

# **INFORMATION TECHNOLOGIES & COMPETITIVENESS IN HOSPITALITY. CASE STUDY OF GREEK RESORT HOTELS**

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### **Abstract**

*Hospitality businesses need to implement a number of strategies so as to compete successfully in today's tourism market. Hoteliers can use information technologies in order to improve service quality, deliver exceptional guest satisfaction and increase revenues, as well as market share. This article explores what are the success factors on ICT and examines whether the ICT investments enhance competitiveness in the hospitality sector and to what extent. The survey was conducted in Chalkidiki, Greece and reveals that the top 5 ICT systems considered to be the most critical to success for the hotel managers are: guest security systems; website development with booking engine; on-line guest satisfaction evaluation; high-speed/WiFi Internet; and, the property management systems. Furthermore, adequate and proper investments in new technology systems enhance the hotel competitiveness in terms of efficiency, effectiveness and profitability. This study was limited to high-class resort hotels in North Greece. Another limitation was the reluctance of some hoteliers to share operating performance and financial data of their lodging. Despite this fact, the sample is considered representative for reliable conclusions, since its size accounts for the 92% of the region's upper class bed capacity. A competitive analysis in the area of ICT, as well as the application of both benchmarking and empirical analysis for the hotel economic assessment are among the main contributions of this study. The findings and proposed analyses can help hotel managers evaluate and compare their property with the competitive set and utilize the results in order to enhance their competitiveness.*

**Keywords:** information technologies, hospitality, competitiveness, resort hotels, capital expenditures.

## **INFORMATION TECHNOLOGIES & COMPETITIVENESS IN HOSPITALITY. CASE STUDY OF GREEK RESORT HOTELS**

### **INTRODUCTION**

Hospitality businesses need to follow a number of principles in order to compete successfully in today's tourism market place. These principles include: put guests first and ensure they feel important, special and comfortable; be a leader in quality; develop radical innovations; and, strengthen the hotel's strategic position within the industry (Poon, 1993 & Hayes et al., 2011).

Information technologies help the hospitality sector reach two of the main goals of a hotel: to deliver exceptional guest satisfaction and increase profits. The hotels that will be successful in the next few years are the ones that do everything possible to satisfy their guests and offer high-tech yet high-touch services (Walker, 2010).

The purpose of this article is to explore what are the success factors on Information & Communication Technologies (ICT) and examine whether the ICT investments enhance competitiveness in the hospitality sector and to what extent.

After extensive literature review we found out that the above facts are missing from the contemporary literature and thus, we conducted a survey in 4 and 5-star resort hotels in Chalkidiki, Greece so as to identify answers to the research problem.

The applied methodological approach includes the following procedures:

- Data collection for the ICT assessment, as well as for the economic performance of the sampled hotels.
- Identification of the most critical success factors on ICT.

## *ICT AND COMPETITIVENESS IN HOSPITALITY*

- Investigation whether the capital expenditures (CapEx) on ICT made by the hotels of the sample have created a competitive advantage enhancing, over the years, their economic performance. Towards this goal:

- ⇒ The average percentage of the hotels' CapEx for ICT investments, as well as various economic performance indicators of the properties are set forth. The economic performance indicators include: Labour Productivity; Efficiency Indexes; Effectiveness; and Profitability Indexes.

- ⇒ Benchmarking process and empirical analysis are both used in order to compare the hotels with each other and the industry averages as well, and for the assessment of their performance.

Towards achieving our objectives, we quote in the article the following data:

- Hotel capacity in Chalkidiki (Table 1).
- The sample characteristics (Table 2).
- The hotel critical success factors in the area of ICT (Table 3).
- The average percentage of capital expenditures of the surveyed hotels for ICT investments over the period 2005-2010 (Table 4).
- The results of the benchmarking process for the key indicators of the hotel sample, as well as the respective industry averages (2005-2010). The hotel performance indicators include the variables: labour productivity, efficiency, effectiveness and profitability (Table 5).

