



## HOTEL COMPETITIVENESS MEASUREMENT METHODS

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### Abstract

*Competitiveness is becoming a very common expression used in business administration. The definition and its application still raises some questions due to the complexity of its meaning. The role of the measurement of competitiveness and its effect on performance and profitability is increasing in the field of hospitality and tourism as well. The measurement of hotel competitiveness is a current issue in business life due to globalization, sharing economy and the change in the consumer habits. The steady increase in the number of accommodation possibilities create a need for competitive strategy among the hotels. Complex indicators and indices formed of special factors are available for estimating the level of competitiveness in the service sector but these methods still hold several untrapped areas. The aim of this research is to introduce the existing literature in connection with hotel competitiveness and with the application of the grey relational analysis evaluate the level competitiveness of five star hotels in Budapest (Corinthia Hotel Budapest, Four Seasons Hotel Budapest Gresham Palace, Intercontinental Hotel Budapest, Kempinski Hotel Corvinus Budapest and Marriott Hotel Budapest). Grey relational analysis is tested on the basis of the competitiveness pyramid and finally a methodology and further business implementation of the index is proposed.*

### Key words:

Hotel competitiveness measurement, grey relational analysis, competitiveness pyramid model, five star hotels, Budapest

### Introduction

Conrad Nicholson Hilton, the founder of Hilton company highlighted one of the most dominant factor of the competitiveness in the beginning of the XIX<sup>th</sup> century. “Location, location, location is everything!” (O’Gorman, 2011) The hotel professionalist with this statement focused on the importance of the destinations, because the aim of the guest travels is usually visiting a destination.

Due to the change of consumer behaviour and the desire of the guests for unique experience the question of competitiveness is a very important factor in the decision-making. Online platforms make it possible for the visitors to share their opinion about the hotel services and the destination as well. These days the guests have the possibility to choose from several accommodation types not only hotels or apartmants, even flats and houses under private ownership are available (e.g. Airbnb). As a result of the expansion of the tourism market, sharing economy and the changing market segments, the role of the guest satisfaction measurement, the comparison of the services, online marketing (social media) is increasing and the role of competitiveness measurement is significant in the service sector. It is essential to define a complex measurement method to indicate the level of business efficiency, profitability and guest satisfaction at the

same time which allows the comparison of hotels of the same category.

### Literature review

Several academic writings and pieces of literature deal with the measurement of competitiveness at different levels. There are indices to mark the level of competitiveness between countries and firms but in the service sector the measurement of competitiveness still lacks a complex index which is able to compare the level of competitiveness between hotels of the same categories but with different location. Despite this fact there are several methods, approaches and models which try to characterise the business efficiency within a hotel. Table 1. summarizes the methods and frameworks applied for the measurement of hotel competitiveness.

The most common and recent approaches the DEA, factorial analysis, scale measurement and the fuzzy number method are analyzed and explained through some examples.

One research carried out by Ling-Feng Hsieh, Li-Hung Lin (2010) is based on the implementation of the data envelopment analysis (DEA) in the hotel industry. The aim of this study is to create a model which is applicable for the analization of the efficiency and effectiveness of international tourist hotels in Taiwan. The different production processes, relationships between efficiency, effectiveness and overall

performance are evaluated and ranked. According to the authors there is need for the measurement of services because the effect of globalization on tourism and the increasing number of hotels in Asia. DEA method is very useful and advantageous in business life because this measurement approach does not require a functional production relationship between inputs and outputs, it allows the data source to be specified with flexibility. A single efficiency score is

generated by simultaneously comparing multiple inputs and outputs of comparable units from the examined best-practice. The traditional models use a single process to evaluate the transforming efficiency of multi-inputs and multi-outputs. The overall performance, efficiency, effectiveness and the performance of each department is measured, which results in a comprehensive performance measure.

Table 1. List of methods applied for Hotel Competitiveness Measurement

METHOD APPLIED FOR HCM	AUTHORS
Data Envelopment Analysis (DEA)	Johns, Howcroft & Drake (1997), Brown & Ragsdale (2002), Hwang & Chang (2003), Sigala (2004), Reynolds (2004), Barros (2005), Wang et al. (2006), Yang & Lu (2006), Keh et al. (2006), Reynolds & Thompson (2007), Seol et al. (2007) Reynolds & Biel (2007), Hsieh & Lin (2010)
Factor Analysis (CFA)	Hsu & Chen (2002), Tung, Cheng & Wu (2009), Tsai, Song & Wong (2009)
Fuzzy number method, TOPSIS ranking	Benitez, Martin & Roman (2007)
Grey Relational Analysis (GRA)	Chang & Wang (2006), Tsai, Song & Wong (2009)
Performance Measurement Framework	Phillips (1999)
LISREL	Gundersen et al. (1996)
Porter's Diamond Model	Go et al. (1994)
Questionnaire	Roy, 2011
SERVQUAL	Armstrong et al. (1997), Akbaba (2006)
Structural Equations Modeling	Campos-Soria et al. (2005)

