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Retraction

Retracted: Smart Tourism Recommendation Method in Southeast Asia under Big Data and Artificial Intelligence Algorithms

Mobile Information Systems

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] P. Ho, "Smart Tourism Recommendation Method in Southeast Asia under Big Data and Artificial Intelligence Algorithms," *Mobile Information Systems*, vol. 2022, Article ID 4047501, 11 pages, 2022.

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Research Article

Smart Tourism Recommendation Method in Southeast Asia under Big Data and Artificial Intelligence Algorithms

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Smart tourism recommendation refers to supplementing suggestions for tourists' self-service sightseeing plans based on Internet technology, and recommending more effective and practical tourism information. This paper uses big data and artificial intelligence algorithms to study the smart tourism recommendation method in Southeast Asia. First of all, this paper gives a brief overview of the definition and classification of big data and artificial intelligence algorithms and then introduces tourism resources and smart tourism in Southeast Asia. Finally, this paper conducts a comparative experiment between the smart tourism development model based on big data and artificial intelligence algorithms and the traditional tourism development model and analyzes the utility of the development model from three aspects, namely, tourists' sense of experience and satisfaction, the scale of tourism transactions and the growth rate of tourism revenue, and the adequacy and harmony of tourism resource allocation. The final experimental results show that the overall average value of tourists' experience and satisfaction under the smart tourism recommendation mode based on big data and artificial intelligence algorithms is 88.84 points, which is 7.30 points higher than the traditional tourism mode, which verifies its effectiveness.

1. Introduction

Against the background of the rapid development of the global economy and information and communication technology, the distance between countries in the world is constantly shrinking, and the entertainment and living standards of residents are constantly improving. More and more people are choosing to travel abroad as a way to relax outside of work or study. Southeast Asia is located in the tropics, with rich and special tropical tourism resources, and it has become the first choice for many tourists to travel abroad. The number of tourists in Southeast Asian countries has repeatedly hit new highs, but the rapid growth of tourism demand has also brought many problems. Due to the limited facilities and the excessive number of tourists, the phenomenon of crowded scenic spots often occurs. And with the improvement of modern transportation, technology, and service facilities and the increasing economic income of tourists, more and more tourists no longer stop at following the traditional way of group travel. They began to prefer a self-guided travel with a very personal difference. From making travel plans to booking tickets for scenic spots, this kind of travel is decided by tourists themselves and completed with the help of modern scientific and technological means and developed communication technology. This method not only maintains the convenience of travel but also enables tourists to experience personalized services that meet their own differences.

In this process, the assistance of data and information is very important. The innovation and progress of science and technology have brought the maturity and improvement of big data and artificial intelligence technology. From conceptual consensus to industrial practice, from pilot exploration to commercial application, it has become an important starting point for promoting the digital transformation of the industry. At present, big data and artificial intelligence algorithms have been widely used in many important fields [1]. For example, it can be seen in value industries such as power and energy, industrial manufacturing, medical care, finance, and intelligent transportation. In the foreseeable future, there will be more and more application scenarios of edge computing, and the value will be brought into play. In terms

of technical implementation, it has the characteristics of resource on-demand allocation and scheduling, information aggregation processing and assignment, etc. Applying it to smart tourism recommendation in Southeast Asia can integrate and analyze the rich tourism resources in Southeast Asia, assist tourists to formulate travel plans, recommend tourism resources and information that match their interests, and achieve more accurate and personalized tourism services.

At present, there are few studies on the recommendation method of smart tourism in Southeast Asia. This paper proposes a novel research direction of smart tourism recommendation method based on big data and artificial intelligence technology. This technology can effectively recommend the most suitable sightseeing plan according to tourists' orientation, provide a perfect and improved development suggestion for the tourism industry, and also provide new ideas for smart tourism research.

In the existing research, the tourism recommendation in Southeast Asia is still in the traditional experience-based method, but the times are changing rapidly, and the power of science and technology cannot be ignored. This paper studies the integration of intelligent methods, such as information technology with tourism, which can simultaneously feel the beauty of life brought by technology and the spiritual enjoyment brought by tourism.

