

Impact of ICTs on the satisfaction of business and leisure guests in Algerian hotels

تأثير تكنولوجيا المعلومات و الاتصال على إرضاء النزلاء من رجال الأعمال و السياح في الفنادق الجزائرية

Salma Cherdouh*, Laboratoire RMTQ, Faculté des Sciences Economiques, Commerciales et des Sciences de Gestion, Université de Bejaia, 06000 Bejaia (Algeria)

Abdenacer Kherri, EHEC Koléa (Algeria)

Ayoub Abbaci, ENP Algiers (Algeria)

Received: 27/01/2022 ; **Revised:** 15/05/2022 ; **Accepted:** 30/06/2022

Abstract:

This paper focuses on the assessment of the impact of ICTs on the overall satisfaction of Algerian hotel guests, taking into account the reason of stay and other non-ICT factors. A quantitative approach consisting of an online questionnaire was carried out. The targeted respondents were business and leisure guests who have stayed in three-, four-, and five-star Algerian hotels. The results indicate that non-ICT factors such as comfort and rest play a greater role in the satisfaction of business guests, whereas leisure guests seem to place more importance on ICT factors. Moreover, it was found that, regarding ICT factors, business guests and leisure guests have no preferences in common. It is believed that this study makes a significant contribution to the literature because previous studies have not compared differences in ICT-related factors between business and leisure guests, especially in developing countries.

Keywords: Guest satisfaction ; Information and communication technology ; Algeria ; Business guests ; Leisure guests.

Jel Classification Codes : M31; Z31; Z32; L83

* Corresponding author

I- Introduction :

Recent technological developments have resulted in an unprecedented revolution in the hospitality and tourism industries (Law et al., 2014). Indeed, the hospitality industry has become so competitive that hotels are constantly looking to implement innovative information and communication technologies (ICTs) to improve the quality of service for increasingly demanding guests (Ruiz-Molina et al., 2011).

It is commonly accepted that ICT components used in the hotel industry can be classified according to the operational domain (Sirirak et al., 2011; Chevers and Spencer, 2017), namely, room division, food and beverage division, general/backoffice, and in-room. It is generally accepted that ICTs can help hotel companies gather and analyse customer information and share information across the company so that better-personalised services can be provided to make customers happy and loyal (DiPietro and Wang, 2010). Moreover, evidence suggests that the adoption of ICTs in the hotel industry has an impact on hotel guests' satisfaction (Sirirak et al., 2011; Chevers and Spencer, 2017).

Algeria is a developing country of the Maghreb region and is the largest country in the Mediterranean Sea and Africa. Algeria has a very rich and varied fauna and flora, particularly in the Gouraya National Park or the Aiguades Bay, located in the town of Béjaia. In the far east of the country, the Bird Lake Nature Reserve in El Tarf offers breath-taking locales and harbours rare species. In Algiers, the capital of Algeria, the Trial Garden of Hamma, which is one of the most important gardens in the world, offers visitors a unique view of more than a thousand exotic plant species, some of which are considered very rare. Moreover, the Roman sites of Djemila, Timgad, Tipasa, and Cherchel tell the lyrical passage of all civilisations. Above all, the beauty of Algeria lies in its desert, one of the most beautiful in the world. Among the unmissable sites that can be found in this desert are the M'zab valley and Tassili N'Ajjer. For their beauty and uniqueness, they were conferred the title of UNESCO World Heritage sites.

The richness of its sites, as well as the artistic and cultural diversity, are the main assets that make this country a popular tourist destination in both the regional and international markets. Algeria has the potential to become one of Africa's top destinations. According to Worldwide Tourism and Travel Council (2019), travel and tourism contribute 5.7 per cent to Algeria's GDP (+5.1 per cent growth in 2020 compared to 2019) and represent more than 6 per cent of its total employment in 2020. Furthermore, Network Readiness Index (2020), which measures a country's readiness to make effective use of ICT, ranks Algeria 108th among 134 countries. Regarding Internet penetration in Algeria, the Internet World Stats (2020)'s report shows that 58 per cent of the population is connected to the Internet, and 43 per cent is subscribed to Facebook. Given these facts, the Algerian government has become aware of the benefits that ICTs can bring, especially in the tourism and hotel sectors, and has implemented a plan called e-Algeria 2013, which seeks to accelerate the integration of ICTs in all administrations and enterprises.

