



# Research on Precision Marketing of Tourist Attractions Based on Big Data Technology: E-commerce Perspective

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**Abstract.** Big data technology can record and analyze tourists' personal travel preferences, consumption habits and other data to express individual differences, is an important supporting force for precision marketing of tourist attractions, and network precision marketing from the perspective of e-commerce is an important tool for tourist attractions. Therefore, this paper focuses on the research on precision marketing of tourist attractions under big data technology, based on the perspective of network marketing of e-commerce, through the analysis of network precision marketing, big data and other theories, sorting out the model of e-commerce marketing platform, analyzing the recommended technologies such as Hadoop under big data technology, in order to build a precision marketing platform for tourist attractions, with the purpose of developing precision marketing technology of scenic spots with the help of big data technology, and improving the operation level of tourist attractions. The article concludes that from the perspective of e-commerce, the precision marketing platform of tourist attractions supported by big data technology can improve its precision marketing system, create a sustainable precision marketing model, and promote the continuous improvement of big data technology.

**Keywords:** Big data technology · Precision marketing · E-commerce · Tourist attractions

## 1 Introduction

Marketing is crucial to maintaining market advantages and identifying market opportunities, and more accurate marketing can not only respond to the diversified demands of tourists but also realize the value of goods and services. Compared with the traditional marketing model, accurate market positioning and accurate sales combination can meet the individual needs of tourists and maximize the benefits of scenic spots.

The application of big data in the tourism industry has become an industry trend, especially in the precision marketing of tourist attractions. It can give tourists more convenient personalized service and precise service. Data is crucial to tourist attractions, it can reflect the behavior characteristics and behavior rules of tourists, such as tourists'

overall impression of tourist attractions, instant emotions, preferences, tourism experience, satisfaction, etc., these difficult to quantify elements (indicators) can be deeply mined in the big data environment, you can obtain tourists' more accurate geographical sources, consumption capacity, consumption preferences, emotional experience, Spatio-temporal behavior, etc., with big data technology for precision marketing, can achieve the in-depth development of scenic spot smart tourism with points and areas, Promote the improvement of scenic spots.

## 2 Literature Review

### 2.1 Precision Marketing

Precision Marketing is an innovative marketing method, originated from the concept of "direct marketing" proposed by Lester Wunderman in 1967, formally proposed in the late 20th century and early 21st century, after continuous development, precision marketing will be a precision marketing concept throughout the development process of enterprises, with low cost, sustainable development goals. It is a marketing model that adapts to market development trends [15]. Precision marketing is related to the psychological and behavioral characteristics of tourists [13], usually using a differentiated personality strategy for marketing communication [14], with the target of marketing objects [13], focusing on the value of customer transfer [12], the economic efficiency of marketing activities [11], the measurability of marketing effects, Characteristics of the dynamics of the precision marketing process [15].

Precision marketing theory is widely used in practice. Under the support of the development of big data technology, precision marketing theory has become an advantage for enterprises to gain advantages and constantly innovate their own marketing strategies. Chai [1] believes that precision marketing plays an important role in tourism e-commerce in the development of the long-tail economy, natural focus market, accurate advertising distribution, and efficient user conversion rate; Feng [5] believes that scenic spots can increase the stickiness of tourist users while achieving the growth of the commercial value of WeChat self-media marketing with the help of precision marketing theory. All in all, under big data technology, the market pattern of tourist attractions has changed, and tourists can be both publishers of information and recipients of the information. In this market pattern, the traditional marketing theory can no longer meet the current market demand, in order to reduce the risk of scenic spot market launch, reduce the waste of resources, and improve marketing efficiency, it is necessary to implement precision marketing strategies [20].

### 2.2 Big Data Technology

The development of big data technology is as rapid as in the fields of management, computer science, and information science in the late 20th and early 21st centuries, and is often associated with words such as "artificial intelligence", "data mining", "cloud computing", "data analysis" [2]. Unlike traditional data management and analytics systems based on relational database management systems (RDBMS), big data systems offer cost