## **LITERATURE REVIEW**

### **Competitiveness**

The competitiveness of a country derives from the performance of its businesses which include the hotel enterprises (Barros, 2005). While a community's growth stimulates hotel performances, in turn hotels contribute to the community's economic, social and cultural

development (Go et al., 1994). There are many other factors (e.g., input, process, output and outcome) that determine the hotel industry's competitiveness (Tsai et al., 2009; Roy, 2011).

The factors considered to be important for the hotel competitiveness are the following: strategic decisions (Wong & Kwan, 2001; Hwang & Chang, 2003); marketing (Keh et al., 2006; Brown & Ragsdale, 2002), including city promotion initiatives and city knowledge networks that can become an effective tool for the competitiveness of hotels (Navarro & Martinez-Martinez, 2011); consumer satisfaction, service quality and pricing; technologies and innovation (Barros & Alves, 2004); operational (in particular environmental and energy) costs (Barros, 2005); strategic alliances with competing firms (Tsai et al., 2009).

According to Olsen et al. (1998); Tsai et al. (2009); Navarro & Martinez-Martinez (2011); and, Roy (2011), the major determinants of hotel competitiveness are: location; technology; human capital, education level and training; strategies; productivity; capital; guest satisfaction-service quality; brand image; strategic alliances; strategic investments; operational efficiency; market conditions; demand conditions; pricing; niche marketing; process management.

In this article, competitiveness is seen as involving elements of productivity, efficiency, effectiveness and profitability.

### **Productivity and Efficiency**

Productivity measures how well production processes transform resource inputs into outputs and it is the quotient between output(s) and one, more or all inputs used in a production process (Keh et al., 2006). Hotel productivity includes efficiency, effectiveness, quality and predictability (Tsai, Song & Wong, 2009).

Service firms can increase productivity in four ways: by improving their labour force through better recruiting or more extensive training; by investing in more efficient capital equipment;

replacing works with automated systems; recruiting consumers to assist in the service process (Lovelock & Young, 1979).

Efficiency is connected to how input resources are utilized and is achieved when the marginal productivity per unit is equated across all resources that contribute to a firm's output (Keh et al., 2006). Tangen (2004) describes efficiency as 'doing the things right' and according to Walker (2010) efficiency is getting the most done with the fewest number of inputs.

### **Effectiveness and Profitability**

Effectiveness is concerned with determining which strategy – among all possible strategies – maximizes long-term Return on Investment (Keh et al., 2006). According to Tangen (2004) and Walker (2010) effectiveness is doing 'the right thing' (e.g. reaching the strategic goals).

On the other hand profitability is the efficiency of a hotel company at generating earnings. So to speak, profitability illustrates how well the management makes investment and financial decisions to generate profits. Profitability ratios are often used to measure how effectively a company's management is generating profits on sales, total assets and stockholders' investments (Moyer et al., 2001).

### **Information Technologies**

Technological innovation is essential for both a nation and its hospitality sector to enhance competitiveness and prosper. To this direction, it is critical for an economy and a business to adopt existing technologies in order to enhance productivity and fully leverage ICT in daily activities and production processes for increased efficiency and competitiveness (World Economic Forum, the Global Competitiveness Report 2011-2012).

Tourism and hospitality is an extremely information-intensive industry. The rapid development of information technologies facilitates the speed and efficiency with which the industry's information is processed, distributed and otherwise manipulated. Technology makes it possible to: increase efficiency of production; provide better quality services; more

## *ICT AND COMPETITIVENESS IN HOSPITALITY*

effectively market and distribute services; release human hours for “high touch” services, and; generate completely new and flexible services (Poon, 1993).

According to Nyheim et al. (2005), hospitality firms can use technology in order to: lower their cost structure; increase revenues and market share; create unique value propositions for guests; create unprecedented returns for investors.

Hotels are among the industry players who use information technologies in order to carry out their front office, back office and food and beverage operations; to entertain their guests and to distribute their bed nights in the marketplace (Poon, 1993).

