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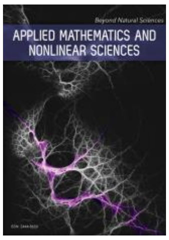

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Optimality of analysing smart tourism destination management based on media convergence algorithms

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Abstract

This paper uses a local path fusion method of medium to simulate the angular deviation between the end direction of the trajectory and the target direction according to a specific evaluation function. The media fusion algorithm is guided to achieve global optimality of the path by fusing global path planning information and avoiding local dynamic obstacles. The smart tourism and tourism management systems are fused to balance the intensity loss constraint weights and perform Gaussian filtering to derive the tourism management situation. By decomposing the highest level of tourism information and normalizing the pixel intensity values and tourism characteristic information, it was found that the smart tourism penetration rate increased by 3.6%, the total tourism revenue increased by 88.87% over the previous year, and the working variance of tourism project effectiveness was 62.430.

Keywords: Media fusion; Trajectory end directions; Loss constraint weights; Gaussian filtering; Pixel intensity values.
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1 Introduction

The development of science and technology has made unprecedented progress since the 21st century, reaching higher levels and levels [1-2]. As human society has entered the information age, various technologies are constantly updated, manifesting themselves in the tourism industry as further enrichment of tourism products, providing the basis for further innovation of tourism patterns and optimization of tourism management models [3-6]. The competition in various tourist destinations is gradually becoming fierce, leading to more stringent requirements for tourism destination management services. There is a need to find newer management ideas, find convenient management methods, and build a perfect management model with them. The smart tourism management model has become a significant trend and direction in developing destination tourism management [7-10]. To provide higher-quality tourism management services [11-12], studying destination tourism management systems for smart tourism is beneficial.

The literature [13] shows that after the scale of domestic and foreign tourist destinations began to increase, it was accompanied by the homogenization of each tourist attraction, leading to a convergence of destination images. Based on the dynamic competitive relationship between homogeneous folklore tourism destinations, a study was conducted using the evolutionary game theory of homogeneous competitive environment to examine the dynamic relationship between tourism destinations. A tourist model is used to analyze the countermeasures that must be taken to provide a reference for improving destination revenue and effective tourist management. Changes in the innovative tourism environment and visitor perceptions, differences in construction connotations, and visitor orientation lead to a more comprehensive enjoyment of the high degree of homogeneity in the scenic area and the use of similar resources in the tourist destination. The literature [14] proposes the theory of environmental attitudes, eco-friendly tourism, and environmentally responsible behavior. A relationship analysis for personal norms in society, perceived behavioral control, and behavioral intentions toward eco-friendly destinations found a significant relationship between destination attitudes and destination travel intentions, findings that are valuable for environmental planning and the growing green market economy, as well as for eco-friendly tourism development.

Internet technology is employed in the literature [15] to manage the application of tourism destinations by exploring and practicing them and thus studying the key factors of success in tourism destinations. New media identification criteria for tourism destinations are proposed due to the nature of new media in tourism destinations. A systematic evaluation method establishes a success factor identification scheme for new media to develop the core of new media training in tourism destinations. A simple multi-level tourism recommendation system framework is proposed in the literature [16] to help potential travelers find the destination that best matches their preferences and requirements. Since there are multiple factors in determining tourists' choice of vacation destinations, a list of potential destinations is constructed by finding destinations that meet all criteria of potential travelers through affordability, activity availability, popularity, and safety. In summary, tourism enterprises have not applied advanced technologies to improve the level and quality of management of tourism enterprises, to strengthen the management of administrative authorities and tourist relations, and to weaken the interaction between tourism resources of tourism enterprises.

This paper creates a model for smart tourism destinations by combining media convergence and smart tourism destinations. In the design process, the evaluation function is used to score each tourism trajectory, and the one with the highest score is selected as the optimal path and executed. To achieve integrated management of tourism resources in an informative and networked way, information on distribution characteristics and other aspects is processed to achieve the quantity and quality of tourism resources. By interpolating and unfolding each layer of the tourism destination, the unfolding sequence is obtained after guiding the filter to keep the edge features, and a nonlinear transformation function is introduced to adjust the tourism destination management further. A multi-scale visual saliency detection method is used for image fusion, parameters are introduced to control the proportion of infrared information in the fused images, and high-frequency components are fused using visual saliency detection theory. The tourism growth trend and the statistical assessment of intelligent tourism are verified and analyzed, and according to the ecological condition of tourism destinations, the theory of relevant ecology is combined to provide tourists with more intelligent destination tourism management services. By integrating tourism enterprise resources effectively, we can achieve the goal of comprehensive development of tourism destinations and promote enterprise progress.

