application and transformation is not to promote digital manufacturing and selling point, but practice customer-focused service concept. They focus on the customer's experience of the revolutionary practice, and use quiet digital technology into the whole process of customer experience to let a guest feel more convenient and safe for an extraordinary stay.

4.2. Reconstructing the Product Supply System of Data Empowerment: from the Perspective of Tourism Supply Chain

With the iteration of digital information technology, tourism industry has received a new kinetic energy, and the tourism industry emerged new mode and new forms. The tour industry of service is more intelligent, and the visitors' experience has more diversified way and a high frequency of interaction. Travel experience, networking and depth is gradually extended of the tourism industry. From the perspective of supply chain, it is an important trend to use digital technology to integrate superior cultural resources into tourism experience scenes. Outbreak normalized background, the tour industry transformation and upgrading is speeding. In the present, consumption is upgrading. Urban and rural interacts frequently under the background of macro policy, and the tourism industry must grasp the opportunity, focus on product and service design, and advance the transformation and upgrading so as to realize the high quality of tour industry development. Under the new situation, the digital age of tourism industry may be determined by the cultural industry, the internet industry, media industry, and other industries. The border of the industry will be extended and new industries, new forms will appear. To foster diversity and global development forms, the whole

chain of tourism will be rebuilt. The new pattern of the supply of tourism products should be the combination of upper and lower, horizontal linkage and multi-participation.

Tourism enterprises should actively respond to the demand of the customers consumption and the need of personalized experience, from design to operation and management innovation, actively develop digital tour products, and build new scenes including immersive experience for customers under the digital means. That can make traditional characteristic tourism resources show the inherent charm and vitality. The well-known Happy Valley theme park demonstrate a good example. In recent years, Happy Valley has actively embraced digital technology, carried out technological and intelligent transformation and upgrading of traditional products, constantly explored new experience scenes, provided customers with novel experience, and realized high-quality development. For example, in Beijing Happy Valley, the skylight nights project fully uses the algorithm of digital multimedia and new art device such as interactive projection technology to combine the original elements. That creates great innovation experience which deeply immersed in multiple field experience in the scene. The scenic area has also realized the upgrading of lighting, beautification and culture, and achieved a breakthrough in quality.

There have been many successful cases of digital empowerment products in the field of tourism and performance. Located in Lingshan Town, Wuxi City, Jiangsu Province, Nianhua Bay Smile Plaza, a performing arts plaza, uses digital technology to provide tourists with good experience. The core experience is provided by the large dynamic sculptures floating on the water. The sculptures get varied to give tourists a good visual experience that couldn't be forgotten for a long time. According to organizers, the large-scale dynamic sculpture is located in the great view of diameter of about 60 meters. The sculpture has more than 300000 composition parts, 8 sets of similar movable pillar. The translation organization structure is the core component of a complete set of machinery equipment. The translation agency mobile rotation can drive the movable pillar to realize synchronous movement. A variety of 45 petals are embedded in each column, and in the movement, the petals can also achieve the rise and fall rotation. The most spectacular scene is, when the pillar spread out form 8 exotic tree style, columns on the petals of flowers are in full bloom. In addition, through the intelligent remote control, finally it is up to more than 20 meters giant polymerization. The whole process lasts 450 seconds. It let the audience experience eventually return to natural flavor deeply.

Another case of tour product innovation is from the Xixi wetland. The designers use large immersive cultural experience acting products, with the concept of "the protection, inheritance and carry forward the Xixi wetland cultural history, folk intangible", to focus on the ancient HongHao story. HongHao was seized by Jin as a hostage. 15 years later, he still sticked to the original aspiration and mission. His wife, Shen Shi, stays at home, adheres to the principles of women, upholds the homework, and teaches her children well. The story eulogizes the touching love and marriage of the couple who help each other and stick to the original aspiration under the grand historical background of home and country. The whole performance is designed in the real scene of the garden wetland. The audience is immersed in it, not only relaxed, but also easier to get into the play and empathize with the actors as the story progresses. In the technology applications of digital holographic sound live theatre of originality, you can realize rotate 360 degrees for the audience to construct of the audience, thus the audience can be implemented in the intelligent control lifting, rotating and moving. Another double side screen can lift from water as fusion holographic and multimedia technology. So the narrative space with multiple protagonists and dual space-time is supported.

Focus on the needs of digitalization and labeling, the digital management of the whole process of business will effectively improve the service efficiency and optimize the service quality. And more themed, personalized and subtle diversified products based on the fine labels of products will be

provided.

For example, in a niche market for the elderly, with the assistance of digital technology, the original service process will be optimized, and more digital intelligent products and services suitable for the elderly will be developed and provided. That can overcome the current service obstacles and pain points for the elderly market. For many old people, they have not smart phones or can't use the smartphone, Hebei and Zhejiang invent "background lag validation health code" digital function to help them. When the elderly visitors visit the park, they just show personal id card at the entrance. The scenic area personal health information links to the background check for green yard. By the direct way, the elderly do not need to show the health code, that greatly reduce the entry cost of the elderly, and improve the service efficiency of the scenic spot and customer satisfaction.

Meituan has also made a lot of beneficial attempt to improve the service efficiency for the elderly. The company attaches great importance to the old people who have not mobile phones or are not good at using smartphones. They timely launch offline project that tickets are ordered and got easily, by use of offline publicity board, write all information on the upper plate with larger font. The relevant reservation and tour time are more prominent, and the service process of reservation is optimized. The three steps are combined into one step, which greatly improves the service efficiency and improves the travel experience of the elderly. In addition, in the offline services, Meituan, lijiang ancient city and Jilin province museum rebuilt the facilities for old people in many as love projects. For example, setting up the elderly service special channel, and by the help of staff and social workers, the park help elderly go into the garden and provide care services. In addition, efforts should be made to tell information, guide directions and explain scenic spots. With the assistance of digital means, humanistic care should be done to improve the visiting experience of the elderly.

Under the background of the current epidemic prevention and control, in order to ensure the security of the scenic spot and tourist safety, a lot of scenic spots are required to let tourists show the health code, transport code, and passphrase code. Switching between multiple programs may raise the cost of the customer, and reduces the pass efficiency. That is a big pain points of the scenic spot service. In this context, Shanghai explores a new practice and provides code special service for scenic spots. The personal identity information, social security, health and safety information link each other and display in one screen. Customers only sweep for a code. That can complete all tests and greatly reduces the time cost of visitors, improves the efficiency of the scenic area, and also reduces the safety risk. Now, the successful practice in Shanghai has been transplanted in Hubei, Hunan, Yunnan and other places of more than 500 scenic spots for reference use, greatly improving the service efficiency of the scenic spot.

5. Conclusions

The global COVID-19 pandemic becomes normalized, and the digital transformation of human society is also accelerating under the influence of the pandemic. The development of the tourism industry faces a new situation, and it is inevitable to transform and upgrade. This study believes that consumers' demand, digital technology and government policies are the driving factors for the transformation and upgrading of the tourism industry. At the same time, to build a digital demand insight system from the perspective of consumers, and to build a systematic and efficient supply system from the perspective of supply chain are the paths to the transformation and upgrading of the tourism industry.

Acknowledgements

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