

An Empirical Analysis on the Performance of Tourism Enterprises Implementing ERP

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Abstract—The tourism industry as a sunrise industry occupies an important position in the growing of national economy. With the more and more highly competitive market, many tourism enterprises have been focusing on the ERP system. The research on ERP seems to be very important to the performance of the tourism enterprises in China. Abstracting samples from the listed tourism enterprises and treating NCF、ATO、ROA、OIGR as the indexes to measure the performance, the author conducted empirical analysis and found the fact that the implementation of ERP system can improve the performance of tourism enterprises; the performance of the tourism enterprises with ERP system is better than that of the tourism enterprises without ERP system; small-scale companies have advantages in implementing ERP system obviously. The research has some realistic meaning for tourism enterprises to improve the consciousness of ERP implementation and to promote the market competitiveness.

Keywords- ERP; Tourism Enterprises; Performance; Empirical Analysis

I. INTRODUCTION

ERP system is a platform for business decision-making in enterprise, which is a kind of modern enterprise operation mode based on advanced management ideology and information technology. ERP system has not only information technology but also systematic management ideology, reflecting the demand for enterprises to allocate resources rationally to maximize social wealth in this era. ERP systems have become the cornerstone for the survival and development of enterprise in the information age. Several years ago, the concept of ERP has entered the Chinese tourism industry. ERP has a significant role on company performance although the ERP system in the application of the tourism industry is in the initial stage. With the development of the tourism industry and ERP systems more widely used, it will definitely play an important role in tourism enterprises.

II. RESEARCH HYPOTHESIS

The implementation of ERP system is actually an IT investment for enterprises which impact on corporate performance is very important. American Production and Control Association believed that the implementation of ERP system allows companies to reduce production cycle, to use of resources rationally, to improve labor productivity and to improve customer satisfaction so that enterprises can solve the problem in terms of human and financial to improve performance.

ERP systems is integrated into a lot of modern management ideological which can help the company to allocate and optimize production resources rationally and plan , organize, control and adjust the property management effectively. At the same time, ERP systems focus on advanced management ideas and models to solve business management problems, highly optimizing and concentrating every aspect of their business to improve the core competitiveness of the enterprises.

Interrelated data shows that small-scale enterprises have an advantage in the application of ERP in large-scale enterprises. ERP system in small-scale enterprise is easy to implement and the costs of training and maintenance are relatively low, so the price has superiority. The small scale facilitates the various functional modules to integrate, avoiding many obstacles which came from the overstaffing and unwieldiness of large-scale enterprise. So the small-scale enterprise can enhance the performance significantly. From the point of view of large-scale enterprises, it is relatively complicated to change the system, habits of enterprise, to re-design process, to alter the permissions and to coordinate the terms of reference and the distribution of benefits of different departments and internal department, which will affect the sound effects of ERP system.

In summary, the following are the three assumptions:

- H1: The performance of the tourism enterprises is significantly improved compared with the performance of

the same enterprise prior to the implementation of ERP system.

- H2: The performance of the tourism enterprises with the implementation of ERP system is better than the tourism enterprise without ERP system.

- H3: From the point of view of small-scale enterprises, the performance of the tourism enterprises with the implementation of ERP system is better than the tourism enterprise without ERP system Implementation of the ERP system, which is not very obvious for large-scale enterprise.

III. RESEARCH DESIGN

A. Sample Selection

Since ERP system lags the financial performance of tourism enterprises, in this paper, the financial performance of the enterprise with two years of implementing ERP system is conducted empirical analysis comparatively with the performance before, which requires the financial data of two years before and after the implementation of the ERP system. Therefore, the data sources in this paper are collected from the RESSET financial research database and the period of the samples is from 2006 to 2012. From 2008 to 2010, we discovered the fact from text of the Annual Report of listed companies in China's tourism industry that there are four companies officially start implementing ERP system in 2008, seven in 2009, three in 2010, seven in 2011, the total is eighteen, among which the data of six companies are not available and has already be removed. Ultimately the number of samples is fixed at 12 and the 12 paired samples are determined according to industry and company size, so we got a total of 384 samples observations. In order to deal with the autocorrelation and heteroscedasticity, the paper adopted the GLS method to conduct regression analysis to unbalanced panel data, using statistical analysis software STATA17.0.