2 Optimize the quality of tourism destination management efficiency

2.1 Smart tourism destination model construction

The study and recognition of smart tourism destination management has been widespread worldwide [17-18]. Combining with traditional tourism, it helps to improve the development of local tourism, and a few destination management agencies have started to try to build it, presenting the six elements of destination information on a simple classification website to achieve the effect of marketing [19-20]. To maximize the integration of domestic and international tourism information resources, tourism management, marketing, and services to achieve comprehensive information and electronics and vigorously develop e-commerce to meet international standards. Figure 1 shows the smart tourism destination model, which builds a tourism model integrating tourism information transmission, tourism industry management, and tourism enterprise marketing application functions through each level platform and network connection structure. In turn, it manages the three-level tourism institutions, a large information application network for all sectors of society, and builds subplatforms at all levels of national administrative units, providing a guiding standard for tourism construction.

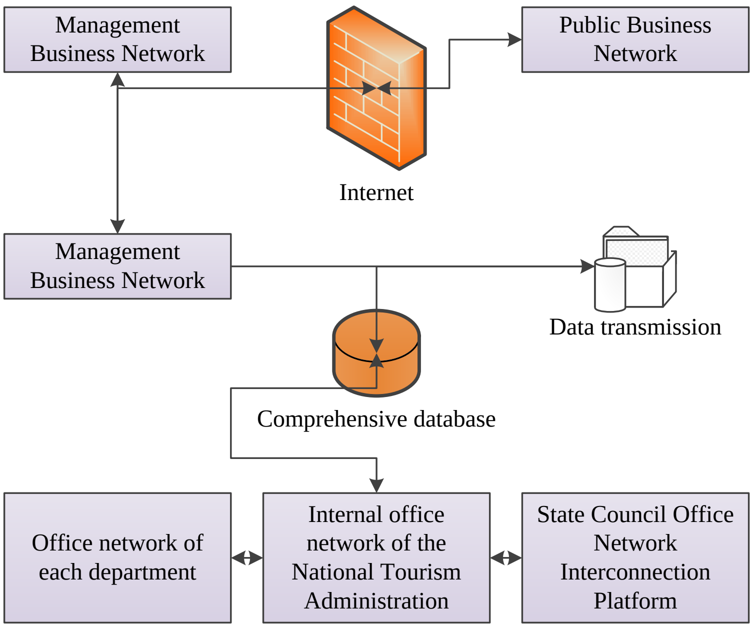


Figure 1. Smart Tourism Destination Model

The smart tourism destination model is a tourism e-magazine that is the overall design idea for designing the destination image. Tourism destination information management, e-map, yellow pages, electronic touch screens, visitor information centers, call centers, etc., are among the information functions. The management level also supports online surveys, complaints, traffic statistics, and other related activities. The biggest difference from the past is the addition of tourism enterprise network management functions. Tourism enterprises can establish their tourism marketing system in this model for mail promotion, advertising promotion, editing the latest product information, updating corporate information, etc. Provide tourism information organization models such as theme tourism and tourism programs, meet the demand of destination information dissemination multi-channel such as tourism consultation phone, website, etc. Establish an articulated connection with tourism information and product suppliers by adding multimedia marketing such as video. Open up the relationship with the destination system at all levels, explore the expression of the destination marketing system on mobile, and finally focus all the information related to destination tourism on one page. Matching travelers' needs with the website's functions, abandoning the traditional search method, and directing visitors to the final page after using the home page as a channel. Different roles, including government, business, and netizens, provide the final page to meet the diverse needs of tourists due to their different identities. In addition to the traditional curing contents such as destination introduction, attraction introduction, traffic map information, food, and accommodation information, there is also the information of netizen's guide to the travel situation of the destination and the online booking platform of travel product suppliers.

2.2 Media convergence algorithm

The media fusion algorithm is a local path fusion method that uses the media medium to transform the traditional location optimization problem into a velocity optimization problem with constraints [21-22]. By the speed of traveler movement in the medium and then simulating the trajectory of the traveler at a certain time interval at these speeds, after obtaining infinitely many sets of trajectories, the optimal trajectory corresponding to the speed of movement is selected according to a specific evaluation function.

There are infinitely many sets of velocities in the medium space, and the sampling velocity is controlled within a certain range according to the environmental and medium constraints, which are constrained by Eq:

$$V_i = \left\{ (v, w) \middle| v \in [v_{\min}, v_{\max}], \middle| w \in [w_{\min}, w_{\max}] \right\} \tag{1}$$

Where, $v_{\max}$ and $v_{\min}$ are the maximum and minimum linear velocities of the tourist, and $w_{\max}$ and $w_{\min}$ are the maximum and minimum angular velocities of the tourist. Due to the influence of the torque in the smart tourism destination model, the maximum acceleration and deceleration of the tourist exists, and its velocity constraint is expressed as:

$$V_j = \begin{Bmatrix} (v, w) \middle| v \in [v_c = \dot{v}_b \Delta t, v_c = \dot{v}_a \Delta t], \\ w \in [w_c = \dot{w}_b \Delta t, w_c = \dot{w}_a \Delta t] \end{Bmatrix} \tag{2}$$

v_c, w_c are the linear and angular velocities at the current moment, $\dot{v}_a$, $\dot{w}_a$ are the maximum acceleration of the traveler, $\dot{v}_b$, $\dot{w}_b$ are the maximum deceleration of the traveler.

