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Research Article

Tomasz Napierała*, Mehmet Bahar, Katarzyna Leśniewska-Napierała, Yunus Topsakal

Technology towards hotel competitiveness: Case of Antalya, Turkey

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Abstract: The main goal of the paper is to identify the perception of technology by managers of five-star hotels located in Antalya region (Turkey). The managerial perception in the following contexts is discussed in detail: the enterprise, the employees, the managers and the competitiveness of hotel entities. The selection of such research area was determined by the fact that Antalya is one of the top Turkish tourist destinations, with international profile of visitors and intense hotel competition. The following three types of hotels were investigated: hotels affiliated with international chains, hotels affiliated with national brands and independent enterprises. Furthermore, 12 selected general managers were interviewed regarding the above-mentioned hotel types. The results confirmed that managers of internationally affiliated hotels are more focused on increasing their employees' skills and competencies compared to managers of independent entities.

Keywords: Information and Communication Technologies; Hotel; Managers; Competitiveness; Antalya

***Corresponding author: Tomasz Napierała,** University of Lodz, Faculty of Geographical Sciences, Poland, 90-142 Lodz, Kopcinskiego 31, CiTUR, Centre of Tourism Research, Development, and Innovation, Portugal, 2520-614 Peniche, Rua do Conhecimento No 4, ORCID: 0000-0002-6407-5197, Email address tomasz.napierala@geo.uni.lodz.pl
Mehmet Bahar, Cappadocia University, School of Applied Science, Turkey, Nevsehir, 50420 Urgüp, Mustafapasa, ORCID: 0000-0001-5377-7292, Email address mehmet.bahar@kapadokya.edu.tr
Katarzyna Leśniewska-Napierała, University of Lodz, Faculty of Geographical Sciences, Poland, 90-142 Lodz, Kopcinskiego 31, Poland CiTUR, Centre of Tourism Research, Development, and Innovation, Portugal, 2520-614 Peniche, Rua do Conhecimento No 4, ORCID: 0000-0003-2998-6179, Email address: katarzyna.lesniewska@geo.uni.lodz.pl
Yunus Topsakal, Adana Science and Technology University, Faculty of Management, Turkey, Adana, 01250 Sarıçam, Balcalı, Catalan Cd., ORCID: 0000-0003-3202-5539, Email address ytopsakal@atu.edu.tr

1 Introduction

Information and Communication Technologies (ICTs) have a great impact on the knowledge and behaviours of tourists. At the same time, the hotel industry experiences rising customer expectations, competition or globalisation (Sigala, 2005). The hospitality industry is expanding with new possibilities of ICT adoption. At the same, it needs to integrate new technological innovations and traditional service delivery processes (Kaushik, Agrawal, & Rahman, 2015). Shin, Perdue, & Kang (2019) noticed that an understanding of the ICT innovations is a key strategic management concern in the hotel industry. In tourism research, there is a significant focus on customers' technology acceptance (Ayeh, 2015; Usoro, Shoyelu, & Kuofie, 2010), while studies on technology perception by managers are still missing. The goal of this enquiry is to fulfil this research niche by investigating the managerial perspectives of impact of ICT innovations on competitiveness of five-star hotels located in Antalya region. To evaluate this impact, in-depth interviews (IDIs) with hotel managers were conducted.

It is hypothesised that technology perception by managers is related to chain affiliation of a hotel (Paraskevas & Buhalis, 2002). Hoontrakul & Sahadev (2004) found that large internationally affiliated hotels are highly advanced in terms of the adoption and use of ICTs. On the other hand, small independent hotels in general, as well as the majority of hotels operating in developing countries are recognised as not experienced in ICT adoption and use. ICTs are recognised as a critical determinant of hotel guest satisfaction (Cobanoglu, Berezina, Kasavana, & Erdem, 2011). It is confirmed that the improvement of technological qualifications, skills and competencies of hotel employees requires permanent exchange of information between the management and employees, as well as between management and other hotel stakeholders, including customers (Jaremen, Jędrasiak, & Rapacz, 2016). Thus, the following types of hotels were considered in the enquiry: affiliated with international chains, affiliated with Turkish chains and independent.

The following research questions need to be asked: 1) what is the range of ICTs used by hotel enterprises?, 2) what is the perception of ICTs by hotel employees?, 3) what are the relations between human resource management and adoption of ICT in hotel enterprises? and finally, 4) what is the impact of ICTs on hotel competitiveness? The article is organised in the following way; firstly, based on the literature, the authors present the investigated managerial perspectives related to ICTs in the hotel industry. Next, they discuss in detail the methodology, as well as some significant issues in presenting the results. Based on the results of a desk study, the authors present a general description of the hotels in Antalya region. The microscale cartographic inventory enabled them to indicate five-star hotels in Antalya, with divide them into international chains, Turkish chains and independent. Finally, with individual, in-depth, structured interviews, it was possible to define the problems, challenges and benefits of implementing ICTs in investigated hotels.

2 Literature Review

2.1 Range of ICTs used by hotel enterprises

ICTs used in depth by hotel enterprises are related to various hotel divisions: 1) room division ICTs (e.g., telephone and fax system, website and email system, global distribution system, guest account management system, check-in/check-out system, central reservation system, room status and housekeeping management, customer database system, statistics and reporting system), 2) food and beverage division ICTs (e.g., electronic point of sale system, stock and inventory systems, conference and banqueting system, menu management system, table reservation system, order entry systems, statistics and report system), 3) general/back office ICTs (e.g., human resource management system, purchasing system, financial and accounting system, sales and catering system, systems for generating reports and statistics, management support system, teleconference system, decision support system, customer relationship management system, wireless internet connection, security system, business centre, ATM in hotel) and 4) in-room ICTs (e.g., in-room telephone system, electronic locking system, energy management systems, automated wake-up system, voicemail system, wired/wireless in-room Internet access, in-room entertainment system, in-room electronic safety boxes) (Sirirak, Islam, & Ba Khang, 2011). ICTs used in hotels are applied to meet the operational needs of hotels. In this context, ICTs create an effective and efficient ecosystem by connecting hotel stakeholders (Boes, Buhalis, Inversini, Morrison, & Gretzel, 2016).

Sensor and beacon technologies are required for a successful smart hospitality (Buhalis & Leung, 2018; Leung, 2019). Internal sensors help monitor the operational activities of hotel applications, both outside and inside the hotel (Yick, Mukherjee, & Ghosal, 2008). Beacons can be used to locate guests within the hotel and send personalised messages (Toedt, 2016). The Internet of Things (IoT) enables the connection of traditional physical objects from machine to machine over the Internet and allows users to communicate with them remotely (Holler, Tsiatsis, Mulligan, Karnouskos, & Boyle, 2014). The need for human power is minimised, as each physical object can automatically communicate with others via the IoT technology (Alsaadi & Tubaishat, 2015). In a hotel room, the settings like room temperature, TV channels and ventilation can be adjusted before the guest arrives in the room using the data on their previous experience.

