

Grey Correlational Analysis on Structure of Inbound Tourism Industry of Xinjiang Province

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KEYWORDS: Inbound Tourism; Industrial Structure; Grey Correlation Analysis; Xinjiang Province

ABSTRACT: Utilizing gray correlation analysis method, this paper explored the relationship between the various departments and the tourism foreign exchange income of Xinjiang in the last 14 years, and obtained the following conclusions: During probationary period (2000-2013), all departments of inbound tourism industry of Xinjiang province have relevancy with the whole exchange income of foreign tourist and they are in order from large to small: Post and Telecommunications, accommodation, commodity sales, other services, catering, long-distance transportation, entertainment, local transportation, sightseeing. Based on this, it pointed out the direction and the focal point of the inbound tourism industrial structure adjustment in Xinjiang province in the future: The main direction of the adjustment of the inbound tourism industry in Xinjiang is to make the development of four sectors, the post and telecommunications, commodity sales, other services and catering, which have huge relevancy with the Xinjiang inbound tourism income with high demand elasticity.

I. Introduction

Tourism Industry Structure refers to food, shelter, transportation, travel, shopping, entertainment and the ratio between the economic and technical contact at the core of the tourism industry between the internal, which is a measure of the merits of health tourism industry development in the Region an important indicator of the level and quality.

Since 2000 the state has adopted the "Western Development" The strategic policy, inbound tourism in Xinjiang has been leaps and bounds. In the context of the current "along the way" development strategy, to build the Silk Road in Xinjiang Economic Zone core area is vital to good tourism development.

This paper aims gray correlation analysis method for the past 14 years, Xinjiang inbound tourism industry structure analysis, identify problems and propose policy recommendations.

II. Review of Applications of Grey Relational Analysis in Tourism

Grey relational analysis since been proposed, will be gradually applied to various fields of social sciences and natural sciences, especially in the socio-economic sphere, such as forecasting macroeconomic development trend, investment benefit all sectors of the national economy, regional economic advantage analysis, evaluate the technical and economic aspects of the program and analysis of the industrial structure adjustment direction and micro-economic factors, have achieved good effects [2].

Currently Scholars on Grey Correlation Analysis in the tourism industry, mainly concentrated in the satisfaction of tourists, the economic impact of tourism factors of tourism industry structure and Tourism Competitiveness Evaluation Research.

A. Tourist Satisfaction

Mei Hu et al. using the gray relational analysis, Guilin 5 4A level scenic tourist resort on an example of the evaluation of customer satisfaction, and were on the strengths and weaknesses of five scenic spots in-depth analysis. Finally, when using gray correlation analysis Scenic Spot Customer Satisfaction Evaluation should be noted that three issues. Yalin Qian et al. Using the gray relational analysis, from the national level scenic areas within selected five low-carbon tourism scenic tourist satisfaction the evaluation and analysis, the advantages and disadvantages to all attractions.

B. Tourism Economic Impact Factors

Meng Xiangwei et al. Zhang congregation and Fu Xiangyang are each constructed a system of indicators to measure the impact of tourism factors of economic development, and the use of Grey Correlation Analysis Methods affecting Baoding, Henan and inner Mongolia tourism economic development factor within the system empirical research, and put forward their suggestions of regional Tourism economic development. Meng Xing et al. Means of gray correlation analysis to analyze and compare 1997-2001 and 2002-2006 periods affect both internal and external factors of tourism development in Fujian Province, Fujian Province, noted that tourism to a great level of economic development, transportation accessibility, level of industrialization, tourism brand and other factors subject degree.

C. Structure of Tourism Industry

Xiao Xu letters to China in 1997 - the relevance of the various departments in 2006 inbound tourism industry system factors and tourism foreign exchange earnings will be between the gray system analysis, obtained in all sectors of our inbound tourism industry, tourism foreign exchange earnings factors descending sort. Chunhui et al. integrated use of dynamic - Shift - Share and gray relational analysis, Shaanxi Province in 2000 - 2007, inbound tourism industry structure and competitiveness of the research and analysis of the various departments inbound tourism industry revenue and Immigration relevance total tourism income.

D. Tourism Competitiveness Evaluation

Zhongyan Liu et al. Using the gray relational analysis of the 2011-2012 period tourism competitiveness in Hunan Province 14 prefecture-level cities were measurement and evaluation, and noted that tourism competitiveness in the difference between the city and the obvious overall not ideal; tourism development of tourism resources and location-dependent conditions more prominent.

Existing research rich, but few studies with this method of Tourism Industry Structure. This paper uses the gray relational analysis method, Xinjiang 2000 - Relevance departments 2013 inbound tourism industry and tourism foreign exchange earnings between factors were analyzed in order to identify the main factors that affect nearly 14 years Inbound tourism industry development in Xinjiang, Xinjiang to optimize inbound tourism industrial structure, promote the healthy and sustainable development of its theoretical basis.

III. Research Methods and Data Sources

Grey Relational Analysis (GRA) by Professor Deng Julong first proposed. Grey correlation analysis is not operating mechanism and a physical prototype or simply a lack of clear physical prototypes gray relationship serialization, pattern, thereby establishing gray correlation analysis model, so that the relationship between the quantization gray, ordering, manifest. It is based on the degree of similarity or dissimilarity between the trends of factors, namely the "gray relational grade" as a measure of the degree of association between factors. Grey Correlation larger trend change two factors (including changes in the size, direction and speed) more consistent. This analysis compared with linear regression, univariate regression digital processing method has the following advantages: Any number of sample size, does not require the typical distribution of small amount of calculation. Just above requirements consistent with the characteristics of the study.

