EXTENDED ABSTRACT

Title: Employing ICTs related capabilities in hotels for improving the internal and external management tasks: A case study on the digital telephone system for Spanish regions

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Extended Abstract: *(minimum1500 words)*

1. Introduction

Tourism is a fast growing activity nowadays. As well as in the rest of the economy, the revolution in Information and Communication Technologies (ICTs), also named Information Technologies (ITs), has allowed the tourism industry to scale up in their operations, providing new ways of marketing their services, innovating in the way traditional tourism services were provided, and opening new channels for stay in touch with their potential and actual customers. Regarding the hospitality industry, hotels have been adopting new technologies to show and sell their products, marketing accommodation services through online platforms and virtual visits for clients. The irruption of massive platforms like Booking.com and Trip advisor have also changed the rules of the market for the hotel industry. Reviews of clients in social networks allow for new types of promotional campaigns and web 2.0 and smartphone development continues opening new channels and opportunities for companies in this branch of the tourism industry.

The spread of ICTs has raised the need of training and education of human resources at hotels. Employees and managers are not always aware of the capabilities that these new technologies provide for the company, including opportunities for efficiency gains for the management of the company and in the relationships with customers. Sometimes, the issue comes from the side of an inadequate or insufficient training of the employee on how to extract all value of the new device or technology. Sometimes, the technology lacks a specific focus on the hospitality industry when being designed, and needs some customization to really attend the needs of the hotel industry.

This is the context informing the present research. In particular, we investigate how to employ the currently installed communication technologies at much of today´s hotels for improving the internal and external efficiency of the company. Our chosen case study will show the possibilities that could be opened to hotels when using additional features of the actual digital telephone systems - Internet Protocol Private Branch

Exchange (IP PBX) -, already installed in most hotels, but actually with almost no use. Those developments come from two main fields, namely improvements in the productivity of human resources, and increasing levels of customer satisfaction. The snalysis will include a number of Spanish regions enabling the comparison of the state-of-the-art across Spain. The rest of the Abstract reviews the literature, presents some research objectives and preliminary findings, and concludes.

2. Literature review

Literature about the use and spread of Information technologies (IT) in tourism and hospitality industries has grown significantly in the last two decades (Buhalis 2008, 2014). As in the rest of the economy, the development of ITs are enabling transcendental changes in these industries, resulting in huge increases of the business performance and operations (Byrd and Turner, 2001; Kim et al., 2008). The survival of firms depends on their capacity to develop or adopt innovations in a world with fast changing technologies, strong competition and rapid changes in consumers' preferences (Damanpour et al., 2009; Wang & Ahmed, 2003). Hospitality is majorly a service business, where IT applications become key in increasing the efficiency of workers, rendering new opportunities to customers or sustaining management decisions (Kim et al., 2008; Law et al., 2013). In general, the literature has been showing how IT technologies allow to improve the productivity of employees while raising the level of satisfaction of clients (Ham et al 2005, Hajli et al., 2015).

Important developments in this sector rely on applications linked to the wide area of communication services. Network technologies, software and mobile devices, including the outstanding role achieved by the smartphone nowadays, open a whole set of opportunities to companies and customers (Aldebert et al., 2011). The deployment of mobile technology has fundamentally transformed tourism offerings, as for example 60% of the global smart phone users have downloaded some kind of travel app (Goodworklabs, 2017) . The use of mobile technologies has increased over time with the geo-localisation related applications. As tourism pioneered the development of e-commerce, it also did with mobile technologies (Aldebert et al., 2011). Mobile technologies increase the interactions among travellers in consulting, managing,

covering in situ needs, and providing post trip experiences and feed-back, as many tourists demand total connectivity before, during and after their trip (Buhalis & Law, 2008).

In this context, a pivotal issue for managers and hotels arises from the need of the necessary adaptability and customization of ITs to companies, mostly in the case of SMEs (Small and Medium) firms. This includes the design of a new service, or the need of customization of IT software and applications for the daily activities of the company (Melian & Bulchard, 2016). In this direction, researchers started to develop the concept of "Information Systems Strategy" (ISS) (Chen et al., 2010; Karpovsky et al., 2014a, 2014b). Chen (2010) identified four dimensions of the ITs: Infrastructure, technical & managerial knowledge, and integration with the firm strategy.