2. Related Work

In recent years, many scholars have carried out research on big data and artificial intelligence technology. Zhang believes that artificial intelligence technology can be well applied in big data analysis such as data classification. He analyzes the application of support vector machine (SVM) methods in artificial intelligence algorithms to multiclassification problems. In order to improve the data classification performance, he creatively designed an improved one-to-one SVM multiclassification method by combining SVM with the K-Nearest Neighbor (KNN) method. The final experimental results show that the improved one-to-one SVM algorithm has good reliability [2]. Han and Huo apply artificial intelligence technology to formulate a scientific martial art system training method. They monitor lactate data by building a neural network algorithm to build a martial art system training method. Finally, the effectiveness of the proposed algorithm is proved by simulation experiments [3]. Guo et al. proposed a design scheme of "demand-industrial design innovation-market-demand" based on industrial intelligence and big data technology. They indirectly assist the decision-making of industrial design through algorithm models, helping industrial enterprises to save costs and shorten the R&D cycle in the R&D process. It proves that the application of artificial intelligence and big data can better solve the major problems of data isolation and low decision-making accuracy faced by existing research institutions at home and abroad [4]. Wang et al. deep learning algorithms are more accurate and efficient than traditional image processing algorithms in the effective training of medical image big data. They have a broader application prospect in the medical field. They applied the intelligent quality control system they developed to the hospital and verified the feasibility and stability of the quality control system [5]. Koren et al. apply the classical K-means algorithm to numerical and categorical attributes in big data platforms. By applying the algorithm in a detailed case study to demonstrate its capabilities, they provide a solid foundation for more targeted analysis using big data for decision-making and research. Finally, they verified the effectiveness of the method through experiments [6]. Zuo studies the development and robustness testing of big data analysis system based on optimized Java technology and parallel Oracle. He proposed a new data mining algorithm combined with clustering method. In data mining, the association between the measures of the dataset is automatically divided into several clusters. He made the data points within the same cluster as similar as possible and finally verified the practicability of the proposed algorithm through experiments [7]. To sum up, after several years of exploration, the application of big data and artificial intelligence technology has been deeply studied by many scholars, but there are no many studies that integrate it with smart tourism in Southeast Asia. Therefore, in order to further promote the development of the tourism industry, the practical research on the smart tourism recommendation method in Southeast Asia from the perspective of big data and artificial intelligence technology is urgent.

3. Big Data and Artificial Intelligence Algorithms and Recommendation Methods for Smart Tourism in Southeast Asia

3.1. Overview of Big Data and AI Algorithms

3.1.1. Definition of Big Data and Artificial Intelligence Technology. In the current research field, different scholars have different understandings and definitions of big data. But fundamentally, big data refers to the use of relatively economical and fast and accurate technology to achieve large-scale data search, integration, and extraction of the most valuable data information [7].

Artificial intelligence is an intelligent technology that uses computers as a means to operate and perform work. It can replace manual work to a certain extent and complete activities that only humans can complete. The computer trains and learns the algorithms written by humans through the system, and then uses computing tools (such as convolutional neural network, fuzzy computing, and expert system) to solve problems intelligently, and finally makes behavioral decisions through human triggering or manipulation [8]. Although the current artificial intelligence technology cannot completely simulate the human brain to form a more natural and effective learning thinking, the model of learning from human intelligence through machines can greatly liberate human hands and improve production and work efficiency.

3.1.2. Classification of Big Data and AI Technology Algorithms. The commonly used algorithms of big data

and artificial intelligence technology are divided into five categories, as shown in Table 1.

(1) Particle Swarm Algorithm. Particle swarm optimization, the full name of Particle Swarm Optimization in English, is one of the most popular algorithms in the research field this year. It was aimed at finding an optimal solution among iterative random solutions. Then, it uses the fitness of the system to judge the quality of the solution, as shown in Figure 1. Compared with other algorithms, this algorithm has simpler rules, and the performance of calculation accuracy and speed is also superior.

(2) Greedy Algorithm. The greedy algorithm is different from the particle swarm algorithm. It is an algorithm that does not aim to find the best quality solution but hopes to obtain a more satisfactory solution [9]. The greedy algorithm can often get the calculation result relatively quickly. As shown in Figure 2, the greedy algorithm often makes the optimal choice based on the current situation, without considering various possible situations. For example, when shopping for money, in order to minimize the number of coins recovered, we do not consider all the various announcement schemes for changing change but start from the currency with the largest denomination and consider various currencies in descending order. It first tries to use a currency with a large denomination and only considers the next currency with a smaller denomination when the amount of the currency with a large denomination is insufficient.

(3) Ant Colony Algorithm. Ant colony algorithm, also known as ant algorithm, is a technique used to find optimal paths in graphs [10]. Its inspiration comes from the behavior of ants finding paths in the process of finding food, as shown in Figure 3, it is widely used in various aspects of real life, and in applications, it can be used as a tool for network routing control. In traffic control, it can successfully solve the vehicle scheduling problem. In chart making, it is used to solve the color fill problem. In addition, it can also be used to design large-scale timetables with practicality and effectiveness.

(4) Linear Regression. Linear regression is one of the most widely used algorithm forms in the research field. It was aimed at finding a straight line and fit each data information point in the scatter plot on the maximum length of the straight line. The independent variable x value and the data structure y value are represented by the formula of the straight line and the fitting of the data information points. The algorithm model is shown in Figure 4.

