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La adopción de la TIC en hoteles y el boca-oreja electrónico

Beatriz Moliner Velázquez

Comercialización e Investigación de Mercados, Universidad de Valencia, Valencia, Spain

María Fuentes Blasco

Organización y Dirección de Empresas, Universidad Pablo de Olavide, Sevilla, Spain, and

Irene Gil Saura

Comercialización e Investigación de Mercados, Universidad de Valencia, Valencia, Spain

Abstract

Purpose – The purpose of this paper is to investigate how information and communication technology (ICT) adoption in hotels contributes to satisfaction and loyalty from the consumer perspective, considering the online dimension of recommendations.

Design/methodology/approach – A quantitative research based on a structured questionnaire and using a personal survey method was developed. Surveys were conducted on 386 guests from Spanish hotels. Causal methodology by testing structural equation model was applied.

Findings – Significant relationships are obtained in the sequence "ICT use perception – satisfaction with ICT – overall satisfaction with the hotel – dimensions of loyalty" and the mediating effect of positive electronic word-of-mouth intention between ICT satisfaction and general intention to recommend the hotel is confirmed.

Research limitations/implications – Future research can replicate these relationships in other tourist services and employ multidimensional scales to measure word-of-mouth behaviour.

Originality/value – The novelty of this work is that it studies the relationships between ICT, satisfaction and loyalty in hotel services, paying particular attention to positive word-of-mouth behaviour, both conventional and online.

Keywords Satisfaction, Loyalty, Hospitality, Information and communication technologies (ICT), Electronic word-of-mouth

Paper type Research paper

Resumen estructurado

Objetivo – El propósito de este trabajo es investigar la contribución que tiene la adopción de las TIC en los hoteles en la satisfacción y la lealtad, desde la perspectiva del consumidor y considerando la dimensión online de las recomendaciones.

Diseño/metodología – Se desarrolló una investigación cuantitativa basada en un cuestionario estructurado y empleando el método de la encuesta personal. Se realizaron 386 encuestas a huéspedes de hoteles españoles. Se aplicó la metodología causal testando un modelo de ecuaciones estructurales.

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Hallazgos – Se obtienen relaciones significativas en la secuencia "percepción de los clientes del uso de las TIC – nivel de satisfacción con las TIC – nivel de satisfacción general con el hotel – dimensiones de la lealtad" y se confirma el efecto mediador que tiene la intención del boca-oreja online entre la satisfacción con las TIC y la intención general de recomendar el hotel.

Limitaciones/implicaciones – En futuras investigaciones se pueden replicar estas relaciones en otros servicios turísticos y emplear escalas multidimensionales para medir la conducta de boca-oreja.

Originalidad/valor – La novedad de este trabajo radica en el estudio de las relaciones entre las TIC, satisfacción y lealtad en los servicios hoteleros poniendo especial atención en la conducta de boca-oreja positivo, tanto convencional como online.

Palabras clave Tecnologías de la Información y Comunicación (TIC), Boca-oreja online, Satisfacción, Lealtad, Hostelería

Tipo de papel Trabajo de investigación

1. Introduction

The tourist industry continues to be one of the most dynamic industries (UNWTO, 2011) and its evolution is closely linked to the development of new technologies. There is a consensus in the literature over the advantages of information and communication technologies (ICT) use for firms in general and hotel establishments in particular (Buhalis and Law, 2008). In order to maintain competitiveness, this type of business has had to adapt quickly to the new technological context.

In addition to this technological revolution, consumers increasingly use the internet to share experiences and make decisions regarding leisure and tourism. Consumers also take into account other peoples' opinions and often base their offline purchase decisions on information and data acquired online (Chan and Ngai, 2011). Recent data confirm that 32.7 per cent of the world's population uses the internet, and Spain has a penetration rate of 30.7 per cent (Internet World Statistics (IWS), 2011). This tool is thus becoming a key information and communication channel for consumers who wish to share their opinions on shopping and consumption experiences. The growth of electronic commerce in recent years and the spectacular expansion of the word-of-mouth industry are provoking significant changes in consumer decision-making and behaviour patterns (Lee *et al.*, 2008). Word-of-mouth is a powerful tool for free communication on a product or service and in the virtual environment it has become a very interesting field of study for scholars and managers (Xia and Bechwati, 2008).

Academic research into customer perception of ICT use in hotels is still scanty (Line and Runyan, 2012; Martínez *et al.*, 2006). Similarly, although attention to loyalty in hotels has grown in recent years, its study is still limited when compared to other areas of marketing (Alrousan and Abuamoud, 2013), and there is little empirical evidence on word-of-mouth in tourism services (e.g. Litvin *et al.*, 2008). Serra and Salvi (2014) identify two research lines in the hotel industry with interesting challenges and opportunities: the study of factors that influence word-of-mouth behaviour and the study of the effects of this behaviour on consumers and businesses. Our research forms part of the first line as we analyse the influence of ICT and satisfaction on comments and recommendations made online and their relationship with traditional word-of-mouth.