Internetisation of pricing, distribution and promotion of hotel services is a continuous process across space and time (Napierała, 2017). A revenue management system, one of the ICTs, seems to be crucial from the perspective of hotel's economic performance. ICTs enable predicting future bookings by managing and using past and real-time big data sources (El Haddad, 2015). Of course, revenue managers must be aware that such predictions may sometimes fail to generate accurate forecasting and pricing strategies due to political, economic and social crises. However, hotels need ICTs that enable analysis of big data on both the external and internal environment in order to generate accurate revenue forecasts with effective revenue management (Guillet & Mohammed, 2015). A new generation of forecasting models that use artificial intelligence provide better financial and strategic planning by determining hotel guests' demands more accurately (Claveria, Monte, & Torra, 2015). Room price is one of the most important factors affecting hotel preferences of hotel guests. However, the contents and credibility of social media, e-word-of-mouth and websites can directly affect guests' reservation intentions (Noone & McGuire, 2013). Therefore, effective use of ICTs in revenue management might significantly improve hotel performance (El Haddad, 2015).

With Industry 4.0, hotels implemented solutions based on mobile applications. The primary reason for hotels to enable mobile applications is to offer guests the possibility to obtain information and make reservations via their smartphones. Im & Hancer (2014) state that the main reasons for downloading mobile applications in the

lodging industry are to learn about a hotel and make transactions via one's smartphone. One of the factors affecting the likelihood of using mobile applications is its content and information (Rivera, Croes, & Zhong, 2016). Therefore, hotels have a better chance to meet the needs of their guests at maximum level through mobile applications. They have replaced traditional loyalty cards and became one of the main big data sources for hotels (Höpken et al., 2012).

2.2 Perception of ICTs by hotel employees

In the opinion of hotel investors and managers who were investigated, ICTs improve the financial and operational performance. International chain hotels tend to use the latest generation technologies in their hotels in order to create a high-tech image (Siguaw, Enz, & Namasivayam, 2000). Hotel investors and managers expect ICTs to reduce labour and time expenditures on operations and improve service quality (Tuominen & Ascenção, 2016). The accommodation experiences of hotel guests can be enhanced with the latest technologies in their rooms (Šerić & Gil-Saura, 2012). Therefore, tourism companies tend to adapt rapidly to new generations of technologies.

Industry 4.0 is expected to make changes in employee talents in hotels with the use of ICTs in the hospitality sector. The need for employees to adapt to the new generation of technologies emerged with the application of ICTs in hotels. Employees unable to adapt to ICTs began to encounter problems such as loss of talent, career interruptions and unemployment (Topsakal, Yüzbaşıoğlu, & Akıncı, 2018). Job insecurity can in turn lead to negative attitudes towards ICTs. Robots and artificial intelligence decision-making systems automate the operation processes in hotels, and therefore, employees are no longer needed for some hotel-related jobs (McClure, 2018). Therefore, ICTs are not always accepted by managers and employees. Mid-level managers' negative attitude towards technology may be especially preventive in the implementation of ICT systems in hotels (Leung, 2019).

As in the tourism industry, it can be said that the general attitude of the employees towards ICTs is negative in the hospitality sector. One of the main reasons for this perception is job insecurity and the threat of job loss. Employees should remember that ICT systems are not a substitute for employees, but a tool that helps them perform better (Osawa et al., 2017). Managers should assure their employees that technology improves job efficiency and job performance, and create a perception that their employees' jobs are safe in the hotel (Leung, 2019). It can be predicted that the use of a new generation of ICTs in hotels will change job descriptions. Therefore, existing employees should be trained to use ICTs. Similarly, in order not to stop the work done with ICT systems used in hotels, there will be a need for employees when these technologies are disrupted or broken (Topsakal et al., 2018).

2.3 Relations between human resource management and adoption of ICTs

According to Lin (2017), most important success factors in the adoption of mobile technologies are management support and user needs. Applying ICTs to hotels is not enough for them to become 'smart'. Human capital, leadership, social capital and innovation are the four elements of a smart hotel (Boes, Buhalis, & Inversini, 2015). According to a study by Leung (2019), hotel managers believe that once hotels become smart, the number of employees can be reduced, as their operations can be simplified and partially automated.

Kim & Kizildag (2011) investigated the potential of using mobile devices to provide employee training in departments such as housekeeping, restaurants and room services. They determined that mobile learning could increase the effectiveness of employee training. Kim, Connolly, & Blum (2014) explored the potential of using mobile technologies to improve employee collaboration and productivity. As a result, they concluded that technical departments in hotels are the most appropriate places to adopt mobile technologies to increase efficiency and cost control. Jeong, Lee, & Nagesvaran (2016) partially confirmed this proposal by identifying hotel employees' perceptions of the use of mobile technologies at work. They found that employees believe that the use of mobile technologies increases their own activities and job performances, and then they think that their job satisfaction and commitment to the organisation increase (Jeong et al., 2016).

2.4 Impact of ICTs on hotel competitiveness

Direct hotel stakeholders generate a hospitality ecosystem, which includes hotel investors, managers, employees, guests, destination management organisations, online travel agencies (OTAs), airlines and suppliers. The existing digital data flow in such an ecosystem helps tourism stakeholders to strategically plan and increase operational efficiency (Leung, 2019). The main purpose of smart hotels is to increase their competitiveness (Gretzel,

Zhong, & Koo, 2016). Smart hotels create common value with all stakeholders (Mistilis, Buhalis, & Gretzel, 2014). ICT companies, local governments and people, hotels and tourists are in a close relationship to create value for each other (Koo, Park, & Lee, 2017). Therefore, smart hotels can increase tourism competitiveness by bringing together local authorities, local people and tourists (Boes et al., 2016).

A new generation of mobile technologies such as augmented and virtual reality applications are all important tools to gain a competitive advantage in tourism and hospitality industries. According to the results of Qin, Tang, Jang, & Lehto (2017), mobile applications can increase shareholder income by 1.32% in hotels and airlines. The use of smartphones and mobile networks with high-speed Internet connections in hotels can further enhance business operations and management strategies (Kim et al., 2014). Mobile technologies enable managers to stay in touch with existing and potential guests, thus accelerating the entire service delivery process. Therefore, it can be said that mobile technologies are an important source of competitive advantage in hotels (Bertan, Bayram, Ozturk, & Benzergil, 2016). However, advantages for a hotel's adoption of a mobile reservation system may vary depending on whether most of its customers use such systems or not (Wang, Li, Zhen, & Zhang, 2016). Hotel guests expect ICT access to faster and more efficient information to stay in the best hotel with the best room rate (Xiang & Gretzel, 2010).