**Source:** Own edit, extended version of Roy (2011)

The study carried out by H. Tsai, H. Song and K. Wong (2009) points out the significance of economies of scale and other benefits that arise from clustering of tourist attractions and provision of appropriate tourist-related infrastructure and equipment. The state of competitiveness of a destination can effectively be raised by the quality of services and organizations (tourist) which complement these clusters and built-infrastructure. Integrating these related products and services in an appropriate manner contributes towards maintaining and building a destination's continuing competitiveness. It is important to emphasize that there is still no universal index for determining tourism competitiveness. This article provides updated knowledge on theories, concepts, ideas and empirical studies on competitiveness in the context of tourism destinations and the hotel industry.

Gu-Shin Tung, Tien-Ming Cheng and Li-Chih Wu (2007) focus on the measurement of hotel competitiveness on the basis of the application of two analytical methods. They use the confirmatory factor analysis (CFA) and grey relational analysis (GRA) to indicate the level of competitiveness for the examined hotels by using four main themes, management performance, property asset, class and scale and communication distance.

The fuzzy number approach is applied by Juan M. Benitez, Juan C. Martin and C. Roman (2007) in a research study. Fuzzy numbers is a suitable methodology that embraces adequately subjective knowledge and objective knowledge. The service quality measurement is described with the usage of fuzzy numbers, it is applicable for the measurement of quality and service in the hotel industry. The research is carried out on some hotels in Canary Islands which tend to focus the commitment of improving their customer service and in this way increase the level of competitiveness and performance of their hotel. Service quality can be regarded as a measure of various attributes which can be divided into tangible and intangible ones. The final evaluation of service quality in the hotel industry is a continuous process which requires consecutive monitoring to maintain high levels of service quality across a number of different service areas, attributes. The evaluation is based on a comparative process that allows managers to identify areas of service improvement or deterioration below some standard of performance that had been previously established. The evaluation result can be used as a benchmarking tool, the overall hotel performance is measured in terms of fuzzy numbers, from which TOPSIS ranking procedure is conducted.

The result indicator can be used to compare all the overall service quality performance and TOPSIS, based on the degree of optimality enables to rank the service performance observation.

Carlos Pestana Barros (2005) investigates the measuring of the efficiency in the hotel sector. In the study the efficiency of the individual hotels belonging to the Portuguese state-owned chain (managed by an enterprise) is measured. The aim of the research is to measure intrachain comparative efficiency in a hotel chain. A complex framework is proposed for the evaluation of hotels and the rationalization of their operational activities in the tourism industry. DEA method is in the focus of the analysis, which allows the incorporation of multiple inputs and outputs in determining relative efficiencies. As the competitiveness of countries is derived from the performance of its enterprises, at national level: it is reflected in the performance of its economy, while at operational level: it is viewed in terms of the market

size. Hotel performance is investigated at company level and measured by either productivity or efficiency. That is the reason for the conclusion-drawing about the level of hotel competitiveness by using efficiency-indices. Productivity is defined as the ratio of outputs over inputs and is measured and defined in different metrics. The methodology described in the article uses a framework for effective hotel evaluation and rationalization.

#### Indicators and determinants of hotel competitiveness

Every researcher and professor approaches the topic of competitiveness from their point of view and professional perspective. The following table summarizes the name of the researchers and according to the authors the most important determinants which contribute to the hotel competitiveness.