We investigate how ICT adoption in hotels contributes to satisfaction and loyalty from the consumer perspective, considering the online dimension of recommendations. Our objective is to analyse the relationship sequence "customer perception of ICT use-level of satisfaction with ICT-general level of satisfaction with the hotel-loyalty dimensions (intention to return, willingness to pay a higher price and positive word-of-mouth intention or recommendation)". In these relationships, we also study the

mediator effect of electronic word-of-mouth (e-word-of-mouth) intention between satisfaction with ICT and general intention to recommend the hotel.

Considering the limitations still present in the literature on online word-of-mouth and ICT adoption in tourism (Line and Runyan, 2012; Serra and Salvi, 2014), the novelty of this work is that it studies the relationships between ICT, satisfaction and loyalty in hotel services with particular attention paid to positive word-of-mouth behaviour, both conventional and online. To approach this study, we first conduct a review of the theory on ICT in hotels and word-of-mouth behaviour that underpins the proposed hypotheses. Then, we describe the empirical research. Finally, the results are presented together with the conclusions and academic and managerial implications.

2. Theoretical framework

2.1 ICT in hotels

Although it has been pointed out that the spread of ICT favours disintermediation (Buhalis, 1998; Longhi, 2008), these technologies represent significant opportunities for tourism businesses (Ruiz *et al.*, 2011). The rapid evolution of ICT has radically changed conditions in the tourism market because it has provided businesses with new instruments to add value to their customers' experience (Buhalis and Law, 2008) and it has changed the way consumers use information to carry out tourist transactions (Yeoman and McMahon-Beattie, 2006).

ICT can be defined as any type of technology used to "create, capture, manipulate, communicate, exchange, present, and use information in its various forms" (Ryssel *et al.*, 2004, p. 198). There is a wide range of technological applications for hotels for internal use (hardware, software, connectivity, etc.) as well as external use (electronic marketing, customer management, CRM, etc.). Technologies for external use are applications focused on B2C relations that can be grouped into ICT for room bookings, catering services, office services and internal technologies in the rooms (Ham *et al.*, 2005; Sigala, 2003; Sirirak *et al.*, 2011). These technologies intervene in the phases of hotel and customer relations that form what is known as the "guest circle": before arrival, check-in, during the stay and after the experience (Kasavana and Brooks, 2001).

Within this industry, hotels in particular have been forced to adopt ICT as a way of dealing with rapid changes in the competition, environment and customer expectations in order to achieve a competitive advantage (Sirirak *et al.*, 2011). Hotel managers are becoming increasingly aware that the introduction of ICT is a key factor for success in improving business results (Sigala *et al.*, 2001; Ham *et al.*, 2005). In this regard, the hotel sector has traditionally been criticised for the scanty incorporation of ICT in smaller and/or independent businesses (Main, 2001; Paraskevas and Buhalis, 2002). Although hotels have been relatively slow to implement ICT (Niininen *et al.*, 2004), more recent studies show that considerable progress has been made in terms of interactive marketing due to the recent introduction of a wide range of technologies (DiPietro and Wang, 2010). In fact, the hotel industry is in a leading position in relation to other economic sectors as regards investment and ICT use (Banco de España/Summary Economic Indicators, 2010; eBusiness W@tch, 2006; Observatorio de las Telecomunicaciones y la Sociedad de la Información – Entidad Pública Empresarial Red.es, 2007).

Many advantages of ICT adoption have been pointed out, such as cost reductions, improved customer satisfaction, increased market share and improved performance among employees (Tae *et al.*, 2008; Karadag *et al.*, 2009). The use of technologies does not necessarily eliminate jobs, but helps to make them more flexible (Tesone, 2006). These advantages also include greater operating efficiency, improved customer

services in the phases before and after the visit (Bilgihan, 2012; Law and Jogaratnam, 2005) and the achievement of competitive advantages (DiPietro and Wang, 2010). However, one of the main opportunities for the hotel industry currently is the use of ICT with a strategic approach. First, they can be an important source of differentiation from the competition (Trimi, 2008), and they provide deep understanding of the needs, behaviours and preferences of customers so that hotels can develop retention and loyalty strategies (Minghetti, 2003). In this line, the studies on hotels undertaken by Ham *et al.* (2005) and Sirirak *et al.* (2011) show that investment in ICT improves productivity. Garau and Orfila (2008) also point out that ICT use in hotels facilitates customer relations and increases the efficiency of relations with service providers.

Despite these advantages, hotels often do not receive the expected benefits of investment in ICT. One of the reasons may be the risk of excessive investment, so the optimum level of ICT in the hotel must be determined in relation to customer needs (Sethuraman and Parasuraman, 2005). The literature brings to light a number of disagreements over this optimum level of investment in technology. Some consider that more technology is always preferable (Palmer and Markus, 2000), whereas others point out that good technology is the "appropriate" technology (Sethuraman and Parasuraman, 2005). In this debate, various studies point out that the advisability of applying the technologies depends on the profile of the establishment (Manes, 2003) and the characteristics of its target public (Sharland, 1997). Sahadev and Islam (2005) also analyse a series of factors influencing the adoption of ICT by hotels. These authors conclude that the category of the establishment and the size of the market encourage the use of technologies whereas the age of the hotel and occupancy rate limit the use. In small or independent hotel businesses with limited capacity to invest in ICT, the level of desired positioning should be prioritised and technological equipment should adapt to customers' needs and expectations (Orfila *et al.*, 2006).