3 Methodology

3.1 Research design

The research was carried out using the following methods: 1) desk research concerning the hotels, 2) a cartographic inventory of categorised five-star hotels functioning in Antalya, 3) structured individual IDIs with hotel owners and managers. All research projects should start with a desk study (Leśniewska-Napierała & Napierała, 2017; Makowska & Boguszewski, 2013). It enables researchers to collect and analyse existing data and thus establish the current state of knowledge concerning a specific topic – the use of ICT in the hotel industry in this case. The following types of hotels were investigated: 1) hotels affiliated with international chains, 2) hotels affiliated with national chains and 3) independent hotel enterprises. A list of available five-star hotels operating in Antalya region was obtained from the Mediterranean Touristic Hoteliers Association, AKTOB. Cartographic data on administrative division of Turkey in shape files were obtained from the Humanitarian Data Exchange (HDX).

3.2 Research area

The main goal of the paper is to identify technology perception by managers of five-star hotels located in Antalya region (Turkey). Managers' perception is discussed in detail in the following contexts: the enterprise, the employees, the managers and the competitiveness of hotel entities. The selection of research area was determined by the fact that Antalya is one of the top Turkish tourist destinations, with international profile of visitors and intense hotel competition. It is argued that all these factors have a strong impact on ICT adoption (Hoontrakul & Sahadev, 2004). Antalya has been chosen as the study area for this research, as it is the most globally connected and dense tourism area of Turkey.

Antalya as a tourism region has already been examined by many researchers (Akis, 2011; Albayrak, Caber, Rosario González-Rodríguez, & Aksu, 2018; Erkuş-Öztürk, 2009; Köksal & Aksu, 2007; Oktay, 2017; Yüzbaşıoğlu, Çelik, & Topsakal, 2014). It is located on the southern Turkish Mediterranean coast, and it is the leading tourism destination of the country, especially for foreign tourists (Erkuş-Öztürk & Eraydin, 2011). The region has a long coastline with many attractions, such as ancient cities, harbours, natural features as well as lots of cultural centres (Arsezen-Otamisa & Yuzbasioglu, 2013). Moreover, Antalya is the largest 'sun-sea-sand' mass-tourism city in Turkey (Erkuş-Öztürk & Terhorst, 2016). In total, 286 five-star hotels are located in the region, including 157 affiliated with Turkish chains, 37 affiliated with international chains and 92 independent entities (Figure 1).

3.3 Individual in-depth interviews as the core method in the study

IDIs were used as a basic qualitative method (Minichiello, Madison, Hays, & Parmenter, 2004) to investigate managerial perception of ICTs. It must be stressed, however, that the qualitative research paradigm followed by this method differs substantially from quantitative methods (Minichiello et al., 2004), for example, the number of subjects to be interviewed is not estimated to ensure statistical representativeness of the sample, but limited by the point of saturation, where every consecutive interview yields little new knowledge (Kvale, 2007). IDIs were conducted

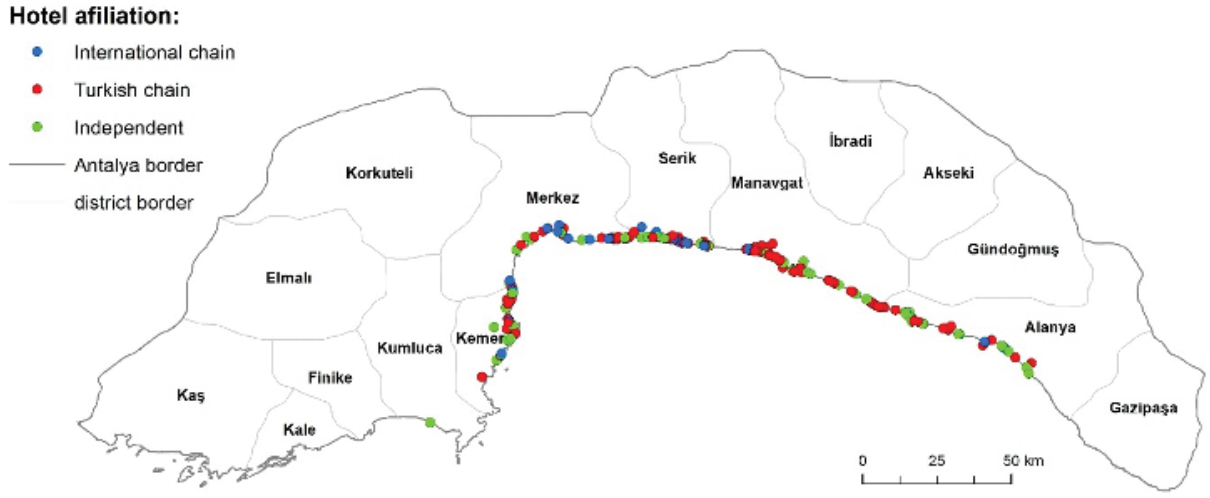

Figure 1: Spatial distribution of hotels in Antalya region
Source: Own elaboration.

in Turkish or English based on the scenario (Table 1). The language was chosen according to hotel manager's preference. The interviews were then transcribed, and those in Turkish were additionally translated into English. The 12 selected general managers (M1 to M12) were grouped according to their hotel types. Thus, four IDIs were conducted with general managers of selected hotels affiliated with international chains [M1 to M4], four IDIs with managers of selected hotels affiliated with Turkish brands [M9 to M12] and four IDIs with managers of selected independent entities [M5 to M8]. Empirical research (desk studies, cartographic inventory and interview) was carried out in the summer of 2019.

The transcripts of IDIs were analysed in a qualitative way. However, a quantitative approach was applied as well in their analysis. Thus, all opinions of interviewed managers were classified according to their general sentiment (positive, neutral or negative) and topic (related to all four research questions presented in Table 1). When extracting sentiments from a text, it is suggested not to base this on the interview, paragraph or even sentence level, as none of them expresses exactly what people like (positive sentiment) or dislike (negative one). Opinions rather than linguistic constructs should be considered (Devika, Sunitha, & Ganesh, 2016). The results of classification were analysed by counting words and presented separately for managers representing different types of investigated hotels: branded-international, branded-national and independent.

4 Results and discussion

4.1 Range of ICTs used by hotel enterprises

The adoption of ICTs in hotel industry has begun in the early 1970s. New technologies in hotels can affect such aspects as competitiveness, financial performance or guest satisfaction (Cobanoglu et al., 2011; Collins & Cobanoglu, 2013). During the last two decades, hotels in Antalya region have made significant progress in terms of quality, service or standards (Oktay, 2017). Interestingly, most of the managerial opinions about the range of ICTs used by their hotels were neutral (Figure 2). When the managers were asked to describe ICTs used in their hotels and related investment projects, they generally did not present any positive or negative opinions. The only exception was the manager [M12] of a hotel affiliated with a Turkish chain complaining about the lack of a mobile application designed for hotel guests.