Previous studies revealed that the adoption levels of ICTs differ between developing and developed countries (Mpofu and Watkins-Mathys, 2011). Moreover, the literature has called for more studies to assess the impact of ICT adoption on hotel performance, especially in developing countries (Mihalic and Buhalis, 2013). Recently, Ezzaouia and Bulchand-Gidumal (2020) studied the factors influencing the adoption of information technology in the hotel industry in Morocco, a developing country. However, to the best of our knowledge, the literature shows that the study of the impact of ICTs on hotel guests' satisfaction in Algeria has not yet received proper research attention. Further, it is widely assumed in the literature that customer needs may differ depending on whether they are business or leisure guests (Millar et al., 2012; Dunn and Tucker, 2013). This study focuses on the assessment of the impact of ICTs on the overall satisfaction of Algerian hotel guests, taking into account the reason of stay and other non-ICT factors. Therefore, the aim of this study is to answer the following research questions:

Impact of ICTs on the satisfaction of business and leisure guests in Algerian hotels

- *RQ1.* Does satisfaction with ICT components have a more positive impact than satisfaction with other factors on overall satisfaction with the hotel, regardless of the reason of stay?
- *RQ2.* Does satisfaction with ICT components have a more positive impact than satisfaction with other factors on the overall satisfaction of business guests?
- *RQ3.* Does satisfaction with ICT components have a more positive impact than satisfaction with other factors on the overall satisfaction of leisure guests?
- *RQ4.* Which of these ICT components, if any, contributes the most to the overall satisfaction of business guests?
- *RQ5.* Which of these ICT components, if any, contributes the most to the overall satisfaction of leisure guests?

The remainder of this paper is organized as follows. Section II provides an overview of the theoretical background of this study. Section III presents our methodology, with a focus on the measurement scales and the adopted data analysis technique. Section IV presents major findings. Section V discusses the obtained results. Section VI concludes the paper and provides future perspectives, as well as the main theoretical and practical implications and addresses the potential limitations of our study.

II- Theoretical review

II.1 ICTs in the hotel industry

The adoption of ICTs has been motivated by two aspects: On the one hand, consumers are becoming more informed and experienced and therefore difficult to satisfy (Buhalis and Law, 2008). Thus, the quality of information provision is becoming a differentiating factor for hotels because of increasingly discerning consumers. On the other hand, information in this area is increasingly varying (Law et al., 2014; DiPietro and Wang, 2010), to the extent that whether internally or externally, tourism operators need to exchange information among themselves because they constitute an essential building block in tourism and hospitality (Law et al., 2014; DiPietro and Wang, 2010).

Many researchers have indicated that ICTs improve the operational and financial performance of hotels, boost productivity, decrease operating costs, enhance guest satisfaction, and increase the competitiveness of the hotel (Sirirak et al., 2011; Chevers and Spencer, 2017). According to Mihalic and Buhalis (2013), ICTs re-engineer and rationalise processes and services and indirectly increase hotel firms' performance through other competitiveness factors. DiPietro and Wang (2010) argue that ICTs have a great impact on the business process, and through them, hotel companies can achieve business synergy, improve productivity and increase efficiency.

II.2 Relationship between ICTs and guest satisfaction

Several studies found that ICTs in hotels contribute positively to customer satisfaction (Sirirak et al., 2011; Bulchand-Gidumal and Melián-González, 2015; Velázquez et al., 2015; Chevers and Spencer, 2017; Moliner-Velázquez et al., 2019).

Cobanoglu et al. (2011) show that not all ICT amenities impact guest satisfaction equally. Indeed, the authors pointed out that business essentials for travellers, such as express check-in/check-out, in-room telephone, in-room alarm clock, and universal battery chargers, were found to have a positive impact on guest's overall satisfaction. Moreover, the study showed that the variety and type of ICT used are important factors that influence hotel selection and return intention. Furthermore, Sirirak et al. (2011) studied the relationship between ICT adoption and satisfaction by measuring ICT adoption using three factors: availability, integration, and intensity of usage. They found that ICT usage intensity has a significant positive relationship with customer satisfaction. More recently, Chevers and Spencer (2017)'s research on Jamaican hotels found a significant relationship between ICT adoption and hotel

guest satisfaction. The authors classify ICTs according to hotel operational domains and claim that in-room ICTs have the most positive effect on guests' satisfaction. More specifically, Bulchand-Gidumal et al. (2011) demonstrated that offering free Wi-Fi can constitute a source of revenue for hotels because Wi-Fi contributes to enhancing customer satisfaction.

To conclude, many studies have investigated the relationship between ICT and guest satisfaction. These studies have mainly focused on developed countries (Sirirak et al., 2011; Moliner-Velázquez et al., 2019). Hence, there is a need for more research on this relationship in developing countries.

