

A “Pentagon” Compound Model in the Evaluation of Customer Satisfaction for Tourism Websites

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Abstract:

In order to enhance customer satisfaction for tourism website and improve the quality of regional tourism online services, this research develops a “pentagon” compound model, and applies it taking the investigation of Beijing as a case. This model is built based on the functions of tourism website, and focuses on customer satisfaction for online service evaluation criterion in the successful application of tourism websites. The model can be used in the regional tourism management to identify the causality between activity characteristics of tourism websites and customer satisfaction. The aim is to help tourism organizations establish tourism online services that make both customer satisfy and tourism website get profits.

Key words: tourism website, customer satisfaction, website evaluation, “pentagon” compound model

1. Introduction

In the application of e-behavior (e-transmission, e-instruction) in information society, website is the most influential means for organizations and customers[1]. At present, one of the significant issues is the rapid development of tourism website and making tourism activity link up with e-commerce[2]. However, the development of tourism websites is facing severe challenges of how to evaluate “successful use” correctly and find out “business countermeasures” [3] in order to increase commercial profits[4]. In addition, after a period of the application of tourism websites, tourism organizations also need decide the relevant investment issues by evaluating their commercial value[5], namely, they need comprehend the optimization of their website application[6], especially the optimization of their activity methods and means, in order to make profits for enterprises themselves.

As customer satisfaction is one of important issues for website evaluation, it is essential to examine the establishment of the whole system of tourism online service, adopt the means of multilateral analysis and evaluate every key factor of customer satisfaction. Therefore, a new thinking is put forward: a “pentagon” compound model is constructed to evaluate the application characteristics

of tourism websites, reveal the judgmental criterion of customer satisfaction and estimate & examine the function degree of all successful factors. This multilateral analysis model, on one hand, is helpful to factors decomposition of tourism websites and tourism online service in order to get a profound cognition to customer satisfaction; on the other hand, is helpful to policy-making innovation of enterprises and assists tourism organizations to establish the “new commercial model” that makes customer satisfy with tourism websites and tourism website get profits, which has a greater impact on tourism online service cultivating the good client relationship and improving the environment of tourism e-commerce in the development period.

Literature review suggests that the types and opportunities of tourism relevant e-commerce and the problems caused by it have been investigated commonly and solutions have been put forward by researchers who engaged in the evaluation of tourism online service[7,8]. However, a comprehensive system to evaluate the successful applications of tourism websites and tourism e-commerce has not been well built up. Therefore, there is an urgent need to improve the poor overall result in the establishment and explanation of causality between the purpose of customers and their satisfaction, between customer satisfaction and the successful applications of tourism website trade. It also suggests that many managers of tourism websites are full of confidence to the success of their e-commerce, but lack a definite, direct and measurable criterion to the success of their websites[9]. Obviously, a gap has appeared between the need of tourism organizations to website customer satisfaction evaluation and a proper evaluation model. The application for website makes what successful organizations have obtained and how to improve competitive power of organizations by the optimal application of tourism e-commerce. Both of them lack powerful explanations from enterprises[10]. The research proposes an evaluation model for customer satisfaction for tourism websites from a regional organizer’s perspective to enhance the ability of effectively enlightening websites.

2. ‘Pentagon’ Compound Model

The “pentagon” compound model in the evaluation of customer satisfaction of tourism website includes

5 sub-models: the evaluation sub-model of online purchase intention of customers, the evaluation sub-model of business strategy of website owners, the evaluation sub-model of network supply, the evaluation sub-model of online management of regional tourism organizations and the evaluation sub-model of customer satisfaction as shown in Fig.1. The model suggests that the supplier provide the platform of tourism online services by networks and websites, on the basis of which the platform functions under the willingness of customers, and finally form the satisfaction evaluation of customers to tourism websites and tourism online services.

