

The Influence of Tourists' Brand Sensory Impression on the Development of Traditional Chinese Medicine Health Tourism

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Abstract. Tourists' good brand sensory image for Traditional Chinese Medicine health tourism (TCMHT) can improve the brand building of tourism destinations. This paper takes some tourists who enter the scenic spots of integrated TCMHT as the research object to investigate the sensory perception of the brand of the TCMHT destination of this group, aiming to further analyze the matching degree between the existing brand building of TCMHT destination and Tourists' Brand Sensory Impression (TBSI). This paper uses Matlab software to carry out a visual word cloud analysis on the TCMHT keywords that tourists pay more attention to. Based on the word cloud data, the binary Logistic regression model is constructed by using Python and SPSS software, and the influencing factors of TBSI's selection of TCM are analyzed from six dimensions. The results show that the richness of natural landscape, the quantity and type of cultural resources, ecological environment, professional service ability, healthy diet and supporting facilities, and market position have a significant positive impact on the choice of TCMHT destination. Meanwhile, the marketing publicity, forms and features of TCMHT destinations have a significant positive impact on tourists' impression intention. Based on the research conclusions and the characteristics of TBSI, this paper proposes the development positioning of tourist destinations, and provides theoretical guidance for the brand building of tourist destinations by using tourists' unique, specific and direct sensory experience. **Keywords:** Tourists' Brand Sensory Impression (TBSI), Tourism, Traditional Chinese Medicine Health Tourism (TCMHT), influence factors, Regression Analysis.

1 Introduction

In recent years, the research of Traditional Chinese Medicine Health Tourism (TCMHT) has become a hot topic of current scholars. TCMHT is an innovative new tourism based on TCM resources, aiming at disease prevention, physical fitness and longevity extension, and integrating vacation, health preservation, recuperation, health preservation and entertainment[1]. As an integrated industry of tourism industry and TCM industry, TCMHT has inspired a lot

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of discussions by scholars[2], researches mainly focus on the definition of TCMHT concept, resource development, product research, environmental prediction, market development, and industrialization integration. With the implementation of the "Guiding Opinions on Promoting Tourism Reform" issued by The State Council, brand construction and product promotion of TCMHT destinations have been promoted[3]. The phenomenon of brand homogeneity competition and repeated imitation has become increasingly serious in most of the TCMHT destinations in China[4]. In view of this, how to give full play to the resource advantages of local TCMHT and carry out the research on the brand construction of TCMHT destinations based on the perspective of Tourists' Brand Sensory Impression has great space.

Therefore, in the first part of this paper, the relevant literature and theories of tourists' sensory brands are sorted out; The second part carries out field sampling and data analysis; The third part constructs the model according to the sample data. The last part summarizes the research conclusion and expounds the research contribution.

2 Literature review

Tourist's brand sensory impression (TBSI) refers to the unique sensory impression left by tourists after receiving the stimulation of the tourist destination[5]. Such sensory impressions will directly affect tourists' consumption perception, consumption judgment and behavior[6]. Such sensory impressions will directly affect tourists' consumption perception, consumption judgment and behavior [7]. At present, tourism destinations have realized the marketing potential of sensory impression and tried to incorporate it into their brand promotion work system[8]. For example, Mogan Mountain, a summer resort, focuses on local unique resource advantages in destination marketing to create visual "green", olfactory "clean" and auditory "quiet", and creates differentiated destination brand advantages through unique human sensory experience[9]. It can be seen that the sensory impression of tourists can enhance the brand competitiveness of tourist destinations.

2.1 Research on brand positioning of tourism destination

Brand positioning of tourist destinations is generally guided by the theory of unique selling points (USP), that is, to identify brand characteristics that can distinguish them from competitors, so as to occupy a unique position in the minds of tourists[10]. Unique selling points (USP) of tourist destinations include unique utility selling points (UUSP), unique symbolic selling points (USSP) and unique experiential selling points (UESP)[11]. In the past, tourism destination positioning only focused on the two dimensions of utility and symbolic selling point, which were mainly reflected by the brand image[12] and brand personality[13] of tourism destinations. Among them, the brand image of tourism destination is usually established by marketers based on the attractive objects, facilities, services and other outstanding resources of the destination starting from the unique utility selling point[14], which mainly reflects the utility attribute of the destination[15]. A good image can enhance tourists' intention to visit[16], promote word-of-mouth publicity, enhance the possibility of re-visiting[17], and weaken the search for alternative tourism places[18]. Due to the replicability and easy imitation of resources and the increasing homogenization of various places, it is difficult for tourism destinations to distinguish themselves from competitors with similar resources through brand image[19].

In view of this, brand personality has gradually entered the vision of researchers and become a new means to improve the difference of destinations. The brand personality of tourism destination refers to a group of personality characteristics that are identified by tourists and

related to the destination [20]. Many tourists will regard the tourist destination as an extension of their own representation, and choose to go to a place that is consistent with their real or ideal self personality [21]. Therefore, the identity value of personality expression contained in the personality of tourist destinations is mostly the result of the application of unique symbolic selling points. Tourist destination personality not only has a significant positive impact on recommendation intention and tourist loyalty, but also helps tourists to identify and choose[22]. So far, individuality has become an important means for some tourist destinations to maintain long-term differences[23]. However, the shaping of personality is not completely controlled by the destination marketer. On the one hand, it will be affected by the congenital characteristics of resource endowment[24]. On the other hand, the “halo effect” of the country or region will also lead the subordinate destinations to be considered as having the same personality[25].