II.3 Business guests vs. leisure guests

Both early and more recent studies have stated that the two main customer segments served by hotels are business and leisure guests (Lewis, 1984; Yavas and Babakus, 2005; Rajaguru and Hassanli, 2018; Mandhachitara and Gulid, 2019; Kim et al., 2020). Various studies that examine the similarities between these two segments have mainly focused on hotel choice attributes. For example, several authors state that the cleanliness of rooms, politeness and friendliness of staff, and location were the most important factors in the choice of the hotel for both business and leisure guests (Zhang et al., 2019; Xu et al., 2019). In contrast, other studies indicate that the preferences of business and leisure guests may diverge. For example, Tsai et al. (2015) found that business guests prefer computer and internet access over the cleanliness of the room, whereas leisure guests prefer the opposite. Moreover, Zhang et al. (2019) suggest that business guests are significantly affected by confidence and the perceived reliability in their use of hotel mobile technologies, whereas leisure guests are much more concerned with entertainment and ease of use.

Although the literature is replete with comparative studies on the needs and preferences of business and leisure guests, to our knowledge, there are few studies that compare these two groups in terms of their technological preferences. The present study addresses this gap by comparing the impact of ICTs on the satisfaction of business and leisure guests.

III- Methodology

Based on the literature and to answer the research questions that we defined previously, we carried out a quantitative study consisting of an online questionnaire. The targeted respondents were guests who have stayed during the past eighteen months in three-, four-, and five-star Algerian hotels. We asked each respondent to indicate the reason of their stay. Upscale hotels were selected because they are more likely to invest in technology. Our study was conducted over three months (from December 2020 to April 2021) during the global health crisis linked to COVID-19.

A pretest was conducted with colleagues, and based on their feedback, we improved the questionnaire by providing more clarity to some questions. We then distributed the questionnaire in tourism-related communities on several social media networks. Our questionnaire was translated into Arabic, French, and English to reach clients of Algerian hotels from different origins and nationalities.

A total of 496 questionnaires were completed. Therefore, the survey included a filter question, which asked if the respondent had stayed in a three-, four-, or five-star Algerian hotel in the past 18 months. If the respondent answers "No", the questionnaire ends. Of the 496 initial respondents, only 291 answered "Yes" to the filter question, which gives us a response rate of 58.7 per cent. Our questionnaire contained 34 questions divided into four sections: guest characteristics, satisfaction with hotel ICT components, satisfaction with other non-ICT factors, and overall guest satisfaction. A five-point Likert-type scale anchored from "1" (highly dissatisfied) to "5" (highly satisfied) was used to measure overall guest satisfaction, guest satisfaction with hotel ICT components and guest satisfaction with other non ICT factors. The R statistical computing environment (R Core Team, 2020) was used to analyse the collected data.

Impact of ICTs on the satisfaction of business and leisure guests in Algerian hotels

With regard to the ICT components included in our study, we followed the catalogue proposed by Sirirak et al. (2011). Considering that Algeria is a developing country that lags behind in the field of ICTs, we adapted this catalogue by adding, deleting, and modifying some items to adapt it to the country context. For instance, ATMs and teleconference systems were not included in our study because to the best of our knowledge, these two items are rarely present in Algerian hotels. The ICT components selected in our research were grouped according to the operational domains of the hotel as shown in Table 1.

Table 1: ICT components

Subcategory	Items
Room division ICTs	Telephone system
	Fax system
	Web site system
	E-mail system
	Hotel social networks
	Check-in/check-out system
	Reservation system
General/Backoffice ICTs	Wireless internet connection area
	Security system
In-room ICTs	In-room telephone system
	Electronic locking system
	Energy management systems
	In-room wireless internet access
	In-room internet access line
	In-room electronic safety boxes
	In-room universal charging station
	In-room television
	In-room smoke detection system
	In-room temperature control system

We adopted the other non-ICT factors included in our survey from the guest satisfaction literature (Heung, 2000; Choi and Chu, 2001; Sirirak et al., 2011; Chevers and Spencer, 2017). These factors were grouped into two categories as illustrated in Table 2.

Table 2: Other non-ICT factors

Subcategory	Items
Staff service quality	Politeness and friendliness of staff
	Helpfulness of staff
	Efficiency of staff
	Neat appearance of staff
Room quality	Efficiency of room service
	Cleanliness of room
	Quietness of room
	Availability of room at check-in

IV- Results

IV.1 Sample profile

Table 3 summarizes the profile of the respondents. Among the 291 respondents, 171 were business guests and the rest were leisure guests.