The kinds of technology used throughout the hospitality industry vary widely depending upon the size and type of hotel. Hotel back-office systems are becoming increasingly sophisticated and are widely recognized as being a key to improved profitability. Moreover, in-room technology is rapidly becoming a very real competitive differentiator (Inkpen, 1998).

Wigand (cited in Werthner), has depicted the value or profit impact of IT not as direct, but as indirect. It occurs via the improvement of business process. This makes it difficult to measure improvements in productivity. The direction of change has to be aligned with the business strategy, which by itself is affected by the enabling potentials of IT (Werthner, 1999).

In hotel business, technological change means investing in new techniques with the aim of improving results. Information Technology (IT), such as the Internet, intranets, and central reservation systems, is one of the crucial technology investments that are often made by hotels to improve performance (Tsai et al., 2009).

Several studies have identified a positive and significant relationship between the use of IT and the development of a competitive advantage (Siguaw et al., 2000). Nyheim, McFadden & Connolly (2005) define competitive advantage as a property's (or chain's) ability to attain and maintain a strong bottom line. Furthermore, IT decisions can play an important role in

areas such as employee productivity, revenue enhancement and guest service (Siguaw et al., 2000).

Ham et al. (2005) examined the effect of IT applications on the performance of lodging operations. Their findings indicate that the installation of computer applications in the front office could improve hotel performance. Although installing back-office applications may not contribute to the improvement of hotel performance in the short-term, it does help with the improvement of the hotel's long-term productivity. Moreover, their study showed that restaurant and banquet management systems have a significant impact on the performance of the hotel operation.

At EU level a survey by e-business w@tch (2006) provides evidence for a high ICT impact on the organization of internal work operations, services and supplies of the tourism companies. More specifically the survey revealed that the percentages of tourism companies observing a positive influence of ICT in various business areas are as follows: revenue growth 51%; business process efficiency 57%; internal work processes 63%; procurement costs 37%; product/service quality 41%; customer service 53%; and, productivity 58%.

Data from another survey show that over the past few years an increasing share of total turnover for accommodation services is generated via internet (ECORYS, 2009).

Jonsson & Devonish (2009) found out that among the used competitive strategies, the "Leveraging information technology to deliver value" was ranked as the most important competitive strategy used in their total sample.

Moreover, Scholochow et al. (2010) presented a data envelopment analysis model in order to investigate ICT's efficiency and effectiveness in the Austrian hotel sector. Their results show that the impact of ICTS on productivity gains is positive and significant.

As it regards the penetration of Information and Communication Technologies into the Greek Tourism Sector, a field research in hotels in 2007 (sample of 250 hotels) has shown that the



### *ICT AND COMPETITIVENESS IN HOSPITALITY*

computer usage in the Greek hotels is 78%, whereas the Internet usage is 74%. The ICT profile of the hotels is as follows: proprietary website 63% of the sample; participation in an advertising website 46%; on-line procurement 19%; on-line sales 50%; use of ERP systems 11%; use of CRM (Customer Relationship Management) 13% (Observatory for Digital Greece, 2007 & 2009).

Another research carried out in 2008 by the Research Institute for Tourism (sample of 289 small and medium size hotels) found out that the 83,4% of the hotels uses the Internet for room reservations, with the average percentage of reservations being 10%. The percentage of hotels that have a website is 88,9% and from the rest of the properties (11,1%), that do not have a website, the 68,8% intends to develop one in the near future.

The same study reveals that from the 51,2% of the hotels programming to make capital expenditures, the majority (34,8%) intends to invest in room renovations and only the 12,2% plans to invest in new technologies.

#### **Capital Expenditures for Technology**

Hotels normally reserve at least 4% of gross revenue for new furniture, fixture and equipment, technology upgrades and new mechanical systems. Nevertheless, the 4% reserve is not enough to meet the true capital requirements over a longer-term basis and each hotel should reserve approximately 8-9% of revenue each year for capital expenditures and repair & maintenance costs combined (Simon, 2009).