2.2 Sensory impression of brand

Sensory marketing refers to the marketing method that affects the perception, judgment and behavior of consumers by stimulating their five sensory experiences of vision, hearing, taste, smell and touch[26]. Agapito et al., Lv et al., took the lead in applying sensory marketing to the study of tourist destinations, which opened a new chapter in the study of tourist sensory marketing[27, 28]. Their research proved that the richer the sensory experience of tourists, the more profound and lasting the sensory memory, that is, the sensory impression, left after the tour, and can effectively promote the formation of tourists’ loyalty [29]. For tourists, the five senses all play an indispensable role in the experience process of tourist destinations. However, for different TCMHT destinations, the perceived intensity and importance of each sensory experience are different[30]. Pan and Ryan found that tourists’ experience of five senses in the three New Zealand cities is quite different, and each city should design Landscape of senses in the most favorable sensory dimension, create unique sensory impressions, and build a destination brand with diversified sensory experiences to attract tourists with diverse needs[31]. Scholars have found that tourists’ experience in the destination can be improved by satisfying their senses and strengthening the emotional bond between the destination and tourists[32]. It has promoted the related research of tourists’ sensory experience marketing, and pioneered the use of sensory marketing theory as a tool.

In conclusion, the sensory experience provided by TCMHT destinations not only helps visitors form a close connection with the tourist destination, but also becomes an effective way for them to create sensory impressions and influence the expectations, decision-making and behavior of potential tourists. The sensory impression of tourists can not only provide accurate basis for destination managers to design and improve the destination experience[33], but also enrich the connotation of the destination brand of TCMHT and provide a new dimension for its brand building[34]. Based on this, this study proposed tourists’ brand sensory impression (the sensory experience characteristics contained in the brand), and attempted to introduce the brand sensory impression into the development positioning of TCMHT destinations. According to the unique, specific and direct sensory experience of tourists, the brand positioning and brand transfer of TCMHT destinations were carried out, so as to improve the differentiated brand competitiveness.

In this paper, Epidata3.1 software was used to input sample data, and SPSS26.0 was used for data analysis, and then logistic regression was used to analyze the related factors of TCMHT that had an impact on the establishment of TSBI. Since the scale is not consistent, the data are normalized in this paper so that different eigenvalues have the same scale. In addition, Python software was used to extract keywords from the literature. After repeated cleaning of the data, high-frequency keywords were finally screened.

3 Research design

Sichuan, the hometown of TCM, has boasted rich tourism resources for a long time, so it has obvious advantages in the development of the TCMHT industry, with many bases and rich products.

3.1 Scale design

Based on the formerly stated documents, the scale of this study selected 19 indicators in the following seven dimensions: age, education level, occupation, monthly income, and other dimensions, which are related to the basic information of the population, and three indicators under the dimension of resource endowment, three indicators under the dimension of industrial development, five indicators under the dimension of serviceability, three indicators under the dimension of comprehensive management, five indicators under the dimension of supporting facilities, a total of 33 impact factors to evaluate the factors influencing Tourists' Brand Sensory Impression (TBSI) of TCMHT products (see table 1 for details), the dimension of crowd intention (demand for TCMHT, comprehension of Chinese medicine culture, trust in TCMHT), the dimension of market location (tourism transportation location and others). The scale adopts and is measured by Cronbach's test [35], and the output coefficient is 0.913, indicating that this scale has satisfactory reliability and validity.

3.2 Statistical methods

The dependent variable of this study, "Tourists' Brand Sensory Impression of TCMHT", is the categorical variable; thus, the Logistic regression method is used to process the questionnaire data. The logistic regression model is mainly used to study the certain probability of some occurrences, usually represented by the letter P . Its fundamental nature is $0 \leq p \leq 1$. The ordinary linear model is hard to describe the relationship between the respective variables and p . In case the value of p is extreme, it is more difficult to observe subtle changes in during the regression process. Therefore, after the corresponding transformation, the logistic model equation is as follows:

$$\text{Logit}(p) = \ln \frac{p}{1-p}$$

The optimization of this model is to use a certain lever to expand the value range of dependent variables. The original p is changed from 0 - 1 to $\text{Logit}(p)$ from $-\infty$ to $+\infty$, which provides great convenience for data processing. After formula transformation, the logistic model can also be transformed into the following forms:

$$\text{Logit}(p) = \ln \frac{p}{1-p} = \beta^T X \quad p = \frac{e^{\beta^T X}}{1 + e^{\beta^T X}}$$

The basic requirement of the model is that the dependent variable (y) is binary, and the probability $p(y = 1|X)$ of the dependent variable is the object of the model.

Moreover, $X = (1, X_1, X_2 \cdots X_k)T$, where X_i represents the i th factor affecting y , which can be a qualitative variable or a quantitative variable, $\beta = (\beta_0, \beta_1, \beta_2 \cdots \beta_k)T$. For this purpose, the model can be expressed as:

$$\ln \frac{p}{1-p} = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k \quad p = \frac{e^{\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k}}{1 + e^{\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k}}$$

Obviously, $E(y) = p$, so the above model shows that $\ln \frac{E(y)}{1-E(y)}$ is a linear function of X_1, X_2, \dots, X_k . So, the regression equation meeting the above conditions is called Logistic linear regression.