Table 3: Guest characteristics

Guest characteristics	Business guests		Leisure guests	
	Frequency	Percentage (%)	Frequency	Percentage (%)
<i>Gender</i>				
Female	75	43.9	78	65.0
Male	96	56.1	42	35.0
<i>Age</i>				
18-24 years	27	15.8	30	25.0
25-34 years	81	47.4	78	65.0
35-44 years	33	19.3	6	5.0
45-54 years	12	7.0	6	5.0
Above 54 years	18	10.5	0	0.0
<i>Country</i>				
Algeria	153	89.5	90	75.0
Other countries	18	10.5	30	25.0
<i>Education</i>				
Below bachelor degree	6	3.6	12	10.0
Bachelor degree	108	63.1	72	60.0
Master degree or higher	57	33.3	36	30.0
<i>Employment status</i>				
Employed	117	68.4	48	40.0
Unemployed	6	3.5	3	2.5
Self-employed	30	17.6	27	22.5
Student	18	10.5	42	35.0
Total frequency		171		120
Total percentage		58.8		41.2

The profiles of business guests and leisure guests are quite similar with regard to the country of origin and education. Nevertheless, there are more females than males among leisure guests compared to business guests. Additionally, business guests seem to be older than leisure guests. Finally, it is notable that there are more students among leisure guests than business guests.

IV.2 Reliability

Table 4 outlines the reliability results of the constructs used to measure “satisfaction with hotel ICTs” and “satisfaction with other non-ICT factors” for both business and leisure guests. The reliability test used all the items that formed each of the two constructs.

Table 4: Reliability results

Category	No. of items	Cronbach's alpha	
		Business guests	Leisure guests
Satisfaction with hotel ICTs	19	0.922	0.927
Satisfaction with other non-ICT factors	8	0.808	0.843

The results show that for both business and leisure guests, reliability coefficients (Cronbach's α) of the “*satisfaction with hotel ICTs*” and “*satisfaction with other non-ICT factors*” constructs varied between 0.808 and 0.927. This indicates that for both business and leisure guests, the two constructs were internally reliable because the reliability coefficients were above the 0.700 threshold, which is considered an acceptable value of reliability (Nunnally, 1978; Chin, 2010).

IV.3 Findings

To answer *RQ1*, a multiple regression analysis was carried out using satisfaction with hotel ICTs and satisfaction with other non-ICT factors as the independent variables and overall guest satisfaction as the dependent variable, regardless of the reason of stay.

Table 5: Regression results of satisfaction with hotel ICTs and other non-ICT factors on overall guest satisfaction

Categories	Overall satisfaction with hotel	
	Coefficients (β)	<i>p</i> -value
Satisfaction with hotel ICTs	0.395	0.000***
Satisfaction with other non-ICT factors	0.368	0.000***
R^2		0.407
Adjusted R^2		0.403
<i>F</i> -statistics		98.781
<i>p</i> -value		0.000***

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5 outlines the results of the multiple regression analysis in which the adjusted R^2 is 0.403, with a significant *F*-statistics value of 98.781. This specifies that 40.3 per cent of the variation of overall guest satisfaction is explained by satisfaction with hotel ICTs and with other non-ICT factors. Regarding the two independent variables, both satisfaction with hotel ICTs and with other non-ICT factors have a significant relationship with overall guest satisfaction (p -value < 0.001). Nevertheless, it can be noticed that the contribution of the satisfaction with hotel ICTs to the overall guest satisfaction ($\beta=0.395$) is slightly higher than that of satisfaction with other non-ICT factors ($\beta=0.368$).

It can be concluded that regardless of the reason of stay, satisfaction with both ICT components and non-ICT factors have a significant positive relationship with overall guest satisfaction..

To address *RQ2* and *RQ3*, we started by dividing all the respondents, based on their reason of stay, into two groups: business guests and leisure guests. Then, we conducted a multiple regression analysis on each group, similar to the previous one. Table 6 summarizes the results of the multiple regression analysis.

Table 6: Regression results of satisfaction with hotel ICTs and other non-ICT factors on overall satisfaction of business/leisure guests

Categories	Overall satisfaction with hotel			
	Business guests		Leisure guests	
	Coefficients (β)	<i>p</i> -value	Coefficients (β)	<i>p</i> -value
Satisfaction with hotel ICTs	0.302	0.031*	0.486	0.003**
Satisfaction with other non-ICT factors	0.465	0.000***	0.268	0.080
R^2		0.399		0.427
Adjusted R^2		0.392		0.417
<i>F</i> -statistics		55.750		43.640
<i>p</i> -value		0.000***		0.000***

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regarding business guests, it can be seen that 39.2 per cent of the variation in overall guest satisfaction is explained by the two independent variables with a significant *F*-statistics value of 55.750. Furthermore, the results of the multiple regression analysis indicate that both satisfaction with hotel ICTs and satisfaction with other non-ICT factors have a significant relationship with overall guest satisfaction (0.05 and 0.001, respectively). Moreover,

satisfaction with other non-ICT factors has a higher contribution ($\beta=0.465$) to overall guest satisfaction than that with hotel ICTs ($\beta=0.302$).