Considering the safety of the traveler during the tour travel, when avoiding obstacles in the local environment, it is possible to ensure that the velocity is reduced to 0m/s before colliding with the obstacle, and the case variables are:

$$V_k = \left\{ (v,w) \middle| v \le \sqrt{2dist(v,w)\dot{v}_b}, w \le \sqrt{2dist(v,w)\dot{w}_b} \right\} \tag{3}$$

$dist(v,w)$ is the closest distance between the end of the simulated trajectory and the obstacle, under the constraint of speed, there are several groups of feasible trajectories in the medium space, and it is necessary to use the evaluation function to score each trajectory, select the one with the highest score as the optimal path and execute:

$$G(v,w) = \alpha \cdot heading(v,w) + \beta \cdot vel(v,w) + \gamma \cdot dist(v,w) \tag{4}$$

In equation (4), $heading(v,w)$ is the traveler azimuth evaluation function, which indicates the angular deviation between the direction of the end of the current simulated trajectory and the target direction, $vel(v,w)$ is the evaluation function of the current simulated speed magnitude, and $dist(v,w)$ is the closest distance between the end of the trajectory and the obstacle.

Due to the lack of global tourist destination path guidance, the media fusion algorithm is often difficult to obtain the ideal optimal path, especially falling into local optimality in complex environments. Therefore, the global path planning information can be fused to guide the media fusion algorithm to achieve the global optimum of the path while ensuring local dynamic obstacle avoidance. Its evaluation function can be changed as follows:

$$Dist(v,w) = \gamma \cdot dist_{ob\min}(v,w) + \theta \cdot dist_{giobal}(v,w) \tag{5}$$

$Dist(v,w)$ is the distance evaluation function, where $dist_{ob\min}(v,w)$ is the obstacle avoidance function, i.e., the shortest distance between the current trajectory and the obstacle, and $dist_{giobal}(v,w)$ is the deviation function, i.e., the distance between the current trajectory and the global path.

The purpose of the media fusion layer is to fuse the intelligent tourism and tourism management system, to deal with the information of distribution characteristics and other aspects for the quantity and quality of tourism resources, and to realize the comprehensive management of tourism resources with informationization and networking. Using different ways such as remote sensing technology, geographic information system, and computer technology, structural similarity loss and intensity loss make the network obtain satisfactory fusion results, and the overall loss of the network can be expressed as:

$$L_{total} = L_{ssim} + \alpha L_{\text{int}} + \beta L_{grad} \tag{6}$$

L_{ssim} denotes structural similarity loss, L_{int} denotes intensity loss, L_{grad} denotes gradient loss, and α and β are hyperparameters to balance the loss weights. The intensity loss constrains the fused image to maintain an intensity distribution similar to the source image, and the intensity loss is calculated as:

$$L_{\text{int}}(x,y)=\frac{1}{HW}\|x-y\|_2^2 \tag{7}$$

H and W denote the height and width of the medium, respectively, and $L_{\text{int}}(x,y)$ denotes the pixel error between mediums x and y, controlling the trade-off between the two parameters contains an array of pixels, each representing the intensity of the relative position, and a Gaussian filtering can be performed to obtain the travel management case:

$$I_l(i,j)=\sum_{m=-2}^{2}\sum_{n=-2}^{2}\omega(m,n)I_{l-1}(2i+1,2j+n) \tag{8}$$

Where $I_l(i,j)$ represents the l nd stop in the destination and N is the last stop in the destination. R_l and C_l are the number of rows and columns of layer l in the tourist destination, respectively. An unfolding sequence is obtained by interpolating and unfolding each layer of the tourist destination, and the l th layer of the tourist destination is:

$$\begin{cases} LP_l=G_l-G_{l+1}^{*},0\le l<N \\ LP_N=G_N,l=N \end{cases} \tag{9}$$

P_N is the starting station of the tourist destination and P_l is the end station of the tourist destination. According to the motion direction of the preset target in smart tourism, the low and high-frequency bands are obtained, and the least squares are made between the calculated tourist image and the image to be filtered using the local linear relationship between the tourist image and the filtered output so that the output tourist image approximates the original image as much as possible.

When the tour image and the guide image are identical, the guide filter can effectively keep the edge features. The assumption at the core of the guide filter is that the output image and the guide image are a linear model locally, and the linear relationship between the output image and the guide image in the local window can be expressed as:

$$q_i=a_kI_l+b_k,\forall i\in\omega_k \tag{10}$$

ω_k is a travel-managed local window of radius r. a_k , b_k are constant coefficients on the managed local window that can be most closely approximated by minimizing the input image in the local window by the equation:

$$E(a_k,b_k)=\sum_{i\in\omega_k}\left((a_kI_l+b_k-p_i)^2+\varepsilon a_k^2\right) \tag{11}$$