Variety seeking behaviour, typical of the tourism consumer, is another reason why hotels may not perceive the benefits of ICT adoption. Variety seeking is a voluntary activity that seeks to break with routine decision making and can affect repetition of the same tourism service (Niininen *et al.*, 2004). Some works highlight the negative effect of this variable on some dimensions of loyalty. For example, Barroso *et al.* (2007) conclude that tourists who show a high need for variety do not show intentions to return despite being satisfied. However, most research has found that satisfied tourists have more positive word-of-mouth intentions (e.g. Litvin *et al.*, 2008). These intentions help to attract new customers despite the variety seeking of the customer who has recommended the service.

In general, the literature in the hotel context focuses on studying the degree to which hotels introduce technologies and the advantages and disadvantages they provide for the business (e.g. Chathoth and Law, 2011; Law and Jogaratnam, 2005; Li *et al.*, 2012; Ruiz *et al.*, 2013; Sigala, 2012). Despite particular interest in analysing the influence of ICT adoption in the relationship between hotels and their customers (e.g. Buhalis and Law, 2008; Garau and Orfila, 2008; Lee *et al.*, 2003; Martínez *et al.*, 2006; Stockdale, 2007), very few studies on hotels analyse the customer perspective on ICT. In this line, some studies have analysed the effect of ICT in hotels on satisfaction and its consequences such as return intention or word-of-mouth (e.g. Sirirak *et al.*, 2011; Ruiz *et al.*, 2013).

2.2 Word-of-mouth and e-word-of-mouth
Although the study of word-of-mouth began in the 1960s (Arndt, 1967), the literature has grown remarkably in recent years (e.g. Serra and Salvi, 2014) and the

word-of-mouth industry is becoming a major sector for business practice (e.g. WOMMA[1]). There are different definitions of this behaviour (Table I). In general, authors highlight the personal and informal nature of word-of-mouth, but there has been some evolution in its conceptualisation (Carl, 2006; Goyette *et al.*, 2010).

Some authors note that the receivers of the information are not commercial; that is, they are individual consumers (Arndt, 1967), whereas other authors consider the emitter to be non-commercial (e.g. Harrison-Walker, 2001; Litvin *et al.*, 2008). Therefore, the information consumers transmit may be directed at other consumers or businesses. However, most authors emphasise that both emitters and receivers have no commercial interest (e.g. Bone, 1992; Anderson, 1998; Theng and Ng, 2001), they are independent of the firm and the means of communication are also independent of the firm (e.g. Silverman, 2001). On the basis of these definitions, the word-of-mouth concept raises various issues.

First, word-of-mouth excludes formal communication from customers to firms (in the form of complaints or suggestions) and from firms to customers (through promotion actions) (Mazzarol *et al.*, 2007). Second, interpersonal communications are both an antecedent and a consequence of consumers' evaluations of their shopping

Source	Definition
Arndt (1967, p. 291)	Oral, person-to-person communication between a perceived non-commercial communicator and a receiver concerning a brand, a product or a service offered for sale
Westbrook (1987, p. 261)	All informal communications directed at other consumers about the ownership, usage, or characteristics of particular goods and services or their sellers
Bone (1992, p. 579)	Exchange of comments, thoughts, and ideas among two or more individuals in which none of the individuals represent a marketing source
File *et al.* (1994, p. 302)	Means by which buyers of services exchange information about those services, thus diffusing information about a product throughout a market
Anderson (1998, p. 6)	Informal communications between private parties concerning evaluations of goods and services
Theng and Ng (2001, p. 164)	Oral, person-to-person communication between a perceived non-commercial communicator and a receiver concerning a brand, a product or a service offered for sale
Harrison-Walker (2001, p. 63)	An informal person-to-person communication between a perceived non-commercial communicator and a receiver regarding a brand, a product, an organisation, or a service
Silverman (2001, p. 48)	Communication about products and services between people who are perceived to be independent of the company providing the product or service, in a medium perceived to be independent of the company
WOMMA (2007)	The act of consumers providing information to other consumers
Litvin *et al.* (2008, p. 459)	Communication between consumers about a product, service or a company in which the sources are considered independent of commercial influence
Goyette *et al.* (2010, p. 9)	Verbal informal communication occurring in person, by telephone, e-mail, mailing list, or any other communication method regarding a service or a good. A recommendation source may be personal or impersonal

Table I.
Main definitions of
word-of-mouth

experience (File *et al.*, 1994; Godes and Mayzlin, 2004). In the pre-purchase stage, individuals seek information from others as a risk reduction strategy (Flanagin *et al.*, 2014), especially in the context of services (Jalilvand and Samiei, 2012). In fact, consumers resort to and trust information from word-of-mouth more when they are dealing with high-risk purchase processes (Ha, 2002). In the post-purchase stage, consumers engage in word-of-mouth with a wide variety of objectives and motivations, mainly to help other consumers, prevent possible errors (Laughlin and MacDonald, 2010), vent their anger or reduce cognitive dissonance (Halstead, 2002). Third, the fact that word-of-mouth is a type of direct, personal behaviour that is independent of the company makes the information transmitted more real and credible. In this regard, the literature recognises that the impact of word-of-mouth on consumer behaviour is greater than the effect of advertising or promotion (Hogan *et al.*, 2004; Sen, 2008). For example, Hogan *et al.* (2004) show that word-of-mouth can triple the effectiveness of advertising.