It has been confirmed that all investigated hotels use applications for electronic customer relationship management (e-CRM), such as Electra, Protell, Asyasoft, Sedna or Athena software. This is in line with the findings by Sigala (2005), who emphasised that e-CRM became a strategic necessity for attracting and increasing guests number in hotels. Sigala (2003) noticed that ICT investments in tourism have been increasing very fast, and they are necessary nowadays. Hotels frequently invest in ICT development by upgrading their Wi-Fi systems, installing digital screens etc.

Table 1: The scenario of IDIs with the representatives of five-star hotels in Antalya region

Research questions	Interview questions
What is the range of ICTs used by hotel enterprises?	• What kind of ICTs are used in the hotel entity, in particular room division, food and beverage division, general and back office, in-room ICTs? • What was your last investment in ICTs in your hotel and when was it made?
What is the perception of ICTs by hotel employees?	• What are the expectations of hotel employees regarding the use of ICTs? • Which hotel employees are expected to use ICTs, in particular line-level employees, supervisors? • What is the willingness to use ICTs by hotel employees? • What are the hotel employees' abilities, skills and competencies to use ICTs?
What are the relations between human resource management and adoption of ICTs in the hotel enterprises?	• What are the tools that you use to make your employees familiar with ICTs and eager to use ICTs? • How do you motivate your employees to use ICTs? • How do your employees improve their skills and competencies to use ICTs?
What is the impact of ICTs on hotel competitiveness?	• Do hotel guests use ICTs? What are the expectations of hotel guests about ICTs in the hotel? • What are the advantages, disadvantages, challenges and achievements of using ICTs by your hotel entity? • Does using ICTs allow your hotel to decrease its costs, e.g. by decreasing number of employees, energy saving? • How advanced in using ICTs are the hotels you compete with? • Do you recognise the new business opportunities emerging through ICTs? If so, what kind of opportunities are enabled by ICTs?

Source: Own elaboration.

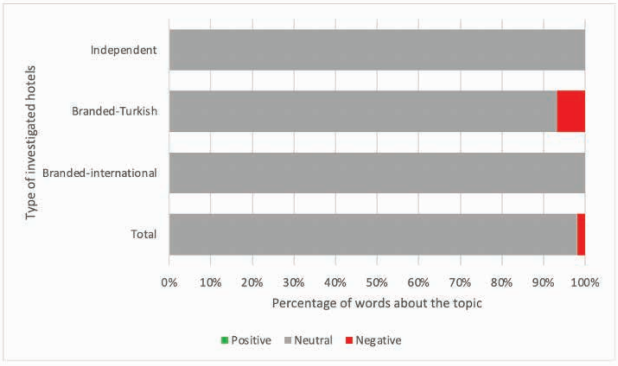

Figure 2: The attitude of managers to the range of ICTs used by their hotels.

Source: Own elaboration based on IDIs with managers of five-star hotels in Antalya region.

4.2 Perception of ICTs by hotel employees

The expectations of hotels' employees regarding the usage of ICTs are very diverse. In some managers' opinions [M4], enabling ICTs in a hotel is seen by employees as a way to increase efficiency of their work. However, it seems like managers present their own expectation related to ICTs as their employees': "*The expectation of the employee is to make the work faster and systematic. They want better operation of the control mechanism with use of ICTs*" [M10]. Technology is expected to speed up and simplify employees' work. Interestingly, as a consequence of increasing work efficiency enabled by ICTs, the number of employees in a hotel can be reduced. This suggestion by investigated managers is in line with the findings from studies conducted by Tuominen & Ascenção (2016). They emphasised that reduction of labour and time spent on operations and improved service quality might result from the development of ICTs in a hotel. The increasing impact of ICTs on employment reduction is a serious consideration for both employees and their managers. Thus, we should recall some postulates emphasised by other researchers, namely that ICTs are not to substitute the employees but to increase their performance and efficiency, and that ICTs cannot influence employment stability (Leung, 2019; Osawa et al., 2017).

Hotel employees forced to use technologies are mainly people who work in the front office or accounting department. Rather less often, ICTs are used by housekeeping employees or technical personnel. Age is indicated by some managers [M5, M6 and M9] as a factor differentiating skills and abilities of employees to use ICTs. Employees of younger generations are seen by managers as more talented and more eager to use ICTs: "*Y and Z generations employees are able to use ICTs, but generation X employees*

are a bit not talented to use the technology" [M5]. Interestingly, in the opinion of one manager [M8], no specific employees' skills or abilities are required to use ICTs, as the tools are seen as easy to use.

In the overall opinion of the managers, their employees are willing to use ICTs. This positive perception is confirmed especially by statements from managers representing branded hotels, affiliated with both Turkish and international chains (Figure 3). By contrast, managers of independent hotels emphasise some negative aspects of how hotel employees perceive ICTs. This is in line with the results of studies by Hoontrakul & Sahadev (2004) and Paraskevas & Buhalis (2002), who confirmed that the perception of ICTs by hotel employees is significantly influenced by the fact whether the hotel is a large, internationally branded entity or a small, independent one. Interestingly, investigated managers did not indicate any moderating impact of work experience of employees on their willingness to use ICTs, as confirmed by Sun, Lee, Law, & Sean (2020). However, the differences in work experience were identified as a factor stimulating transfer of knowledge regarding ICTs from more to less experienced employees.

Some managers stressed that the question of employees being able to use ICTs is not an issue. From the managerial perspective [M8], being an efficient employee in general is important. On the other hand, ICTs are seen as crucial tools for daily routines. This is in line with the results of research conducted by Leung (2019), who confirmed that the development of ICTs in a hotel might simplify and partially automate employees' tasks.

All the managers of internationally affiliated hotels emphasised that they provide regular trainings for their employees. In case of independent hotels, job trainings are never used, or used only when they are needed. Two managers of independent hotels [M3, M4] declared that workshops about ICTs are organised for employees on demand. One of the independent hotel managers [M2] uses the canteen as a training room for the employees. Moreover, workshops for employees are organised during the breaks. According to a suggestion by Lin (2017) that management support is one of key success factors in the adoption of ICTs, it must be stressed that such managers' treatment of their employees' rights cannot increase their competencies in using ICTs, nor change their negative attitude to using ICTs.