Some authors have tried to obtain empirical evidence on this theory at the level of the firm (Mata et al., 1995; Ross et al., 1996; Powell and Dent-Micallef, 1997). For IT infrastructure and technical knowledge they measure connectivity, velocity, capability, and degree of standardization of the firm's computer networks and platforms. As technical knowledge refers to the know-how needed to implement IT, users provide information of the department members, as well as the degree of adaptation to new IT innovations, and the relationship they had to colleagues in other areas. Regarding IT managerial knowledge, authors try to anticipate the organization's future IT needs, but also of contemplating aspects related to the abilities to integrate the information system into the firm's vision and strategy, while implementing this technology as a facilitator of the work of the firm's agents, both internal and external (Feeny and Willcocks, 1998; Bharadwaj, 2000; Dehning and Richardson, 2002). Finally, IT integration into the business strategy leads to measure the relationship in terms of levels of communication between those responsible for IT and the different business units, and levels of shared knowledge about IT capabilities and firms´ needs (Tippins and Sohi, 2003; Melville et al., 2004; Ray et al. 2005; Crawford et al. 2011). In this context, it becomes necessary to identify the reasons why technology adoption remains low in hotels and to find out the drivers of technology adoption. However, research exploring the reasons behind low levels of IT adoption in the hotel industry is still limited. (Reino et al., 2014). As a

response, the current research tends to contribute on this field.

3. Research objectives and findings

3.1- Objectives and Strategy

Our approach here is to better understand how to rely on existing technologies to develop new uses that render in value added for managers and employees in the hotel industry, as well as for customers, thus increasing the firm´s performance, reducing cost of adoption on IT technologies, and resulting in higher levels of customers´ satisfaction. The cornerstone of our strategy relies on identifying the main weaknesses still arsing in this area, then leading to employee training courses for IT adoption and development. This strategy aligns with the literature recognising IT implementation as a creator of value in the hotel industry, providing faster delivery, higher productivity and cost savings, as well as rising the levels of guest and staff satisfaction.

In order to cope with such a declared objective, the present paper seeks to better understand what is the state-of-the-art regarding IP PBX – digital telephony - in hotels, what capabilities are the most widely employed, and shedding more light on how to improve the implementation of this technology with a focus on improving the menu of services provided to clients and staff resulting in higher levels of efficiency and customers´ satisfaction.

The designed strategy is as follows:
Improve two of the four dimensions of ITs: as IT infrastructure, is already good enough and easy to deploy, while the IT integration with the firm strategy must be dealt with by the managerial staff, it seems more logical to focus on the knowledge, technical and managerial area. Some expected developments include the following ones:

1. - Offering the guests the possibility of using their mobile phone as a room phone and internal SMS device with directory functions – Lightweight Directory Access Protocol LDAP -, including group partners rooms/smartphone contact. Offering the staff capabilities such as real time room cleaning monitoring via internal texting, or internal texting and calling between employees configuring staff extensions also on staff mobile

devices. This includes teaching the staff on the entire list of capabilities of these devices, while showing the audience some cases of study.

2.- Offering some ideas as to install cheap public tablets able to video conference with staff from key places in the establishment or change room phones with wall or portable small tablets.

Regarding some offered experiences of internal management improvement cases, we propose:

3.- Internal texting that is a faster method of communication than voice and video calls and saves time. Real time work monitoring based in text updates as room cleaning that is already been done in a few hotels. Mobile availability calling or texting to the desk number – it saves time when someone is out of his or her desk and you have to call back to their mobile - automatic redirect call when someone in the department is not working that day for example.

4.- Big data analysis, from texts between guests and hotel services and via GeoIP to relocate some services if necessary and detect customer behaviour. Being able to add close providers to this system. Receive fax in the e-mail and send fax from document, to save time. Send files between computers or phones inside your internal network, being faster more reliable and without the security issues of that data transmitted over a external network as the internet is. Interactive Voice Response IVR for incoming calls to public numbers – new callers will find the person they need to speak in a faster way -. Regarding improvements focused on developing and facilitating the hotel-guest relationship some proposals include:

5.- The use of directory - Lightweight Directory Access Protocol LDAP – as the customer can find what service to call or text directly from their mobile device faster than calling a receptionist. Being able to text the hotel with privacy asking for help in embarrassing situations. High quality video call, Interactive Voice Response IVR for simple and often services as ask for “new towels” - that is alerady implemented in a few hotels -.

Some during-trip relationship between guests could include the following ones:
6.- The use of directory to contact other guests, and not having to share your phone number or messaging service ID, with people that you rarely will contact with after the trip, being able to text, call, voice call, share files as pictures, save as favorite and all the other capabilities digital telephony offers you by default, and whatever the hotel would like to add from additional modules.

Some guest-world communications improvement cases are:
7.- Being able to call with no cost or very small cost to your – foreign – country. Being able to make local calls with no cost.

Some potential destination improvements include:
8.- Unified digital telephone hotel system, with shared Wi-Fi saving costs and spreading the WiFi area for all hotel guests. Providing more diversified destination hotel activities and friendship or dating opportunities allowing interested people to meet and share similar interests. The ability to develop internal dating and friendship applications, cicerone services, feedback and other User Generated Content – UGC - applications.