With respect to leisure guests, it can be seen that 41.7 per cent of the variation in overall guest satisfaction is explained by the two independent variables, with a significant F -statistics value of 43.640. When looking at the results of the multiple regression, it can be highlighted that only satisfaction with hotel ICTs was found to have a significant relationship with overall guest satisfaction. Indeed, for a one-unit increase in satisfaction with hotel ICTs, overall guest satisfaction increases by 0.486.

In summary, it can be concluded that the impact of satisfaction with hotel ICTs on overall guest satisfaction differs according to the reason of stay. Indeed, overall satisfaction with leisure guests seems to be much more dependent on satisfaction with hotel ICTs than on satisfaction with other non-ICT factors, while for business guests, even if satisfaction with hotel ICTs contributes to overall satisfaction, this category of guests is much more affected by satisfaction with other non-ICT factors.

To answer *RQ4* and *RQ5*, we conducted a multiple regression analysis using satisfaction with each ICT-related item and with each item belonging to other non-ICT factors as the independent variables and overall guest satisfaction as the dependent variable, and divided the respondents into two groups: business guests and leisure guests. Table 7 summarizes the regression results.

Table 7: Regression results of satisfaction with each ICT-related item and with each item belonging to other non-ICT factors on overall satisfaction of business/leisure guests

Items	Overall satisfaction with hotel			
	Business guests		Leisure guests	
	Coefficients (β)	p -value	Coefficients (β)	p -value
Satisfaction with telephone system	0.013	0.804	-0.006	0.928
Satisfaction with fax system	0.083	0.129	0.023	0.706
Satisfaction with web site system	0.068	0.234	-0.064	0.302
Satisfaction with e-mail system	-0.083	0.130	-0.008	0.905
Satisfaction with hotel social network	-0.061	0.257	0.263	0.000***
Satisfaction with check-in/check-out system	-0.049	0.332	-0.027	0.667
Satisfaction with reservation system	-0.033	0.547	-0.049	0.442
Satisfaction with wireless internet connection area	0.122	0.025*	-0.017	0.785
Satisfaction with security system	-0.032	0.564	-0.029	0.618
Satisfaction with in-room telephone system	-0.027	0.623	0.116	0.035*
Satisfaction with electronic locking system	0.142	0.005**	-0.066	0.311
Satisfaction with energy management systems	-0.061	0.235	-0.084	0.107
Satisfaction with in-room wireless internet access	-0.024	0.692	0.214	0.000***
Satisfaction with in-room internet access line	0.190	0.000***	-0.054	0.382
Satisfaction with in-room electronic safety boxes	0.186	0.002**	-0.011	0.870
Satisfaction with in-room universal charging station	-0.036	0.455	-0.016	0.796
Satisfaction with in-room television	-0.059	0.310	0.144	0.017*
Satisfaction with in-room smoke detection system	0.009	0.858	-0.040	0.553
Satisfaction with in-room temperature control system	-0.020	0.728	0.142	0.023*
Satisfaction with politeness and friendliness of staff	0.169	0.004**	0.182	0.004**
Satisfaction with helpfulness of staff	-0.037	0.505	0.140	0.030*
Satisfaction with efficiency of staff	0.013	0.795	-0.018	0.789
Satisfaction with neat appearance of staff	-0.077	0.133	-0.013	0.850
Satisfaction with efficiency of room service	-0.044	0.428	-0.033	0.596
Satisfaction with cleanliness of room	0.142	0.005**	0.228	0.000***
Satisfaction with quietness of room	0.207	0.000***	-0.009	0.860
Satisfaction with availability of room at check-in	0.115	0.043*	-0.024	0.705
R^2		0.626		0.720
Adjusted R^2		0.556		0.637
F -statistics		8.872		8.751
p -value		0.000***		0.000***

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regarding business guests, 55.6 per cent of the variation in overall guest satisfaction is explained by the independent variables, with a significant F -statistics value of 8.872. More

Impact of ICTs on the satisfaction of business and leisure guests in Algerian hotels

specifically, it was found that the significant variables sorted in descending order of their contribution to overall satisfaction are: quietness of room ($\beta=0.207$, $p\text{-value} < 0.001$), in-room internet access line ($\beta=0.190$, $p\text{-value} < 0.001$), electronic safety boxes ($\beta=0.186$, $p\text{-value} < 0.01$), politeness and friendliness of staff ($\beta=0.169$, $p\text{-value} < 0.01$), cleanliness of room ($\beta=0.142$, $p\text{-value} < 0.01$), electronic locking system ($\beta=0.142$, $p\text{-value} < 0.01$), wireless internet connection area ($\beta=0.122$, $p\text{-value} < 0.05$), and finally availability of room at check-in ($\beta=0.115$, $p\text{-value} < 0.05$). In summary, the ICT components that contribute the most to the overall satisfaction of business guests are as follows:

1. In-room internet access line ;
2. In-room electronic safety boxes ;
3. Electronic locking system ; and
4. Wireless internet connection area.