Equation (11), ε is a regularization parameter, taking values in the range of 0 to 1, a_k is the smoothing coefficient. The smaller the ε, the clearer the image edge, by determining the edge retention and the smoothness of the output image, the smoothing coefficient can be solved as:

$$a_k = \frac{\frac{1}{|\omega|}\sum_{i\in\omega_k} I_i p_i - \overline{I}_k \overline{p}_k}{\sigma_k^2 + \varepsilon} \tag{12}$$

$$b_k = \overline{p}_k - a_k \overline{I}_k \tag{13}$$

$|\omega|$ is the number of pixels in the local window of the tour management, $\overline{I}_k$ and σ_k^2 are the mean and variance of the middle bootstrap image I, respectively, and $\overline{p}_k$ is the mean of the input images p in the local window. The pixel intensity values and significant IR feature information are normalized by decomposing the highest level of tourism information, which significantly reflects the IR feature distribution as follows:

$$P = \frac{R}{\max_{X\in\Omega}\{R(x)\}} \tag{14}$$

$\max_{X\in\Omega}\{R(x)\}$ is the value of the maximum point of pixel intensity in the whole tourism image region, and the following nonlinear transformation function is introduced to further adjust to control the relative effective information of the tourism image in the fused image:

$$S_\lambda(\alpha) = \frac{\arctan(\lambda\alpha)}{\arctan\lambda} \tag{15}$$

The range of α is [0,1], which indicates the independent variable of the function, and the function parameter λ is greater than 0. When λ increases, the shape of the S_λ curve becomes steeper, and the corresponding nonlinear transformation is gradually enhanced, and the amount of infrared information in the merged results can be controlled by adjusting the function parameter.

In the fusion process, the proportion of infrared information should also be relatively large to avoid losing a large amount of energy information and reducing the contrast of the tourist images, and the low-frequency fusion results can be obtained as follows:

$$LF_N = C \cdot LA_N + (1-C) LB_N \tag{16}$$

Where, LA_N and LB_N denote the low-frequency information of tourism image decomposition, respectively, and the multi-scale visual saliency detection method is used for image fusion to obtain the high-frequency components of infrared and visible images, and the corresponding visual maxima of tourism images are obtained by taking details to determine the final visual saliency.

The algorithm in this paper first preprocesses the travel management situation to improve the contrast of the travel image. The image is decomposed in the second step to obtain its high-frequency and low-frequency components. The decomposed infrared low-frequency information is used to determine the low-frequency band fusion weights, parameters are introduced to control the proportion of infrared information in the fused image, and the high-frequency components are fused using visual saliency detection theory. After the fused low-frequency and high-frequency components are fused, they are reconstructed using inverse transformations for the fused image, and the medium fusion algorithm's fusion process is depicted in Figure 2.

Media convergence algorithm for tourism enterprises, unified monitoring and dispatching system, through the collection of dynamic data of tourism enterprises, to master the specific types of tourism enterprises about the tourism area, to facilitate the corresponding supervision of enterprises in tourism destinations. Dynamic data on destination tourism information resources is used to integrate and optimize the tourism service process and top-level design to provide e-commerce tourism services. Media fusion through smart tourism to manage tourism enterprises, the establishment of a comprehensive monitoring and scheduling management network service system, the integration of monitoring and positioning, command and dispatch and comprehensive query management, and other different modules to meet the needs of intelligent destination scheduling services, to further improve the management efficiency of tourism enterprises. Establishing a destination tourism management system based on smart tourism becomes an important development direction of current tourism industry development, and is also a key example of media fusion in tourism industry development, and is the future development trend of tourism destination management.