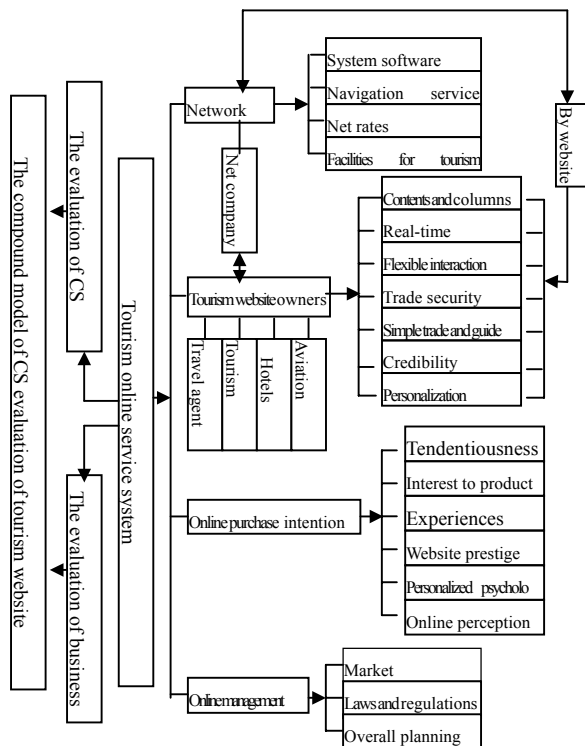


Fig.1:Pentagon compound model

This model contains two layers. The supply-demand relationship of the first layer is the evaluation model of online purchase intention of customers and the business strategy of website owners. The supply-demand relationship of the second layer is the evaluation model of network supply and online management of regional tourism organizations.

It is indispensable to precisely comprehend the influence factors of online customer's intention in measuring the market of e-commerce. Based on the previous research results, the research develops a model of online purchase intention that is fit for practical needs, which includes four sides: the tendentiousness of tourism purchase-- conceptualized as a special way of life; the experiences of online purchase-- purchase intention is in relation to applying Internet category; online perception-- the credence to the website determines the application of

e-commerce; and personalized psychology--the customer realizes the self-realization, the sense of control and the psychological needs.

In the service system of tourism website, network supply is a kind of unilateral supplier--network is one of component factors in the tourism online services system, but it is not specially used only for a certain services. The evaluation of online management of regional tourism organizations is essential to the effective use and improvement Internet services in tourism websites. The key role of the government in online service system is propelling the integration trend of informatization construction planning[11]. The evaluation model of online management of regional tourism organizations in the research includes the environment platform, the human resource, the industry management and the information-base.

3. Testing the compound model

Data to establish and test the "pentagon" compound model has been obtained by two main channels. One is online search and the other is survey investigation.

Online search involves search from the statistic websites, the tourism information websites and the statistic-analysis system of the monographic tourism websites. Survey is taken the form of interview including two categories. One is tourism organization engaged in tourism websites and e-commerce, and the other is their customer engaged in the activities of tourism websites. The sample of tourism organization was selected from different types of cases of tourism organizations, which are running e-commerce. Two main classes of their websites are the specialized tourism websites (direct suppliers, intermediary service provider, comprehensive websites, local organizations' websites, bookable websites based on GDS and tourism search engine) and unspecialized websites. The selection criteria of customers include the quality evaluation of content setup; the layout, the content setup, the pertinence service, the service space and the proper classification; the evaluation of technological organizations: the affinity of man-machine interface, the interactive space, the search function; and the prestige evaluation of information service: the quality of information service, the service function and the trade security, etc. The online behavior of the owner and customer was recorded by the investigation results.

This research applies the method of Computer Auxiliary Investigation (CAI) to the panoramic measurement to the supply-demand of tourism websites. The survey was completed in Beijing, China. The sample includes 6 comprehensive tourism websites which were selected from of 21, 6 international travel agents and 4 domestic ones were selected from 66 travel agents' websites; 6 tourism

scenic spots websites selected from of 24; 8 tourism websites of hotels selected from of 61; and 3 tourism websites of transportation selected from 7.

In order to assure the generation of compound investigation results and valid data needed in the compound model of customer satisfaction of tourism websites, the adopted research model is improved again on the basis of the structure balance model. Ultimately the compound model of customer satisfaction evaluation appropriate to the characteristic of tourism online service system itself is constructed by the decomposition of factors. The isolated and non-isolated variables will be calculated on the basis of obtaining the materials online. The functional relationship of the evaluation model is as follows:

The satisfaction S_i of customer i is the difference function of the perceptible effect of tourism website service and the excepted value of customer i , namely:

$$S_i = \varepsilon_T T_i + \varepsilon_A A_i$$

ε the function restraint coefficient. It includes unsatisfaction, satisfaction and extreme satisfaction.