(5) Genetic Algorithm. Genetic algorithm is an evolutionary algorithm. In terms of artificial intelligence, the problem of generative optimization search can be effectively handled. The basic genetic algorithm process is not complicated. Taking each individual as the object, optimization is carried out through three kinds of genetic operators (selection genetic operators, mutation genetic operators, and crossover genetic operators). As the name implies, the selection process is a survival of the fittest and elimination of the weak [11]. In nature, when a pair of chromosomes are located in the same position, the genes they carry will be exchanged. This process is called crossover. Similarly, genes will mutate, and the control one state becomes control of another state, which is the phenomenon of mutation. Mutation can make the performance of the genetic algorithm more perfect, so that the algorithm has the ability of random search.

When a selection operation is performed, its algorithm formula is expressed as follows:

$$F(t) = \sum_{i} F(A_i), \tag{1}$$

$$m(H, t+1) = \sum_{A_i \in H \cap P} \frac{M \times F(A_i)}{F(t)}, \tag{2}$$

$$m(H, t+1) = \sum_{A_i \in H \cap P} \frac{M \times f(H, t)}{F(t)}, \tag{3}$$

$$m(H, t+1) = m(H, t) \times \frac{M \times f(H, t)}{F(t)}, \tag{4}$$

$$m(H, t+1) = m(H, t) \times \frac{f(H, t)}{\bar{F}(t)}. \tag{5}$$

In Formula (1), (2), (3), (4) and (5), i represents the number of patterns in the population; A_i represents the number of individuals included in each pattern; $F(t)$ represents the sum of the fitness values of all individuals in the population; and M represents the total number of populations.

Suppose:

$$C = \frac{f(H, t)}{\bar{F}(t)}, \tag{6}$$

$$m(H, t+1) = m(H, t) \times C, \tag{7}$$

$$m(H, t+k) = m(H, t) \times C^k. \tag{8}$$

In Formula (6), (7) and (8), $f(H, t)$ represents the average fitness value of the mode H when the genetic algorithm runs to the t generation; $\bar{F}(t)$ represents the average fitness value of the population when the genetic algorithm runs to the t generation. When the genetic algorithm proceeds to the crossover operation, where H represents the pattern, and assuming that the set crossover probability is P_c, then the probability that pattern H can be retained to the next generation is [12] as follows:

$$\frac{P_s \geq 1 - P_c \times \delta(H)}{(l-1)}, \tag{9}$$

$$m(H, t+1) = m(H, t) \times C \times P_s, \tag{10}$$

$$m(H, t+1) \geq m(H, t) \times C[1 - P_c \times \delta(H)/(l-1)]. \tag{11}$$

Table 1: Big data and artificial intelligence technology algorithm classification.

Sequence	Algorithm	Attribution type
1	Particle swarm algorithm	
2	Greedy algorithm	
3	Ant colony algorithm	Big data and artificial intelligence
4	Linear regression algorithm	
5	Genetic algorithm	

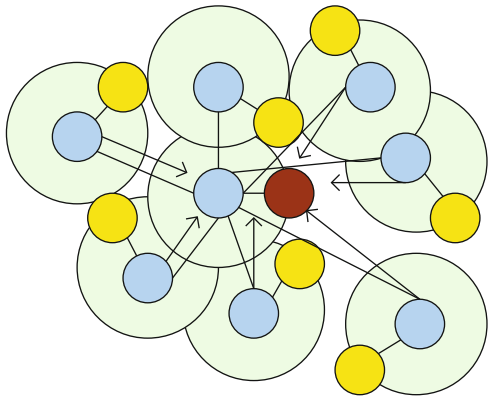

Figure 1: Schematic diagram of particle swarm algorithm.

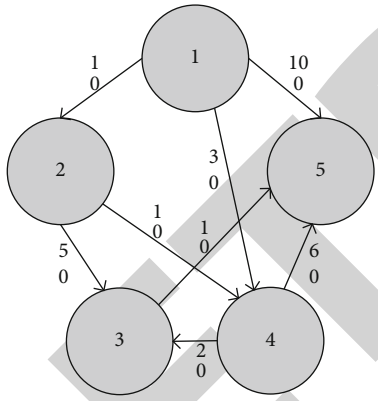

Figure 2: Schematic diagram of greedy algorithm.

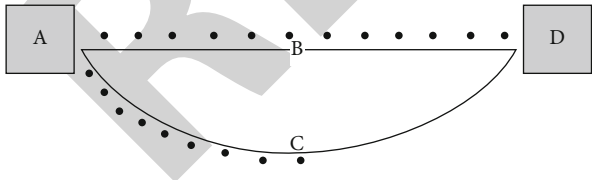

Figure 3: Schematic diagram of ant colony algorithm.