The review of the theory shows various areas of debate which indicate some conceptual and empirical deficiencies. These deficiencies are the result of certain disagreements over the nature of word-of-mouth and therefore on the dimensions that must be evaluated to measure the construct.

Word-of-mouth has been characterised traditionally as having a two dimensional nature, with an evaluative dimension (valency or degree of accuracy of the information) and a conative dimension (degree of diffusion to others) (Harrison-Walker, 2001; Halstead, 2002). More recent works have identified new word-of-mouth dimensions such as referral and activity (Gelbrich, 2011). Referral refers to the degree to which consumers speak positively of a product or firm and/or recommend it, and activity represents the degree to which consumers speak of the advantages. Sweeney *et al.* (2012) recognise three types of characteristics in the communication of word-of-mouth behaviour: valency or degree of favourability, the cognitive component which refers to what is being said and the affective component that reflects the emotions in how it is said (Mazzarol *et al.*, 2007). The development of technologies has added the form or medium for word-of-mouth to the above dimensions because online and offline comments are remarkably different in effect and content (Chan and Ngai, 2011).

Although these dimensions are accepted, most research into loyalty continues to use intention to recommend and/or word-of-mouth behaviour in general to measure the construct. Word-of-mouth is also often considered as another dimension of loyalty, that is, without explicit reference to any dimension (Gremler and Brown, 1999; Zeithaml *et al.*, 1996). For example, in the area of services, studies like those by Cho and Rutherford (2011), Moliner and Berenguer (2011), Reynolds *et al.* (2012), Chu and Li (2012), Mouakket and Al-hawari (2012) and Arenas *et al.* (2013) use highly reliable scales, adapted from Zeithaml *et al.* (1996) and Maxham and Netemeyer (2002) to measure the degree to which individuals recommend or the likelihood of encouraging and speaking positively to others.

Furthermore, there is no consensus over whether word-of-mouth is an active recommendation from consumers (Gremler and Brown, 1999), simply a negative comment on a product or service (Anderson, 1998) or a combination of both (Maxham and Netemeyer, 2002). Most researchers consider that word-of-mouth refers to extremely positive or negative comments concerning original and memorable experiences (Anderson, 1998; Herr *et al.*, 1991). Therefore, word-of-mouth does not necessarily include a recommendation, especially if it is negative, as it can spark a rumour or complaint behaviour (Kumar *et al.*, 2013). Thus, the relationship between satisfaction and

word-of-mouth behaviour can be represented in the form of an inverted "U", such that the most satisfied and the most dissatisfied consumers will provide the most comments on their experiences (Andreassen and Streukens, 2009; Litvin *et al.*, 2008).

Related to these conceptual differences, confusion arises over the consideration of word-of-mouth as a component of loyalty (Sweeney *et al.*, 2012). Behavioural loyalty places the emphasis on past experience and refers to repeat purchase (Buttle and Burton, 2002; Oliver, 1997). Attitudinal loyalty, however, is based on promises consumers make about their future behaviour (Zins, 2001) and can include the likelihood of future purchase or intentions to recommend to third parties (Zeithaml *et al.*, 1996). Given that word-of-mouth is not always a recommendation (Anderson, 1998; Herr *et al.*, 1991), only positive word-of-mouth would be a dimension of loyalty.

With the growth in ICT, the virtual dimension of word-of-mouth has been added to these disagreements, giving rise to the concept of e-word-of-mouth[2], of increasing importance for scholars and business. Chan and Ngai (2011) analyse the most recent literature on this phenomenon and note that the number of studies published in prestigious academic journals has increased exponentially since 2006. In the hotel context, Serra and Salvi (2014) examine academic research into e-word-of-mouth, finding that the topic has great analytical opportunities and has been receiving growing attention especially since 2011. Thus, the academic study of e-word-of-mouth is relatively new and research is still scanty and dispersed (Aguilar *et al.*, 2014).

The few definitions highlight important aspects of the nature of e-word-of-mouth and notable differences with traditional word-of-mouth. Hennig-Thurau *et al.* (2004, p. 39) limit the behaviour to customers when they define e-word-of-mouth as "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet". However, Litvin *et al.* (2008, p. 461) use a broader focus to define e-word-of-mouth as "all informal communications directed at consumers through Internet-based technology related to the usage or characteristics of particular goods and services, or their sellers". These authors emphasise that it includes not only communications between consumers but also between businesses and consumers. In this second case, e-word-of-mouth is caused by buzz or viral marketing[3], where marketing managers broadcast a message with specific aims and use different forms of communication from conventional means (Goyette *et al.*, 2010).