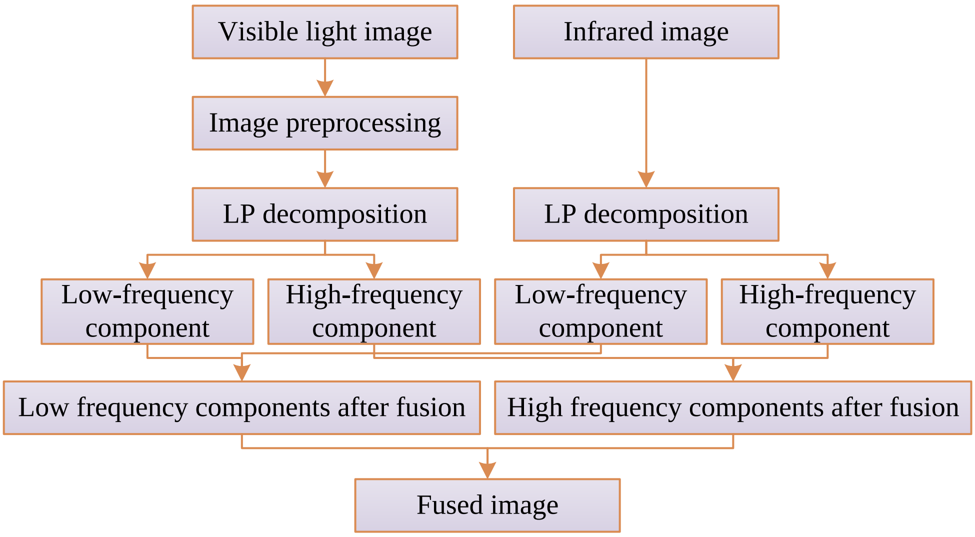


Figure 2. Fusion Process of Media Fusion Algorithm

2.3 Cluster Analysis of tourism cycles

To keep the comprehensive evaluation indexes of self-driving tourism destinations comprehensive and concise and to eliminate redundant indexes, the comprehensive evaluation indexes should be screened to make the evaluation index system scientific and reasonable [23-24]. The methods of indicator screening include mathematical and statistical screening methods, subjective judgment screening methods, and others. In practice, the screening method for mathematical statistics has a certain degree of objectivity and practicality.

When building a statistical model, the cluster analysis method groups similar indicators into one category. The hierarchical cluster analysis method is used to screen out the indicators that reflect the same characteristics, are independent of each other and are representative, and group them into one category. Correlation analysis can determine if the indicators are dependent on each other, and the formula for calculating correlation strength between indicators is:

$$r=\frac{\sum_{i=1}^{n}(x_i-\bar{x})(y_i-\bar{y})}{\sqrt{\sum_{i=1}^{n}\sum_{i=1}^{n}(x_i-\bar{x})(y_i-\bar{y})^2}} \tag{17}$$

The larger the value of r, the stronger the correlation, the weaker the correlation between the indicators, when $r\in[0.5,0.8)$, indicating a high correlation between the indicators, $r\in[0.8,1)$ indicates that the correlation between the indicators is significant.

The maximum-minimum method processing method used to standardize these indicators has been unified, and the formula for calculating the standard value of negative correlation indicators is:

$$s_{ij}=\frac{\max x_{ij}-x_{ij}}{\max x_{ij}-\min x_{ij}} \tag{18}$$

In the formula, s_{ij} indicates the standard value of the indicator, x_{ij} is the original value of the indicator, $\max x_{ij}$ is the maximum value of the indicator variable of the tourism sample, and $\min x_{ij}$ is the minimum value of the indicator variable of the tourism sample.

Before conducting the principal component analysis, it is necessary to first conduct the principal component analysis suitability test to verify whether the original indicators can be analyzed using principal component analysis, based on the sphericity test reaching the required values:

$$e_j=\frac{\lambda_j}{\sum_{j=1}^{m}\lambda_j} \tag{19}$$

$$E_m=\sum_{j=1}^{m}e_j \tag{20}$$

The number of principal components is judged by observing the contribution rate of the j st eigenvalue and the contribution rate of the first m eigenvalues, e_j indicates the contribution rate of a certain eigenvalue, e_m indicates the sum of the contribution rate of the first m eigenvalues, and the number of eigenvalues whose sum of eigenvalue contribution rate is greater than 80% is observed.

In order to achieve a simple, accurate and effective role, it is necessary to use the weighted composite index method to determine the comprehensive evaluation index of each driving destination, the formula model is:

$$E=\sum_{i=1}^{n}W_i\times p_i \tag{21}$$

Where, E is the comprehensive evaluation value of self-driving tourism destination, W_i is the weight of the i rd evaluation index, p_i is the value of the i th evaluation index, and n is the number of evaluation index.

The Sill coefficient is a spatially decomposable method for analyzing regional differences in tourism, which can be used to analyze the changes in overall regional tourism differences, inter-regional differences and intra-regional differences, as well as the impact of changes in inter-regional differences and intra-regional differences on changes in overall regional differences. The Sill coefficient can be calculated using the following formula:

$$I(0)=\sum_{i=1}^{N} log \frac{\bar{y}}{y_i} \Big/ N \tag{22}$$

Where, y_i is the tourism competitiveness score value of region i, $\bar{y}$ indicates the average tourism competitiveness score value, and the higher the Sill coefficient I index, the greater the difference in tourism development level between regions. Using the three major spatial patterns of the economic belt, a one-stage decomposition of the Sill coefficient is performed, and its calculation formula is:

$$I(0)=\sum_{i=1}^{M} I(O)_j + \sum_{i=1}^{M} log \frac{1}{V_j} \tag{23}$$

Where, $\sum_{i=1}^{M} I(O)_j$ denotes the tourism competitiveness difference between regions within each group, i.e., interprovincial differences. $\sum_{i=1}^{M} log \frac{1}{V_j}$ indicates the tourism competitiveness difference between groups. V_j indicates the tourism competitiveness score of group j.

Since the data units of different indicators in the index system are not used and are not comparable and uniform, in order to avoid bias in the evaluation results, data standardization is carried out before analyzing the data. After the standardization process, the original data are transformed into dimensionless data with uniform standards, all at the same quantitative level, and then the next step of analysis is sorted out:

$$Z_{ij}=\frac{x_{ij}-\mu_j}{\sigma_j}(i=1,2,3...11) \tag{24}$$

Z_{ij} is the value of the j rd indicator of the j nd province (city) after dimensionless processing, x_{ij} is the willing data of the j th indicator value of the j th province and city, μ_j is the mean value of the j th indicator data 11 provinces and cities, σ_j is the standard deviation of the j th indicator data.