B. Index Selection

For now, the research on enterprise performance evaluation index system mainly focus on the division grade and performance evaluation of manufacturing, but for related service industries , especially tourism, the enterprises performance evaluation index system is little studied. The prior index system is mainly focused on the performance evaluation of state-owned enterprises, which emphasized on the preservation and appreciation of state-owned assets and that is not appropriate for the performance evaluation of tourism enterprises^[8]. In addition, tourism enterprises have the characteristics of simultaneity of tourism services, production and consumption and also the tourism product can't be saved, these characteristics determine the inventory of many tourism enterprises is little or no inventory^[9]. Therefore, the indicators such as inventory turnover should not be used as key indicators to evaluate the status of the asset operational of the tourism enterprises. On the contrast, return on assets which has a major impact on the profitability of the tourism enterprises and revenue growth which affected the development capacity of the enterprises should be should be taken into account. Determining a reasonable index

system for the performance evaluation of the tourism enterprises is basic work, which should be based on business objectives and evaluation purposes and choose representative, strong constraints indicators as the evaluation index^[10]. So we chosen the net cash flow (NCF), asset turnover (ATO), return on assets (ROA), operating income growth rate (OIGR) as the indicators to evaluate the performance of tourism enterprises, which is shown below Table 1.

TABLE I. VARIABLE TABLE

Variable Type	Variable Name	Description of Variables
Variable Being Explained	ERP	Whether annual report announced the implementation of ERP systems
Explanatory Variables	NCF	Net Cash Flow
	ATO	Asset Turnover
	ROA	Return on Assets
	OIGR	Operating Income Growth Rate

IV. EMPIRICAL ANALYSIS

A. The Empirical Analysis of Assumption 1

When the test is carried out on the assumption 1, the point in time of the implementation of ERP system is set to T0, T+1、T+2、T-1、T-2 represent the time point of the enterprises to implement ERP one year later, two years later , one year ago and two years ago respectively. Table 2 presented paired samples T-test of the tourism enterprises from one year before the implementation of ERP system, two years before, one year later and two years later compared with the right year of the implementation of ERP. The test results shows that the t value net cash flow(NCF) compared among T+2—T0、T+1—T0 is 1.56 and 1.27 respectively, the difference is obvious, which indicated that net cash flow of tourism enterprises listed has been significantly enhanced when comparing one year and two years before the implementation of ERP system with the right year of ERP, while, the enhancement is not that obvious in the comparison of T-1—T0、T-2—T0. The enhancement of the net cash flow indicates that the implementation of the ERP system in tourism enterprises greatly improved the financing decision-making capacity, corporate credit and profitability. For the measure of asset turnover ATO, t rose gradually in the four stages of T-2—T0、T-1—T0、T+1—T0、T+2—T0 which indicates that asset turnover is getting higher and higher with the implementation of the ERP system and the management quality and utilization efficiency of the cooperate asset have all improved. Return on asset declined in T+1—T0 but is still rising throughout the whole phases. The improvement of return on asset indicates that the profitability of the business owners' equity enhanced. Operating income growth rate reflects the development of the tourism enterprises and it rose in T-2—T0、T-1—T0 stage but not significant, enhanced greater in T+1—T0 stage and more

obvious in T+2—T0 stage, which showed that the development capacity of tourism enterprises went up after the implementation of the ERP system.

We found that the implementation of ERP system has great impact on the improvement of the performance of tourism enterprises through the four indexes from the comparison of T0 and T-1、T-2、T+1、T+2 of the implementation of ERP system. So the two related samples t test verified the assumption 1 well, which is shown below Table 2.