A comparison of these definitions with the ones in Table I shows significant differences between traditional word-of-mouth and e-word-of-mouth related to the scope, speed and availability of information. As internet is the communication channel for e-word-of-mouth, individuals can share information in three ways: one-to-one (mail or instant messaging), one-to-many (e.g. web sites) and many-to-many (e.g. blogs, virtual communities and forums) (Chan and Ngai, 2011). These ways of sharing information can also be classified in relation to the level of interaction, from the most asynchronic (e.g. mail or blogs) to the most synchronic ones (e.g. instant messaging). This variety of means for online word-of-mouth enables the speedy generation of a high volume of information. Furthermore, unlike traditional word-of-mouth, online information is written, remains accessible over time (Litvin *et al.*, 2008) and can be accompanied by emotional elements (photographs, emoticonos, etc.) (Munar and Jacobsen, 2014).

Some authors consider that e-word-of-mouth is less credible than word-of-mouth in a more personal environment as consumers exchange opinions with people they do not know from anywhere in the world (e.g. Chan and Ngai, 2011; Dellarocas, 2003; Sen and Lerman, 2007). Other authors, however, point out that e-word-of-mouth is more

influential than the traditional form due to its speed, convenience, scope, and absence of the pressure inherent in face-to-face interactions (e.g. Sun *et al.*, 2006).

This new virtual context has brought significant change to purchase situations. Varadarajan and Yadav (2002) note that the main changes stemming from the emergence of e-word-of-mouth are access to information on prices and other product attributes, ease of comparison and improved quality, organisation and structure of the information. In the tourism industry, these changes have been particularly remarkable. Sharing opinions on tourism experiences online has become a customary practice. Nowadays, most potential tourists consult opinions published by others before making their purchase decisions (Melián *et al.*, 2013). The hotel industry is probably the most affected by the phenomenon of e-word-of-mouth (Serra and Salvi, 2014). The difficulty with evaluating the service before consumption, its seasonal and perishable nature and consumer perceptions of high risk are important reasons for making e-word-of-mouth crucial in this shopping process (Lewis and Chambers, 2000). Various studies in the area of accommodation management have highlighted the effects of positive e-word-of-mouth on attitudes and likelihood of purchase by consumers who read these comments (e.g. Melián *et al.*, 2013; Vermeulen and Seegers, 2009; Ye *et al.*, 2009). Despite the importance of e-word-of-mouth in tourists' purchase decisions, the literature warns that this behaviour is not a representative measure of customer feelings towards certain tourism services (Serra and Salvi, 2014)[4].

2.3 Proposed model and hypotheses

Satisfaction continues to be one of the most important topics in the literature and there is extensive empirical evidence in hotels. However, applied research into ICT adoption is still scanty (Line and Runyan, 2012), especially when analysing the degree of ICT use from the customer perspective (Martínez *et al.*, 2006). There are also few studies on word-of-mouth behaviour and e-word-of-mouth (Litvin *et al.*, 2008). Considering the importance of the use of ICT in this type of establishment and the new purchase context caused by e-word-of-mouth, we attempt to further progress in the literature by analysing the influence of perceived ICT use on satisfaction and the dimensions of loyalty (Zeithaml *et al.*, 1996). Thus, our theoretical objective focuses on studying the relationships between ICT, satisfaction and loyalty, differentiating between global (or traditional) word-of-mouth and e-word-of-mouth. Empirically, following the majority of studies that analyse the influence of satisfaction on tourist loyalty (e.g. Ekinci *et al.*, 2008; Mouakket and Al-hawari, 2012; San Martín *et al.*, 2008; Yüksel and Yüksel, 2007), we take an attitudinal approach to study the dimensions of loyalty, measuring return intention, willingness to pay more and positive traditional word-of-mouth and e-word-of mouth intentions.

Some studies of hotel businesses show that the degree of ICT use contributes to the level of customer satisfaction and its subsequent consequences. For example, Chathoth (2007) develops a conceptual framework, proposing that hotel services based on information technologies help to delight and surprise customers and improve their levels of satisfaction and loyalty. In their empirical study Sirirak *et al.* (2011) find a positive, significant relationship between intensity of ICT use and global satisfaction, return intention and positive word-of-mouth intention. Other contributions, although focusing on the specific technology of Wi-Fi, emphasise that this application is a way of increasing satisfaction (Sigala and Connolly, 2004). In this regard, Bulchand *et al.* (2011) show that offering the Wi-Fi service free of charge positively influences satisfaction and improves the evaluations placed by customers on social networks about their

experiences in hotels. Therefore this technological application improves customer satisfaction and favours customer online recommendations.

More recent works also reveal strong relationships between certain technological applications and satisfaction. Thus the results in Ruiz *et al.* (2013) suggest that technologies related to entertainment (e.g. interactive television) have a positive relationship with satisfaction with the hotel and applications that allow the hotel an online presence (e.g. viral marketing) correlate strongly with e-word-of-mouth. Kim and Qu (2014) confirm that perceived risk and the compatibility of hotel online reservation systems significantly influence guest satisfaction. Finally, in other tourism contexts such as airports, Abdullah (2012) concludes that the perception of optimism and innovation in new technologies helps to improve customer satisfaction with those technologies.

