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An Empirical Research on Hotel Revenue Management Financial Performance Influencing Factors

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Performance Influencing Factors

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Abstract: In recent years, revenue management has become an important competitive strategy in the hotel, and the level of hotel performance directly reflects the effectiveness of the application of revenue management. But so far, academic research about hotel revenue management performance influencing mechanism and evaluation is still extremely limited. Based on fully retrieving the relevant literature, the author summarized the factors affecting revenue management financial performance and built a conceptual model, using structural equation model (SEM) to verify and correct it. Then the author concluded: hotel quality attributes which contain hotel scale, star rating, owner type and management company type have no significant effect on hotel revenue management performance; technical drivers which include pricing and non-pricing factors have significant positive impact on RM performance, and the impact of pricing tools is more intense; organizational drivers including organizational support, manager quality, incentive and training have positive impact on RM performance, second only to pricing tools; and finally, organizational drivers had significant impact on technical drivers.

Keywords: hotel; revenue management; financial performance; influencing factors

1. INTRODUCTION

Revenue Management (RM), which is originated in the 1970s in the US airline industry, has been widely used in the international hotel industry. In recent years, because of China's rapid development of hotel industry, the market competition is becoming increasingly fierce, hotel RM research gradually attracts more attention from the scholars [1]. Compared to wide usage in hotel industry and rapidly development in theory field abroad, hotel RM domestic is relatively lag behind. Wang (2013) showed that the application popularity of RM in star hotels is only about 55% [2]. According to China's hotel industry communique released by the National Tourism Administration, it was the largest annual loss ever recorded in 2014. In this context, the ability of RM impacting hotel performance becomes more important, and hotel RM attracts more attention from hotel owners and managers.

However, existing domestic empirical research on RM performance is very rare, and the studies mostly used to measure RM performance from managers' perception [2][3]. While the hotel managers are always feel more optimistic about RM implement, the psychological perception of RM performance improvement perhaps proved different from the actual financial result. This paper argues that hotel RM is an effective means to improve the hotel economic benefits, and the hotel RM performance measurement must be based on the financial data. In addition, the existing research on RM just examined some hotel RM performance factors, did not demonstrate the extent of its impact, especially lack of the research at the financial performance in domestic situation. Therefore, there is a large research space and many opportunities.

This paper selects three factors which are widely recognized in academic circles: hotel quality attribute factors, technical decision-making factors (price and non-price factors) and organizational decision-making factors. And we choose ADR, OCC, RevPAR, three industry recognized performance evaluation metrics to measure the financial performance of hotel RM objectively, exploring the influencing mechanism between

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various factors and RM performance.

2. THEORETICAL BASIS

2.1 The concept of hotel RM

The core of RM theory is the optimization of product, time, price, customer and sales channel five elements, and the goal is to achieve hotel revenue maximization. Hotel RM process includes developing strategic goals, collecting and analyzing data, forecasting demand, making price and book policies, implementing and evaluating the result [4]. Generally speaking, RM includes both levels of strategic and tactical work [5]. Sieburgh (1988) [6] first proposed that hotel RM was " a series of procedures controlling prices and rental rates." This paper argues that Kimes' (1989) [7] definition is the most representative: RM was selling the right products to the right guests at the right time and the right price. Since then, many scholars had given the definitions from economic, management, methodology and system theory perspective. For example, Relihan (1989) [8]proposed that RM was a range of management applications which use economic theory to change room rates. Xi (2005)[9] defined RM was a system of management concepts and methods, combined with scientific prediction and information technology, used market segmentation, pricing and other methods, sold products to different types of customers at different prices timely, in order to maximize hotel revenue. Jauncey S et al (1995) [10]thought that hotel RM was a system, sustained and integrated approach which can make the hotel room revenue maximized, it included not only room sector but also other hotel sectors. Jones and Hamilton (1992) [11]proposed hotel RM included a series of systems and procedures, which wound help achieving hotel profit maximization. Hu (2009)[12] proposed hotel RM was not only a dynamic management process, but also a combination of knowledge and technology.