A study called CapEX on hotel **Capital Expenditures** carried out in the USA concluded that full-service hotels averaged 6,88% of gross revenues on CapEX from 1983-1993. The average CapEX for all hotels was 5,77% of gross revenues over 25 years. The same study showed that in the full-service hotels the breaking down of CapEx into components is as follows: rooms & corridors 40%; food & beverage 15%; other public space 15%; building 15%; other 7%; technology 5%; ADA/Life safety 3% (Berg & Skinner, 1995).

Based on the CapEX 2007 study of capital expenditures in the hotel industry, the Furniture Fixtures & Equipment (FF&E) expenditures by property age per available room in the full service hotels are as follows: for properties < 5 years old: 2,3% of gross revenues; from 5-15 years old: 3,5%; > 15 years old: 5,4%; overall: 5,1% (Stanford, 2008).

Armijos et al. (2002) studied technology investments in the lodging operations and found out that the average capital expenditures for technology as a percentage of total revenues increased from 4,26% in 2000 to 4,98% in 2001, while technology operating expenditures as a percentage of total revenues increased from 5,59 to 6,26% in the same period.

## **METHODOLOGY**

To examine what are the success factors on ICT, as well as whether the investments on information technologies enhance competitiveness in the hospitality sector, and to what extent, the applied methodological approach includes the following steps:

### **Data Collection and Sample Characteristics**

The nature of our study requires a plethora of input as well as a long-term (2005-2010) investigation into sensitive areas of the hotel's management, such as efficiency and profitability. Due to this fact, the data were collected both through questionnaires and in site visits to the hotels for direct collaboration with their managers and executives whenever this was necessary. Moreover, an extensive elaboration of data published in several sector studies and financial directories took place so as to calculate indicators and industry averages.

The hotels of the sample are located in Chalkidiki, Greece and the survey was conducted from April to September 2012. We selected Chalkidiki for our survey for the following reasons: the area is one of the key tourist destinations in Greece, it has a considerable number of resort hotels and more than one third of its hotel capacity belongs to the luxurious and high class lodgings, which as generally admitted, keep reliable and well-organized records.

The data concerning hotel capacity in Chalkidiki are as follows (Table 1):

**Table 1****Hotel capacity in Chalkidiki (2010)**

<b>Hotel classification</b>	<b>Nr of hotels</b>	<b>Nr of rooms</b>	<b>Nr of beds</b>
5*	19	3.213	6.852
4*	44	5.946	11.666
Total (all hotel categories)	526	23.667	46.526

Note: The 5 & 4-star hotel beds are the 39,8% of the total hotel bed capacity.

Source: Association of Greek Tourism Enterprises

The questionnaire we developed for the study was sent to all 63 upper class hotels of Chalkidiki. Since some hotel managers were not willing to share their financial data, six questionnaires were not answered and the sample consists of 57 hotels (90% of the total 63 four and five-star hotels operating in the region). Some of these hotels belong to the same company or group of hotels, and they publish consolidated balance sheets and performance data. The personal contacts for obtaining or clarifying the ICT, performance and financial data included collaboration with each hotel's general manager, as well as the financial, ICT, sales & marketing and human resources manager (a total of 285 executives).

The questions included in the questionnaire can be classified into four basic groups: (a) the hotel basic characteristics, such as: classification, bed capacity and number of employees; (b) the contemporary technology systems used by the property and the factors considered to be the most critical to success for the hotel; (c) the capital expenditures made by the hotel for ICT investments over the period 2005-2010; and (d) the property's economic data and performance for the same period.

Profile of the sample

General description of the hotels: all the properties are 4 and 5-star resort hotels. Their location by the beach and the physical environment is considered to be one of their major advantages; all the hotels offer a big variety of food and beverage services; all the properties are managed directly by the ownership and not by third-party professional companies.

The basic characteristics of the sample are (Table 2):

**Table 2**

**Sample Characteristics**

Number of Hotels	Classification	Bed Capacity
17	5*	6.508
40	4*	10.619
Total Number of Employees: 16.740		
Market Share (5-star hotels): 6,35%		
Market Share (4-star hotels): 5,40%		

Source: author's own elaboration

Note. Market Shares in terms of the Overall (Greece) Amount of Beds, per Hotel Category.