According to these results, we understand that consumers are increasingly more demanding in terms of the degree of technology in hotel establishments. These findings suggest that consumers resort increasingly to technology-based information and communication both in the process of choosing the hotel, for example, with the aim of reducing purchase risk (Ha, 2002), and in their subsequent behaviours after the experience, for example, in order to help or prevent possible errors (Laughlin and MacDonald, 2010). Consequently, ICT in hotels acquire a key role in customer satisfaction and loyalty.

Therefore, we assume that customers who perceive greater ICT use in the hotel, will be more satisfied with those ICT, thereby improving their overall satisfaction with their stay in the hotel. Furthermore, if we consider that customers positively value the use of technologies in their tourism experience, we also assume that consumers who are satisfied with the hotel's ICT will tend to make recommendations using these technologies. Therefore, satisfaction with ICT will not only influence satisfaction with the hotel but will also encourage positive word-of-mouth through the internet (Figure 1). Therefore, we posit:

H1. Greater customer perception of ICT use by the hotel leads to greater customer satisfaction with ICT.

H2. Greater satisfaction with ICT leads to greater overall satisfaction with the hotel.

H3. Greater satisfaction with ICT leads to greater positive e-word-of-mouth intention.

In relation to the consequences of satisfaction with tourism services, return intention, intention to make recommendations and willingness to pay more are considered to be
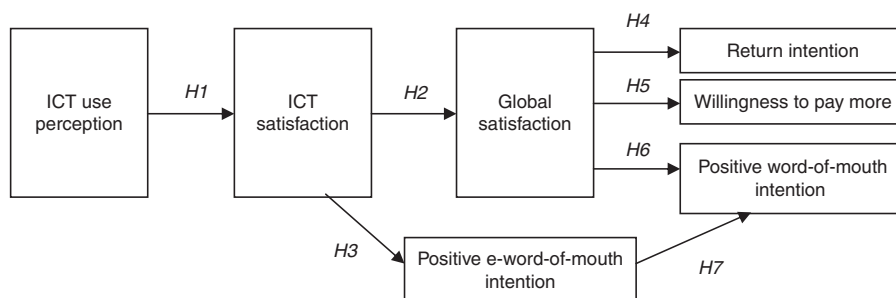

Figure 1.
Proposed causal
model about the
effects of ICT
adoption

expressions of customer loyalty (Moliner *et al.*, 2009; Conze *et al.*, 2010). The literature on tourism services contains empirical evidence for the close relationship between customer satisfaction and subsequent behaviours and intentions. The study by Rodríguez del Bosque *et al.* (2006) on travel agencies and the study by Yoon and Uysal (2005) on tourist destinations show that satisfaction positively influences intention to recommend and repeat the purchase or return. Lee *et al.* (2007) also conclude that satisfaction affects recommendations for a destination. In the hotel industry, Barsky and Nash (2002) show that guests who experience positive emotions are less resistant to paying more in future visits and Ladhari (2009) shows that emotional satisfaction directly influences intention to recommend the hotel and willingness to pay more.

More recently, Mouakket and Al-hawari (2012) report that satisfaction with online reservation systems for tourism services favours intentions to recommend. Alrousan and Abuamoud (2013) confirm the positive effect of satisfaction with a hotel chain on loyalty. Furthermore, given that the relationship between satisfaction and word-of-mouth takes the form of an inverted "U", as the level of satisfaction in tourists increases, the more word-of-mouth comments they make (Andreassen and Streukens, 2009; Litvin *et al.*, 2008). Finally, the results in Jani and Han (2014) show that satisfaction with the hotel influences loyalty in the form of intention to return and recommend.

According to this empirical evidence, we consider that customer satisfaction with the hotel will have a positive impact on the various dimensions of loyalty, that is, on return and positive word-of-mouth intentions and on willingness to pay more (Figure 1), therefore:

H4. Greater satisfaction with the hotel leads to greater intention to return.

H5. Greater overall satisfaction with the hotel leads to greater willingness to pay more.

H6. Greater overall satisfaction with the hotel leads to greater positive word-of-mouth intention.

Finally, we assume the existence of a relationship between traditional word-of-mouth and e-word-of-mouth. In the conceptualisation of word-of-mouth (Table I), some definitions mention the oral or personal nature of the communication (e.g. Arndt, 1967; Theng and Ng, 2001; Harrison-Walker, 2001). However, the common thread in the definitions is that word-of-mouth is a communication between consumers, that is, a communication unrelated to the commercial interest inherent in promotion or advertising strategies or formal complaints directed at firms (Mazzarol *et al.*, 2007). With the development of the technologies, e-word-of-mouth behaviour has acquired a leading role in consumer behaviour. This virtual dimension has been reflected in some of the most recent definitions of word-of-mouth which indicate that communication is made through any medium (e.g. personally, by telephone or by e-mail (Goyette *et al.*, 2010).

Therefore, given that consumers can speak and make recommendations about a product or service using different means of contact, e-word-of-mouth can be regarded a specific way of engaging in general word-of-mouth behaviour. Thus, customers who use the online medium to make recommendations may be more willing to recommend through any medium. Transferring this reflection to the relationship between variables, we assume that customers' intentions to broadcast their positive experiences

through the internet favour intentions to make recommendations in general (Figure 1). Therefore:

H7. Greater positive e-word-of-mouth intention leads to greater positive word-of-mouth intention.