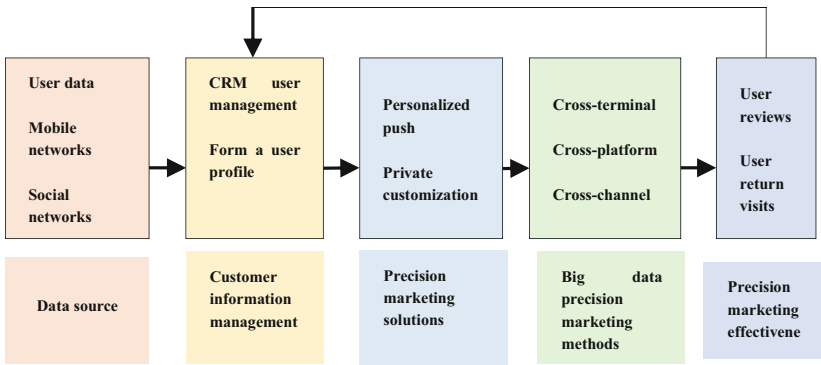
efficiency, flexibility, and the ability to scale up or down for persistent data storage and schema-free massive data management [7]. Big data technologies usually include “MPP massively parallel processing system”, “Hadoop big data processing platform”, “ETL technology”: MPP massively parallel processing system has the advantages of node independent storage, structure, etc., is a data processing system that works together by SMP symmetric multi-processing system servers, the server only accesses local resources, and 512 nodes can be connected between servers; Hadoop big data processing platform is composed of HDFS distributed file system, Map/Reduce computing framework and other components, the input, calculation, output of the whole process of storage and recording, integrated data storage, data processing, system management and other modules, providing a powerful system-level solution, in the process of enterprise precision marketing widely used; Extract-Transform-Load (ETL) technology includes Extend, Transform, Load three links of data processing, with automatic error correction, data protection and other functions. It is one of the important big data technologies [21].

With the development of big data technology theory, practical application has become the main direction of scholars' research, such as the application of big data technology in e-commerce [16], the research on big data-based and tourism [4], and the research on big data technology and enterprise development [3]. The research of big data technology in marketing has become a top priority, especially the precision marketing research based on big data. Marketing based on big data technology is called data-driven marketing, which can display information such as tourists' consumption patterns, movement trajectories, and geographical coordinates, search, collect, collate, analyze and execute in massive information data, and judge potential tourist information, so as to achieve one-on-one service work, that is, precision marketing [19]. The academic community has begun to pay attention to tourism marketing based on big data technology, believing that big data technology can provide great help to smart tourism, provide more accurate services, products and experiences [18], and have broad development prospects in tourism marketing [10]. Scholars tend to reconstruct the tourism marketing chain by big data technology [17], often taking rural tourism and cultural tourism as the research object, but rarely involves the precision marketing of scenic spots. Therefore, from a microscopic point of view, this paper studies the precision marketing strategy of scenic spots under big data technology.

### **3 Precise Marketing Mode of Tourist Attractions**

#### **3.1 The Construction of Precision Marketing Model**

Under the support of big data technology, there are three methods of precision marketing. First, precision marketing based on the database, the database has the advantages of accurate and complete information, easy to collect and sort out tourist information, but the establishment process of the database is complex and long, and it requires continuous collection and updating of data, which is not conducive to the database construction of small scenic spots, but can use the existing databases of other organizations in the society (such as: the database of the Bureau of Statistics, the database of third-party research agencies, etc.) to find suitable information according to their own needs and carry out marketing activities. The second is based on the Internet to identify tourists'



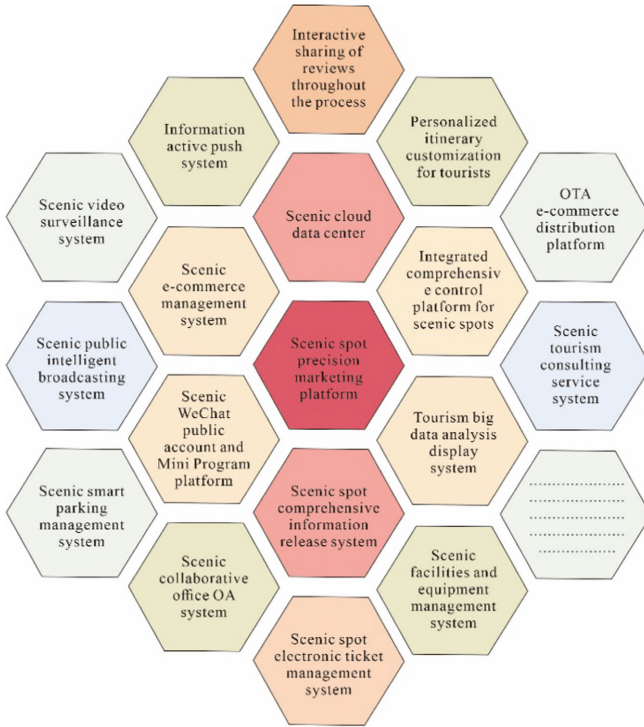
**Fig. 1.** E-commerce enterprise big data precision marketing model.

tourism behavior and tourism motivations, and then carry out targeted marketing activities according to the survey results, compared with the database, the precision marketing of the Internet can reduce the difficulty of collecting tourist information in scenic spots; the third is based on the method of the third channel, when the potential tourist information of scenic spots is difficult to identify or difficult to collect, you can obtain the tourist information you need by other institutions that can obtain your own potential tourists, or exchange tourist information databases with other institutions. Liu [9] constructed a digital-mode decision-making system for tobacco companies based on the characteristics of the cigarette industry; Gong & Cao [6] analyzed the precision marketing model of agricultural products in Yunnan; Liang & Hou [8] proposed a precision marketing model for e-commerce enterprises in combination with the cases of domestic and foreign e-commerce enterprises (Fig. 1).