As shown, all these developments rely in the area of improvements directed to increase the use of potential application of IP PBX devices already installed at many hotels, leading to improvements in the three areas of internal hotel management applications, new options for the relationships among customers, and the relations of customers with their foreign affiliates and relatives. In order to focus the path for such a list of improvements and transfer opportunities to hotels, we will design a questionnaire to be distributed by a sample of hotels in different regions of Spain as a pilot study that could be exported to the rest of European Union. This sample will allow to better understand differences between regions of Spain in the use and extension of IP PBX applications.

3.2.- Survey design and Analysis

In this point of the research, a questionnaire will be designed in order to ascertain the following research questions:

- Is your hotel employing IP PBX services, and are you aware of the advantages over the analogic one that this ICT entails for the hospitality sector?.
- What is the current use and capabilities of the digital telephony - IP PBX - usually employed in your company for the daily business activity?.
- Are you aware of the additional capabilities that ICT service could provide to your company in terms of internal management operations, guest-staff relationships and guest-to-guest interactions?.
- Are you willing to apply such ICT developments to your company through a short training course improving the performance of your company and the satisfaction level of your customers with small additional costs?.

In this respect, our new services also include proposed solutions to be taught through the case method – AZT – offering tourist the use of this ICT able to communicate with hotel staff, with a directory – LDAP - via text calling or video calling.

The proposal in the current investigation answers a number of problems in line with the contribution of Chen et al. (2010), improving the performance of the IT devices for the hotel industry from a technical and managerial point of view. The proposal also aligns with Melian and Bulchard (2015) on the need of the necessary adaptability and customization of Its for the hospitality industry in general.

4. Conclusions

This research is still a work in progress seeking to build on ICT usages of the hotel industry in order to improve them in a cost saving strategy mainly based in bridging existing gaps between the engineering and managerial and economic staffs of the industry. Following the literature, we propose a case study for a number of outstanding Spanish regions to demonstrate the still incipient understanding and applications of the ICT technologies in three main areas of the hotel business, including managerial techniques, customer focus and the relationship between service staff and guests inside the hotel facilities. Our proposal builds on a better understanding of existing opportunities to improve the use of ICT devices with no additional costs for improving these three areas, resulting in higher levels of performance of the company and satisfaction of the customers. The proposed activities include the design of a

questionnaire that will guide the proposed actions of ICT customization to hotels through short training courses in line, answering in a primary stage to the needs of the industry identified by the tourism and ICT literature.

References

Aldebert, B., Dang, R. J., & Longhi, C. (2011): "Innovation in the tourism industry: The case of Tourism@", Tourism Management, nº32(5), p. 1204-1213. https://doi.org/10.1016/j.tourman.2010.08.010

Bharadwaj, A.S. (2000): "A resource-based perspective on information technology capability and firm performance: an empirical investigation", MIS Quarterly, nº24(1), p. 169-196.

Buhalis, D., & Law, R. (2008): "Progress in information technology and tourism management: 20 years on and 10 years after the Internet-The state of eTourism research", Tourism Management, nº29(4), p. 609-623. https://doi.org/10.1016/j.tourman.2008.01.005

Byrd, T. A. & Turner, D. E. (2001):"An exploratory examination of the relationship between flexible IT infrastructure and competitive advantage. Information and Management", nº39(1), p 41-52. https://doi.org/10.1016/S0378-7206(01)00078-7

Chen D. Q., Mocker, M., Preston, D. S. & Teubner, A. (2010):"Information systems strategy: reconceptualization, measurement, and implications for information and communication technologies in tourism", MIS Quarterly nº34(2),p. 233-259.

Crawford, J., Leonard, L.N.K., & Jones, K., (2011): "The human resource's influence in shaping IT competence", Industrial Management & Data Systems, nº111 (2), p. 164-183.

Damanpour, F., & Schneider, M. (2009): "Characteristics of Innovation and Innovation Adoption in Public Organizations: Assessing the Role of Managers", Journal of Public Administration Research and Theory, nº19, p. 495. https://doi.org/10.1093/jopart/mup031

Dehning, B. & Richardson, V.J. (2002): "Returns on Investments in Information Technology: A Research Synthesis", Journal of Information Systems, nº 16(1), p. 7-30. https://doi.org/10.2308/jis.2002.16.1.7

Feeny, D.F. & Willcocks, L.P. (1998): "Core IS capabilities for exploiting information technology", MIT Sloan Management Review, nº39(3), p. 9-21.