The different stages of cluster analysis of tourism places present different characteristics, the number of tourists, growth rate, external investment situation, construction of tourism infrastructure, the scale of tourism destinations, development of tourism resources in each stage, the factors affecting the life cycle are various according to the different tourism places, mainly summarized as four major factors: attractiveness, demand, effectiveness, and environment, Figure 3 shows the flow of interacting factors in cluster analysis.

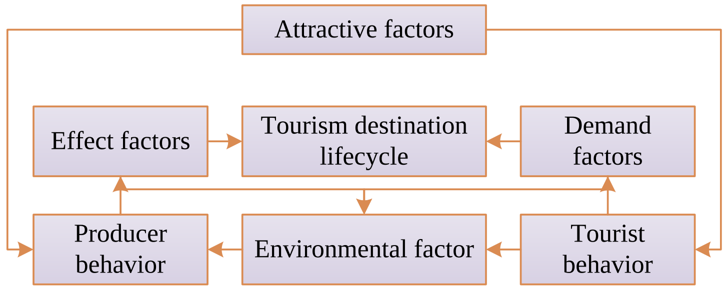


Figure 3. Process of Interaction Factors in Cluster Analysis

The attractiveness of the tourist place in the cluster analysis depends on the attractiveness of the tourist attraction, usually in a positive relationship. The stronger the attractiveness, the longer the life cycle of the tourist place, the more motivated the tourist practitioners, the stronger the benefit function, and the more developed the local tourism industry. Enhance the attractiveness of the tourist place, mainly to enhance the quality of the tourist attraction, combined with the life cycle of the tourist place, from the beginning of exploration to participation, to ensure that the development of tourism products is planned with characteristics and culture, to promote the rapid start of the tourist place. From the development stage to the consolidation stage, to enhance the attractiveness of the tourist attraction, the concept of total tourism should be used to grasp the entertainment-related elements comprehensively and to enhance the comprehensive functions of the resources to ensure the basic tourist functions of the resources. From the consolidation stage to the stagnation stage, on the one hand, we should maintain the market's attractiveness by continuously integrating, transforming, and updating the elements of tourist attraction. On the other hand, we should focus on establishing and improving the support and guarantee system of the tourism place, including information system, environmental protection system, and related regulations and systems, to improve the subsequent development capacity of the tourism place.

3 Optimization of smart tourism destination management under media convergence

3.1 Tourism growth dynamics

Information is an important factor in the development of the tourism industry, and the existence of synchronization of consumption and purchase of tourism products leads to the need for a large amount of information to help tourism consumers make decisions. Under media convergence, tourism consumers can not only obtain information with mobile terminals in their hands but also generate a large amount of tourism data information. This paper analyzes the growth trend of online tourism market transactions in City A from 2010-2017 based on the model of smart tourism purpose under media convergence, and Figure 4 shows the scale of tourism market transactions in City A.

As the advantages of the online tourism industry continue to manifest, many offline tourism enterprises are attracted to go online, and the smart tourism model under media convergence acquires greater competitive advantages. The online tourism industry grew steadily from 2010 to 2012, and the tourism penetration rate increased from 5.3% to 6.2%. In 2013-2016, the tourism industry experienced gradual and rapid growth, with an average annual growth of around 5 million yuan, and the tourism penetration rate increased by 1.7%. The tourism industry in 2016-2017 grew rapidly, with a growth of 14.39 million yuan, and the penetration rate grew by 3.6%. It shows that with the full use of media integration, tourism resources and information will be publicized and configured through the Internet, reforming the traditional destination tourism publicity and management methods, realizing accurate public management, promoting the construction of an online platform for tourism information, combining tourism management with social public management, improving the management level of tourism enterprises, playing the role of government tourism agencies, and bringing the tour arrangement into the touch era.