**Identification of the Sample's Success Factors on ICT**

In order to identify the most critical success factors of the competing hotels concerning the application of contemporary technology systems, we conducted a competitive analysis by entering the collected data in the Hotel Competitor Analysis Tool (H-CAT): a Strategic Positioning Tool for Managers (Enz & Thompson, 2011). This tool is an Excel spreadsheet designed to help managers make strategic comparisons between competing hotels on critical success factors. Our analysis concerned the ICT assessment of the hotels that compose the sample.

The results of the analysis show that the ICT factors (and their weight) considered to be the most critical to success for the hotels in question are (Table 3):

**Table 3****Hotel Critical Success Factors in the Area of ICT**

SN	FACTOR	WEIGHT % (respondents average)
1.	High-speed / WiFi Internet	10
2.	Website development with booking engine	15
3.	Guestroom phones with automatic features	5
4.	Smart-cards applications	8
5.	In-room media devices	5
6.	Guest security systems	20
7.	On-line guest satisfaction evaluation system	12
8.	Points of Sales system	7
9.	Intranet and extranet technologies	8
10.	Property Management Systems	10
<b>TOTAL WEIGHT:</b>		<b>100%</b>

Source: author's own elaboration

The hotels of the sample are used for further analysis and study aiming to test whether their capital expenditures (CapEx) in new technologies have enhanced, over the years, their competitiveness and performance.

### **Investigation if the Capital Expenditures on ICT Create a Competitive Advantage**

Given the ICT-intensive nature of hotel businesses, the next methodological step is to investigate whether the level of capital expenditures on ICT made by the hotels of the sample over the period 2005-2010 have created a competitive advantage in relation to: a. their direct competitors and b. the Greek hospitality sector in total.

Towards this goal, we quote the sample's average percentage of CapEx for ICT investments during 2005-2010 (Table 4), as well as the sampled hotels' key facts and the respective industry averages (Table 5) for the following economic performance indicators:

⇒ Labour Productivity.

⇒ Efficiency indexes: Return on Equity and Return on Capital Employed.

⇒ Effectiveness: Annual occupancy; Turnover; Revenue per Bed, and

⇒ Profitability indexes: Margins of Gross Profit, Operating Profit, Net Profit and EBITDA.

Moreover, benchmarking and empirical analysis is used for the comparison of hotels and for the assessment of their performance.

### ICT Investments

The Table 4 shows the average percentage of capital expenditures of the surveyed hotels for ICT investments over the period 2005-2010.

**Table 4**

#### Average Percentage of CapEx for ICT Investments (%) 2005-2010

Number of Hotels	Percentage (%) on CapEx
3	8,0
2	7,0
5	6,5
4	6,0
8	5,5
7	4,5
4	4,0
2	3,0
9	2,5
6	2,0
5	1,0
2	0,5

Source: author's own elaboration

Note. This percentage includes the cost for purchase, installation, operation, maintenance, upgrade and training on ICT systems.

### Economic Performance Indicators and Benchmarking

The labour productivity in the hospitality sector is measured by dividing the total revenue by the number of full-time equivalent employees (Walker, 2010). We adopt this simplified way of productivity measurement in order to be able to compare all the hotels of our sample by using the same standards.

The efficiency of hotel enterprises is assessed by using the indexes Return on Equity and Return on Capital Employed (ICAP, 2012). Effectiveness is evaluated by the hotels' operating

performance. The hotel performance assessment methods include the following variables: average annual occupancy, turnover (sales) and revenue per available bed (Kasavana & Brooks, 2005). For the assessment of profitability the indexes of Gross Profit, Operating Profit, Net Profit and EBITDA margin<sup>1</sup> are used (ICAP, 2012).