Negative managerial attitudes and opinions related to human resource management and the adoption of ICTs were mainly presented by representatives of independent entities (Figure 4). Negative motivation is also applied by some managers. If an employee is not eager to use ICTs, he or she will lose their job. No job trainee programme and no wage and non-wage motivators were introduced and developed by managers of independent hotels: "*They have to do use ICTs, otherwise they will fail to do their jobs*" [M4]. Interestingly, one hotel manager [M2] identified the improved quality of working tools as a sufficient motivation to use them. This is in line with the findings from the studies by Jeong et al. (2016). They confirmed that job satisfaction and commitment to the organisation increase when ICTs are developed in the company.

No need for motivators meant to support their employees' use of ICTs was indicated by managers of branded entities either: "*Rewarding is out of the question. Programs are made simple and so they can be used*" [M5]. Employees' willingness to use ICTs is not a necessary subject of enterprise motivation system: "*There is no need to motivate the employees very much*" [M9]. Moreover, it is clearly

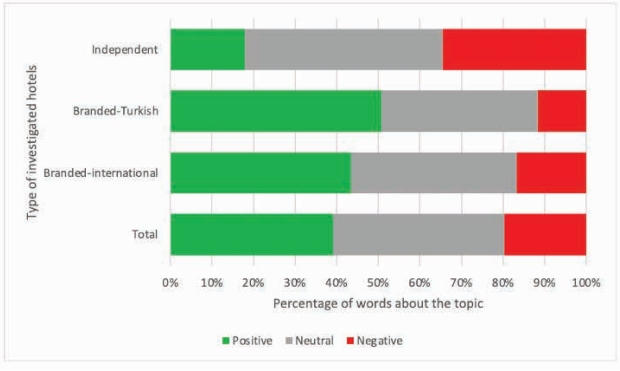

Figure 3: Managerial opinion about perception of ICTs by hotel employees.

Source: Own elaboration based on IDIs with managers of five-star hotels in Antalya region.

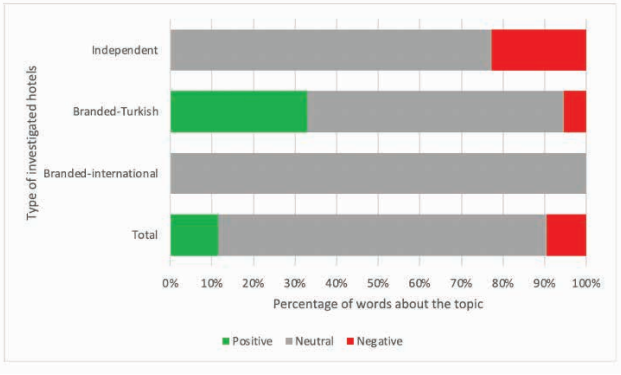

Figure 4: Managerial opinion about relations between human resource management and employees' adoption of ICTs.

Source: Own elaboration based on IDIs with managers of five-star hotels in Antalya region.

expressed by some managers [M6, M7] that using ICTs is mandatory: "*Employees are compelled to use. They cannot choose to use or not*" [M6]. It is worth noticing that, in some cases, using ICTs could be profitable: "*Employees who are skilled in using ICTs will have priority for promotion*" [M12].

Representatives of branded entities emphasise that employees are trained in two ways: by external companies, usually software providers (when software and training are sold as a package), and by their more experienced peers [M11]. Moreover, it is also common in independent hotels that employees with long work experience teach the new ones: "*They learn themselves and from their colleagues*" [M3], or "*Employees learn from each other. Sometimes we ask support from the software company*" [M4].

4.3 Impact of ICTs on hotel competitiveness

The impact of ICTs on hotel competitiveness is generally seen as positive by managers (Figure 5). It must be underlined that the lowest percentage of negative opionions was expressed by representatives of international hotel chains. This matches the results of studies conducted by Paraskevas & Buhalis (2002), as well as Hoontrakul & Sahadev (2004). They found that internationally affiliated lodging enterprises are more advanced in terms of the adoption and use of ICTs towards achieving competitive advantage.

The opinion of some managers about their guests' willingness to use ICTs is focused on the guests' demand for fast Wi-Fi: "*They want fast Wi-Fi and they want Wi-Fi everywhere*" [M4], "*They use Wi-Fi. They expect fast and secure Wi-Fi service*" [M10], "*We sometimes have complaints about the slow Wi-Fi*" [M12], "*They expect fast and free Wi-Fi*" [M12]. Investments in developing fast Wi-Fi, both in lobbies and in hotel rooms, might significantly increase competitiveness of the entity [M8]. Thus, it might be seen as a problem evidenced in the investigated hotels in general. It is difficult to introduce ICTs while the infrastructure is not really sufficient. Only high-speed Internet connections in hotels enable other actions, tactics and strategies taken to increase hotel competitiveness (Kim et al., 2014).

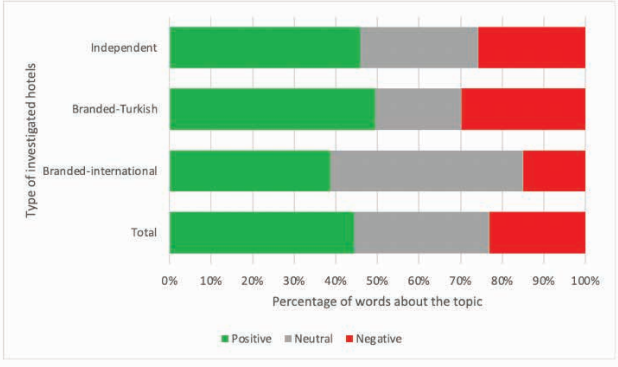

Figure 5: Managerial opinion about impact of ICTs on hotel competitiveness.

Source: Own elaboration based on IDIs with managers of five-star hotels in Antalya region.

The interviewed managers of chain-affiliated hotels noticed that special applications for communication are welcome by their guests: "*Guests can chat among themselves with the BLUE app. Guests can do all reservations (SPA reservation, à la carte restaurant reservations etc.), taxi calls, technical service, everything through this app*" [M8], "*Guests are using the questionnaire in our CRM program. They expect to approach the managers directly with these technologies*" [M6]. Therefore, as it was also confirmed by Bertan et al. (2016), such solutions might become an important source of achieving competitive advantage by hotels.

Most managers failed to fully understand the question about ICTs used by other hotels operating in the market. Thus, they did not describe competitive entities but describe general rules about using ICTs in the hotel industry. Some managers were focused on the negative context of not using ICTs, i.e. "use or perish": "*Hotels that do not use technology have no chance of living in the sector*" [M2]. Findings from the IDIs show that using ICTs decreases costs, reduces the number of employees, provides energy savings and increases guest satisfaction: "*You can fulfil the guest's requests immediately. ICT increases profitability and occupancy by using our own reservation system. ICT reduces cost and increases sales advantage*" [M1], "*The trend of guests can be followed by ICTs. With knowing what the guest wants and their trends, the hotel can be competitive among its rivals*" [M6].