### 3.2 Precise Marketing Model of Tourist Attractions

The precision marketing of tourist attractions under the imagination is based on big data technology, based on hyper ledger Fabric alliance blockchain, with scenic spots as nodes, to achieve scenic spot-centered management systems, to help scenic spots products for accurate distribution and marketing, including accommodation management, commodity management, consulting management, order management, merchant management, user management and configuration management of scenic spots. This model has a unified and simple merchant access method, a complete merchant marketing system, real-time account management, and multi-angle data analysis. Under this model, the operator of the tourist attraction can integrate and rationally allocate the resources of the merchants and surrounding areas of the scenic spot, create an innovative marketing model for the scenic spot, reasonably share tourist resources, divert each other's resources, and tap the tourism resources and tourists' interest points through big data analysis, so as to plan the corresponding tourism products, formulate the corresponding marketing theme, and promote the secondary consumption of the scenic spot (Fig. 2).

At the same time, a hybrid recommended technology application is adopted. LOCATION-based PMF/LPMF/MMMF/HITS/ST/PTR+, JPMF/CCDT technology for



**Fig. 2.** The composition of precise marketing of scenic spots based on big data technology. **Note:** This picture is drawn according to Yunyeah’s scenic precision marketing business.

advertising recommendations, and DNN/RMFX/Hadoop technology for news recommendations. The article uses HITS technology based on location recommendation and Hadoop technology for news recommendation as marketing technology support for tourist attractions.

## 4 The Status Quo of Precision Marketing in Tourist Attractions

### 4.1 Big Data Technologies Are Valued but Not Fully Utilized

The application of big data technology in tourist attractions has attracted the attention of the majority of scholars as early as the beginning of the 21st century, but most of them stay in macro policy formulation, ignoring the application at the micro level; emphasizing the discussion of academic theories and ignoring the applicability of practice. For example, the construction of the smart scenic spot management platform of Wuyishan National Park, although it was selected as a typical case of smart tourism in 2021, more focused on the presentation of data, the real use of data for precision marketing still needs to be improved. Big data processing platforms such as Hadoop have been able to implement a precise understanding of the psychology and behavior of real and potential tourists, but there are still great prospects for development in precision applications. Especially in

today's development of tourism popularization, the precision marketing of e-commerce in tourist attractions seems to focus on the "popularization" marketing method, and the marketing strategy of precise segmentation and precise combination occupies a disadvantageous position. Therefore, what big data technology should be used in the precision marketing of tourist attractions, how to use it, and how effective it is are all problems that need to be urgently considered in contemporary tourist attractions and e-commerce industries.

## **4.2 The Marketing System of Tourist Attractions Needs to Be Improved**

The deep integration of big data and the marketing of tourist attractions is the trend of China's tourism development. However, precision marketing is not only the marketing of scenic spots but also includes precision marketing of tourist attraction products, tourism scenic spot culture, tourism scenic spot industry, and other aspects. The precision marketing system is the precision marketing of the industrial chain, which should be comprehensively laid out and laid out in the long run. Due to the development of technology, the establishment of the "Internet+" one-stop network marketing system in tourist attractions have relevant technical support, and the integration of "food, accommodation, travel, shopping, and entertainment" in tourism websites. However, there is also the problem of the unity of marketing, and the existing online precision marketing of scenic spots often pays too much attention to the problem of "in the middle of the tour", ignoring the leading role of "before the tour", "after the tour" and related industries. Therefore, the network precision marketing system of tourist attractions should fully display local customs and customs, experiential activity scenic concepts, and other information under the premise of optimizing web page design and keyword search, so as to drive the increase in the number of offline tourists. In addition, we should also pay attention to offline precision marketing, such as enabling big data flow monitoring, controlling places with more people flow, and accurately implementing scenic spot strategies.

## **4.3 Unsustainable Web Celebrity Tourist Attractions to Create a Model**

Web celebrity scenic spots based on big data technology usually use a large number of "net reds" or ordinary people to quickly gain popularity, using filters and beautified natural scenes to attract a large number of tourists, resulting in congestion in scenic spots. More importantly, this marketing model often has the problem of over-rendering, which can easily lead to excessive expectations of tourists and a dissatisfied play experience. In addition, inappropriate web celebrity marketing can easily trigger scenic spots to follow the trend, resulting in homogenization problems. The failure to properly use big data technology has resulted in the lack of cultural content in scenic spots, which can no longer meet the tourism needs of contemporary people who pursue in-depth leisure experiences in tourism. Moreover, due to the promotion role of open and interactive Internet platforms, shoddily manufactured web celebrity scenic spots are prone to fall into word-of-mouth crisis because of the dissatisfied comments of netizens. It can be seen that under the big data technology, although the web celebrity scenic spot can attract tourists for a while, it is difficult to achieve sustainable development due to the excessive

pursuit of popularity, which is contrary to the pursuit of sustainable precision marketing theory. Therefore, how to truly achieve sustainable precision marketing while creating blockbusters in tourist attractions is an important issue that needs to be considered urgently by academics, industries, and politicians.