With regard to leisure guests, the results show that 63.7 per cent of the variation in overall guest satisfaction is explained by the independent variables with a significant F -statistics value of 8.751. More precisely, it can be seen that the significant variables sorted in descending order of their contribution to overall satisfaction are: hotel social network ($\beta=0.263$, $p\text{-value} < 0.001$), cleanliness of room ($\beta=0.228$, $p\text{-value} < 0.001$), in-room wireless internet access ($\beta=0.214$, $p\text{-value} < 0.001$), politeness and friendliness of staff ($\beta=0.182$, $p\text{-value} < 0.01$), in-room television ($\beta=0.144$, $p\text{-value} < 0.05$), in-room temperature control system ($\beta=0.142$, $p\text{-value} < 0.05$), helpfulness of staff ($\beta=0.140$, $p\text{-value} < 0.05$), and finally, in-room telephone system ($\beta=0.116$, $p\text{-value} < 0.05$). In conclusion, the ICT components that contribute the most to the overall satisfaction of leisure guests are as follows:

1. Hotel social network ;
2. In-room wireless internet access ;
3. In-room television ;
4. In-room temperature control system ; and
5. In-room telephone system.

V- Discussion

ICTs were found to have a significant positive impact on the overall satisfaction of both business and leisure guests. However, for business guests, other non-ICT factors were found to contribute more to overall satisfaction than ICTs. This can be explained by the fact that business guests are usually older than leisure guests and are therefore more sensitive to comfort and rest after a day of hard work. Indeed, *quietness of room* has been found to be the most important factor in the overall satisfaction of business guests. *Availability of room* at check-in was also found as an important non-ICT factor that contributes to overall satisfaction of business guests. This may be because business guests are often much more pressed for time than leisure guests and they do not want to be late for their work meetings. In addition, the results highlight that *helpfulness of staff* contributes to the overall satisfaction of leisure guests because, in general, this type of guest often asks the staff how to reach the attractions offered by the hotel, interesting tourist spots to see nearby, and the nearest public transport. It was also found that business guests and leisure guests have common preferences, such as *politeness and friendliness of staff* and *cleanliness of room*, which corroborates with recent literature (Lewis, 1984; Knutson, 1988; Barsky and Labagh, 1992; Dolnicar, 2002; Xu et al., 2019).

With regard to ICT components that positively impact overall guest satisfaction, it was surprising to discover that business guests and leisure guests have no preferences in common. It has been noticed that the overall satisfaction of business guests was impacted by safety-related ICTs, such as *electronic safety boxes* and *electronic locking systems*. This is because

business guests are more likely to bring valuables such as laptops, luxury watches, jewellery, sensitive files, or cash. The overall satisfaction of business guests is also impacted by work-related ICTs such as *wireless internet connection area* and *in-room internet access line*. Indeed, it is common for business guests to wish to connect to the Internet in their room using cable rather than Wi-Fi for security and reliability reasons. In addition, when they wish to meet their collaborators in the hotel, they prefer to work with them while being connected to the Internet via Wi-Fi in the hotel lobby.

For leisure guests, however, *Hotel social network* and *in-room wireless internet access* were found to have the greatest impact on overall guest satisfaction. This may be due to the need for leisure guests to constantly interact with the hotel social networks using their smartphones to keep up to date with the events and activities organized by the hotel, as well as to communicate and share their memories with friends and family. Furthermore, the overall satisfaction of leisure guests was also found to be impacted by ICTs related to comfort and entertainment, such as *in-room temperature control system*, *in-room television*, and *in-room telephone system*. This is probably due to the fact that the majority of leisure guests go on holiday during the summer and that it is essential for them to have air conditioning and television in the room to entertain themselves when they are not outside on the beach or at the swimming pool. Finally, the results also highlighted that *in-room telephone system* contributes to the overall satisfaction of leisure guests, as it can be a convenient way to communicate with the hotel reception to request information or to order food in the room.