In order to assess the performance of the hotel companies, benchmarking process of their key performance indicators for the period 2005-2010 is applied. The average indicators of the hotel sample, as well as the respective industry averages are presented in the Table 5:

**Table 5**

**Sampled Hotels Key Indicators & Industry Averages (Mean 2005-2010)**

Performance Indicator		Hotel Sample	Industry Averages
Labour Productivity (€)		45.352	23.400
Efficiency	Return on Equity (%)	-1,55	-8,05
	Return on Capital Employed (%)	1,32	-2,13
Effectiveness	Average annual occupancy (%)	74,41	55,93
	Turnover (Mio €)	8,76	4,012
	Revenue per available bed (€)	7.688	7.150
Profitability	Gross Profit Margin (%)	15,065	23,06
	Operating Profit Margin (%)	-14,82	-14,86
	Net Profit Margin (%)	-2,36	-15,83
	EBITDA Margin (%)	5,32	18,07
Average Percentage of ICT on CapEx		4,0	N/A

Source: author's own elaboration

## RESEARCH FINDINGS

After having studied and analysed the data of the hotel sample, the main findings can be summarized as follows:

### *ICT AND COMPETITIVENESS IN HOSPITALITY*

○ The ICT factors (and their weight) that are considered to be the most critical to success for the managers of the sampled hotels are:

1. Guest security systems 20%
2. Website development with booking engine 15%
3. On-line guest satisfaction evaluation system 12%
4. High-speed / WiFi Internet 10%
5. Property Management Systems 10%
6. Smart-cards applications 8%
7. Intranet and extranet technologies 8%
8. Points of Sales system 7%
9. In-room media devices 5%
10. Guestroom phones with automatic features 5%.

○ The average percentage of the surveyed hotels' ICT investments on CapEx (2005-2010) is 4% (35 hotel companies have spent less than 5% and 22 have spent more than 5%).

○ There is a positive correlation between the investments on technological change and the enhancement of competitiveness. More specifically:

Those hotels that have spent more than 5% of their capital expenditures on contemporary technologies the period 2005-2010, have increased competitiveness (efficiency, operating and net profit margin) compared to their competitors. There are 20 hotels in this category. Moreover, compared to the industry averages (5\* and 4\* hotels), the specific hotels have enhanced indexes in terms of efficiency, turnover, operating profit margin and net profit margin.

However, those hotels that have not invested enough in contemporary technologies (less than 5% of their CapEX) show declining competitiveness especially in terms of efficiency and profitability. The number of hotels belonging to this category is 35.



### *ICT AND COMPETITIVENESS IN HOSPITALITY*

The 3 hotel resorts that have spent on average 8% of their CapEx for ICT Investments have the highest economic performance indicators in terms of efficiency, effectiveness and profitability compared both to their key competitors in the area, as well as to the Greek industry averages.

The only exceptions to the above findings are two 5-star hotels which have invested in new technologies, but despite this fact they have negative economic results till 2008. Further investigation has shown that after this year, the specific hotels were absorbed by another company that after a huge increase in capital expenditures in 2009 appears to be profitable in 2010.

- The data show that in the case of some hotels, labour productivity is unusually high but their “profitability” margin is negative. The only possible interpretation for this phenomenon is that some companies employ a high number of foreign employees who are not registered with the local Social Security Organization. Since labour productivity is the quotient of total revenue by the number of (registered) employees, the result sometimes does not reflect reality.

- According to the management of the hotels having been found competitive on overall performance, the main factors contributing to the creation of their competitive advantages and the weighting index of each factor in competitiveness are the following: proper strategic decisions 30%; high standards of service quality & guest satisfaction 20%; well-trained & motivated staff 20%; continuous technology & innovation investments 20%; careful control of operational costs 10%.

As for the technological systems and factors that have contributed significantly to the creation of their competitive advantages, these are the following: Key lock System; High-speed / WiFi Internet; Website development with booking engine; Property Management and Human Resources Management system; Points of Sales system (PDAs included); In-room

media devices including guest comfort and convenience features; Web based guest questionnaires; Continuous training of staff on the use of technological systems, always towards guest satisfaction and offer of high quality services.