2.2 Hotel RM financial performance metrics

When RM was introduced into the lodging industry, RM performance evaluation was created as income for each guest each room per day, namely RevPAR. With RM widely being used in the hotel industry, its financial performance evaluation has gradually diversified, and ultimately tends to relatively unified. Ben Vinod (2004) proposed the main statistical indicators measuring RM performance include Over sales, Occupancy, ADR, RevPAR and GOPPAR [13.] For most hotels, RevPAR was used as optimal evaluation criteria of hotel interior RM performance [14]. In 2009, Cross et al. put forward with income-generating index (RGI) in order to make up the difference of hotel RM performance in different economic environment [5]. In the same year, Hu (2009) summarized hotel RM performance metrics: Occupancy, ADR, RevPAR, Market Share Index, Market Fair Share and Market Penetration Index [12]. This survey shows that 82.7% of the hotel developed targeted measurements for RM, in which OCC (94.1%), ADR (84.3%) and RevPAR (73%) are the most widely used. Therefore, this study uses the annual growth rate of the three indicators to observe hotel RM performance.

3. HOTEL RM PERFORMANCE INFLUENCING FACTORS FRAMEWORK

According to the hotel RM system framework [4], the implementation of hotel RM was influenced by external macro, micro, and internal operating environment, the hotel managers must take hotel strategic goals, financial status, legal issues, competitive environment, major events and other factors into account while making RM decisions. As the hotel external environmental factors are too comprehensive to measure, we will discuss the hotel RM performance drivers from internal operational level. Based on existing domestic and abroad research, we will focus on the hotel quality attribute factors, technical (pricing and non-pricing) decision-making factors, as well as organizational decision-making factors.

3.1 Hotel quality attributes and RM performance

Hotel quality attributes mean location, hotel scale, star rating, type of owner and management company.

Many foreign scholars had emphasized the hotel physical attributes played an important role for hotel average price variation, including room numbers, facilities, etc. [15-18] Wang (2013) [2] firstly verified domestic high-star hotel RM performance drivers with empirical research, concluded that the type of hotel management company and owner significantly affected RM performance, and room numbers, location, star rating were not significant. Tian (2014) [3] also demonstrated the hotel management company type was the most significant factor. So we propose the following hypothesis:

H_1: Hotel quality attributes have significant positive impact on RM performance.

3.2 Technical decision-making factors and RM Performance

Stanislav (2012) [4] summarized the hotel RM technical decision-making behavior as pricing and non-pricing tools. We summarize the hotel RM pricing technical factors as market segmentation, demand forecasting, dynamic pricing, and RM system, and define non-pricing factors as capacity controlling, overbooking and channel management.

Griffin (1996) [19] listed four basic elements for achieving RM success: market segmentation, demand forecasting, inventory management and performance measurement. Queenan et al. (2011) [20] explored the hotel RM decision-making behavior's influencing on RM performance, proved that market segmentation and demand forecasting were the significantly influencing factors of hotel RM financial performance. Dynamic pricing, demand forecasting and IT are significantly influencing factors of perceptual performance. Then Tian (2014) [3] found that dynamic pricing, demand forecasting respectively had significantly positive effect on RM performance, and market segmentation, capacity controlling, information technology had not. According to the research above, we can see that pricing factors had significant positive influence on hotel RM performance, but non-pricing factors had not. This result can not explain that RM was a system, so it need further research. So we put forward the following hypothesis:

H_2: Pricing technical factors have significant positive impact on RM performance.

H_3: Non-pricing technical factors have significant positive impact on RM performance.

3.3 Organizational decision-making factors and hotel RM performance

Hotel RM organizational decision-making behavior is organization management behavior in the essence. We divide it into four factors: organizational support, manager quality, assessment &incentive and RM training. In related research, organizational support, organizational structure and training had been validated [3,20]. In addition, Kimes (2008) found that 63% of RM managers believed that personal factor was more closely with RM performance from the survey on RM professionals [3], and the quality of RM managers wound be the focus of the hotel competition. In summary, we have the following assumptions:

H_4: organizational decision-making factors have significant positive impact on RM performance.

3.4 Organizational decision-making factors and Technical decision-making factors

Several studies had indicated that organization created supportive environment which helped promote employees' behavior, so as to enhance organizational performance [21]. Eisenberger (2002) [22] noted that organizational support significantly affected employees' work attitude and behaviors, especially on organizational commitment. Organizational support theory emphasized organizational support was important factor for employees to produce organizational commitment, enhance responsibility, and help achieving organization goals [23]. So we put forward hypothesis 5:

H_5: organizational factors have significant positive impact on the technical behavior.