The main identified advantages of using ICTs in hotels are: 1) easier and faster communication, for example, "*The guest can be reached more quickly within the hotel*" [M2]; 2) improved quality of tasks completed by employees, for example, "*The job can be done correctly*" [M3]; 3) the ability to collect and store data related to hotel performance, "*It provides very accurate and clear statistical data (providing accurate information instantly according to room type, age, nationality). With these statistics, budgeting and investment decisions can be made better*" [M6]. On the other hand, managers emphasised some disadvantages of using ICTs in their hotels. One manager noticed that "*It is possible to experience unfair sharing of hotel on social media by taking photos of places that are not for*

guests (only for employees)" [M2]. The quick changes of using technologies could also be a challenge for the hotel: "*Technology is moving fast, some of the software we bought previously cannot be adapted to new technologies*" [M11].

Most of the managers interviewed in the study were aware of the business opportunities created by the application of ICTs: "*Nowadays, it is imperative to follow the opportunities provided by technology*" [M2]. Successful achievement of competitive advantage by the development of ICTs in hotel industry is also confirmed by Gretzel et al. (2016). Moreover, some hotel managers emphasised that the development of ICTs in their hotels results in new vacancies rather than labour reduction: "*It creates more new jobs*" [M11], "*Social media experts are now employed in hotels*" [M10]. Disappointingly, hotel managers not interested in finding business opportunities in applying ICTs were identified as well: "*Actually, I'm not really aware*" [M3]. Some other managers [like M9] understand that enabling ICTs might create new business opportunities. However, they are not able to identify those chances to develop their enterprises.

5 Conclusions

In this paper, we have focused on the managerial perspectives of ICT application in hotel industry: the enterprise in general, the employees, the managers themselves and the competitiveness of the hotel industry. In this respect, this paper attempts to challenge previous tourism literature by discussing the impact of ICTs on the competitiveness of luxury hotels in particular.

It was found that the understanding and awareness of using ICTs by general managers of hotels in Antalya is insufficient. Our research reveals that managers of the investigated five-star hotels in the region are only aware of some basic ICTs used in room division, back office and in the rooms, like CRM applications or wireless Internet connection. However, the focus of managers of internationally affiliated hotels on increasing their employees' skills and competencies was evidenced. Hotel managers noticed that ICTs may be effectively used to improve the quality of business analytics, including market forecasting, and revenue management support. However, to implement these, job trainings for employees are needed, and this brings new costs for the hotel. On the contrary, in the opinion of managers, cost reduction is one of the main benefits of using ICTs in hotels.

Like any other research, this example has several limitations that provide a foundation for future research. One major limitation is that it is focused only on the managerial perspective. It would be interesting to further investigate the question whether employees have a need to use more advanced ICTs in their daily work. Moreover, a longitudinal research would provide a more precise understanding of how ICTs are operationalised in the hotel industry. The results of this study may be used to design further research on different perspectives of using ICTs towards competitiveness of the hotel industry.

Bionotes

Tomasz Napierała is a geographer and economist. He is working at the Faculty of Geographical Sciences, University of Lodz (Poland), and cooperating with CiTUR Centre for Tourism Research, Development and Innovation (Portugal). In his research, he is focused on spatial aspects of competition in the hotel industry, mainly spatial volatility of hotel prices and its impact on hotel competitiveness. He is currently serving as the Secretary General of the Polish Geographical Society.

Mehmet Bahar is a gastronomist. He is working at the School of Applied Science, University of Cappadocia (Turkey) and is a member of Professional Hotel Managers Association (Turkey). In his research, he is focused on new technologies in gastronomy science and tourism industry. He is a member of the Board of Management of the Professional Hotel Managers Association. He is the co-editor of the Journal of Tourism Intelligence and Smartness.

Katarzyna Leśniewska-Napierała is a geographer with special interest in socio-economic geography. Since 2014, she has been working at the Faculty of Geographical Sciences, University of Lodz (Poland), in the Institute of the Built Environment and Spatial Policy, and cooperating with CiTUR Centre for Tourism Research, Development and Innovation (Portugal). In her research, she has mainly focused on the social aspects of spatial planning and the use of qualitative methods in geographic sciences. She is a sub-editor in the European Spatial Research and Policy journal.

Yunus Topsakal is a doctoral research assistant. He is working at the Faculty of Management, Adana Science and Technology University (Turkey), and is an academic member of Professional Hotel Managers Association (Turkey). In his research, he is focused on Industry 4.0 and the new generation of technologies in tourism management, mainly the application of new technologies in

hotels. He is the second editor of the Journal of Tourism Intelligence and Smartness.

References

[1] Akis, A. (2011). The effects of mass tourism: A case study from Manavgat (Antalya – Turkey). *Procedia - Social and Behavioral Sciences*, *19*, 289–296. https://doi.org/10.1016/j.sbspro.2011.05.134

[2] Albayrak, T., Caber, M., Rosario González-Rodríguez, M., & Aksu, A. (2018). Analysis of destination competitiveness by IPA and IPCA methods: The case of Costa Brava, Spain against Antalya, Turkey. *Tourism Management Perspectives*, *28*, 53–61. https://doi.org/10.1016/j.tmp.2018.07.005

[3] Alsaadi, E., & Tubaishat, A. (2015). Internet of Things: Features, Challenges, and Vulnerabilities. *International Journal of Advanced Computer Science and Information Technology (IJACSIT)*, *4*(1), 1–13.

[4] Arsezen-Otamisa, P., & Yuzbasioglu, N. (2013). Analysis of Antalya Tourism Cluster Perceived Performance with Structural Equation Model. *Procedia - Social and Behavioral Sciences*, *99*, 682–690. https://doi.org/10.1016/j.sbspro.2013.10.539

[5] Ayeh, J. K. (2015). Travellers' acceptance of consumer-generated media: An integrated model of technology acceptance and source credibility theories. *Computers in Human Behavior*, *48*, 173–180. https://doi.org/10.1016/j.chb.2014.12.049

[6] Bertan, S., Bayram, M., Ozturk, A. B., & Benzergil, N. (2016). Factors influencing hotel managers' perceptions regarding the use of mobile apps to gain a competitive advantage. *Asia-Pacific Journal of Innovation in Hospitality and Tourism*, *5*(1), 59–74.