In Equation (9), (10) and (11), l represents the length of the chromosome; $m(H,t)$ represents the number of individuals included in the pattern H.

When the genetic algorithm proceeds to the mutation operation, when the pattern H is destroyed, it is because the uncertain loci in the pattern H have changed due to mutation. Assuming that the set mutation probability is P_m, and the value of P_m is generally relatively small, the probability that the pattern H is destroyed during the mutation process is [13] as follows:

$$P_b = 1 - (1 - P_m)^{o(H)}, \quad P_b = 1 - (1 - P_m)^{o(H)} \approx o(H) * P_m. \tag{12}$$

Among them, $o(H)$ represents the mode order of mode H, and the probability that mode H is not destroyed in the crossover process and can be preserved to the next generation is [14] as follows:

$$P_s \approx 1 - o(H) \times P_m. \tag{13}$$

The genetic algorithm analyzes the pattern H in the operation process of selection, crossover, and mutation, and the number of chromosomes contained in the pattern H after the operation can be obtained, namely, [15]

$$m(H, t+1) \geq m(H, t) \times \frac{f(H,t)}{\bar{F}(t)} \times \left[1 - P_c \times \frac{\delta(H)}{(l-1)} - o(H) \times P_m\right]. \tag{14}$$

According to the pattern theorem, not all patterns are processed in a genetic algorithm run with the same probability. Because those patterns that define the pitch length are easily broken during crossover operations. The following is an analysis of the modes that are efficiently processed in the algorithm run, and a lower bound on the number of modes is calculated [16]:

$$(l - l_s + 1) \times 2^{l_s - 1}, \tag{15}$$

$$n \times (l - l_s + 1) \times 2^{l_s - 1}, \tag{16}$$

$$n_s \geq \frac{n \times (l - l_s + 1) \times 2^{l_s - 1}}{2} \approx \frac{(l - l_s + 1)}{4} \times n^3, \tag{17}$$

$$n_s = Cn^3, \tag{18}$$

$$n_s = o\left(n^3\right). \tag{19}$$

In Formula (15), (16), (17), (18) and (19), n represents the number of chromosomes in the binary-coded population; l represents the length of the binary; and l_s is a constant and less than l.

Genetic algorithm can quickly search for the optimal solution, and its operation efficiency is high [17]. In order

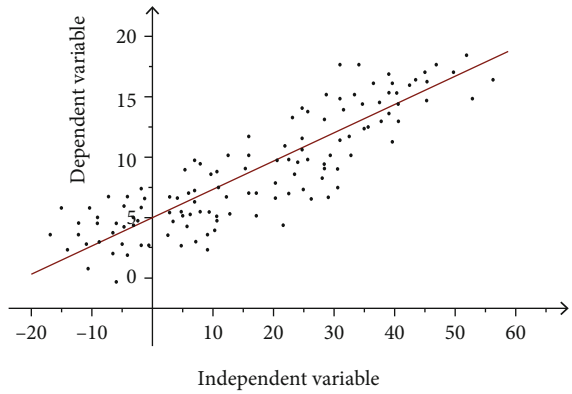

Figure 4: Linear regression algorithm model.

to further verify the performance of the genetic algorithm, this paper obtains the running efficiency and test accuracy of the algorithm through numerical experiments of the algorithm. The experimental data are from the UCI dataset. The experimental results of the numerical operation efficiency of the genetic algorithm and the numerical accuracy of the algorithm are shown in Table 2 and Table 3. The experimental results show that the algorithm has good performance.

3.2. Smart Tourism in Southeast Asia

3.2.1. Southeast Asia Tourism Resources. Southeast Asia has a special location. It spans the equator and is located in the tropical region. Affected by the equatorial rainy climate, many countries in Southeast Asia have rich tropical evergreen rainforest and tropical monsoon rainforest resources. These make natural forests an important natural tourism resource, coupled with a long history and religious culture, and the cultural tourism resources are also extremely rich.

(1) Natural Tourism Resources. Most of the countries in Southeast Asia are close to the ocean, and the cumulative total length of the coastline has reached 100,000 kilometers. The winding coastline, beautiful seascape, and warm and pleasant climate attract thousands of tourists to visit here. The most representative seaside city is Manila in the Philippines, and Manila is not only the capital city of the Philippines but also the largest port in the Philippines, where the most famous Roxas Beach Road is located. The road is wide, the sea is blue, and the scenery is extremely beautiful. As shown in Figure 5, the annual temperature here is around 28°C, which is very suitable for tourists to travel [18].