The tourism industry constitutes the existence of different academic classification system, this paper constitutes the tourism industry according to the traditional theory, with "China Statistical Yearbook" and "Xinjiang Statistical Yearbook" statistical methods will be divided into long-distance transportation, tour, accommodation, catering, marketing, entertainment, telecommunications, transportation and other services in the city nine categories. Statistical data used in this study is based on 2001-2014 "China Statistical Yearbook" and "Xinjiang Statistical Yearbook" collating the data.

IV. Empirical Analysis

Let inbound tourism revenue changes with the number of the year as the parent sequence x_0 ; and long-distance transportation, sightseeing, accommodation, catering, marketing, entertainment, telecommunications, transportation and other services to the local Immigration nine kinds of constituents tourism revenue, which 9 species composition changes each year with the number of columns is formed, constituting 9 subsequences x_1-x_9 . According to "Xinjiang Statistical Yearbook" inbound tourism industry in Xinjiang to build comparative sequence (Table 1).

Table 1. Comparison of sequences of Inbound Tourism Industry in Xinjiang (Unit: million US dollars)

Year	Total revenue	Long-distance traffic	tour	accomm odation	Merchandise sales	entertain ment	Teleco mmunic ations	Traffic in the city	other service	
										Food
2000	9493.68	1903.61	140.88	917.69	858.38	4226.34	169.63	280.79	94.21	902.15
2001	9856.48	1723.77	640.1	829.91	275.6	4685.05	276.2	57.75	451.55	916.55
2002	10060.57	3251.17	149.14	785.45	855.05	3609.09	298.27	238.62	99.42	774.36
2003	4857.63	1350.84	96.24	393.86	455.3	1850.3	159.04	137.52	57.85	490.24
2004	9865.53	3100.48	265.76	708.68	797.27	3189.06	354.34	265.76	177.17	1007.01
2005	10008.99	3186.9	146.19	769.93	838.15	3537.76	292.38	233.9	97.46	906.33
2006	12800	3114	465	1168	640	5124	854	100	239	1096
2007	16190	2511	332	1106	884	8498	253	426	253	1927

2008	13578	3131	428	1057	763	6436	134	361	335	933
2009	13663	3029	724	1139	779	6312	252	273	309	846
2010	36844	9543	1769	2984	2026	13374	516	1216	921	4495
2011	46519	11304	1489	3582	2000	17677	619.2	1303	1861	7303
2012	55057	21087	2973	6717	2753	11011	3909	1376	1817	3414
2013	58502	21002	3744	7196	3569	11583	3627	1638	1346	4797

NOTE: According to 2001-2013 Years "Xinjiang Statistical Yearbook" data collation, resulting corrected later.

Due to the different systems of physical significance of various factors, resulting in dimensional data varies, direct comparison is not easy to draw the right conclusions. Therefore, before the gray system analysis, data needs to be non-dimensional treatment. Current common dimension treatment methods are extreme value, standardization, equalization, and standard deviation of the initial value of transform methods. After repeated as appropriate, we use the initial value change method to process raw data.

According to the formula $\Delta_{oi} = |x_0^{(t)} - x_i^{(t)}|$ to calculate the reference sequence x_0 and each sub-series x_i in different years difference absolute difference, to give absolute difference table.

Table shows that the absolute difference=20.4136=0.0011. Into the correlation coefficient formula, the general value where k is 0.5, find the correlation coefficient to obtain a correlation coefficient table.

Table 2 Correlation table

	Long-di stance traffic	tour	accomm modation	food	Mercha ndise sales	entertain ment	Post and Telecom municati ons	Traffic in the city	other service
Correlatio n sort	0.9178	0.78 16	0.9575	0.9282	0.9451	0.8512	0.9665	0.7966	0.9422
Correlatio n sort	6	9	2	5	3	7	1	8	4

V. Conclusion

Table 5 shows, the various departments of Xinjiang inbound tourism industry, for inbound tourism foreign exchange earnings impact decreasing order: telecommunications, accommodation, sale of goods, other services, catering, long-distance transportation, entertainment, local transportation, tour . Wherein the post and telecommunications sector demand elasticity is high, but in the initial stage of development, the development of space, to increase support; accommodation sector although lower demand elasticity sectors, but the larger the impact on inbound tourism in Xinjiang's total revenue; Goods sales elasticity of demand is high, but after investigation it benefits poor sectors, should increase efforts to improve; Relational other departments and services and two dining Xinjiang inbound tourism income is relatively large, and demand is more elastic, it should

also strengthen its further development ; long-distance transport sector demand less elastic, but a high correlation, should further improve; entertainment and tours of Xinjiang, the two departments are associated with inbound tourism revenue, although lower, but greater elasticity of demand, in the future it is necessary to strengthen both development sectors.

Through the above analysis, the future of Xinjiang should strengthen inbound tourism revenue and the associated degree of elasticity of demand for the development of high posts and telecommunications, merchandising, catering and other services as the main direction of the four divisions of Xinjiang inbound tourism industry structure adjustment, to improve the foreign exchange earning capacity of Xinjiang inbound tourism. For merchandise sales department, to regulate the tourism commodity markets, while developing rich tourism products to meet the needs of different levels of tourists. In addition, we should pay attention to the quality of accommodation sector, content development, and improve the accommodation sector services, reception level.

Acknowledgements

Project No. 2013BAH27F04

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