Based on the above assumptions, we present the factors affecting the hotel RM performance conceptual model in Fig. 1:
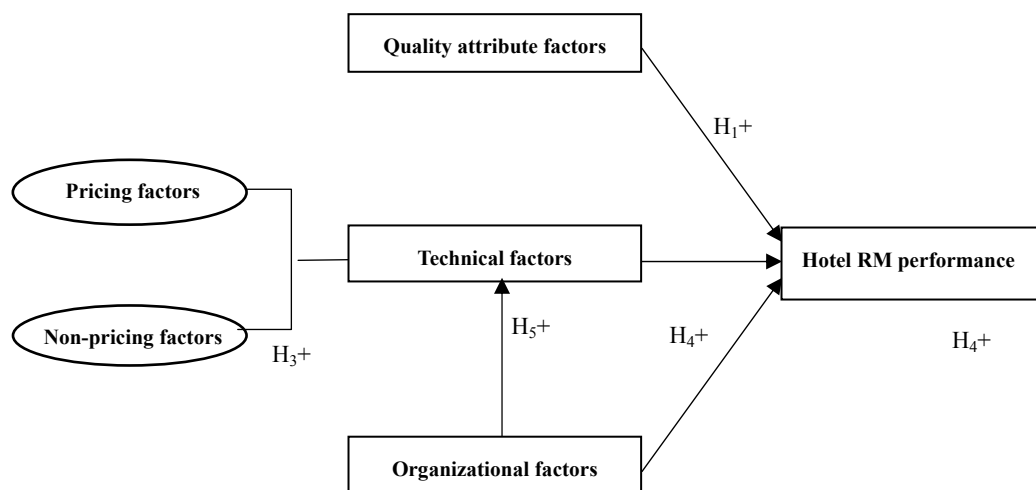
Fig. 1 Hotel RM Performance Influencing Factors Conceptual Model

4 EMPIRICAL STUDY

4.1 Scale design and data collection

We form the questionnaire mainly based on existing research scale domestic and abroad, combine with the domestic hotel general manager interview results and domestic industry situation. Questionnaires were distributed and collected mainly during 2015.4 -2015.8. A total of 232 surveys were returned, excluding which was unmatched or not complete, our final sample size was193, the response efficiency was 83.18%. The respondents were general manager, booking manager, revenue manager and other hotel top managers, which made the collected data highly reliability.

4.2 Reliability and Validity

In this study, we use exploratory factor analysis(EFA) to test the reliability and validity of the scale. For the scale of hotel RM performance influencing factors, KMO is 0.888, chi-square of Bartlett's test of sphericity is 2392.599, p is less than 0.001 (p = 0.000), proved a significant correlation between the variables for factor analysis. According to the EFA, only item ZL1 falls alone in one factor, was excluded. Then the results of factor analysis show in the following table 1, the four factors explain 79.633% of the total variance. Next on hotel RM performance scale, the KMO is 0.740, chi-square of Bartlett's test of sphericity is 374.233, p is less than 0.001 (p = 0.000), indicating fit for factor analysis. After EFA, only one factor is extracted, the items inside explain 83.883% of the total variance.

Overall, the factor loading of each corresponding item is greater than 0.6 and the values of CITC are all greater than 0.3. It shows that the scale has good construct validity. Cronbach's α of each scale is greater than 0.8, indicating that the scales have a high degree of internal consistency and good overall reliability.

4.3 Hypothesis Testing

After securing the reliability and validity of the scales, we assess the overall model fit by conducting structural equation model(SEM). Generally speaking, a model will be considered acceptable if values of CFI, NFI, and GFI are greater than 0.9, RMSEA is smaller than 0.08, PCFI and PNFI are greater than 0.5, χ^2/df is less than 5. The model standardized path estimate results are showed in fig.2, and the proposed model fits the data reasonably(χ^2/df=1.79; GFI=0.89; CFI=0.97; NFI=0.93; RMSEA=0.06; PCFI=0.80; PNFI=0.77).

We can see the standardized path coefficients in tab.2. Hypothesis 1 is rejected. The relationship between hotel quality attribute and hotel RM performance is not supported by the corresponding estimate of -0.035(t=-0.746, p=0.456).

