

## Research on tourism industry competitiveness based on structural equation model

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**Abstract.** As tourism industry develops rapidly and accounts for more and more in national economy, people pay more and more attention to its position. This paper, starting at the definition of tourism industry competitiveness, discusses constructing of structural equation model in tourism competitiveness evaluation.

### Introduction

Because tourism industry drives related industries greatly, developing tourism industry is of great significance to promote tertiary industry developing rapidly, improve strategic restructuring of the economy, expand domestic demands, promote employment, and increase resident income, boost international exchange and cooperation and others. Currently, tourism industry has already become one of the pillar industries for developing most of regional economies. Thus, promoting competitiveness of regional tourism industry becomes one strategy for regional economy development, while it is an essential link to evaluate competitiveness of regional tourism industry for improving its competitiveness [1]. It is possible to understand the advantages and shortages of regional tourism development by scientifically evaluating the competitiveness of regional tourism industry. This is to facilitate regional tourism management department to present detailed strategies for developing regional tourism industry based on its advantages and shortages [2-3].

### Definition of tourism industry competitiveness

Tourism industry departments are divided based on consumers' purchase purpose. The common property of tourism industries is that their services and products aim at consumers at the same level to be consumption-oriented tourism industry. It has broad extension with undefined boundary. Generally, we can divide tourism industry into two departments of basic industry and specific industry. Namely, the basic industry refers to department serving local residents and tourists, such as urban transport, social restaurants, postal service, water and electricity supply, ordinary entertainment venues and others [4]. For these departments, they will downsize only if there are no tourists instead of shutting down. The specific industry refers to those serving tourists particularly, including beauty spots, airplane chartering for traveling, tourist hotels and others. These departments will find it hard to survive without tourists [5]. This paper aims at the latter in its study on tourism industry competitiveness in addition to related basic industry departments. Therefore, industry competitiveness refers to the ability different regional economy bodies compete with each other to develop resources in certain industry. Tourism industry competitiveness then refers to the ability different regional economy bodies compete with each other to develop resources in tourism industry. Specifically, tourism industry competitiveness embodies tourist products, tourist industries as well as the ability to realize tourist market finally [6-8]. Tourist enterprises or industries can provide tourist products or services consumers will to accept in a way more effective than the other competitors, with their comprehensive ability to obtain satisfying economic profits[9].

This paper suggests there are two comparing international and domestic significance. Our laws and overall policies are formulated by the country, while as for formulating and managing tourism industry policies; various regions still have great flexibility and autonomy. In different regions, tourism industry structure, its organizational form as well as development environment differ,

moreover, economic profit entities with various regions as their carriers exist objectively, so industry competitiveness exists certainly in different regions in the country [10-12].

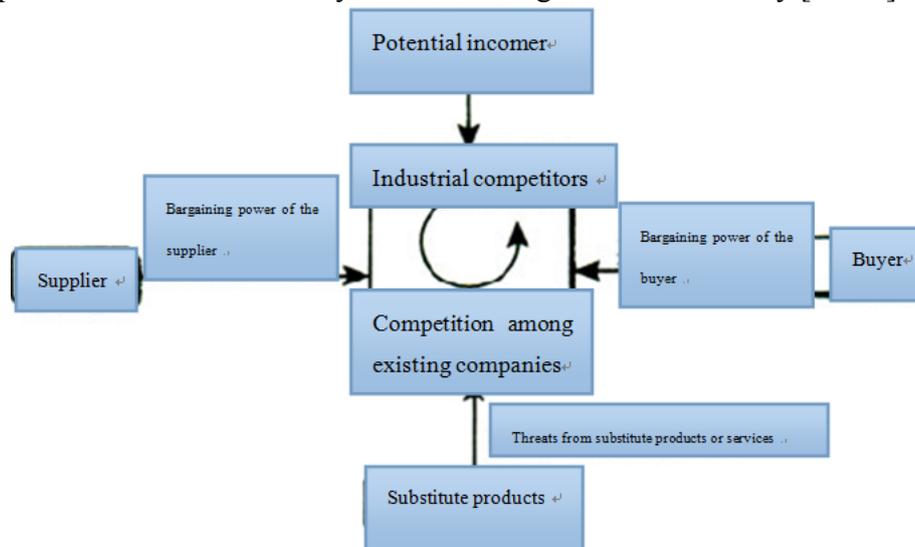


Figure 1 Five-Strength Competition Model

### The competitiveness model of Michael Porter

Regional competitiveness mainly refers to regional comprehensive competitiveness to be a qualitative concept unable to be measured. It is necessary to base on certain evaluation model in studying regional competitiveness. Wherein, the most classical analytical model is Porter’s diamond model [13]. This model presents four related key element layers, with each layer representing one factor deciding regional competitive advantage, that are enterprise strategies, enterprise structure, horizontal competition, demand conditions, production factors and related supportive industries. Besides, opportunities and government factors also influence the above four element layers. The diamond system is dynamic reactive system, with each internal factor influencing and depending on each other, therefore to form different competitive system [14-15].