(2) Humanistic Tourism Resources. Southeast Asia has a long history and is one of the most densely populated areas in the world. The existence of famous ancient cities has added many splendid and spectacular cultural landscapes to it. Malacca City, one of the world's famous ancient cities, is located in this area. Malacca City is the oldest ancient city in Malaysia. It was once the capital city of the Malacca Dynasty and was later occupied by Portugal, the Netherlands, and the United Kingdom. Therefore, the architectural style of the area has integrated many European cultures on the basis of maintaining its own culture [19]. As shown in Figure 6, the styles are diverse and each has its own characteristics.

Table 2: Experimental results of numerical operational efficiency of genetic algorithm.

Dataset	Number of samples in the dataset	Number of dataset categories	Attributes contained in each dataset sample point	Operating efficiency
Iris	261	4	7 dimensions	86.37%
Vowel	1394	11	13 dimensions	92.73%
Cancer	21941	7	14 dimensions	92.14%
Bupa	774	5	14 dimensions	93.75%
Jain	651	7	9 dimensions	91.31%

The extremely inclusive feature of Southeast Asia is also deeply influenced by the rich and diverse religious and cultural resources. Bangkok is a famous Buddhist cultural city, and the number of Buddhist temples alone has reached more than 400. Temple of the Emerald Buddha is the largest and most famous Buddhist temple in Bangkok, Thailand. The highly respected Jade Buddha is enshrined in the Mahavira Hall. Its buildings are row upon row, majestic, and magnificent, and it is also a famous tourist attraction, as shown in Figure 7.

3.2.2. Concept of Smart Tourism. Smart tourism is based on the concept of smart city. However, it is different from the latter in that the main body of smart tourism is tourists, and all the high-quality and high-quality information services it formulates are provided to meet the personalized sightseeing needs of tourists. Smart tourism also means the integration of tourism and Internet technology. Tourists can rely on the convenient mobile client to enter the entire tourism resource network, view real-time network dynamics anytime and anywhere, and obtain accurate sightseeing information, so as to avoid changes or termination of sightseeing plans due to emergencies in scenic spots. From this point of view, tourists can not only inquire and obtain desired tourism services according to their personal wishes but also passively accept real-time information pushed by the Internet, and the tourism experience is diverse and rich.

Smart tourism has both similarities and differences with digital tourism. Digital tourism refers to digitizing the entire process of tourism activities. In other words, it is to convert information such as images, videos, sound images and other information generated in sightseeing activities into digital language through modern scientific digital information technology and then submit the digital language to the computer for processing [20]. Networking of tourism activities is to use computer control technology and information communication technology to connect computers and mobile terminals in various fields. And it communicates according to the relevant network protocol, so as to realize the purpose of sharing tourism information resources together even if each tourist has different authority. The scope of digital

Table 3: The experimental results of the numerical accuracy of the genetic algorithm.

Dataset	Parameter C	CPU time (s)	Test accuracy
Iris	9	0.38	94.78%
Vowel	12	0.55	86.39%
Cancer	6	0.43	88.69%
Bupa	4	0.36	89.36%
Jain	11	0.57	91.45%

tourism includes the digitization of tourism service information, management information, and spatial information, and smart tourism is an evolutionary version of information services provided on its basis.

The combination of the tourism industry and the "Internet +" model has become a new industry development leader. More tourism products are also known to everyone because of the arrival of new media [21]. In the information age, many industries have changed their traditional business models and ushered in a new dawn of development. There are also some popular cultures that are spread through self-media and new media and reappear in people's vision.

The combination of "Internet +" and the tourism industry has also received strong support from the state. Therefore, the combination of tourism and the Internet has become a new industry development direction. It further promotes the development of tourism. With the advent of the information age, various tourism resources have also been realized informatization using technologies such as visualization and mobile communication. Tourists can check information about various tourism products and learn about the latest developments in tourism by subscribing to other tourism products such as related public accounts [22].

Internet cultural tourism is a social enterprise that realizes the intelligent service and marketing of scenic spots, merchants, and tourists by designing tasks and establishing service platforms. Its development mode is mainly two kinds of development and management mechanism and platform construction mechanism. In the information age, tourists can have a higher travel experience [23]. With the continuous updating of Internet of Things technology and Internet technology, the development of cultural tourism resources has also been innovated. Through the platform, tourism information can be effectively integrated and shared, and managers can conduct informatization operations through electronic products, such as computers, so as to better manage tourism resources. Tourists can also make changes according to their own situation, so as to obtain a more efficient tourism experience [24]. Therefore, using the Internet can not only change the traditional tourism industry marketing model but also better protect tourism resources.

3.2.3. Smart Sightseeing Function. From the perspective of the entire sightseeing process, smart sightseeing has four functions, namely, navigation, tour guide, tour, and shopping guide.