TABLE II. T TEST RESULTS OF TOURISM ENTERPRISES PERFORMANCE BEFORE AND AFTER THE IMPLEMENTATION OF THE ERP SYSTEM

index	time	Mean	t	sig.(2-tailde)
NCF	T+2—T0	0.1244	1.56	0.024
	T+1—T0	0.0267	1.27	0.124
	T-1—T0	0.0453	0.94	0.005
	T-2—T0	0.00834	1.98	0.024
ATO	T+2—T0	0.0498	2.453	0.046
	T+1—T0	0.0119	1.33	0.29
	T-1—T0	0.0035	0.436	0.108
	T-2—T0	0.0014	0.098	0.002
ROA	T+2—T0	0.1543	3.509	0.502
	T+1—T0	0.0498	1.05	0.093
	T-1—T0	0.0934	2.39	0.401
	T-2—T0	0.0038	2.38	0.021
OIGR	T+2—T0	0.25	2.069	0.009
	T+1—0	0.00456	1.398	0.134
	T-1—T0	0.0046	0.933	0.045
	T-2—T0	0.0017	0.907	0.052

B. The empirical analysis of assumption 2

Same as the assumption 1, we adopted the two related samples t test to verify the assumption 2, as shown in table 3. From the result, we can tell that the net cash flow, asset turnover and the return on assets improved significantly, so the implementation of ERP system makes tourism enterprises occupy a dominant position in market competition. At the same time, the value of operating income growth rate of the tourism enterprises is not obviously higher than that of the tourism enterprises without the ERP system, which indicates that the advantage of the implementation of ERP system is not to improve the development of tourism enterprises. ERP system is a highly integrated system, from the true sense of the completion of internal integration and external integration need close work between internal department and external department, any part of the system appearing the problem of convergence will cause obstruction

to the trade development. So ERP system didn't reflect the advantage on development capacity, but with the time prolonged, the advantages of ERP to enhance the development capacity of tourism enterprises will gradually emerge.

Overall, the performance of the listed tourism enterprises with ERP system improved higher than that of the listed tourism enterprises without ERP system, the implementation of ERP system added advantages to the tourism enterprises in market competition. The above verified the assumption 2, which is shown below Table 3.

TABLE III. T TEST RESULTS PERFORMANCE CHANGES OF THE SAMPLE COMPANIES AND PAIRING COMPANIES AFTER THE IMPLEMENTATION OF ERP SYSTEM

index	ERP	time	Mean	t	sig.(2-tailde)
NCF	ERP—non-ERP	T+2	0.0098	1.35	0.035
		T+1	0.0094	1.054	0.36
		T-1	0.049	0.198	0.005
		T-2	0.18	0.938	0.098
ATO	ERP—non-ERP	T+2	0.0027	3.947	0.058
		T+1	0.0048	2.097	0.17
		T-1	0.019	1.235	0.406
		T-2	0.097	2.043	0.006
ROA	ERP—non-ERP	T+2	0.0024	2.39	0.54
		T+1	0.0078	0.098	0.017
		T-1	0.0376	1.329	0.005
		T-2	0.297	1.09	0.027
OIGR	ERP—non-ERP	T+2	0.0096	2.35	0.039
		T+1	0.0038	2.36	0.244
		T-1	0.09	0.81	0.008
		T-2	0.104	2.099	0.049

C. The empirical analysis of assumption 3

For the test of assumption 3, firstly, the 12 listed tourism enterprises with the implementation of ERP system are classified by the scale. Scale classification is based on the median boundaries and they are divided into two types of large-scale and small-scale companies. The same classification method is used to divide the other 12 listed tourism enterprises without ERP system. Finally, sample comparison test is conducted on the two set of data classified to get the result of empirical analysis.

After classification, find 6 companies with ERP system and without ERP system respectively from the large-scale listed tourism companies to compose the sample and another sample is collected from the small-scale companies. ERP grouping independent samples unilateral means tests were carried out on two groups of samples, as is shown in Table 4. The analysis results show that small-scale listed tourism

companies with the implementation of ERP is better than the same scale listed tourism companies without the implementation of ERP in the index of NCF, ATO, ROA, OIGR, the comparison can be seen clearly in Figure 1. This shows that small-scale tourism enterprises have an advantage in the implementation of ERP systems and ERP has some help for small and medium-sized tourism enterprises to improve their performance and competitiveness of enterprises.