Table 2. Main determinants of hotel competitiveness

DETERMINANTS OF COMPETITIVENESS	AUTHORS
Brand Image	Prasad & Dev (2000), Brown & Ragsdale (2002), Kim & Kim (2005)
Capital	Brown & Dev (1999), Barros (2005)
Customer Satisfaction, Service Quality	Gundersen et al. (1996), Armstrong et al. (1997), Choi & Chu (1999), Brown & Ragsdale (2002), Mattila & O'Neil (2003), Campos-Soria et al. (2005), Akbaba (2006), Reynolds & Thompson (2007)
Demand Conditions	Go et al. (1994), Phillips (1999), Brown & Dev (1999)
Destination	Go et al. (1994), Cizmar & Weber (2000)
Human Capital, Education Level, Training	Chandrasekar & Dev (1989), Go et al. (1994), Gundersen et al. (1996), Philips (1996), Brown & Dev (1999), Cizmar & Weber (2000), Wong & Kwan (2001), Brown & Ragsdale (2002), Morey & Dittman (2003), Reynolds (2004), Barros (2005), Orfila-Sintes et al. (2005), Trung & Kumar (2005), Mandelbaum & Nicholas (2006), Yang & Lu (2006)
Market Conditions	Go et al. (1994), Brown & Dev (1999), Philips (1999), Morey & Dittman (2003), Reynolds (2004), Barros (2005), Yeung & Lau (2005, 2006)
Marketing	Go et al. (1994), Cizmar & Weber (2000), Keh et al. (2006), Mandelbaum & Nicholas (2006)
Operational Costs	Barros (2005), Trung & Kumar (2005), Karagiorgas et al. (2007)
Physical Characteristics	Phillips (1999), Morey & Dittman (2003), Reynolds (2004), Barros (2005), Yang & Lu (2006), Reynolds & Thompson (2007)
Pricing	Qu et al. (2002), Mattila & O'Neil (2003), Lockyer (2005), Mattila & Choi (2006), Reynolds & Biel (2007)
Process Management	Phillips (1999), Cizmar & Weber (2000), Yang & Lu (2006), Seol et al. (2007)

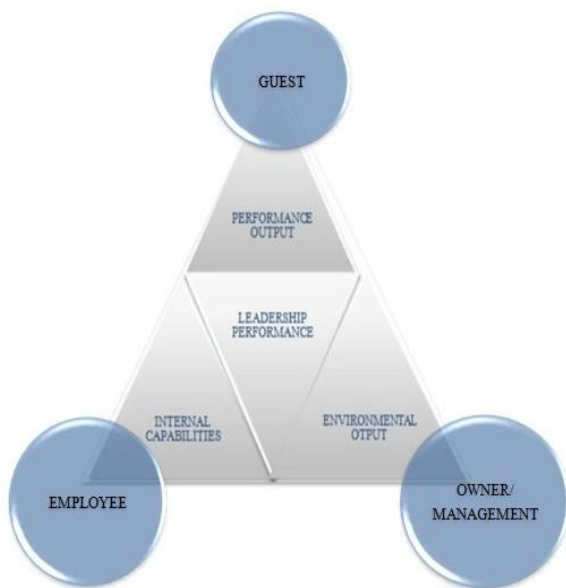
DETERMINANTS OF COMPETITIVENESS	AUTHORS
Productivity	Brown & Dev (1999, 2000), Barros & Alves (2004), Sigala (2004), Reynolds (2004), Barros (2005), Yang & Lu (2006), Reynolds & Thompson (2007), Seol, Choi, Park & Park (2007)
Strategies	Go et al. (1994), Phillips (1996, 1999), Cizmar & Weber (2000), Wong & Kwan (2001), Brown & Dev (1999, 2000), Hwang & Chang (2003), Morey & Dittman (2003), Barros (2005), Yeung & Lau (2005)
Strategic Alliances	Preble et al. (2000), Kim & Kim (2005), Pine & Phillips (2005)
Technology	Chandrasekar & Dev (1989), Go et al. (1994), Brown & Dev (1999), Philips (1999), Siguaw et al. (2000), Wong & Kwan (2001), Barros & Alves (2004), Sigala et al. (2004), Ham et al. (2005), Law & Jogaratnam (2005), Orfila-Sintes et al. (2005)

**Source:** Own edit, extended version of Tsai, Song & Wong (2009)

The determination of the competitiveness of a hotel is very complex. The performance of the firms have a great influence on the competitiveness of a country, this includes the service sector and the hotel industry as well. As the society starts to grow and improve, it stimulates the hotel industry and the service sector to grow, in return the hotel contributes to the economic, social and cultural improvement of the society. The hotel industry stimulates economic growth and stability of the destination, due to the multisectoral impact of tourism commerce and service industries evolve, the number of visitors is growing, creating demand of increased expansion of accommodation services. A hotel competitiveness indicator expresses the extent to which the hotel is able to provide services which are available for sale while providing satisfaction for the guests, employees and management/ownership at the same time (Juhász, 2012). In this statement the different dimensions are highlighted and a conclusion is drawn, that reaching high business profit does not mean full competitive advantage on the market. If the guest wishes are guaranteed and the guest satisfaction is high without adequate revenue this fact is still not enough for a firm to possess competitive advantage on the market. Special indicators (GESPER<sup>1</sup>, GOP<sup>2</sup>-level, REVPAR<sup>3</sup>, TREVPAR<sup>4</sup>-results etc.), the ability to increase in profitability, guest segments, harmony of specialization, level of personal cost and the profitability of the invested capital all contribute to the competitiveness of a hotel. However, international competitiveness must be compared to foreign market conditions, due to the differences in the level of the general consumption tax, tourist tax and with regard of human resources tax. The competitiveness of domestic hotels is based on the labour costs and equipment