Table 1. Factors influencing TBSI of TCMHT destination

Dimension	The evaluation index	Impact factor	Coding
The dimension of resource endowment	The abundance of TCMHT resources	Mountain, water, forest, field, and other natural landscape types related to TCMHT	A1
		Types of cultural landscapes such as humanistic customs and activities related to TCMHT	A2
	The quantity of TCMHT resources	The number of natural landscapes related to TCMHT such as mountains, water, forests, and fields	A3
		The number of cultural landscapes such as cultural customs and activities related to TCMHT	A4
	The abundance and quantity of other tourism resources	Except for TCMHT resources, the number, and types of other cultural landscape tourism resources	A5
		Except for TCMHT resources, the excellence of the ecological environment	A6
The dimension of industrial development	The business scale of TCMHT destination	The covered area of TCMHT attractions	B1
		The size of the reputation of TCMHT scenic spots	B2
		The business scale of TCMHT scenic spots	B3
	Construction of TCMHT demonstration sites	Whether it is a national demonstration base of TCMHT	B4
		Selection of TCMHT destination	B5
		The intention of choosing to go to the national TCMHT demonstration base	B6
		Total number of tourists received by TCMHT	B7
	Number of tourists	Total number of tourists of TCMHT	B8
The dimension of serviceability	Tourism Management Department	Systematization and standardization of TCMHT site management	C1
	Staff capacity	Professional competence of staff	C2
		Service attitudes of staff	C3
		Impact of staff's professional competence	C4
	The soundness of the industrial chain	Peripheral industries in TCMHT destination	C5
		The soundness of peripheral industries of TCMHT destination	C6
	Infrastructure	Service facilities and equipment in TCMHT destination	C7
	Staffing	Staffing scale in TCMHT destination	C8
The dimension of comprehensive management	Supervision and management system of TCMHT	The norms of tourism market management	D1
		Improvement of tourism supervision and management system	D2
		Improvement of tourism information service system	D3
	Investment in the development of TCMHT	Landscape quality of TCMHT destination	D4
		The rationality and diversity of the project design of TCMHT	D5
		Continued development of innovative capabilities and appeal of TCMHT products	D6
		Distinct theme and geographical distinctiveness of TCMHT products	D7
		Complete leisure and recuperation facilities of TCMHT destination	D8
		The tourism identification cards are clear and correct, and there is an interpretation system of TCMHT	D9
	TCMHT marketing publicity	The publicity of tourism is well-defined and characterized-themed	D10
		Targeted marketing publicity of products	D11
		Influential celebrities carry out marketing publicity	D12
		The diverse and distinctive publicizing ways	D13
The dimension of supporting facilities	Ecological environment quality	Pleasant climate	E1
		Enough sunshine	E2
		Fresh air	E3
		Abundant animal and plant resources	E4
	Policy support	Relevant national policy support	E5
		Relevant policy support of local government	E6
		Degree of policy implementation	E7
	Public infrastructure	Whether the subway exists	E8
		Whether the airport exists	E9
		Whether the high-speed railway exists	E10
		Whether the train exists	E11
		Other public infrastructure	E12
	Economic development level	The economic development of tourist destination	E13
		Consumption of tourist destination	E14
	Social environment	Good public security in the tourist destination	E15
		Good public image	E16
		The attitude of residents towards tourists	E17
The dimension of crowd intention	Demand for TCMHT	Whether it is needed	Y01
	Understanding of TCM culture	Whether it is comprehended	Y02
	Trust in TCMHT	Whether it is believed	Y03

4 Data Processing

4.1 Demographic description

This paper selects adult tourists over the age of 18 as the questionnaire survey object by using literature review and market research method. The TBSI of TCMHT products was investigated and sampled by an online questionnaire. A total of 644 questionnaires are distributed, 582 valid questionnaires are returned, and the effective rate of the questionnaire is 90.4%. In all by respondents, the male to female ratio is 32: 65; Young people under 25 years old accounted for 65.64%, middle-aged people between 25 and 60 years old accounted for 33.33%, and older people over 60 years old accounted for 1.03%. The survey basically covered the whole age group under 45 years old. Respondents mainly have a bachelor’s degree or above. Students, general staffs, business managers, civil servants, self-employed workers, ordinary workers, agriculture, forestry, animal husbandry, fishery, and other occupations are involved (See table 2 for details).

Table 2. Frequency table of basic information of respondents

Variable	Attribute	Number		Total
Education level	Bachelor degree or above	448	77%	100%
	Associate College	76	13%	
	High school	49	8%	
	Junior middle school	6	1%	
	Primary school	3	1%	
Occupation	Students (medical students)	127	22%	100%
	Students (non-medical students)			
	Government / Cadres / Civil servants	30	5%	
	Enterprise manager	20	3%	
	Ordinary staff	47	8%	
	Professional	58	10%	
	Ordinary labor workers	6	1%	
	Business service workers	5	1%	
	Self employed / contractor	5	1%	
	Liberal professions	9	2%	
	Agricultural, forestry, animal husbandry, and fishery workers	1	2%	
	Retired	7	1%	
	No occupation	5	1%	
	Other professionals	5	1%	
Monthly Income (RMB)	Below 1500	112	19%	100%
	1500-2000	36	6%	
	2000-3000	29	5%	
	3000-5000	55	9%	
	5000-8000	74	13%	
	8000-12000	27	5%	
	Above 12000	18	3%	
	The unwaged	231	40%	
Number of effectively-investigated persons				582

This questionnaire has comprehensive coverage and relatively uniform distribution, which is in line with the actual situation. The large sample size ensures the randomness, scientificity, effectiveness, and representativeness of the collected data.

4.2 Analysis of TBSI hot spots of the TCMHT

(1) Draw portraits of tourists in TCMHT

Figure 1. Tourist portraits of TCMHT



Figure 2. Tourist TBSI word cloud map of TCMHT



Compared with male respondents, female respondents are more inclined to choose TCMHT. Respondents with a vocational school’s degree, a bachelor’s degree, or above are more tended to choose TCMHT. Respondents who have never, once or twice or seldom taken recuperation as the main purpose of tourism, are also the respondents in this questionnaire who are more inclined to choose TCMHT. By using the data collected from the questionnaire to draw the portrait of consumers in TCMHT, the results are as follows (see details in Ffigure 1). Obviously, middle-aged women are still the leading group of TCMHT tourists, among whom traveling in family outings and with a bachelor’s degree or above are the majorities.

(2) Establish a visual analysis of the TBSI about TCMHT

The questionnaire data are analyzed in the visual-text-word-segmentation method by using the Jieba library from Python and the word cloud library. A tourist TBSI word cloud map of the TCMHT is constructed. Here are the results (see figure 2 for details).

The larger the font in the word cloud, the more frequently the word appears. As can be seen from Figure 2, tourists’ most sensory impressions of TCM health care brands involve “good”, “very good” and “great”. In the brand building of TCMHT destinations, the most impressive brand impressions of tourists are “scenery, scene, flower, cloud, aviation, experience and feeling”. Their main sensory impression in choosing a tourist destination or scenic spot is the landscape and experience. In addition, the chart also includes the terms of tourism services such as “walking” and “car”, indicating that the service in the scenic area and the transportation convenience of TCMHT are also the decisive factors for tourists to establish sensory brand impression.