## **5 Suggestions for Precision Marketing of Tourist Attractions**

### **5.1 Value and Make Full Use of Big Data Technologies**

The control of people flow and data monitoring are common applications of big data technology in tourist attractions, but the application of marketing is still relatively lacking. For example, in offline marketing, set up sales points for tourism products in places with larger traffic, publicize the cultural connotation of facilities and tourist attractions, etc.; in online marketing, appropriately take some “net red” means to promote the flow of people in some less popular attractions and realize the diversion of popular attractions. In addition, according to the source of tourists and passenger flow shown by big data technology, a combination of tourism price difference and individual pricing can be adopted, such as increasing the price of popular attractions, reducing the price of unpopular attractions, and adopting free and reduced tickets in some areas to achieve a precise balance of tourists. Third, analyze the characteristics of tourists attracted by tourist attractions, classify tourist groups, “upgrade” popular tourism products, attract more tourists, but also pay attention to the attraction of tourists revisiting, precision marketing concept not only advocates the accuracy of first marketing but also advocates the effectiveness of secondary marketing. Therefore, in terms of attaching importance to and making full use of big data technology, the analysis of data is an effective means of precision marketing tourist attractions.

### **5.2 Improve the Precision Marketing System of Tourist Attractions**

The perfect precision marketing system is an important premise for the development of e-commerce in tourist attractions, Zhao et al., [22] gave a precision marketing system model. The application of big data technology can change the traditional marketing model and improve the social visibility of scenic spots. However, scenic spots themselves should also establish horizontal and vertical system mechanisms, build a one-stop marketing system, integrate scenic spots and the participation of various departments, and promote the construction of relevance and industrial chain. Accurately position tourists, strengthen the precision, proceduralization, and specialization of scenic spot services, and pay attention to the convenience of offline and online. The accurate dissemination of information can greatly improve the conversion rate of tourists, according to the characteristics and potential of tourist attractions, the analysis of consumer behavior, consumption trends, consumer preferences, etc., strengthen the introduction of precision marketing scenic spots, transportation, weather, customs, entertainment activities, and other information, integrate big data to promote the construction of scenic spots, establish brand advantages, and drive online and offline tourists to visit and consume, in order to build a sound precision marketing system.

### 5.3 Create Sustainable Marketing Model of Tourist Attractions

The marketing model of creating “net red” scenic spots based on big data technology can attract tourists to a certain extent, but we should also pay attention to the sustainable development of scenic spots. Therefore, in the process of development, attention should be paid to improving the quality of infrastructure and service, in view of the phenomenon of poor experience, low satisfaction and other phenomena from the service attitude, service level, reception capacity and scenic road construction, safety equipment and other software and hardware to achieve sustainable development; attention should be paid to the marketing of market segmentation, for tourists who like to take photos, photography sharing, vigorously market the “film rate” of scenic spots, for tourists who pay attention to experience, vigorously market their “cultural connotation” and “experience activities”, To avoid dissatisfaction among tourists at different aesthetic levels; attention should be paid to the application of online marketing data in scenic spots, reduce the randomness and uncertainty of marketing as much as possible, and at the right time, through the right channels, want to send the right marketing information to the right tourists, and carry out targeted marketing and precision marketing. In short, the sustainable marketing model of tourist attractions must rely on the precision marketing concept supported by big data technology to complete to achieve more accurate and standardized marketing.

## 6 Conclusions

In today’s society, digital and intelligent technology is subverting the traditional tourism system, and through the introduction of artificial intelligence and virtual reality technology, a new form of development of tourist attractions based on big data technology has been created. In order to truly adapt to the big data tourism environment, we should fully stimulate and tap the consumption potential of the tourism market, not only need to enrich the tourism consumption format, but also actively integrate into the big data environment, reconstruct the precision marketing model, and promote the high-quality development of tourist attractions. At the same time, big data should not only stay at the level of theoretical research with loud slogans, but also need to apply the research results of big data to social practice. Especially in the construction of tourist attractions, it is necessary to rely on big data policies, use the power of big data, and adopt the mode of industry, education and research to create a precision marketing platform for tourist attractions, and truly lead the development of big data industry and smart tourism.

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