T_i and A_i respectively depend on the evaluation of several relevant factors and can be estimated by $T_i = F$ (network W , website S and supplier O) and $A_i = F$ (the expected value parameter of customer's online purchase intention in 5 aspects). W , S , O were all the perceptible effect factors and each of them also includes some specific contents. On the basis of considering the whole function category, W , S , O , A were identified as four sub-system indexes of function appraisal and the specific contents that contain inside them were the appraisal parameter in the four sub-systems. The score of T_i and A_i can be obtained by:

$$y_{ij} = \sum_{i=1}^m x_{iKi} \quad (1) \quad \text{and} \quad Z = \sum_{j=1}^n D_j y_{ij} \quad (2)$$

In regarding to function S_i , there were differences between the construction of εT and εA in the two function items of T_i and A_i , because the restraint of these two function items may come from the different aspects. The measurement to ε draws support from the method of parameter measurement in the checking and calculating of China economy growth. The proper management may increase customer satisfaction, so the identity can be obtained: Added-value of satisfaction $v =$ added-value of perceptible effect $v_t +$ decrease of excepted value v_a :

$$\rightarrow v_t / v + v_a / v = 1$$

v_t / v is the elasticity of management to the perceptible effect (indicated with ε_T), v_a / v is the elasticity of management to the excepted value of customers (indicated with ε_A):

$$\rightarrow \varepsilon_T + \varepsilon_A = 1$$

the value of ε_T and ε_A can be identified by this formula combined with the primary evaluation model on the condition that $\varepsilon_T T_i = \varepsilon_A A_i$ indicating satisfaction. On the basis above, the compound model structure relation of tourism website satisfaction evaluation can be given concretely and the curve chart of its satisfaction function relationship is as follows (fig.2).

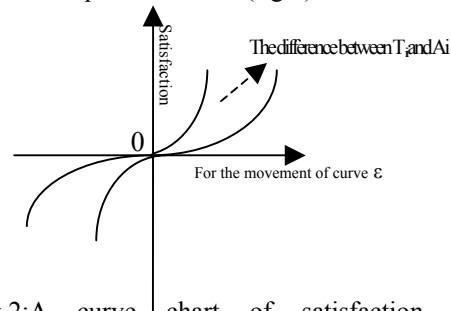


Fig.2: A curve chart of satisfaction function relationship

The data-processing mainly includes the following procedures:

(1) The establishment of grade score of appraisal parameter in sub-system is in relation to the establishment of maximum value and minimum value of standard grade score of appraisal parameter; the establishment of the medium value (fixing at the average position that is in the appraisal range of its index parameter) of standard grade score of appraisal parameter; dividing into groups and fixing the score from medium to both ends; corresponding the practical data of each index parameter in the score criterion chart to get the grade score of each index parameter.

(2) The part indexes need to be processed by calculation, so the paper adopted the method of relevant relationship analysis and analogy. For instance, the calculation of two indexes: the purchase experiences & the online trade and that in online management: the policy and regulations & planning.

The main course is: 1) Making the relevant relationship analysis with VB program of computer and getting the relevant results. 2) Finding the comparable target with high authority in the vertical data, for instance, the data from the investigation of the Internet Information Center to Internet netizen in China. 3) Calculating the comparable satisfaction of indexes that were needed. Finally, using the function formula above mentioned, comparing with scoring criterion, gathering, scoring and getting the result.

According to synthesizing above, such as, website content and real-time information in Beijing tourism website, provided by www.pcworld.cn/2001 and www.ctrip.com/community/comment/district/ the research conducts a non-dimension transform processing and the result is as follows (tab.1).