4.3 The establishment of the competitiveness model of TCMHT based TBSI

(1) Data Resources

Sorting the data for all the item options of this valid questionnaire in the 6-level scoring, we calculate 1 to 3 points for yes and 4 to 6 points for no; in the 5-level scoring, 1 to 2 points for yes, and 3 to 5 points for no; in the 4-level scoring, 1 to 2 points for yes, and 3 to 4 points for no; in the 3-level scoring, 1 point for yes, and 2 to 3 points for no. Multiple-choice questions are divided into single-choice questions according to the options, 1 point for each

choosing, 0 points for not choosing. Calculating the average score of tourists' TBSI to choose TCMHT products, we take the perception of TCMHT resource endowment, industrial development, serviceability, comprehensive management, and supporting facilities as independent variables. The Logistic model of this project is constructed to analyze the remarkable factors in choosing TCMHT products, find out the main reasons that influence tourists to choose TCMHT, and provide effective predictions for TCMHT scenic spots.

(2) Model building

Constructing the Logistic binary regression model in the former six dimensions is the way to analyze the impact of various factors in the above six directions on TBSI and avoid multiple collinearity or heteroscedasticity between variables caused by independent variables, which can confuse regression results. (The logistic model of the dimension of traffic location is not separately constructed because there is only one question in the questionnaire)

Overall, the dependent variable is the categorical variable "TBSI to choose TCMHT". Because it is a typical binary variable, it is coded as "1". "tourists have no tourists' sensory brand choice willingness to choose TCMHT" is coded as "0". After the data is imported, the respective variables are substituted into the regression model by stages. The parameter estimation rejects some insignificant independent variables. The final Logistic regression model is obtained by repeatedly modifying it.

(3) Model test, discussion, and analysis

1. Analysis on the influence of TCMHT resource endowment on TBSI choice willingness

This paper analyses the impact of resource endowment of TCMHT on TBSI choice willingness through the HL test and logistic regression analysis of the regression results. See table 3 for details.

Table 3. Various price parameters

Hosmer-Lemshaw test			
Process	Chi-square	DOF	Significance
1	7.645	4	0.394

Table 3 is the test result of the fitness of the regression model affecting TBSI to purchase TCMHT from the dimension of TCMHT resource endowment. As apparently seen from table 3, the HL test value $0.394 > 0.05$ indicates that the fitted model and the actual situation are at a very high rate of adaptation. Target variable can be reasonably explained by independent variables of the Logistic regression model.

Table 4. Significance test of model parameters

B	Standard error	Wald	DOF	Significance	Exp(b)	95% confidence interval for the B		
						Lower limit	Upper limit	
A1(1)	1.115	0.322	11.989	1	0.001	3.048	1.622	5.728
A2(1)	0.173	0.296	0.343	1	0.558	1.189	0.666	2.125
A3(1)	0.061	0.33	0.035	1	0.852	1.063	0.557	2.031
A4(1)	0.572	0.314	3.318	1	0.069	1.772	0.957	3.279
A5(1)	0.755	0.281	7.211	1	0.007	2.129	1.226	3.695
A6(1)	0.555	0.267	4.312	1	0.038	1.743	1.032	2.944
Constant	-0.919	0.16	33.194	1	0	0.399		

Table 4 shows the parameter estimation of the significance of each independent variable in the regression model. According to the test standard that the significance is less than 0.05, the independent variables that affect the dependent variables are obtained, which are A1 ($p=0.001$), A5 ($p=0.007$), and A6 ($p=0.038$). It shows that tourists' sensory brand impression willingness to choose TCMHT is significantly related to the abundance of the natural

Table 5. Probability table of TBSI for TCMHT

A1=1	A5=0	A6=0	=0.75
	A5=0	A6=1	=0.84
	A5=1	A6=0	=0.87
	A5=1	A6=1	=0.92
A5=1	A1=0	A6=0	0.68
	A1=0	A6=1	0.79
A6=1	A1=0	A5=0	0.64

Table 6. The test of Hosmer-Lemshaw

Hosmer-Lemshaw test			
Process	Chi-square	DOF	Significance
1	6.233	8	0.621

landscape, the number and type of cultural landscape, and the excellence of the ecological environment.

Exp(b) represents $OR(Odds\ ratio) \approx RR(Relative\ risk)'s\ multiple$. $Exp(b) = x$ means that the probability that a certain factor causes the dependent variable to take the value 1 is x times that of the dependent variable to take the value 0. In table 4, the Exp (B) of independent variable A1 is 3.048. It shows that the index “abundance of TCMHT resources” will affect TBSI to choose TCMHT. Under the influence of this index, the probability of tourists sensory brand impression choosing tourism is 3.048 times that of not choosing tourism; the Exp (B) of independent variable A5 is 2.129, indicating that the index “abundance and quantity of other tourism resources” will affect TBSI to choose TCMHT. Under the influence of this index, the probability of tourists sensory brand impression choosing tourism is 2.129 times that of not choosing tourism; the Exp(b) of independent variable A6 is 1.743, indicating that the index “ecological environment of TCMHT resources” will affect tourists sensory brand impression to choose TCMHT. Under the influence of this index, the probability of tourists choosing tourism is 1.743 times that of not choosing tourism.

P_a is the probability that an independent variable in the endowment of TCMHT resources makes TBSI to choose TCMHT. Combined with the binary Logistic model, P_a can be obtained, as shown in table 5:

$$\ln\left(\frac{P_a}{1-P_a}\right) = 1.115A1 + 0.775A5 + 0.555A6$$

$$P_a = \frac{e^{1.115A1+0.775A5+0.555A6}}{1+e^{1.115A1+0.775A5+0.555A6}}$$

Comprehensively analyzing the above results, in terms of nature, arguments A1, A5, A6 has a significant positive effect on TBSI choose TCMHT; from the value perspective, argument A1 “the richness of natural landscape types such as mountains, water, forests, and fields” has an essential influence for tourists to choose TCMHT. Moreover, when A1=1, the probability P_a of sensory brand impression willingness to choose TCMHT is higher than 0.75. Based on the whole model, the resource endowment of TCMHT has a significant impact on TBSI to choose TCMHT.