VI- Conclusion and implications

VI.1 Conclusion

The initial aim of this study was to determine whether hotel ICTs had a greater impact than other non-ICT factors offered by the hotel on overall guest satisfaction regardless of the reason of stay in Algerian hotels. The results showed that both ICT and non-ICT factors have a significant positive impact on overall guest satisfaction. Moreover, the impact of ICTs on overall satisfaction was slightly greater than that of other non-ICT factors offered by the hotel.

Second, we assessed this impact according to the reason of stay and divided the sample into two groups: business guests and leisure guests. The aim was to see whether other non-ICT factors offered by the hotel contributed more than ICTs to the satisfaction of these two categories of guests. Our findings confirmed that this was the case for business guests, but not for leisure guests.

Further analyses were carried out to see in detail which ICT components have an effect on the overall satisfaction of business guests and of leisure guests. Given the results, we were able to conclude that, in general, the overall satisfaction of business guests was positively impacted by ICTs related to safety and work, while overall satisfaction with leisure guests was positively impacted by ICTs related to comfort and entertainment.

VI.2 Theoretical implications

Our study contributes to filling the scientific gap highlighted in the literature (Mihalic and Buhalis, 2013) regarding the lack of studies that assess the impact of ICT adoption in the hotel sector in developing countries. The results also help to enrich the body of knowledge regarding the needs and behavioural intentions of business guests versus leisure guests. In addition, researchers can use our approach in other emerging contexts in developing countries, such as rental of homes and apartments, private rooms, and other properties, as well as to assess the impact of ICTs on other customer segments.

VI.3 Practical implications

Impact of ICTs on the satisfaction of business and leisure guests in Algerian hotels

The findings of the present study will provide useful insights to Algerian hotel managers about ICT components that will potentially contribute to guest satisfaction. In addition, it will help hotel managers better understand guests' expectations in terms of ICT components according to their reason of stay, and by extension, can assist hotel managers in improving the loyalty of their target customers.

Moreover, the results of our study may support policymakers in making strategic and innovative decisions to improve the hotel industry.

VI.4 Limitations and future directions

Despite the significant findings of our study, there are some limitations. First, the size of the sample of business and leisure guests that we evaluated, although consistent with previous studies (Moliner-Velázquez et al., 2019; Chevers and Spencer, 2017), remains relatively small. Indeed, we found a reluctance on the part of the hoteliers to collect feedback on the degree of satisfaction of their guests. However, via social networks and tourism-related communities, we managed to disseminate the questionnaire to our targeted audience. It would be preferable in the future to have databases or channels for collecting tourist data, which would require an effort from governmental authorities to promote the tourism sector. Second, we submitted our questionnaire to the guests of upscale hotels. Therefore, caution is required when generalising results for lower-class hotels or other types of accommodation. Third, it was noted that the majority of the hotels in which the respondents stayed were located in the north of the country. More research is needed to target hotels in the south. Fourth, future studies need to be conducted to include other ICT components, such as teleworking technologies that became almost the norm during the COVID-19 pandemic.

References

- Barsky, J. D. and Labagh, R. (1992). A strategy for customer satisfaction. *Cornell Hotel and Restaurant Administration Quarterly*, 33(5):32–40.
- Buhalis, D. and Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the internet - the state of tourism research. *Tourism Management*, 29:609–623.
- Bulchand-Gidumal, J. and Melián-González, S. (2015). Information technology (it) in hotels: a full catalogue. Available at SSRN 2771059.
- Bulchand-Gidumal, J., Melián-González, S., and López-Valcárcel, B. (2011). Improving hotel ratings by offering free wi-fi. *Journal of Hospitality and Tourism Technology*, 2:235–245.
- Chevers, D. A. and Spencer, A. (2017). Customer satisfaction in jamaican hotels through the use of information and communication technology. *Worldwide Hospitality and Tourism Themes*, 9:70–85.
- Chin, W. W. (2010). How to write up and report pls analyses. In *Handbook of partial least squares*, pages 655–690. Springer.
- Choi, T. Y. and Chu, R. (2001). Determinants of hotel guests' satisfaction and repeat patronage in the hong kong hotel industry. *International Journal of Hospitality Management*, 20:277–297.
- Cobanoglu, C., Berezina, K., Kasavana, M., and Erdem, M. (2011). The impact of technology amenities on hotel guest overall satisfaction. *Journal of Quality Assurance in Hospitality & Tourism*, 12:272 – 288.
- DiPietro, R. B. and Wang, Y. (2010). Key issues for ict applications: impacts and implications for hospitality operations. *Worldwide Hospitality and Tourism Themes*, 2:49–67.

Dolnicar, S. (2002). Business travellers' hotel expectations and disappointments: A different perspective to hotel attribute importance investigation. *Asia Pacific Journal of Tourism Research*, 7:29 – 35.