3. Methodology

3.1 Information collection and measurement scales

To test the proposed relationships, we carried out quantitative research using the personal interview method. A structured questionnaire was produced for hotel guests to collect their evaluations of the following variables: ICT use perception in these establishments, ICT satisfaction, global satisfaction with the hotel, positive word-of-mouth and positive e-word-of-mouth intention, intention to return and willingness to pay a higher price (Table II). The scales were chosen from the literature and adapted to our context and measured using five-point Likert scales.

The scale for perception of ICT use is based on the scale used in Wu *et al.* (2006). To measure satisfaction[5] single item scales were used: satisfaction with ICT was measured with an ad hoc scale and global satisfaction with the hotel was measured with a scale adapted from Kattara *et al.* (2008). The scales for return intention, willingness to pay more and positive word-of-mouth intention come from Zeithaml *et al.* (1996) and the scale for positive e-word-of-mouth intention comes from Kim and Cha (2002). Following the attitudinal approach of most of the studies that relate satisfaction with word-of-mouth in services (e.g. Moliner and Berenguer, 2011; Yoon and Uysal, 2005) and, in particular, in the tourist industry (e.g. Ekinci *et al.*, 2008; Mouakket and Al-hawari, 2012; San Martín *et al.*, 2008; Yüksel and Yüksel, 2007), positive word-of-mouth

Variables	Source	Items
ICT use perception	Wu *et al.* (2006)	This hotel invests in technology ICT in this hotel are always the latest technology In relation to competitors, the technology in this hotel is more advanced This hotel takes into account customers' opinions to coordinate and develop ICT in order to improve the service and satisfy customer needs better
ICT satisfaction	Ad hoc	In general, are you satisfied with the technology in this hotel?
Global satisfaction	Kattara *et al.* (2008)	In general, what is your level of satisfaction with this hotel?
Positive e-word-of-mouth intention	Kim and Cha (2002)	I intend to tell other people on the Internet about the positive aspects of this hotel I intend to recommend this hotel to other people through the Internet
Positive word-of-mouth intention	Zeithaml *et al.* (1996)	I will make positive comments about this hotel to other people I will recommend this hotel to people who ask my advice I will encourage my friends and family to go to this hotel
Return intention	Zeithaml *et al.* (1996)	I will consider this hotel as the first choice for accommodation I will return to this hotel on my next visit to this city
Willingness to pay more	Zeithaml *et al.* (1996)	I shall return to this hotel even if the prices go up a little I am willing to pay more than in other hotels for the benefits I receive at this hotel

Table II.
Measurement scales

and positive e-word-of-mouth intentions were measured by the degree to which consumers are willing to recommend, speak positively and encourage others.

The study was carried out in Spain, the leading country in Europe and the second in the world in terms of tourist revenue (UNWTO, 2011). Four and five star hotels were chosen in the cities of Barcelona, Madrid and Valencia, because they are considered benchmarks for the industry and because higher category hotels are likely to invest more in technological applications[6]. Guests were intercepted in the hotel reception area after obtaining permission from the hotel and 386 valid questionnaires were obtained from 111 establishments. Hotel distribution by province and category and distribution of interviewees by gender, age and type of trip are shown in Table III.

3.2 Analysis of measurement scale reliability and validity

Scale dimensionality was examined using exploratory factor analysis with the maximum likelihood (ML) method of estimation and varimax rotation. This initial study indicated that the items loaded on the corresponding dimension. The factors of satisfaction with ICT and overall satisfaction comprised a single measurement item. There was no need to purge the scale. The exploratory dimension was confirmed by estimating a first order measurement model using Robust ML (Table IV). Viewing with caution the significance of the global contrast because of the size of the sample, the statistics indicate that the model presents adequate fit ($\chi^2_{\text{Sat-Bt.}}$ (g.l. $= 73) = 172.97$ (p-value < 0.01); RMSEA $= 0.061$; CFI $= 0.969$; BB-NFI $= 0.949$; BB-NNFI $= 0.953$; GFI $= 0.936$; AGFI $= 0.892$).

The internal consistency of the dimensions was assessed, considering three indicators: Cronbach's α, composed reliability with its minimum threshold of 0.7 (Anderson and Gerbing, 1988) and average variance extracted (AVE) for each of the scales, whose value must be over 0.5 (Fornell and Larcker, 1981). These indexes, shown in Table IV, are acceptable for all the factors. To complete the description of the scales, Table IV shows the average values for the dimensions and the correlation between them.

Scale validity is confirmed: content validity, because the scales making up the items were created on the basis of the literature review; convergent validity, by confirming that all the standardised coefficients are > 0.6 and significant at 99 per cent (t-statistic > 2.58) (Steemkamp and Van Trijp, 1991); and discriminant validity, as the linear correlation between each pair of scales is less than the square root of AVE (Table IV). This validity has been analysed in depth with the χ^2 difference test between estimation of the model restricting correlations between each pair of constructs to the unit and the unrestricted model following the indications in Anderson and Gerbing (1988). The statistical value $\chi^2 = 1,633.09$ (g.l. $= 21$) is significant at 99 per cent (p-value $= 0.000$) and so we can state that each scale measures a different dimension.