2. Analysis of the influence of destination development of the TCMHT on TBSI choosing willingness

Through the HL test and logistic regression analysis of the regression results, this paper analyses the impact of the development of the TCMHT Destination on TBSI choosing willingness. The results are shown in table 4.3.

Table 7. Significance test of model parameters

		Variables in Equations						95% confidence interval for the B	
		B	standard error	Wald	DOF	Signification	Exp(b)	Lower limit	Upper limit
Step 1a	B1(1)	-0.156	0.204	0.583	1	0.445	0.856	0.573	1.277
	B2(1)	0.138	0.21	0.431	1	0.511	1.148	0.76	1.734
	B3(1)	0.199	0.192	1.066	1	0.302	1.22	0.837	1.778
	B4(1)	-0.184	0.243	0.575	1	0.448	0.832	0.517	1.339
	B5(1)	-0.05	0.191	0.067	1	0.796	0.952	0.654	1.385
	B6(1)	0.379	0.219	2.99	1	0.084	1.461	0.951	2.245
	B7(1)	0.142	0.214	0.44	1	0.507	1.152	0.758	1.751
	B8(1)	0.202	0.219	0.852	1	0.356	1.224	0.797	1.881
	Constant	0.303	0.172	3.097	1	0.078	1.353		

a. Variables entered in step 1: B1, B2, B3, B4, B5, B6, B7, B8.

Table 8. The test of Hosmer-Lemshaw

Hosmer-Lemshaw test			
Process	Chi-square	DOF	Significance
1	9.477	8	0.304

Table 4.3 shows the test results of the fitness of the regression model of the development dimension of TCMHT industry on tourists’ brand impression intention of purchasing TCMHT. It can be seen from the figure that the HL test value is $0.621 > 0.05$, indicating that the fitted model has very high adaptability to the actual situation, and the independent variables in the logistic regression model can reasonably explain the target-dependent variables.

Table 7 is the parameter estimation of the significance of each independent variable in the regression model. Each independent variable in the development dimension of the TCMHT industry has no significant impact on the dependent variable. Based on the whole model, the industrial development dimension of TCMHT has a significant impact on TBSI choosing willingness.

3. Analysis of the influence of the serviceability of TCMHT on TBSI choosing willingness

Through the HL test and logistic regression analysis of the regression results, this paper analyses the impact of serviceability of TCMHT on TBSI choosing willingness. See table 8 for details.

Table 8 shows the test results of the fitness of the regression model of the serviceability dimension of TCMHT to TBSI. It can be seen from the table that the HL test value is $0.304 > 0.05$, indicating that the model highly fits the actual situation, and the independent variables in the logistic regression model can reasonably explain the target-dependent variables.

Table 9 shows the parameter estimation of the significance of each independent variable in the regression model. It can be seen in table 9 that the independent variables that have a significant impact on the dependent variables are C4 “professional ability of staff in TCMHT destination” ($p = 0.018$), C5 “focusing on related meals of TCM health” ($p = 0.001$), C8 “scale of facilities and equipment in TCMHT destination” ($p = 0.016$). It shows that the above three indicators will affect TBSI choice willingness to TCMHT.

In table 9, the Exp (b) of the independent variable C4 is 1.939, indicating that the index “professional ability of staff” will affect tourists’ sensory brand choice willingness. Under the influence of this index, the probability of tourists sensory brand choosing tourism is 1.939 times that of not choosing tourism; The Exp (b) of independent variable C5.1 is 2.93, indicating that the index “surrounding industries of TCMHT” will affect tourists’ sensory brand

Table 9. Significance test of model parameters

		Variables in Equations						95% confidence interval for the B	
		B	Standard error	Wald	DOF	Significance	Exp(b)	Lower limit	Upper limit
Step1a	C1(1)	0.118	0.222	0.28	1	0.597	1.125	0.728	1.738
	C2.1(1)	0.467	0.254	3.382	1	0.066	1.595	0.97	2.622
	C2.2(1)	0.119	0.276	0.185	1	0.667	1.126	0.655	1.936
	C2.3(1)	0.065	0.229	0.079	1	0.778	1.067	0.681	1.671
	C2.4(1)	0.244	0.232	1.099	1	0.294	1.276	0.809	2.012
	C2.5(1)	0.086	0.232	0.137	1	0.712	1.09	0.691	1.717
	C2.6(1)	0.053	0.403	0.017	1	0.896	1.054	0.478	2.323
	C3(1)	-0.125	0.291	0.184	1	0.668	0.883	0.499	1.561
	C4(1)	0.662	0.279	5.624	1	0.018	1.939	1.122	3.353
	C5.1(1)	1.075	0.245	19.282	1	0	2.93	1.813	4.735
	C5.2(1)	0.078	0.205	0.146	1	0.702	1.081	0.724	1.615
	C5.3(1)	0.207	0.228	0.822	1	0.364	1.23	0.786	1.923
	C5.4(1)	-0.092	0.212	0.187	1	0.666	0.913	0.603	1.382
	C5.5(1)	-0.369	0.364	1.028	1	0.311	0.692	0.339	1.411
	C6(1)	0.168	0.244	0.474	1	0.491	1.183	0.734	1.907
	C7(1)	-0.332	0.262	1.6	1	0.206	0.718	0.429	1.2
	C8(1)	0.545	0.226	5.802	1	0.016	1.724	1.107	2.686
Constant		-1.481	0.315	22.18	1	0	0.227		

a. Variables entered in step 1:C1, C2.1, C2.2, C2.3, C2.4, C2.5, C2.6,C3, C4, C5.1, C5.2, C5.3, C5.4, C5.5, C6, C7, C8.

Table 10. Probability table of tourists’ sensory brand impression choice willingness for TCMHT

C4=1	C5.1=0	C8=0	=0.66
	C5.1=0	C8=1	=0.77
	C5.1=1	C8=0	=0.85
	C5.1=1	C8=1	=0.91
C5.1=1	C4=0	C8=0	=0.75
	C4=0	C8=1	=0.83
C8=1	C4=0	C5.1=0	0.63

choice willingness. Under the influence of this index, the probability of tourists choosing tourism is 2.93 times that of not choosing tourism. The Exp (b) of independent variable C8 is 1.724, indicating that the indicator “staffing scale of TCMHT destination” will affect TBSI. Under the influence of this indicator, the probability of tourists sensory brand choosing TCMHT is 1.724 times that of not choosing.