Dunn, G. and Tucker, E. (2013). An examination of business traveler's perceptions and intentions toward hotel technologies: Viewed through the lens of the technology acceptance model. *International Journal of Trends in Economics Management & Technology (IJTEMT)*, 2(5).

Ezzaouia, I. and Bulchand-Gidumal, J. (2020). Factors influencing the adoption of information technology in the hotel industry. an analysis in a developing country. *Tourism Management Perspectives*, 34:100675.

Heung, V. C. S. (2000). Satisfaction levels of mainland chinese travelers with hong kong hotel services. *International Journal of Contemporary Hospitality Management*, 12:308–315.

Internet World Stats (2020). Africa internet user stats and 2020 population by country. <https://www.internetworldstats.com/africa.htm#dz>.

Kim, D., Hong, S., Park, B., and Kim, I. (2020). Understanding heterogeneous preferences of hotel choice attributes: Do customer segments matter? *Journal of Hospitality and Tourism Management*, 45:330–337.

Knutson, B. J. (1988). Frequent travelers: Making them happy and bringing them back. *Cornell Hotel and Restaurant Administration Quarterly*, 29(1):82–87.

Law, R., Buhalis, D., and Cobanoglu, C. (2014). Progress on information and communication technologies in hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 26:727–750.

Lewis, R. C. (1984). The basis off hotel selection. *Cornell Hotel and Restaurant Administration Quarterly*, 25:54 – 69.

Mandhachitara, R. and Gulid, N. (2019). Stretching the performance quality value-behavioural consequences chain: an empirical study of business and leisure segments in upscale hotels in thailand. *International Journal of Leisure and Tourism Marketing*, 6:279.

Mihalic, T. and Buhalis, D. (2013). Ict as a new competitive advantage factor-case of small transitional hotel sector. *Economic and Business Review for Central and South-Eastern Europe*, 15(1):33.

Millar, M., Mayer, K. J., and Baloglu, S. (2012). Importance of green hotel attributes to business and leisure travelers. *Journal of Hospitality Marketing & Management*, 21:395 – 413.

Moliner-Velázquez, B., Fuentes-Blasco, M., and Gil-Saura, I. (2019). The role of ict, ewom and guest characteristics in loyalty. *Journal of Hospitality and Tourism Technology*, 10:153–168.

Mpofu, K. and Watkins-Mathys, L. (2011). Understanding ict adoption in the small firm sector in southern africa. *J. Syst. Inf. Technol.*, 13:179–199.

Network Readiness Index (2020). Network readiness index 2020 algeria. <https://networkreadinessindex.org/countries/algeria/>.

Nunnally, J. (1978). *Psychometric Theory*: 2nd Ed. McGraw-Hill series in psychology. McGraw-Hill.

R Core Team (2020). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

Impact of ICTs on the satisfaction of business and leisure guests in Algerian hotels

Rajaguru, R. and Hassanli, N. (2018). The role of trip purpose and hotel star rating on guests' satisfaction and wom. *International Journal of Contemporary Hospitality Management*, 30:2268–2286.

Ruiz-Molina, M.-E., Gil-Saura, I., and Moliner-Velázquez, B. (2011). Does technology make a difference? evidence from spanish hotels. *Service Business*, 5:1–12.

Sirirak, S., Islam, N., and Khang, D. B. (2011). Does ict adoption enhance hotel performance. *Journal of Hospitality and Tourism Technology*, 2:34–49.

Tsai, Y.-H., Wu, C.-T., and Chen, S.-L. (2015). Hotel choice criteria by business and leisure travelers. *International Journal of Organizational Innovation (Online)*, 7(4):158.

Velázquez, B., Blasco, M. F., and Saura, I. (2015). Ict adoption in hotels and electronic word-of-mouth. *Academia-revista Latinoamericana De Administracion*, 28:227–250.

Worldwide Tourism and Travel Council (2019). Algeria 2020 annual research: Key highlights. <https://wttc.org/Research/Economic-Impact>.

Xu, X., Li, Y., and Lu, A. (2019). A comparative study of the determinants of business and leisure travellers' satisfaction and dissatisfaction. *International Journal of Services and Operations Management*, 33:87–112.

Yavas, U. and Babakus, E. (2005). Dimensions of hotel choice criteria: congruence between business and leisure travelers. *International Journal of Hospitality Management*, 24:359–367.

Zhang, T., Seo, S., and Ahn, J. A. (2019). Why hotel guests go mobile? examining motives of business and leisure travelers. *Journal of Hospitality Marketing & Management*, 28:621 – 644.