(1) Navigation Function. The navigation function of smart tourism refers to the integration of satellite navigation and positioning technology and Internet technology to provide location information services to tourists. By obtaining the positioning authority, tourists can obtain their own location information on the mobile client, and the interface of the mobile client is simple and practical. It can not only realize the real-time update of the scenic spot map but also provide road traffic information to the tourists.

(2) Tour Guide Function. The tour guide function of smart sightseeing can integrate the tourist information of the scenic spots in the area where the tourists are located or the surrounding scenic spots. It includes food, accommodation, shopping, entertainment, and other information, which is collected and recommended to tourists so that they can adjust or change their sightseeing plans.

(3) Tour Function. The guide function of smart tourism can display the surrounding information of the scenic spot to the tourists in the form of multimedia. It can even develop a virtual tourism module for tourists through 3D virtual reality technology, so that they can have a deeper understanding of tourism information and obtain the best tourist route information [25].

(4) Shopping Guide Function. The shopping guide function of smart sightseeing can help tourists complete all the expenses booked in the sightseeing plan before traveling, so that tourists can enjoy the service more conveniently and easily.

4. Southeast Asia Smart Tourism Experiment Based on Big Data and Artificial Intelligence Algorithms

In this paper, the genetic algorithm in the classification of big data and artificial intelligence algorithms is used in the five most representative cities in Southeast Asia in 2021 to conduct smart tourism experiments. It is analyzed from three aspects: tourists' sense of experience and satisfaction, the scale of tourism transactions and the growth rate of tourism revenue, and the adequacy and harmony of tourism resource allocation. And its traditional tourism development model in 2020 is compared to verify the effectiveness of smart tourism.

4.1. Tourist Experience and Satisfaction. The analysis of tourists' experience and satisfaction mainly starts from five perspectives: the construction of the city's internal communication network, the perfection of tourism functions, the intelligence of medical and health services, and the status of the emergency command system. It surveys tourists' travel experiences and uses a scoring test. The following statistical results come from the experience and satisfaction ratings of 500 tourists in Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay, as shown in Figure 8.

As can be seen from Figure 8, in the smart tourism recommendation mode based on big data and artificial

Figure 5: Manila waterfront scenery.

Figure 6: Malacca City architecture landscape.

Figure 7: Landscape map of Jade Buddha Temple.

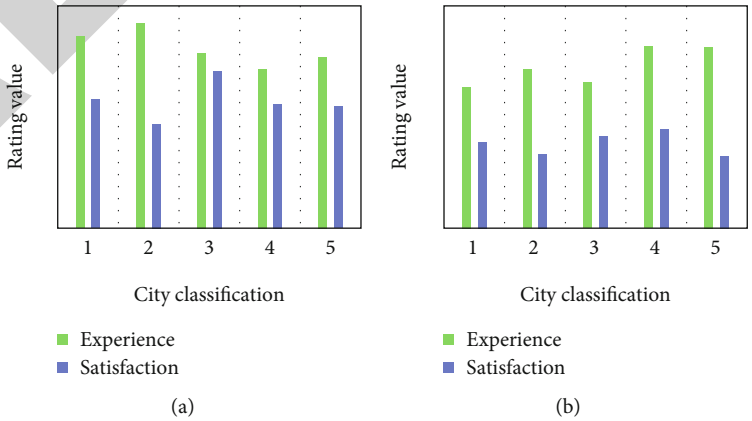

Figure 8: Analysis results of tourists' experience and satisfaction. (a) shows the sense of experience and satisfaction of tourists under smart tourism. (b) shows tourists' sense of experience and satisfaction under traditional tourism.

intelligence algorithms, tourists scored the five major cities' internal communication network construction, tourism function perfection, medical and health service intelligence, and emergency command system experience about Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay. The overall mean is 91.24 points, and the overall mean satisfaction score is 86.44 points. Under the traditional tourism development model, tourists rated the construction of the internal communication network, the perfection of tourism functions, the intelligence of medical and health services, and the status of the emergency command system in the five major cities of Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay. The overall mean is 83.27 points, and the overall mean satisfaction score is 79.81 points.

4.2. Tourism Transaction Scale and Tourism Revenue Growth Rate. The analysis of the scale of tourism transactions and the growth rate of tourism revenue is from the perspective of the peak tourism season and the low season of tourism in the five major cities of Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay. The results are shown in Figures 9 and 10.

As can be seen from Figure 9, under the smart tourism recommendation model based on big data and artificial intelligence algorithms, the transaction volume of the five major cities of Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay during the peak tourist season increased by about 2.19% compared to last year. Compared with last year, the overall growth rate of the tourism off-season transaction scale is about 3.13%. Under the traditional tourism development model, the transaction volume of the five major cities of Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay during the peak tourist season increased by about 0.53% compared with last year. Compared with last year, the overall growth rate of tourism off-season transaction scale is about 1.02%.