The probability that the independent variable (serviceability dimension of TCMHT) affects tourists’ sensory brand choice willingness to TCMHT is set as table 10 shows the results of Pc combined with binary logistic model:

$$\ln\left(\frac{P_c}{1-P_c}\right) = 0.662C4 + 1.075C5 + 0.545C8$$

$$P_c = \frac{e^{0.662C4+1.075C5+0.545C8}}{1+e^{0.662C4+1.075C5+0.545C8}}$$

From the comprehensive analysis, the independent variables C4, C5.1, and C8 have a significant positive impact on tourists’ sensory brand choice willingness to TCMHT; From the numerical value, the independent variable C5.1 “In your opinion, which industries are important supporting parts around the TCMHT destination, and which related meals of TCM health do you care? Whether these factors will affect TBSI choice willingness”. When C5.1 = 1, the probability Pc of tourists’ intention to choose TCMHT is higher than 0.75. Based on the whole model, the index “serviceability of TCMHT” has a significant impact on TBSI to TCMHT.

4. Analysis on the influence of comprehensive management of TCMHT on TBSI

Table 11. The test regression results HL test

The regression results are HL test			
Process	Chi-square	DOF	Significance
1	3.599	5	0.609

Table 12. Significance test of model parameters

Variables in Equations									
		B	Standard error	Wald	DOF	Significance	Exp(b)	95% confidence interval for the B	
								Lower limit	Upper limit
Step1a	D1(1)	0.716	0.427	2.816	1	0.093	2.046	0.887	4.723
	D2(1)	0.423	0.351	1.451	1	0.228	1.526	0.767	3.035
	D3(1)	0.035	0.401	0.008	1	0.931	1.035	0.472	2.272
	D4(1)	0.192	0.42	0.208	1	0.648	1.211	0.532	2.76
	D5(1)	0.316	0.397	0.635	1	0.425	1.372	0.63	2.984
	D6(1)	0.16	0.361	0.197	1	0.657	1.174	0.578	2.382
	D7(1)	-0.124	0.393	0.099	1	0.753	0.884	0.409	1.908
	D8(1)	0.186	0.391	0.226	1	0.634	1.204	0.56	2.589
	D9(1)	0.373	0.374	0.992	1	0.319	1.452	0.697	3.022
	D10(1)	-0.047	0.343	0.018	1	0.892	0.955	0.487	1.87
	D11(1)	1.017	0.316	10.384	1	0.001	2.764	1.489	5.13
	D12(1)	0.328	0.299	1.2	1	0.273	1.388	0.772	2.496
	D13(1)	0.778	0.306	6.442	1	0.011	2.176	1.194	3.967
	Constant	-1.854	0.229	65.676	1	0	0.157		

a. Variables entered in step 1: D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13.

Through the HL test and logistic regression analysis of the regression results, this paper analyses the impact of the comprehensive management of TCMHT on TBSI. See table 11 for details.

Table 11 shows the test results of the fitness of the regression model of the comprehensive management dimension of TCMHT on TSBI choice willingness. It can be seen from Table 11 that the HL test value is $0.609 > 0.05$, indicating that the model highly fits the actual situation. Moreover, the independent variables in the logistic regression model can reasonably explain the target-dependent variables.

Table 12 represents the parameter estimation of the significance of each independent variable in the regression model. As can be seen in table 12, the two factors of D11, “Whether there is targeted marketing publicity” ($p= 0.001$) and D13 “various publicity channels of TCMHT products” ($p= 0.011$) can significantly affect tourists’ TCMHT on TSBI choice willingness.

In table 12, the Exp (b) of independent variable D11 is 2.764, indicating that the index “targeted marketing publicity of health products” will affect TBSI willingness to choose TCMHT. Under the influence of this index, the probability of tourists choosing TCMHT is 2.764 times that of not choosing Tourism; The Exp (b) of independent variable D13 is 1.194, indicating that the index “diversity and characteristics of publicity of TCMHT products” will affect tourists’ sensory brand willingness to choose TCMHT. Under the influence of this index, tourists’ probability of choosing TCMHT tourism is 1.194 times that of not choosing.

The probability that the independent variable (comprehensive management dimension of TCMHT) affects tourists’ sensory brand choice willingness to TCMHT is set as table 13 shows the results of P_d combined with binary logistic model:

$$\ln\left(\frac{P_d}{1 - P_d}\right) = 1.017D_{11} + 0.778D_{13}$$

$$P_d = \frac{e^{1.017D_{11}+0.778D_{13}}}{1 + e^{1.017D_{11}+0.778D_{13}}}$$

Table 13. The probability table of tourists’ sensory brand choice willingness to choose TCMHT

D11=0	D13=1	=0.69
D11=1	D13=0	=0.73
D11=1	D13=1	=0.86

Table 14. The test regression results HL test

The regression results are HL test			
Process	Chi-square	DOF	Significance
1	5.755	6	0.451