Goodworkslabs (2016): "How mobile app benefits travel and tourism industry". Downloaded from: https://www.goodworklabs.com/how-mobile-app-benefits-travel-and-tourism-industry/

Hajli, M., Sims, J. M., Ibragimov, V. (2015): "Information technology (IT) productivity paradox in the 21st century", International Journal of Productivity and Performance Management, nº64(4), p.457-478. https://doi.org/10.1108/IJPPM-12-2012-0129

Ham, S., Kim, W. & Jeong, S. (2005): "Effect of information technology on performance in upscale hotels", International Journal of Hospitality Management, nº 24(2), pp. 281-294.

Karpovsky, A., Hallanoro, M., Galliers, R.D., (2014)a: The process of information systems strategizing: review and synthesis. In: Cohen, R., Topi, H., Tucker, A. (Eds.), The CRC Handbook of Computing: Information Systems and Information Technology, 3rd edition, vol. II. Chapman & Hall, London.

Karpovsky, A., Hallanoro, M., Galliers, R.D., (2014)b: "Information Systems Strategizing-as-organizing: A 50-year Reflection", Bentley University Working Paper, Waltham, MA.

Kim, T. G., Lee, J. H., & Law, R. (2008): "An empirical examination of the acceptance behaviour of hotel front office systems: An extended technology acceptance model." Tourism Management, nº29(3), p. 500–513.
https://doi.org/10.1016/J.TOURMAN.2007.05.016

Law, R., Leung, D., Au, N., & Lee, A. (2013): "Progress and development of information technology in the hospitality industry evidence from Cornell hospitality quarterly." Cornell Hospitality Quarterly, nº54(1), p. 10-24.
https://doi.org/10.1177/1938965512453199

Law, R., Buhalis, D., & Cobanoglu, C. (2014): "Progress on information and communication technologies in hospitality and tourism." International Journal of Contemporary Hospitality Management, nº26(5), p. 727-750.
https://doi.org/10.1108/IJCHM-08-2013-0367

Mata, F.J., Fuerst, W.L., Barney, J.B., (1995): "Information technology and sustained competitive advantage: a resource-based analysis", MIS Quarterly nº19(4), p. 487-505.
https://doi.org/10.1108/IJCHM-08-2013-0367

Melián-González, S., & Bulchand-Gidumal, J. (2016): "A model that connects information technology and hotel performance", Tourism Management, nº53, p 30-37.
https://doi.org/10.1016/J.TOURMAN.2015.09.005

Melville, N., Kraemer, K., Gurbaxani, V., (2004): "Review: information technology and organizational performance: an integrative model of IT business value." MIS Quarterly, nº28(2), p. 283-322.

Navío-Marco, J., Ruiz-Gómez, L. M., & Sevilla-Sevilla, C. (2018): "Progress in information technology and tourism management: 30 years on and 20 years after the

internet - Revisiting Buhalis & Law's landmark study about eTourism" Tourism Management, nº69, p. 460–470.
https://doi.org/10.1016/J.TOURMAN.2018.06.002

Peppard, J., Galliers, R. D. & Thorogood, A. (2014): "Information systems strategy as practice: Micro strategy and strategizing for IS", The Journal of Strategic Information Systems nº23(1), p. 1-10.
https://doi.org/10.1016/j.jsis.2014.01.002

Pérez-Aróstegui, M. N., Bustinza-Sánchez, F., & Barrales-Molina, V. (2015): "Exploring the relationship between information technology competence and quality management." Business Research Quarterly, nº18(1), p. 4-17. *https://doi.org/10.1016/j.brq.2013.11.003*

Powell, T.C., Dent-Micallef, A., (1997): "Information technology as competitive advantage: the role of human, business, and technology resources." Strategical Managemet Journal, nº18(5), p. 375-405.

Ray, G., Muhanna, W.A., Barney, J.B. (2005): "Information technology and the performance of the customer service process: A resource-based analysis." MIS Quarterly, nº29(4), p. 625- 652.

Reino, S., Lamsfus, C., Salas, H., Ortiz, T. & Alzua-Sorzabal, A. (2014): "Listening to CEOs: A New Perspective to Study Technology Adoption in Hotels" Information and Communication Technologies in Tourism, nº34, p. 709-722.
https://doi.org/10.1007/978-3-319-03973-2

Ross, J.W., Beath, C.M. & Goodhue, D.L. (1996): "Develop long-term competitiveness through IT assets." Sloan Management Review, nº38(1), p. 31-42.

Sirawit, S. Nazrul , I. & Khang, D. B. (2011): "Does ICT adoption enhance hotel performance?", Journal of Hospitality and Tourism Technology 2011, nº2(1), p. 34-49.

Tippins, M.J, & Sohi, R.S. (2003): "IT competency and firm performance: is organizational learning a missing link?", Strategical Management. Journal, nº24(8), p. 745-761.

Wang, C. L. & Ahmed, P. K. (2003): "Organisational learning: a critical review", The Learning Organization, nº10(1), p.8-17.
https://doi.org/10.1108/09696470310457469