[7] Boes, K., Buhalis, D., & Inversini, A. (2015). Conceptualising Smart Tourism Destination Dimensions. In I. Tussyadiah & A. Inversini (Eds.), *Information and Communication Technologies in Tourism 2015* (pp. 391–403). Springer. https://doi.org/10.1007/978-3-319-14343-9_29

[8] Boes, K., Buhalis, D., Inversini, A., Morrison, A., & Gretzel, U. (2016). Smart tourist destinations: Ecosystems for tourism destination competitiveness. *International Journal of Tourism Cities*, *2*(2), 108–124. https://doi.org/10.1108/IJTC-12-2015-0032

[9] Buhalis, D., & Leung, R. (2018). Smart hospitality - Interconnectivity and interoperability towards an ecosystem. *International Journal of Hospitality Management*, *71*, 41–50. https://doi.org/10.1016/j.ijhm.2017.11.011

[10] Claveria, O., Monte, E., & Torra, S. (2015). A new forecasting approach for the hospitality industry. *International Journal of Contemporary Hospitality Management*, *27*(7), 1520–1538. https://doi.org/10.1108/IJCHM-06-2014-0286

[11] Cobanoglu, C., Berezina, K., Kasavana, M. L., & Erdem, M. (2011). The Impact of Technology Amenities on Hotel Guest Overall Satisfaction. *Journal of Quality Assurance in Hospitality & Tourism*, *12*(4), 272–288. https://doi.org/10.1080/1528008X.2011.541842

[12] Collins, G. R., & Cobanoglu, C. (2013). *Hospitality information technology: Learning how to use it*. Kendall/Hunt Publishing Co.

[13] Devika, M. D., Sunitha, C., & Ganesh, A. (2016). Sentiment Analysis: A Comparative Study on Different Approaches. *Procedia Computer Science*, *87*, 44–49. https://doi.org/10.1016/j.procs.2016.05.124

[14] El Haddad, R. (2015). Exploration of revenue management practices – case of an upscale budget hotel chain. *International Journal of Contemporary Hospitality Management*, *27*(8), 1791–1813. https://doi.org/10.1108/IJCHM-08-2013-0390

[15] Erkuş-Öztürk, H. (2009). The role of cluster types and firm size in designing the level of network relations: The experience of the Antalya tourism region. *Tourism Management*, *30*(4), 589–597. https://doi.org/10.1016/j.tourman.2008.10.008

[16] Erkuş-Öztürk, H., & Eraydin, A. (2011). Factors of global connectivity in antalya's tourism. *Annals of Tourism Research*, *38*(4), 1300–1321. https://doi.org/10.1016/j.annals.2011.03.002

[17] Erkuş-Öztürk, H., & Terhorst, P. (2016). Innovative restaurants in a mass-tourism city: Evidence from Antalya. *Tourism Management*, *54*, 477–489. https://doi.org/10.1016/j.tourman.2016.01.003

[18] Gretzel, U., Zhong, L., & Koo, C. (2016). Application of smart tourism to cities. *International Journal of Tourism Cities*, *2*(2), 216–233. https://doi.org/10.1108/ijtc-04-2016-0007

[19] Guillet, B. D., & Mohammed, I. (2015). Revenue management research in hospitality and tourism: A critical review of current literature and suggestions for future research. *International Journal of Contemporary Hospitality Management*, *27*(4), 526–560. https://doi.org/10.1108/IJCHM-06-2014-0295

[20] Holler, J., Tsiatsis, V., Mulligan, C., Karnouskos, S., & Boyle, D. (2014). *From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence*. Academic Press.

[21] Hoontrakul, P., & Sahadev, S. (2004). ICT Adoption Propensity in the Hotel Industry: An Empirical Study. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.635942

[22] Höpken, W., Deubele, P., Höll, G., Kuppe, J., Schorpp, D., Zapata Licones, R. O., & Fuchs, M. (2012). Digitalizing Loyalty Cards in Tourism. In *Information and Communication Technologies in Tourism 2012* (pp. 272–283). Vienna: Springer. https://doi.org/10.1007/978-3-7091-1142-0_24

[23] Im, J. Y., & Hancer, M. (2014). Shaping travelers' attitude toward travel mobile applications. *Journal of Hospitality and Tourism Technology*, *5*(2), 177–193. https://doi.org/10.1108/JHTT-11-2013-0036

[24] Jaremen, D. E., Jędrasiak, M., & Rapacz, A. (2016). The Concept of Smart Hotels as an Innovation on the Hospitality Industry Market – Case Study of Puro Hotel in Wrocław. *Ekonomiczne Problemy Turystyki*, *36*, 65–75. https://doi.org/10.18276/ept.2016.4.36-06

[25] Jeong, M., Lee, M., & Nagesvaran, B. (2016). Employees' use of mobile devices and their perceived outcomes in the workplace: A case of luxury hotel. *International Journal of Hospitality Management*, *57*, 40–51. https://doi.org/10.1016/j.ijhm.2016.05.003

[26] Kaushik, A. K., Agrawal, A. K., & Rahman, Z. (2015). Tourist behaviour towards self-service hotel technology adoption: Trust and subjective norm as key antecedents. *Tourism Management Perspectives*, *16*, 278–289. https://doi.org/10.1016/j.tmp.2015.09.002

[27] Kim, J. S., Connolly, D. J., & Blum, S. (2014). Mobile Technology: An Exploratory Study of Hotel Managers. *International Journal of Hospitality and Tourism Administration*, *15*(4), 417–466. https://doi.org/10.1080/15256480.2014.961795

[28] Kim, J. S., & Kizildag, M. (2011). M-learning: Next generation hotel training system. *Journal of Hospitality and Tourism Technology*, *2*(1), 6–33. https://doi.org/10.1108/17579881111112395

[29] Köksal, C. D., & Aksu, A. A. (2007). Efficiency evaluation of A-group travel agencies with data envelopment analysis (DEA): A case study in the Antalya region, Turkey. *Tourism Management*, *28*(3), 830–834. https://doi.org/10.1016/j.tourman.2006.05.013

[30] Koo, C., Park, J., & Lee, J. N. (2017). Smart tourism: Traveler, business, and organizational perspectives. *Information Management*, *54*, 683–686. https://doi.org/10.1016/j.im.2017.04.005

[31] Kvale, S. (2007). *Doing interviews*. London: SAGE Publications Ltd.

[32] Leśniewska-Napierała, K., & Napierała, T. (2017). The function of hotels in revitalizing rural areas: case studies in Pomerania Province. *Turyzm/Tourism*, *27*(2), 63–72. https://doi.org/10.1515/tour-2017-0014

[33] Leung, R. (2019). Smart hospitality: Taiwan hotel stakeholder perspectives. *Tourism Review*, *74*(1), 50–62. https://doi.org/10.1108/TR-09-2017-0149

[34] Lin, S. W. (2017). Identifying the Critical Success Factors and an Optimal Solution for Mobile Technology Adoption in Travel Agencies. *International Journal of Tourism Research*, *19*(2), 127–144. https://doi.org/10.1002/jtr.2092

[35] Makowska, M., & Boguszewski, R. (2013). Analiza danych zastanych - zagadnienia wstępne. In M. Makowska (Ed.), *Analiza danych zastanych: Przewodnik dla studentów* (pp. 9–31). Warszawa: Wydawnictwo Naukowe SCHOLAR.