Table 15. Significance test of model parameters

		Variables in Equations						95% confidence interval for the B	
		B	Standard error	Wald	DOF	Significance	Exp(b)	Lower limit	Upper limit
Step1a	E1(1)	1.292	0.482	7.188	1	0.007	3.642	1.416	9.369
	E2(1)	-0.863	0.452	3.638	1	0.056	0.422	0.174	1.024
	E3(1)	-0.035	0.488	0.005	1	0.942	0.965	0.371	2.513
	E4(1)	0.679	0.361	3.542	1	0.06	1.972	0.972	3.998
	E5(1)	0.102	0.386	0.071	1	0.791	1.108	0.52	2.359
	E6(1)	0.258	0.347	0.554	1	0.457	1.295	0.656	2.556
	E7(1)	0.418	0.343	1.487	1	0.223	1.519	0.776	2.976
	E8(1)	0.049	0.305	0.026	1	0.873	1.05	0.577	1.909
	E9(1)	-0.203	0.335	0.365	1	0.546	0.817	0.423	1.575
	E10(1)	0.246	0.341	0.52	1	0.471	1.279	0.655	2.494
	E11(1)	0.107	0.324	0.109	1	0.741	1.113	0.589	2.102
	E12(1)	0.12	0.352	0.116	1	0.733	1.127	0.566	2.248
	E13(1)	-0.079	0.325	0.059	1	0.808	0.924	0.489	1.746
	E14(1)	0.641	0.3	4.567	1	0.033	1.899	1.055	3.419
	E15(1)	0.275	0.431	0.405	1	0.524	1.316	0.565	3.065
	E16(1)	-0.339	0.369	0.844	1	0.358	0.712	0.345	1.469
	E17(1)	1.067	0.425	6.297	1	0.012	2.907	1.263	6.692
Constant		-1.757	0.246	50.977	1	0	0.173		

a. Variables entered in step 1: E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14, E15, E16, E17.

From the comprehensive analysis, from the nature, the independent variables D11 “targeted marketing publicity of health products” and D13 “diversity of publicity channels” positively affect TBSI choice willingness; From the numerical value, the independent variable D11 “targeted marketing publicity of health products” has an important impact on tourists’ sensory brand impression choice willingness. Based on the whole model, the comprehensive management of TCMHT will significantly affect TBSI choice willingness

5. Analysis on the influence of supporting facilities of TCMHT on TBSI choice willingness

Through the HL test and logistic regression analysis of the regression results, this paper analyses the impact of the supporting facilities of TCMHT on tourists’ sensory brand impression choice willingness. See table 14 for details.

Table 14 shows the relevant contents of the infrastructure supporting facilities dimensions of TCMHT and the test results of the fitness of the regression model affecting TBSI willingness to choose TCMHT. It can be seen from Table 14 that the HL test value is 0.451 > 0.05, indicating that the fitted model has a very high degree of adaptability to the actual situation, and the independent variables in the logistic regression model can reasonably explain the target-dependent variables.

Table 15 shows the parameter estimation of the significance of each independent variable in the regression model. The independent variables that have a significant impact on the dependent variables can be obtained from table 15, which are E1 “climate of TCMHT desti-

Table 16. Probability table of TBSI willingness to choose TCMHT

E1=1	E14=0	E17=0	=0.78
	E14=0	E17=1	=0.91
	E14=1	E17=0	=0.87
	E14=1	E17=1	=0.95
E14=1	E1=0	E17=0	=0.66
	E1=0	E17=1	=0.85
E17=1	E1=0	E14=0	=0.74

nation” (P= 0.007), E14 “consumption of TCMHT destination” (P= 0.033), E17 “hospitality of residents in tourism destination” (P= 0.012). It shows that the above three indicators will affect TBSI choice willingness.

In table 15, the Exp (b) of the independent variable E1 is 3.642, indicating that the index “climate of TCMHT destination” affects tourists’ choice willingness. Under the influence of this index, the probability of tourists choosing tourism is 3.642 times that of not sensory brand impression choosing tourism; The Exp (b) of independent variable E14 is 1.899, indicating that the index “consumption of TCMHT destination” affect TBSI choice willingness. Under the influence of this index, the probability of tourists choosing tourism is 1.899 times that of not choosing tourism; The Exp (b) of the independent variable E17 is 2.907, indicating that the index “hospitality of residents in tourism destination” affect TBSI choice willingness. Under the influence of this index, the probability of TBSI choosing tourism is 2.907 times that of not choosing tourism.

The probability that the independent variable (infrastructure supporting facilities dimension of TCMHT) affects TBSI choice willingness to TCMHT is set as table 16 shows the results of Pe combined with binary logistic model:

$$\ln\left(\frac{P_e}{1-P_e}\right) = 1.292E1 + 0.641E14 + 1.067E17$$

$$P_e = \frac{e^{1.292E1+0.641E14+1.067E17}}{1+e^{1.292E1+0.641E14+1.067E17}}$$

From the comprehensive analysis, from the nature, the independent variables E1 “climate of TCMHT destination”, E14 “consumption of TCMHT destination” and E17 “hospitality of residents in tourism destination” have a significant positive impact on TSBI choice willingness. From the numerical value, the independent variable E1, “climate of TCMHT destination”, significantly impacts TBSI choice willingness. Furthermore, when E1 = 1, Pe of TBSI for TCMHT is higher than 0.75. Based on the whole model, the infrastructure of TCMHT has a significant impact on TSBI choice willingness.

5 Discussion

From the perspective of sensory image, this paper analyzes the unique sensory impression of tourists visiting TCMHT destinations with different resource endowments through questionnaire survey. The influencing factors and differentiated value of TCMHT destination brand on the formation of tourists’ sensory impression were explored, and the research results were as follows.

According to the results of logistic analysis, Firstly the main factors affecting tourists’ sensory brand image of traditional Chinese medicine health tourism destinations were resource endowment, industrial development, service ability, comprehensive management, infrastructure supporting and market position. Among them, the abundance of natural land-

scapes such as mountains, water, forests, and fields in the destination of TCMHT could significantly positively affect the formation of tourists' good sensory impression of brand.

Secondly, the product design, comprehensive management and infrastructure supporting of TCMHT destinations will also have a significant positive impact on the brand perception of tourists. For example, various health and healing projects, theme features of decoration, supporting facilities, professional services, and the operation and maintenance capabilities of the destination have also become key elements for tourists to form a good brand impression.

Finally, Tourists' sensory brand perception of TCM health tourism destinations runs through the whole process of tour. The brand sensory image of tourists is that tourists are affected by personal factors or external factors during tourism. As to whether the tourism destination meets the basic needs and social needs of individuals, such perceptual experiences as hearing, smell, vision, touch and taste will show diversity and mutability with the process of tourism. The cultural customs and health activities related to TCMHT destinations can also affect the sensory impression of tourists.