TABLE IV. THE COLLATION OF SMALL-SCALE COMPANIES TO IMPLEMENT ERP SYSTEM

Var	ERP	N	Means	Std.	Min.	Max.
NCF	0	6	0.0384	0.0098	-0.192	0.1227
	1	6	0.0439	0.0383	0.1824	1.0894
ATO	0	6	0.0912	0.0438	0.1344	0.1923
	1	6	0.305	0.0939	0.2164	0.2095
ROA	0	6	0.501	0.393	-2.294	1.3098
	1	6	0.798	0.513	0.1084	2.119
OIGR	0	6	0.387	0.829	-3.483	0.1542
	1	6	0.882	0.782	-0.091	0.45

TABLE V. THE COLLATION OF LARGE-SCALE COMPANIES TO IMPLEMENT ERP SYSTEM

Var	ERP	N	Means	Std.	Min.	Max.
NCF	0	6	0.264	0.0205	0.352	0.464
	1	6	0.359	0.0602	0.4523	0.554
ATO	0	6	0.536	0.119	-0.52	0.624
	1	6	0.565	0.1205	-0.356	0.6524
ROA	0	6	0.466	0.456	0.494	3.534
	1	6	0.562	0.614	0.522	3.648
OIGR	0	6	0.942	0.866	-3.491	0.223
	1	6	0.993	0.892	-3.183	0.448

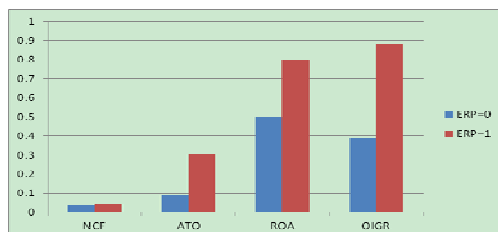


Figure 1. The collation histogram of small-scale companies to implement ERP system

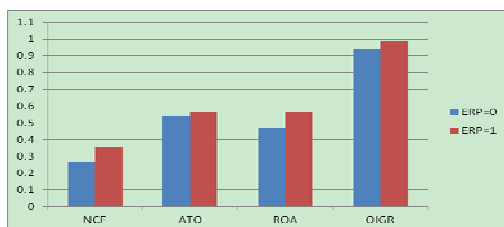


Figure 2. The collation histogram of large-scale companies to implement ERP system

The results of the analysis also found that the large-scale listed tourism companies with the implementation of the ERP system is better than the same scale of listed tourism

companies without the implementation of ERP in NCF, ATO, ROA, OIGR, too, but figure 2 shows that this advantage is not particularly obvious relative to small companies. This result reflects the fact that the dispersion phenomenon may exist in large-scale tourism companies in the implementation of the ERP system, the enhanced performance has been transferred to other aspects. Meanwhile, the investment of ERP system in large-scale enterprises will take a very long time and not effective. The above results proved the correctness of assumptions 2.

V. RESEARCH CONCLUSIONS AND IMPLICATIONS

Through empirical analysis, from the overall trend the implementation of ERP system will increase the financial indicators of tourism enterprises, promoting the financial performance of tourism enterprises significantly; The performance of tourism enterprises with the implementation of ERP system is better than that of implementation of the tourism enterprise without ERP; Small-scale enterprises have advantages in enhancing the performance of tourism enterprises when implementing ERP system.

At present, what tourism enterprises urgently need to do is to accelerate the construction of ERP, to focus on solving the problem of managing in a deeper level and to improve the management level and business performance fundamentally. Combining the specific characteristics of the tourism industry and grasping the inherent law of tourism, the company should create favorable conditions for the smooth progress of the construction of ERP and enhance the economic efficiency of enterprises with ERP in the shortest possible time. Meanwhile, we also need to be aware clearly that the construction project of ERP system requires a lot of investment in pre - implementation and implementation period, these inputs will be digested in a long time for tourism enterprises, the return cycle of ERP system is very long. We can also say that ERP system is an information construction project that needs high input, high risk and high return, this requires tourism enterprises to have enough patience and confidence to the understand and apply the ERP system, identifying, analyzing and solving problems timely, finally, the tourism enterprises can get the huge gains from ERP system. However, there are many companies do not realize the lag of ERP system which result in giving up when failing to get the payoff from ERP especially in re-implementation and implementation period, that makes ERP project a semi-finished product.

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