Tab. 1   Reliability and Validity Analysis Results

Measuring item	Factor loading	CITC	Cronbach's α	Variance explained
Quality attributes			0.804	79.633%
ZL2	0.807	0.438		
ZL3	0.836	0.397		
ZL4	0.612	0.468		
ZL5	0.704	0.525		
Pricing technical factors			0.953	
DJ1	0.899	0.722		
DJ2	0.855	0.802		
DJ3	0.868	0.746		
DJ4	0.873	0.727		
Non-pricing technical factors			0.906	
FDJ1	0.781	0.656		
FDJ2	0.757	0.707		
FDJ3	0.731	0.714		
Organizational factors			0.916	
ZZ1	0.803	0.722		
ZZ2	0.774	0.681		
ZZ3	0.833	0.668		
ZZ4	0.826	0.701		
Hotel RM performance			0.903	83.883%
JX1	0.901	0.783		
JX2	0.910	0.795		
JX3	0.936	0.849		

Hypothesis 2 gets supported. The standardized path coefficient from hotel pricing technical factors to RM performance is 0.47(t =8.39, p <0.001). In the items of pricing technical factors, demand forecasting weights most (0.93), followed by market segmentation, dynamic pricing and RM system. This finding indicates that pricing technical factors paly the most important role on hotel RM performance.

Hypothesis 3 gets supported. Non-pricing technical decisions have a direct impact on hotel RM performance, which is supported by a statistically significant estimate of 0.14(t =1.98, p =0.048<0.05), indicating it is significant at the level of 0.05. And channel management has the maximal weight (0.90), higher than room allocation and overbooking. The findings reflect that channel management in hotel RM is gradually prominent with the development of internet.

Hypothesis 4 gets supported. The standardized path coefficient from organizational drivers to hotel RM performance is 0.46(t = 5.79, p <0.001). Among organizational factors, organizational support takes up the biggest weight of 0.89, playing an important role in promoting the hotel RM performance.

Hypothesis 5 gets supported. Organizational behavior has a significant positive impact on hotel technical behavior. The relationship between them is supported by the corresponding estimate of 0.61(t = 8.71, p <0.001) on pricing technical factors and 0.78(t = 11.44, p <0.001) on non-pricing technical factors. The more effective is the organizational decision-making behavior, the more motivate is the staff' technical behavior.
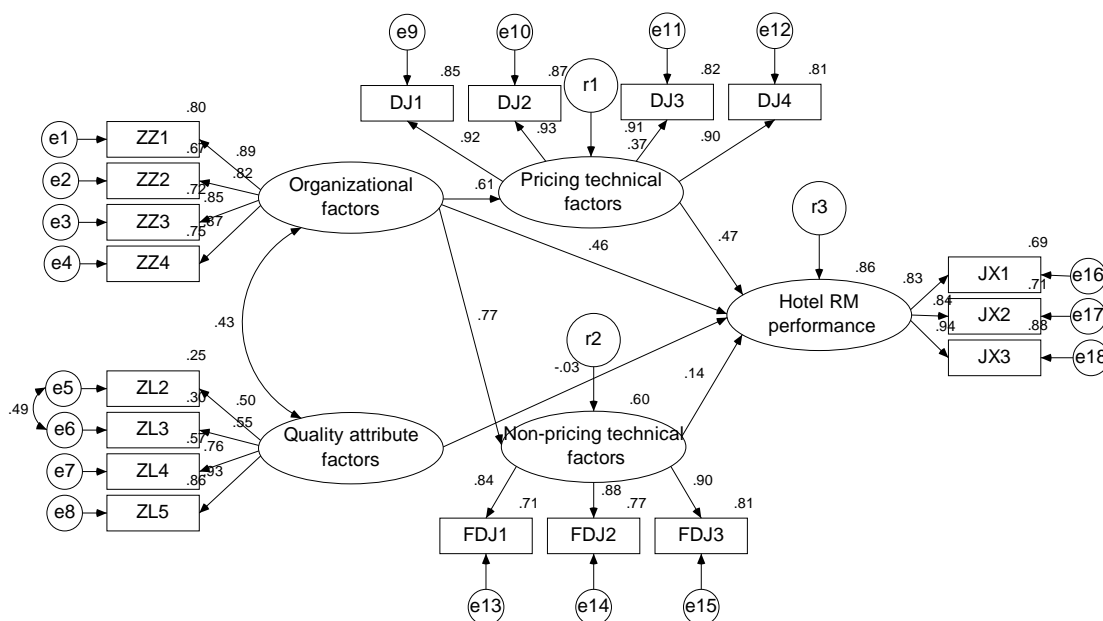
Fig. 2   Model standardized path estimate