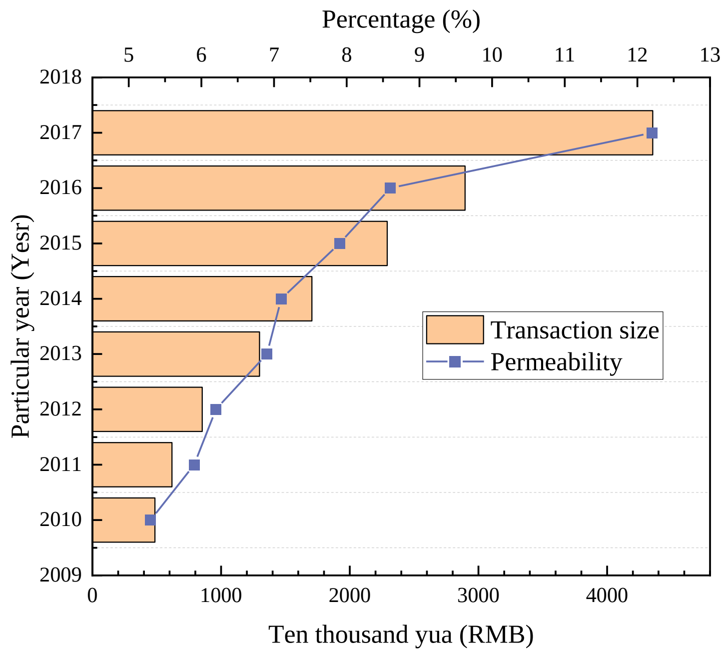
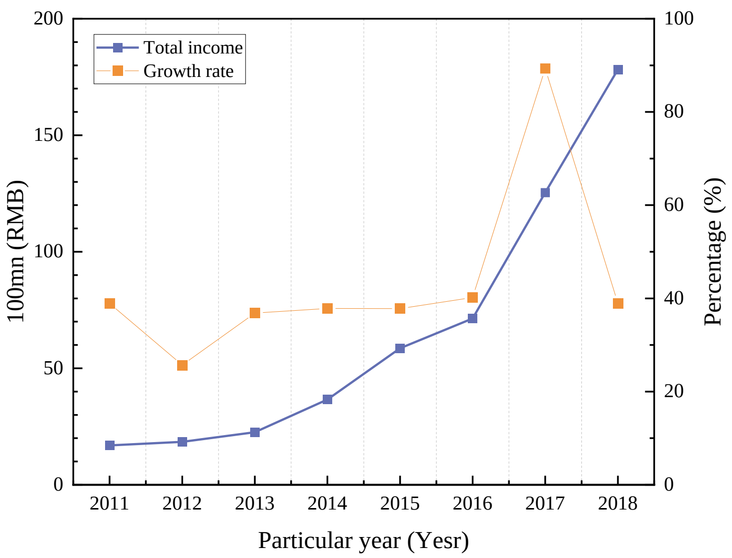


Figure 4. Transaction Scale of Tourism Market in City A

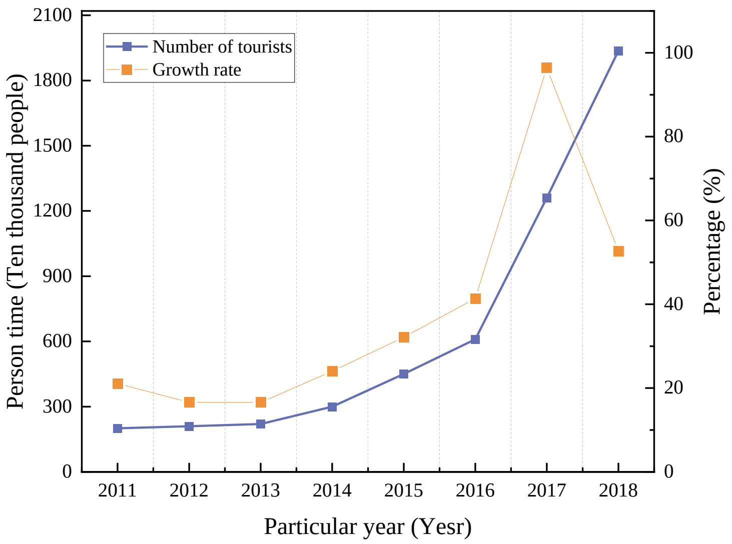
Media convergence communication in City A can revitalize the regional economy of the province and drive local economic development, which can reduce regional differences, according to the development communication perspective. Media convergence makes the utilization and export of cultural resources easier for economic development breakthroughs. Tourism revenue and growth in City A are used to analyze tourism management in this paper. Figure 5 illustrates the number of tourism receivers and revenue in City A.

Tourism revenue has increased in city A in recent years, as shown in Figure 5(a). The total tourism revenue has been growing steadily year by year from 2011 to 2016, and the year-on-year growth rate decreased in 2012, and the year-on-year growth rate was the same from 2012 to 2016. 2017 had the most significant growth, with total tourism revenue of 1,254,100,000 yuan, an 88.87% increase over the previous year and a 38.95% growth rate compared to 2011. There was a significant increase compared to the 38.95% growth rate 2011. In 2018, City A's tourism revenue reached $1,782,000, a 47% decrease in year-on-year growth rate but still higher than the years before 2016.

In city A, Figure 5(b) displays the number of tourists received in recent years. The number of domestic and foreign tourists received from 2011 to 2013 was around 2 million, increased by 1.5 million per year from 2014 to 2015, and increased by 600,000 in 2016, and the year-on-year growth rate also increased significantly. The number of domestic and foreign tourists received in 2017 was 12,618,000, an increase of 96.44% over the previous year. With a growth rate of 52.69%, the number of domestic and foreign tourists received increased to 19.368 million in 2018. It shows that the media convergence technology is used as a basis to promote the transformation and upgrading of modern tourism management in a real sense so that tourism management gradually changes towards modern management, achieving the goal of dynamic industry supervision and communication for the development of a path to develop communication science.