6 Conclusion

The research findings of this paper not only verify the brand marketing power of tourists' senses and promote the development of sensory marketing theory, but also make up for the shortcomings of only paying attention to utility and symbolic selling points while ignoring experience selling points in the process of destination brand construction in the past, so as to improve the theoretical framework of TCMHT destination brand positioning. The conclusion of this paper fully verified the market's acceptance of the brand sensory impression as a new tool for destination positioning, and provided a reliable theoretical basis for the positioning of TCMHT destination marketing strategy.

In addition to the brand image and brand personality of the destination, tourists' brand perception is another new dimension of brand competition that can be used by the destination marketers. The traditional image and personality of TCMHT destinations established based on unique utility and symbolic selling points almost convey the abstract quality and commitment of the destination from the perspective of supply, which ignores the sensory experience of tourists.

Tourists go to the destination of TCMHT to pursue high-quality sensory experience. Destination marketers should build brand sensory impressions based on the sensory experience of tourists, fully explore the types of resources that can impress tourists' hearing, perspective, smell, taste and touch, and promote the profound degree of sensory impression left by visiting tourists after experience. Stimulate visitors to form a unique sensory brand impression above the threshold. Based on this, marketers of TCMHT destinations should show the sensory experience that tourists yearn for through brands, consider how to reasonably position themselves from the perspective of establishing a good sensory image of tourists, enrich the connotation of TCMHT destinations brand, start from the advantages of sensory experience, and establish a unique competitive advantage of TCMHT destinations.

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References

- [1] C. Yang, *Construction of evaluation index system of international health tourism service quality of traditional chinese medicine*, in *BASIC & CLINICAL PHARMACOLOGY & TOXICOLOGY* (WILEY 111 RIVER ST, HOBOKEN 07030-5774, NJ USA, 2020), Vol. 127, pp. 201–201
- [2] H. Xu, X. Lin, F.e. Liu, *Forests* **13**, 1855 (2022)
- [3] X. Wang, W. Zhang, J. Yang, X. Hu, Y. Wang, *A comparative study on the construction model of traditional Chinese medicine tourism in Sichuan province-based on the perspective of industrial integration*, in *E3S Web of Conferences* (EDP Sciences, 2021), Vol. 251, p. 03040
- [4] T. Liu, *Green Book of Health Tourism: China Health Tourism Development Report 2021* (Beijing: Social Science Literature Press, 2021)
- [5] J.E. Bigne, M.I. Sanchez, J. Sanchez, *Tourism management* **22**, 607 (2001)
- [6] A. Krishna, *Journal of consumer psychology* **22**, 332 (2012)
- [7] C. Költringer, A. Dickinger, *Journal of Business Research* **68**, 1836 (2015)
- [8] F. Long, J. Liu, S.e. Zhang, *Sustainability* **10**, 2964 (2018)
- [9] Y. Ekinici, S. Hosany, *Journal of travel research* **45**, 127 (2006)
- [10] L. Murphy, G. Moscardo, P. Benckendorff, *Journal of travel research* **46**, 5 (2007)
- [11] S.J. Barnes, J. Mattsson, F. Sørensen, *Annals of Tourism Research* **48**, 121 (2014)
- [12] M. Tong, *International Journal of Food Properties* **25**, 845 (2022)
- [13] Z.L. Wisker, D. Kadirov, J. Nizar, *Journal of Hospitality & Tourism Research* **47**, 84 (2023)
- [14] X. Xu, *Tourism Management and Technology Economy* **5** (2022)
- [15] M.C. Dițoiu, A.L. Caruntu, *Procedia-Social and Behavioral Sciences* **109**, 301 (2014)
- [16] F. DeMicco, A.A. Poorani, *Medical Travel Brand Management: Success Strategies for Hospitality Bridging Healthcare (H2H)* (Apple Academic Press, 2023)
- [17] R. Chen, *Frontiers in Psychology* **13** (2022)
- [18] J. Romão, P.P. Seal, P.e. Hansen, *Asia-Pacific Journal of Regional Science* **6**, 91 (2022)
- [19] H. Lim, H. Lim, *Commodity research* **39**, 1 (2021)
- [20] J. Wang, M. Li, C.e. Li, *Annals of Tourism Research* **95**, 103408 (2022)
- [21] W. Shi, *Analysis on the predicament of destination brand personality creation from the perspective of new media*, in *The 3rd International Conference on Economy, Management and Entrepreneurship (ICOEME 2020)* (Atlantis Press, 2020), pp. 528–532
- [22] S. Hanna, J. Rowley, *Journal of Marketing Management* **35**, 1135 (2019)
- [23] F. Chigora, J. Ndlovu, E.e. Mutambara, *Zimbabwe tourism destination brand personality: Tourists' voices on the ground* (2019)
- [24] P. Rodrigues, A.P. Borges, E. Vieira, *International Journal of Business Excellence* **25**, 110 (2021)
- [25] S. Ranfagni, B. Crawford Camiciottoli, M. Faraoni, *Journal of Interactive Marketing* **35**, 70 (2016)
- [26] L. Xingyang, *Tourism Tribune* **33**, 7 (2018)
- [27] D. Agapito, P. Pinto, J. Mendes, *Tourism Management* **58**, 108 (2017)
- [28] X. Lv, S. McCabe et al., *Tourism Management* **77**, 104026 (2020)
- [29] D. Agapito, P. Pinto, J. Mendes, *Spatial and Organizational Dynamics Discussions Papers* **10**, 7 (2012)
- [30] P. Rodaway, *Sensuous geographies: body, sense and place* (Routledge, 2002)
- [31] S. Pan, C. Ryan, *Journal of Travel & Tourism Marketing* **26**, 625 (2009)

- [32] X. Yanjun, F. Youmeng, *Human Geography* **32**, 129 (2017)
- [33] L. Xinyang, *Tourism Tribune* **33**, 7 (2018)
- [34] J. LIANG, X. Lv, Y. Qu, *Human Geography* **31**, 113 (2016)
- [35] Z. Ya-Xing, S. Lei, G.e. Yu-Lin, *Cognitive Systems Research* **52**, 596 (2018)