Tab. 2 Model standardized regression path coefficient

Standardized path	Standardized path coefficients	t-value	p	Results
Quality attributes to RM performance	-0.04	-0.746	0.45	Unsupported
Pricing technical factors to RM performance	0.47	8.392	***	Supported
Non-Pricing technical factors to RM performance	0.14	1.977	**	Supported
Organizational factors to RM performance	0.46	5.788	***	Supported
Organizational factors to pricing technical factors	0.61	8.712	***	Supported
Organizational factors to non-pricing technical factors	0.77	11.438	***	Supported

＊＊＊ significant at the 0.01 level, ＊＊ significant at the 0.05 level

5. THE CONCLUSION AND DISCUSSION

5.1 Research conclusion

First of all, the hotel quality attributes have no significant impact on RM performance. In the research of Wang (2013) [2] and Tian (2014) [3], the type of hotel owner and management company are significantly related to the hotel RM performance, but these two factors have no data support in this study. Reasons may come from two aspects: first, we use financial indicators to measure RM performance, which is different from the previous research in essence; Second, although China's hotel RM methods are introduced through the expansion of international hotel [3], domestic hotels also positively seek breakthrough in the changeable economic and fierce international competition environment in recent years, the gap between the domestic and abroad hotels is becoming smaller.

Second, the RM technical decision-making behaviors have different effects on RM performance, pricing technical factors are the keys. For demand forecasting and dynamic pricing, the conclusions are consistent with other researches, but the conclusions of market segmentation and RM system are different. This survey suggests that: 91.35% of the hotels make market segments based on the consumer behavior; 88.11% of the hotels forecast future demand aim to different market segments; 92.43% of the hotels will according to the result of demand

forecasting to formulate the corresponding dynamic pricing strategy; 89.32% of the hotels have introduced RM theory and 51.8% of which have adopted the RM system. All of the above shows that the domestic hotels have begun to attach importance of the RM tools and do well in market segmentation, dynamic pricing and RM system.

Non-pricing technical factors include channel management, capacity controlling and overbooking are proved significant on RM performance, but the impact is the weakest. In which channel management is the most prominent indirect factor, while Queenan et al (2011) [25] and Tian (2014) [3] both demonstrated there is no relationship between non-pricing factors and RM performance. This paper argues that this difference may result from the development of hotel industry make the neglected elements in the past play a more important role in the present stage. In the survey, more than one RM manager said that reducing the cost of distribution wound be the focus to realize the profit maximization. The same with capacity controlling and overbooking, the results prove that their contribution to the hotel revenue should not be ignored.

Third, RM organizational factors are significantly related to hotel RM performance, which is consistent with previous research. Organizational support has the greatest indirect influence on the performance, followed by training. The conclusions remind us of paying more attention to the integration of the organizational factors, especially the top push, hotel culture from top to bottom, the establishment of the special RM team, followed by targeted training, effective assessment and incentive system, and configuration with skilled RM managers.

Finally, organizational decision-making behaviors are significantly positively related to technical behavior. RM organizational behavior will actively promote the implementation of technical decision-making behavior, improve the performance indirectly and contribute the most to the hotel revenue. It should be noted that the standardized path coefficient from non-pricing factors to organizational decisions is greater than pricing factors, which demonstrates the effectiveness of non- pricing decisions are more dependent on organization and people. Therefore, hotel should increase investment of organizational support, promote interaction between organizational and technical decision-making behavior, contribute to the overall efficiency and revenue.

5.2 Limitation and outlook

The innovation of this paper is mainly reflected in the optimization of RM performance indicators and research method. With the financial performance index as the dependent variable, using SEM to explore the influencing mechanism of hotel RM performance, we explain the relationship among the aspects of the variables through detail analysis of the path coefficient. However, for the only 193 samples are limited relative to nearly ten thousand three-star and greater than three-star hotels, the conclusions have limitations. At the same time, due to the limited sample size, we can't verify the difference among various hotel quality attributes, and we hope the following studies can do it further.

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