As can be seen from Figure 10, under the smart tourism recommendation model based on big data and artificial intelligence algorithms, the peak tourist season income of the five major cities of Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay increased by about 20.80% compared to last year. Compared with last year, the overall growth rate of tourism off-season income is about 27.78%. Under the traditional tourism development model, the income of the five major cities of Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay in the peak season of tourism increased by about 12.77% compared with last year, and the income in the off-season of tourism increased by about 19.67% compared with last year.

4.3. Adequacy and Harmony of Tourism Resource Allocation. The analysis of the adequacy and harmony of the distribution of tourism resources mainly starts from five perspectives: the comprehensiveness of the ticket function of the scenic spot, the perfection of the scenic spot planning, the perfection of the tourism planning, the degree of commercialization of marketing, and the status of public information release. It surveys the distribution of tourism resources in five major cities, Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay, and uses a scoring test. The following statistical results are also obtained from 500 tourists who rated Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay city tourism resource allocation, as shown in Figure 11.

From Figure 11, under the smart sightseeing recommendation mode based on big data and artificial intelligence algorithms, it can be seen that tourists overall score the five major cities, Bangkok, Kuala Lumpur, Manila, Hanoi, and Mandalay, in the comprehensiveness of scenic ticket functions, the perfection of scenic spot planning, the perfection of tourism planning, the degree of commercialization of marketing, and the adequacy of the distribution of tourism resources in the public information release status. The mean is 85.71 points, and the overall score of harmony is 82.49 points. In the traditional tourism development model, tourists overall score the five major cities in terms of the comprehensiveness of scenic ticket functions, the perfection of scenic spot planning, the perfection of tourism planning, the degree of commercialization of marketing operations, and the adequacy of the distribution of tourism resources in public information release. The mean is 78.46 points, and the overall score of harmony is 78.96 points.

5. Discussion

By comparing the experimental data between the smart tourism recommendation model based on big data and artificial intelligence algorithms and the traditional tourism development model, the following conclusions can be drawn:

(1) In terms of tourist experience and satisfaction, the overall average of tourist experience under the smart tourism recommendation model based on big data and artificial intelligence algorithms is 7.97 points higher than the overall average of tourist experience under the traditional tourism development model. The overall mean of tourist satisfaction is 6.63 points higher than the overall mean of tourist satisfaction under the traditional tourism development model

(2) In terms of tourism transaction scale and tourism revenue, the growth of the tourism peak season transaction volume based on the smart tourism recommendation model based on big data and artificial intelligence algorithms is 1.66% higher than that of the traditional tourism development model. The increase in the scale of tourism transactions in the off-season was also 2.11% higher than that of the traditional tourism development model. The growth rate of peak tourist season revenue based on the smart tourism recommendation model based on big data and artificial intelligence algorithms is 8.03% higher than that of the traditional tourism development model. The growth rate of tourism off-season revenue was also 8.11% higher than that of the traditional tourism development model

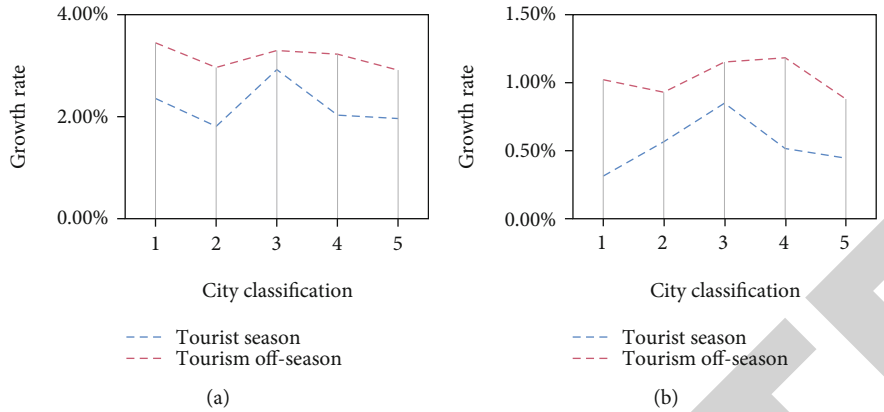

Figure 9: Growth rate of tourism transaction scale. (a) shows the growth rate of tourism transaction scale under smart tourism. (b) shows the growth rate of tourism transaction scale under traditional tourism.