### **LIMITATIONS AND FUTURE RESEARCH**

This study was limited to 5 and 4-star resort hotels in Chalkidiki, Greece. Another limitation was the reluctance of some hotel managers to share operating performance and financial data of their property. Despite this fact, the sample is enough for reliable findings and conclusions, since the sample's size (bed capacity equal to 17.127 and 92% of the region's upper class total capacity) is considered representative.

Future research is suggested to include hotels of all types (e.g. city hotels), sizes and levels of service, as well as properties from wider geographical areas. Likewise, the guest perceptions on the subject should be taken under consideration for having more global and precise results. Furthermore, due to the very high number of variables required for the measurement of hospitality competitiveness, the future researchers should focus on developing comprehensive, yet reliable and effective methodologies that will help the industry players understand, apply and interpret both the input and the outputs of the assessment.

### **CONCLUSIONS**

According to a considerable number of authors, researchers and reports, technology can be used in hospitality in order to enhance service quality, competitiveness, revenues and market share.

This study was intended to identify the most critical success factors on ICT and examine the impact of ICT investments on the competitiveness of high-class resort hotels in Greece. In order to achieve the study purpose, the following analyses took place. First, a competitive analysis in the area of ICT was conducted. Second, data on ICT investments and economic performance were elaborated and their mean was presented by descriptive statistics. Third,

benchmarking as well as empirical analyses were performed to identify whether the level of capital expenditures on ICT had significant effects on the competitiveness of the sampled hotels.

The research sample was comprised of 17 five-star hotels and 40 four-star resort hotels located in Chalkidiki, Greece. The market share (in terms of the overall amount of beds per hotel category) of the sampled 5 and 4-star properties was, respectively, 6,35% and 5,40%.

The data were collected through questionnaires and several in site visits to the hotels and direct collaboration with their managers (a total of 285 executives). Moreover, in order to calculate the required variables, an extensive elaboration of data published in several sector studies and financial directories took place.

The competitive analysis conducted in the area of Information and Communication Technologies, as well as the application of both benchmarking and empirical analysis for the economic assessment of the hotels are among the main contributions of this study.

The study revealed that adequate (more than 5% of annual capital expenditures) and proper investments in new technology systems enhance the competitiveness of the hotels in terms of efficiency, effectiveness and profitability. The top five ICT systems that are considered to be the most critical to success for the hotel managers are: guest security systems; website development with booking engine; on-line guest satisfaction evaluation; high-speed / WiFi Internet; and, the property management systems.

The above findings, as well as the proposed analyses of this study can help hotel managers evaluate and compare their property with the competitive set and utilize the results in order to enhance their competitiveness.

The future outlook

It is expected that in the next years the competition in the lodging industry will be increased both at global and national level. In order to survive, the hospitality companies need to

continually pursue new, different opportunities for the future. Success will depend on adoption of innovative strategies and creation of competitive advantages that will help the hotels establish, maintain or improve their position in the market. Based on the findings of the current article, proper technology and innovation investments at adequate level can contribute towards hotel efficiency, effectiveness and profitability enhancement and, therefore, to their success in the competitive game.

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#### Endnote

<sup>i</sup> The indexes used for the assessment of the sample's efficiency and profitability are calculated as follows:

#### Efficiency indexes

$$\text{Return on Equity} = \frac{\text{PROFIT BEFORE TAX}}{\text{EQUITY}} \times 100$$

$$\text{Return on Capital Employed} = \frac{\text{PROFIT BEFORE TAX}}{\text{LIABILITIES}} \times 100$$

#### Profitability indexes

$$\text{Gross Profit} = \frac{\text{GROSS PROFIT}}{\text{SALES}} \times 100$$

$$\text{Operating Profit} = \frac{\text{OPERATING MARGIN}}{\text{SALES}} \times 100$$

$$\text{Net Profit} = \frac{\text{PROFIT BEFORE TAX}}{\text{SALES}} \times 100$$

EBITDA =  $\frac{\text{EBITDA}}{\text{SALES}} \times 100$  (EBITDA is the total resulting as the sum of Operating margin + Financial costs + Accounted depreciation costs), ICAP, 2012.