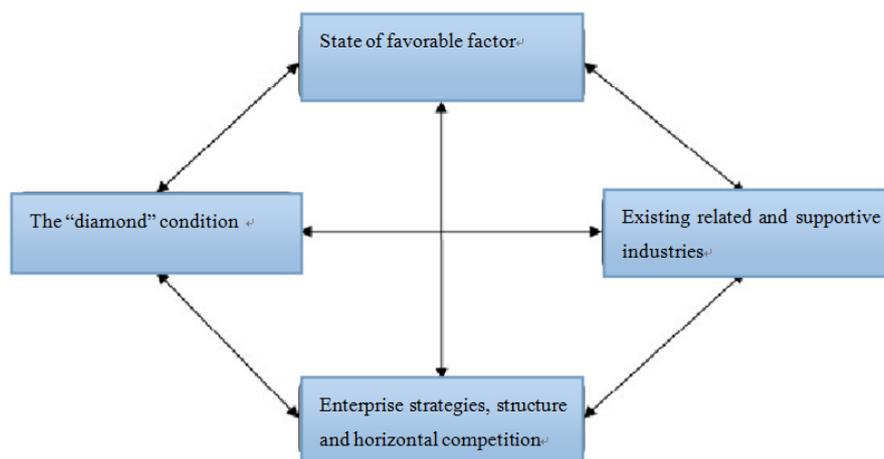


Figure 2 Diamond Model Figure

### The basic concept of structural equation model

The structural equation model (SEM), targeted at the shortages of the traditional causal model and path analysis, and is presented after introducing of factor analysis into path analysis. Under the effort of other statisticians, the research model of latent variable represented by factor analysis was integrated with the traditional linear causality model represented by path analysis. The structural equation model theories have been developing gradually and applied in psychometric, econometrics,

pedagogy and other subjects [16-17]. Driven by numerical analysis and computer science, its theories and methods had been gradually perfected at the end of 1980s and were widely applied. Then, multiple regressions, factor analysis, path analysis and other methods are special cases of structural equation model [18].

### Structural model

The structural model reflects the causal relationship among latent variables, which is also called latent variable model or causal model, the equation wherein is called structural equation. The model pattern is:

$$\eta = B\eta + \tau\xi + \zeta$$

$m \times 1$      $(m \times m)(m \times 1)$      $(n \times n)(n \times 1)$      $m \times 1$

In the formula,  $\eta$  is endogenous latent variable,  $\xi$  is exogenous latent variable,  $\zeta$  is stochastic disturbance, reflecting the undefined part of  $\eta$  in the formula. B is the coefficient matrix of endogenous latent variable, describing interaction among endogenous latent variable  $\eta$ ,  $\tau$  is the coefficient matrix of exogenous latent variable, describing the influence of exogenous latent variable  $\xi$  on endogenous latent variable  $\eta$ , and m is the number of endogenous latent variable and n is the number of exogenous latent variable[19].

### Constructing of structural equation model in tourism competitiveness evaluation

The theoretical basis of this paper is symbiosis theory in tourist management. The above six factors are latent variables unable to be directly measured. The 20 observational variables are manifest variables to obtain from investigation [20]. The structural equation model of this paper adopts the estimation method of GLS. This is because the sample size of this paper belongs to small sample and the majority of variables are not subject to the assumption of normal distribution. Meanwhile, it is superior to adopt GLS instead of MLE. The test of goodness of fit adopts likelihood rate chi-square, CFI, NFI, IFI, RMSEA test to examine and weigh goodness of fit [21]. AMOS7.0 software is adopted to set up the path diagram of the structural equation. See following table 1 for results of fitting indexes, model figure and results after operation.

Table 1 Results of Model Test and Goodness of Fit

Model	CMIN	DF	P	CMIN/DF	CFI	NFI	IFI	RM-SEA
Default Model	328.12	137	0	2.271	0.881	0.834	0.86	0.062

### Analysis of Model Results

#### Analysis on relationship among latent variables

As for the relationship between tourism resource factor and tourism enterprise factor, the regression coefficient is 0.71, which represents that when tourism resource factor is raised by one unit, the tourism enterprise factor will rise by 0.71 unit, demonstrating that tourism resource factor exerting great influence on tourism enterprise factor. Tourism resources are directly perceived by tourists in the tourist destination and influence tourists' satisfaction to the tourist destination. Therefore, tourist enterprises shall choose characteristic tourism resources to improve their competitiveness.

As for the relationship between tourism environmental factor and tourism enterprise factor, the regression coefficient is 0.52, which represents that when tourism environmental factor is raised by one unit, the tourism enterprise factor will rise by 0.52 units, demonstrating that tourism environmental factor exerting general influence on tourism enterprise factor.

### **Analysis on relationship between latent variable and observational variable**

As for the relationship between tourism resource factor and observational variable, sequentially, the regression coefficient of natural resources is 0.73 to be maximum, the regression factor of human resources is 0.65, the regression factor of social resources is 0.6 and the regression factor of supporting infrastructure is 0.52. The above demonstrates that natural resources are the core factor to improve tourism industry competitiveness, besides; human resources are also important factor influencing tourism resources.

As for the relationship between tourism environmental factor and observational variable, sequentially, the regression coefficient of regional competitiveness level is 0.71 to be maximum; the regression coefficient of regional policies is 0.68, which of economic environment is 0.44. The above demonstrates that regional competitiveness level and regional policies have serious influence on environmental factor.

As for the relationship between locational condition factor and observational variable, sequentially, the regression coefficient of traffic service is 0.7 to be maximum; the regression coefficient of industrial competitiveness is 0.66 to be the second, that of geographical position is 0.58. This demonstrates that industrial competitiveness and traffic service are important factors influencing locational condition factor.

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