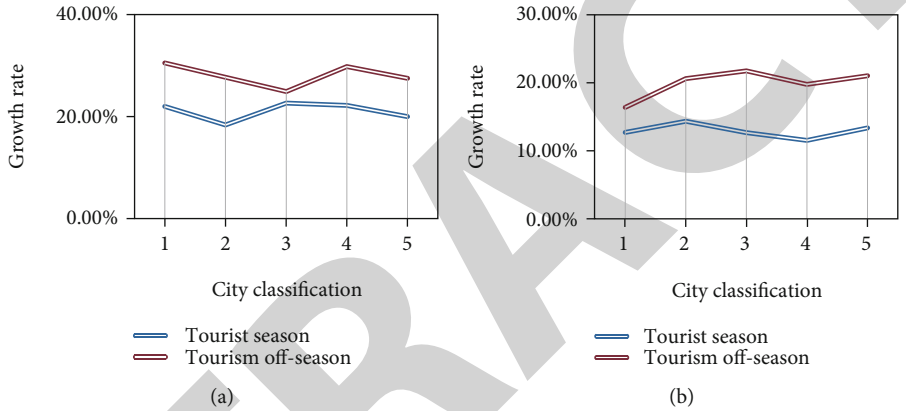

Figure 10: Tourism revenue growth rate. (a) shows the growth rate of tourism revenue under smart tourism. (b) shows the growth rate of tourism revenue under traditional tourism.

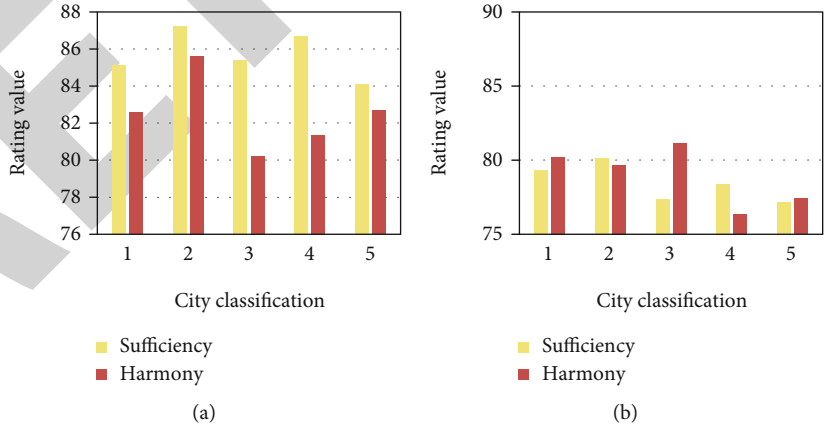

Figure 11: Analysis of the adequacy and harmony of tourism resource scheduling.

(3) In terms of the adequacy and harmony of the distribution of tourism resources, the overall mean of tourism resource allocation adequacy under the smart tourism recommendation model based on big data and artificial intelligence algorithms is 7.25 points higher than the overall mean of tourism resource allocation adequacy under the traditional tourism development model. The overall mean of the harmony degree of tourism resource allocation is 3.53 points higher than the overall mean of the harmony degree of tourism resource allocation under the traditional tourism development model

The whole comparative experimental data shows that, under the condition of keeping other experimental conditions the same, the urban tourism industry with different development modes, whether it is in terms of tourist experience and satisfaction, tourism transaction scale and tourism revenue, or the adequacy and harmony of tourism resource allocation, the development results under the smart tourism recommendation mode based on big data and artificial intelligence algorithms are more superior. It shows that the smart tourism recommendation based on big data and artificial intelligence algorithm can effectively realize the full distribution and integration of tourism resources, thereby promoting the further development of the tourism industry.

6. Conclusion

Southeast Asia is a world-famous tourist area, and it is also one of the areas where Chinese residents choose to travel abroad with the largest proportion. How to quickly and accurately provide tourism information services to tourists in the current situation of fierce competition in the development of the tourism industry and uneven distribution of tourism resources, so that tourists can obtain the best service experience is an urgent problem that needs to be solved in smart tourism. Based on big data and artificial intelligence algorithms, it is not only possible to find the tourism plan that best meets the individual differences of tourists from the massive data but also to realize information sharing by relying on the client. It effectively solves the problems of crowded and uneven distribution caused by limited resources. It is believed that with the improvement and maturity of technology, smart tourism in the field of big data and artificial intelligence algorithms will develop more and more to high quality and high level. Although this paper uses big data and artificial intelligence algorithms to conduct in-depth research on smart tourism recommendation in Southeast Asia, there are still many deficiencies. The depth and breadth of the research in this paper is not enough, the author's academic level research is also limited, and the research on smart tourism is still in the preliminary stage. In the future work, it is believed that based on the existing technology and level, appropriate methods and means of smart tourism recommendation will be studied from more perspectives, and the development quality of the tourism industry will be continuously improved.

Data Availability

No data were used to support this study.

Conflicts of Interest

The author declares that he/she has no competing interests.

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