[36] McClure, P. K. (2018). "You're Fired," Says the Robot: The Rise of Automation in the Workplace, Technophobes, and Fears of Unemployment. *Social Science Computer Review*, *36*(2), 139–156. https://doi.org/10.1177/0894439317698637

[37] Minichiello, V., Madison, J., Hays, T., & Parmenter, G. (2004). Doing qualitative in-depth interviews. In V. Minichiello, G. Sullivan, K. Greenwood, & R. Axford (Eds.), *Research methods for nursing and health science* (pp. 411–446). New South Wales: Pearson Education Australia.

[38] Mistilis, N., Buhalis, D., & Gretzel, U. (2014). Future eDestination Marketing. *Journal of Travel Research*, *53*(6), 778–790. https://doi.org/10.1177/0047287514522874

[39] Napierała, T. (2017). Internetization of selling hotel rooms in metropolitan area of Łódź (Poland). *Journal of Geography, Politics and Society*, *7*(3). https://doi.org/10.4467/24512249JG.17.023.7179

[40] Noone, B. M., & McGuire, K. A. (2013). Pricing in a social world: The influence of non-price information on hotel choice. *Journal of Revenue and Pricing Management*, *12*(5), 385–401. https://doi.org/10.1057/rpm.2013.13

[41] Oktay, S. (2017). An analytical study to identify and determine the usage frequency of sales and marketing strategies for 5 star hotels in the Antalya region. *Procedia Computer Science*, *120*, 862–870. https://doi.org/10.1016/j.procs.2017.11.319

[42] Osawa, H., Ema, A., Hattori, H., Akiya, N., Kanzaki, N., Kubo, A., … Ichise, R. (2017). What is Real Risk and Benefit on Work with Robots? In *Proceedings of the Companion of the 2017 ACM/IEEE International Conference on Human-Robot Interaction* (pp. 241–242). https://doi.org/10.1145/3029798.3038312

[43] Paraskevas, A., & Buhalis, D. (2002). Outsourcing IT for Small Hotels. *Cornell Hotel and Restaurant Administration Quarterly*, *43*(2), 27–39. https://doi.org/10.1177/001088040204300203

[44] Qin, M., Tang, C.-H. (Hugo), Jang, S. (Shawn), & Lehto, X. (2017). Mobile app introduction and shareholder returns. *Journal of Hospitality and Tourism Management*, *31*, 173–180. https://doi.org/10.1016/j.jhtm.2016.11.006

[45] Rivera, M., Croes, R., & Zhong, Y. (2016). Developing mobile services. *International Journal of Contemporary Hospitality Management*, *28*(12), 2721–2747. https://doi.org/10.1108/IJCHM-02-2015-0052

[46] Šerić, M., & Gil-Saura, I. (2012). ICT, IMC, and Brand Equity in High-Quality Hotels of Dalmatia: An Analysis From Guest Perceptions. *Journal of Hospitality Marketing & Management*, *21*(8), 821–851. https://doi.org/10.1080/19368623.2012.633211

[47] Shin, H., Perdue, R. R., & Kang, J. (2019). Front desk technology innovation in hotels: A managerial perspective. *Tourism Management*, *74*, 310–318. https://doi.org/10.1016/j.tourman.2019.04.004

[48] Sigala, M. (2003). The information and communication technologies productivity impact on the UK hotel sector. *International Journal of Operations & Production Management*, *23*(10), 1224–1245. https://doi.org/10.1108/01443570310496643

[49] Sigala, M. (2005). Integrating customer relationship management in hotel operations: managerial and operational implications. *International Journal of Hospitality Management*, *24*(3), 391–413. https://doi.org/10.1016/j.ijhm.2004.08.008

[50] Siguaw, J. A., Enz, C. A., & Namasivayam, K. (2000). Adoption of Information Technology in U.S. Hotels: Strategically Driven Objectives. *Journal of Travel Research*, *39*(2), 192–201. https://doi.org/10.1177/004728750003900209

[51] Sirirak, S., Islam, N., & Ba Khang, D. (2011). Does ICT adoption enhance hotel performance? *Journal of Hospitality and Tourism Technology*, *2*(1), 34–49. https://doi.org/10.1108/17579881111112403

[52] Sun, S., Lee, P. C., Law, R., & Sean, S. (2020). An investigation of the moderating e ff ects of current job position level and hotel work experience between technology readiness and technology acceptance. *International Journal of Hospitality Management*, *90*, 102633. https://doi.org/10.1016/j.ijhm.2020.102633

[53] Toedt, M. (2016). Beacons - top or flop for the hospitality industry? Retrieved 3 October 2019, from https://www.hospitalitynet.org/opinion/4073267.html

[54] Topsakal, Y., Yüzbaşıoğlu, N., & Akıncı, Z. (2018). Smart tourism: cannot tourism enterprises unable to generate

smart solutions be able to compete. In *Proceedings of the 9th International Conference of Strategic Research on Scientific Studies and Education* (pp. 259–272). Antalya.

[55] Tuominen, P. P., & Ascenção, M. P. (2016). The hotel of tomorrow. *Journal of Vacation Marketing*, *22*(3), 279–292. https://doi.org/10.1177/1356766716637102

[56] Usoro, A., Shoyelu, S., & Kuofie, M. (2010). Task-Technology Fit and Technology Acceptance Models Applicability to e-Tourism. *Journal of Economic Development, Management, IT, Finance and Marketing*, *2*(1), 1–32.

[57] Wang, X., Li, X. (Robert), Zhen, F., & Zhang, J. (2016). How smart is your tourist attraction?: Measuring tourist preferences of smart tourism attractions via a FCEM-AHP and IPA approach. *Tourism Management*, *54*, 309–320. https://doi.org/10.1016/j.tourman.2015.12.003

[58] Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management*, *31*(2), 179–188. https://doi.org/10.1016/j.tourman.2009.02.016

[59] Yick, J., Mukherjee, B., & Ghosal, D. (2008). Wireless sensor network survey. *Computer Networks*, *52*(12), 2292–2330. https://doi.org/10.1016/j.comnet.2008.04.002

[60] Yüzbaşıoğlu, N., Çelik, P., & Topsakal, Y. (2014). A Research on Innovation in Small and Medium-sized Enterprises in Tourism Industry: Case of Travel Agencies Operating in Antalya. *Procedia - Social and Behavioral Sciences*, *150*, 735–743. https://doi.org/10.1016/j.sbspro.2014.09.039