resources (Juhász, 2010). The performance and competitiveness of a hotel is determined by several factors. The hotel using the input factors (work environment, technology, infrastructure, training, business environment, innovation, creativity) and products to form services, which result in output factors (economic growth, increase in the employment and in the quality of life) which depend on the strategic and competitive position of the hotel in the region. The impact of the above mentioned factors is reflected by the market share, and the productivity of the hotel, the cost and price competition in the regional market. The hotel competitiveness indicators can be classified into three groups, indicators associated with service (service capacity, capacity indices, demand, supply, distribution, availability, category, quality and innovation) performance (output growth, possibility of growth, employment, quality of labor, skills, education, sustainability, productivity, efficiency, ability to create income) and resources (location, added value, labour, capital, assets, investment in the sector, annual replacement of equipments, technology).

The following Pyramid Model (which is the base for the research) highlights how environmental inputs, internal conditions, leadership performance and performance output affect hotel competitiveness while ensuring sustainable development, providing the satisfaction of the guests, employees and of the management/owners at the same time. The indicators of competitiveness are divided into the four dimensions according to their relationship to other factors. According to this model competitiveness of hotels can be measured from three perspectives, from the guest's, employee's and owner's point of view.



Source: Own edit

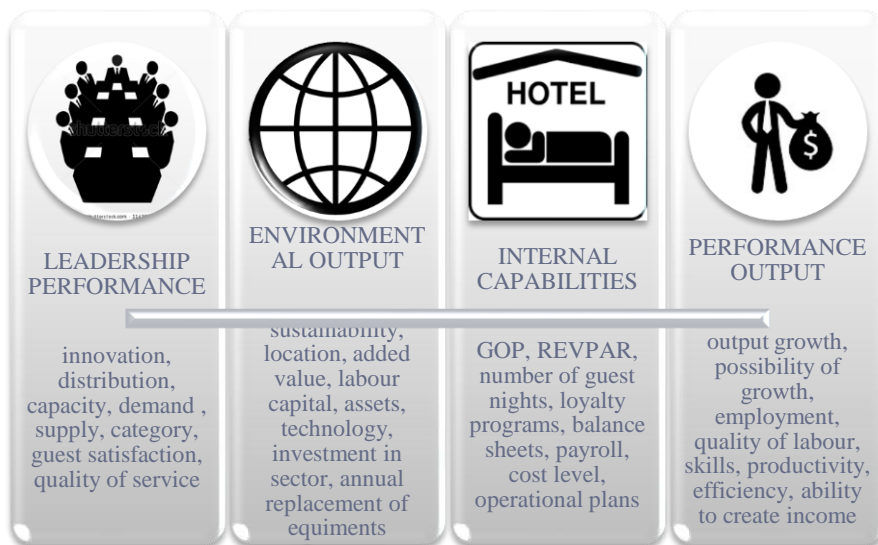
Figure 1. Hotel Competitiveness Pyramid

**Research procedure**

The aim of this research is to measure the competitiveness of 32 four and five star hotels in Budapest and to test the model of the competitiveness pyramid and the validity of the grey relational analysis

and its applicability for the measurement of competitiveness in the service industry.

32 international tourist hotels formed the base sample for the research. According to the category these were all 4 and 5 star hotels. Some of the data used in the research was confidential, that is the reason only the final result is published and only the final TOP 5 hotels are examined. Two analytical methods are applied for the monitoring of the hotels, confirmatory factor analysis (CFA) and grey relational analysis (GRA). The GRA is based on a synthetic measure about the similarity of developing trend to measure the relationship between the factors. During the measurement the results are derived with the application of the ranking method. The rank in descending order indicates the result of the competitiveness results. One advantage of this method is that with only few available data/factors the analysis results in approximately accurate calculations. In the hotels and other business/firms it is a very difficult process to obtain internal data, that is the reason this method was applied during the research. The main point of the study is the analysis of four dimensions presented in Figure 2.



Source: Own edit

Figure 2. Hotel Competitiveness Monitor based on the Pyramid Model

The Hotel Competitiveness Monitor includes the different factors and indicators contributing to define the level of hotel competitiveness. These four main dimensions of the hotel competitiveness pyramid are leadership performance, environmental output, internal

capabilities and performance output. These can be calculated with the help of the four times eight investigated indicators and with the application of CFA. The framework of the paper and the results of the four dimensions are demonstrated in Table 3.