The evaluation result of online business of tourism website in Beijing suggests that the information provided by all types of websites is the

Tab.1:The evaluation score of tourism website

Evaluation index ki	the tourism website in Beijing						weight xi
	Comprehensive website	travel agent	hotel	scenic spot	transportation	average value	
Content	6.0	7.5	7.3	7.2	6.9	6.98	0.17
Real-time information	6.7	6.6	6.7	6.3	6.5	6.56	0.13
Flexible interaction	6.2	6.2	5.4	5.1	5.0	5.58	0.16
Trade security	5.0	4.9	4.9	4.7	5.2	4.94	0.14
Simple trade and guide	5.4	5.6	5.4	5.2	5.3	5.38	0.15
Credibility	6.0	6.1	5.9	5.9	6.2	6.02	0.14
Personalization	2.6	2.1	2.1	1.4	1.1	1.86	0.11
Comprehensive evaluation score	5.48						

most perfect and real-time information is more mature. But the personalization is most weak, which has become the bottleneck of meeting the high-level demand of customers and enhancing the online business achievements of website owners.

Network provides an open environment and fair opportunity for tourism virtual market. To the I S P providing network service, the issue they most concerned is whether the customer can satisfy. In order to cooperate with this monographic study, the paper uses the investigation data on the satisfaction of network users to network service in Beijing from Yiguan Company to generate tab.2.

Tab.2:The satisfaction of network users to network service in Beijing unit (score)

Satisfaction index (ki) of network service	Net fees	net rate	network content
The score of Beijing comprehensive score	3.56	3.22 5.16	3.86

The data were from: <http://www.fengoo.com/doc/read.asp?>

The result shows that the score of network service is still low at present. In the three indexes, the satisfaction of network users to network content is relatively high, that of net fees takes the second place and that of net rate is the lowest. The access rate and Internet fees have become a significant restraint factor of influencing the network development, which must impact on tourism online service system that regards them as an indispensable environment platform.

4. Conclusion

The research presents a “pentagon” compound model in the evaluation of customer satisfaction for tourism websites through putting the development factors such as, the supplier & policymaker, the company, the participant and the local manager into the tourism online service system. It aims to enlighten the policymaker and planning personnel in companies in order to assure the development of tourism online services. The research profoundly and effectively reveals the selection criteria of customer satisfaction for tourism websites. Taking satisfaction function relationship as a starting point, this study also finds that there is an increasing contribution of tourism online service management to online customer satisfaction. The paper also considers that network

service is as an indispensable environment “platform” of tourism online services, whose supply-demand difference has become a factor to restrain the development of tourism online services.

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References

- [1] Torre J, Moxon R. E-commerce and global business: the impact of the information and communication technology revolution on the conduct of international business. *Journal of International Business Studies*, pp. 617-639,2001.
- [2] Lu Z, Lu J, Zhang C. Website development and evaluation in the Chinese tourism industry. *Special Issue of Network and Communications on the Internet Development in Asia, NETCOM*, pp.191-208,2002.
- [3] Zhang P, Von Dran G. Satisfiers and dissatisfies: a two-factor model for website design and evaluation. *Journal of American Association for Information Science*, pp.1253-1268,2000.
- [4] Lu Z, Li Y.L, Han B. Supply-demand Difference Analysis for Tourism On-line Service in Beijing. *Chinese MIS*, pp.13-24,2004.
- [5] Fan L.L, Lu Z, Geng B. The Analysis and Recommendations for Small-medium Size e-tourism Companies. *Journal of hebei normal university*, pp.70-74,2004.
- [6] Lu Z, Fan L.L, Deng Zh.P. Service Function and Business model of Small-Medium Tourism Websites. *Chinese MIS*, pp.1-11,2004.
- [7] Helander M.G, Khalid H. M. Modelling the customer in electronic commerce. *Applied Ergonomics*, pp.609-619,2000.
- [8] Ranganathan C, Ganapathy S. Key dimensions of business-to-consumer web sites, *Information & Management*, pp.457-465,2002.
- [9] Lu J, Zhang G.Q. Cost Benefit Factor Analysis in E-Services. *International Journal of Service Industry Management*, pp.570-595, 2003.
- [10] Paul C, Adams , Rina Ghose. India.com: the construction of a space between. *Progress in Human Geography*, pp.414-437,2003.
- [11] Lu J. A model for evaluating E-commerce based on cost/benefit and customer satisfaction. *Journal of Information Systems Frontiers*, pp.265-277, 2003.