(a) Tourism Revenue Situation in A City in Recent Years



(b) The Number of Tourists Received by City A in Recent Years

Figure 5. Number of Tourists and Income in City A

3.2 Statistical Evaluation of intelligent tourism

A statistical analysis was conducted using an assessment questionnaire for city A to assess the reliability and validity of smart tourism destinations. The valid data for the reliability analysis were 300 entries, with the statistical variables being the mean, variance, correlation coefficient, correlation, and change in alpha coefficient. Different methods calculated the reliability coefficients, then the correlations were analyzed, and the whole economic problem was analyzed with a few factors instead of all variables, Table 1 shows the statistical volume analysis of smart tourism destinations.

The mean and variance of the total travel questionnaire scores have a small variation, and the correlation coefficients between each item and the total score are relatively high, all of which cause a change in the overall travel reliability with a high degree of confidence. The first column shows the total mean score of a certain travel item, excluding the consumer's warning mechanism for the tourism crisis. The total mean score of the remaining other items is 78.56. The second column shows the sample variance of the total score of the remaining travel items, and the variance of the work with the effectiveness of communication with guest sources is 62.430, based on the honest, transparent, and efficient communication is conducive to weakening the consumer's evaluation of the tourism image of city A. The third column is the simple correlation coefficient of the total score of the assessed travel items. The average correlation coefficient is 0.609. the fourth column is the complex correlation coefficient of the assessed travel items, which reflects the overall correlation between this assessed item and the rest of the assessed items. The communication effectiveness correlation coefficient is 0.522, and the last column assesses the reliability coefficient after the travel items. Alpha has the highest level of reliability coefficient, 0.078. As the reliability coefficient is greater than 0.07, overall, the intrinsic reliability of this evaluation system is relatively ideal. It indicates that the destination tourism management system based on smart tourism has become an important development direction for the current tourism industry development, a key model for integrating science and technology into tourism development, and a future development trend of tourism destination management.

Table 1. Statistical Analysis of Smart Tourism Destinations

Entry	Scale Mean	Scale Variance	Correlation	Correlation Squared	Alpha Coefficient
V1	78.36	62.430	0.726	0.237	0.078
V2	78.26	60.040	0.377	0.351	0.073
V3	78.45	62.060	0.752	0.296	0079
V4	78.16	59.723	0.326	0.328	0.074
V5	79.63	59.129	0.678	0.424	0.068
V6	79.65	59.787	0.336	0.369	0.076
V7	79.39	62.167	0.507	0.529	0.071
V8	79.68	63.036	0.419	0.434	0.065
V9	79.45	61.490	0.297	0.633	0.066
V10	79.63	59.685	0.436	0.531	0.070

The number of great minima and variance terms of tourism items were calculated by conducting a basic descriptive assessment analysis of 12 tourism items in city A to examine the descriptive assessment of tourism items. The descriptive statistical analysis of tourism items is presented in Table 2.

The mean scores for each item were widely different, and the variability of each rating was also prominent, leading to consumers making very different behaviors based on the perceived value. By assessing the covariance and correlation between items, it is seen that the correlation of each rating item is high at 151.326, the maximum covariance is 152.065, and the minimum tourism item variance is 0.843. It shows that consumers and destination stakeholders have a huge role in tourism items, providing personalized tourism services to tourists and accelerating the use of information technology as the core science and technology in tourism areas penetration and application in the destination, and providing a more comfortable, convenient and safe tourism environment for tourists in the tourism area, actively guide tourism consumption and promote the further development of the tourism industry.

Table 2. Descriptive Statistical Analysis of Tourism Projects

Evaluation Content	Mean Value of Tourism Items	Variance of Tourism Items	Covariance between Tourism Items	Correlation between Tourism Items
Mean Value	15.731	7.706	2.096	0.096
Minimum	2.580	2.460	2.367	2.415
Maximum Value	145.646	156.487	149.787	151.326
Range	150.069	151.066	152.065	151.095
Variance	0.726	0.843	0.763	0.812
Number of Items	11	11	11	11

4 Conclusion

The sampling speed in this paper is regulated by the tourism environment and media constraints. Different ways of cluster analysis are used to perform structural similarity loss to obtain satisfactory fusion results, and local linear relationships between tourism images and filters are output according to the motion direction of predefined targets in smart tourism. Multi-scale visual saliency detection is used for tourism image fusion, and the contribution rate of the eigenvalue of the number of principal components is judged using regularization parameters and smoothing coefficients to analyze the optimization type of smart tourism destination management. The results show that the smart tourism penetration rate increased from 5.3% to 6.2% with a year-on-year growth rate of 52.69%, and the tourism communication effectiveness correlation coefficient was 0.522 with a minimum variance of 0.843. Relying on media convergence technology support, we will continuously improve the public management system of tourism society, strengthen the construction of the government's unified tourism information platform, combine intelligent tourism with destination tourism management, and effectively promote the overall development of domestic tourism.

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