**Research results**

Table 3. Result of Grey Relational Analysis

	<b>Corinthia</b>	<b>Four Seasons</b>	<b>InterContinental</b>	<b>Kempinski</b>	<b>Marriott</b>
Step 1					
Dimension 1	4944562	9661	4603627	4240168	4679768
Dimension 2	28184077	217555	19504774	19833997	23831301
Dimension 3	-2163204	-17475	-1906919	-878806	-3220576
Dimension 4	9,2	9,4	9	9,3	8,6
Step 2	Application of GRA according to the formula				
Dimension 1	1	0	0,931	0,857	0,946
Dimension 2	1	0	0,69	0,701	0,844
Dimension 3	0,33	1	0,41	0,731	0
Dimension 4	1	0	0,949	0,766	0,787
Step 3	Calculation of absolute value				
Dimension 1	0	1	0,069	0,143	0,054
Dimension 2	0	1	0,31	0,299	0,156
Dimension 3	0,67	0	0,59	0,269	1
Dimension 4	0	1	0,051	0,234	0,213
Step 4	Grey relational analysis				
Dimension 1	1	0,333	0,879	0,778	0,903
Dimension 2	1	0,333	0,617	0,626	0,763
Dimension 3	0,427	1	0,459	0,65	0,333
Dimension 4	1	0,333	0,907	0,681	0,701
Step 5	Grey relational analysis and ranking method				
Dimension 1	1	0,333	0,879	0,778	0,903
Dimension 2	1	0,333	0,617	0,626	0,763
Dimension 3	0,427	1	0,459	0,278	0,333
Dimension 4	1	0,333	0,907	0,681	0,701
<b>Sum</b>	<b>3,427</b>	<b>1,999</b>	<b>2,862</b>	<b>2,363</b>	<b>2,7</b>
<b>Rank</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>3</b>

Source: Own edit, internal secondary data

The TOP 5 hotels in Budapest and the result of the competitiveness is showed in Table 3. Four Seasons Hotel Budapest Gresham Palace was found to be the most competitive, on the second place stood Kempinski Hotel Corvinus Budapest and then Marriott Hotel Budapest on the third place. These hotels possessed the most competitive factors in the hotel market in 2013 in Budapest.

The method of GRA and the Hotel Competitiveness Pyramid were tested on three star hotel sas well, the validity was also checked by the changing of some values. The conclusion can be drawn that this method is applicable for the estimate measurement of hotel competitiveness.

**Summary**

The aim of this research was to introduce the existing literature in connection with hotel competitiveness and with the testing of the

Competitiveness Pyramid Model and application of the grey relational analysis evaluate the level competitiveness of five star hotels in Budapest. The formulation of the hotel competitiveness index was carried out on the basis of the Pyramid modell. The main indicators were assumed and from them dimensions were formed to evaluate the level of competitiveness for each hotel.

One practical aim of the research was the development of measurable indicators regarding environmental, economic and social factors which have an effect on the hotel industry. This research focused on the combination of these complex indicators with the business indicators of each hotel. Finally a hotel competitiveness index was reached, which is suitable to rank the competitiveness level of hotels among its competitors.

With more internal data resource and with the increasing number of factors a more exact hotel

competitiveness-index could be calculated which can contribute to reaching higher business accomplishment. If the management is aware of the weak points which need further development, on long term better results can be achieved. The general objective is to achieve better business results, more profit, higher guest satisfaction results, higher GOP and more positive guest comments. The competitiveness-index is also helpful for making long- and short-term decisions about investments, innovation and other type of business decisions.

The research focused on hotel competitiveness measurement methods. Literature was examined in this topic revealing the questions around the service-hotel competitiveness measurement and competitiveness measurement in general and in the case of destinations. The conclusion from the investigated articles is that the measurement of hotel performance and competitiveness still needs some improvement and research to derive competitiveness factors from them. A reliable and fix measurement system which would be able to compare and specify the competitiveness of two or more hotels with different categories and location has not been defined yet, but the above mentioned different methods which enable the evaluation of hotel and destination performance contribute to the measurement of hotel competitiveness and make the creation of a ranking list between categorized hotels possible.

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<sup>1</sup> Guest Night Per Revenue

<sup>2</sup> Gross-Operating Profit, result of the business activity

<sup>3</sup> Revenue Per Available Room

<sup>4</sup> Total Revenue Per Available Room