Hotels distribution			Guests distribution					
Province	Barcelona	28.2%	Gender	Man	59.3%	Type of trip	Holidays	59.3%
	Madrid	42.7%		Woman	40.7%		Business	35.7%
	Valencia	29.1%	Age	< 35 years	24.5%		Others	5%
Category	4 stars	75.5%		35-55 years	63%			
	5 stars	24.5%		> 55 years	12.5%			

Table III.
Sample distribution

Variables	Average	SD	Cronbach's α	Composite reliability	AVE	1	2	3	4	5	6	7
1. ICT use perception	3.33	0.66	0.90	0.91	0.71	0.84[a]						
2. ICT satisfaction	3.58	0.55				0.64**						
3. Global satisfacción	3.90	0.57				0.22**	0.26**					
4. Positive e-word-of-mouth intention	2.75	1.33	0.96	0.96	0.93	0.75**	0.65**	0.19**	0.96			
5. Positive word-of-mouth intention	3.85	0.66	0.80	0.81	0.76	0.53**	0.45**	0.68**	0.44**	0.87		
6. Return intention	3.74	0.70	0.81	0.81	0.68	0.33**	0.32**	0.61**	0.25**	0.89**	0.82	
7. Willingness to pay more	3.45	0.82	0.82	0.82	0.70	0.65**	0.49**	0.55**	0.59**	0.85**	0.75**	0.84

Notes: [a]The elements on the main diagonal show the square root of the AVE. **Significant at level of 99 per cent (p-value < 0.01)

Table IV.
Descriptive statistics,
reliability indices
and correlations

4. Results

After checking the reliability and validity of the proposed scales, we proceeded to verify the hypotheses by estimating a causal model. The results are shown in Figure 2, reflecting the standardised loads and *t*-Student (*t*-St) values between brackets. Fit quality, analysed with different goodness of fit measures is acceptable.

The coefficients estimated between the model dimensions suggest there are significant causal relationships in the proposed theoretical sequence. The relation between perception of ICT use and satisfaction with ICT is significant at 99 per cent (0.894**; *t*-St: 3.15). Therefore, we can state that consumer perception of the hotel's use of technologies directly and positively influences customer satisfaction with the technologies, and so *H1* is accepted. Similarly, there is a significant effect of satisfaction with ICT on overall satisfaction with the hotel (0.427**; *t*-St: 3.06) and on intention to recommend the hotel positively online (0.844**; *t*-St: 3.19), thereby confirming *H2* and *H3*. That is, increased customer satisfaction with the hotel's use of technologies leads to more online recommendations for the hotel.

Global satisfaction with the stay at the hotel positively and significantly influences intention to repeat the experience (0.910**; *t*-St: 10.97), willingness to pay more (0.737**; *t*-St: 8.07) and positive word-of-mouth intention (0.930**; *t*-St: 10.26), and so we can accept *H4*, *H5* and *H6*. The results also confirm *H7*, because intention to recommend the hotel online significantly increases the intention to recommend it in general (0.146**; *t*-St: 3.51). Therefore, consumer satisfaction with the hotel's use of ICT has a significant indirect influence through online recommendation on general intention to recommend.

5. Conclusions

This study has examined the influence of ICT adoption by hotels on satisfaction and loyalty, incorporating the presence of the emerging phenomenon of e-word-of-mouth. The results show that guests' perception of the use the hotel makes of ICT, positively contributes to satisfaction with the technologies and encourages customers to engage in online word-of-mouth. Satisfaction with ICT improves the level of general satisfaction with the hotel, which increases willingness to pay more, intention to return and to recommend. Recent research in the hotel context has also shown the positive effects of technology use on satisfaction and its subsequent consequences (e.g. Bulchand *et al.*, 2011; Sirirak *et al.*, 2011). E-word-of-mouth is therefore a variable that depends on
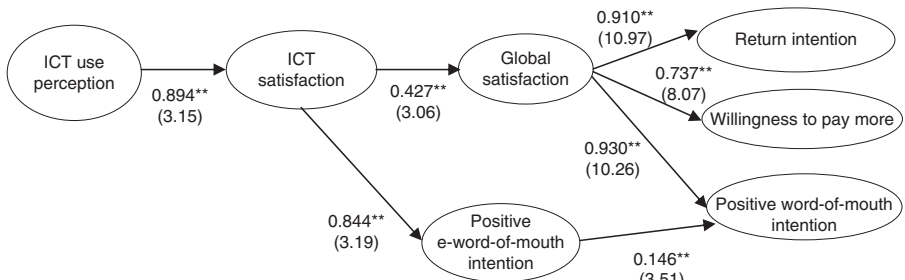

Figure 2.
Estimated causal relations model

Notes: RMSEA=0.061; CFI=0.965; BB-NFI=0.942; BB-NNFI=0.954; GFI=0.926; AGFI=0.891. χ^2 Sat. (g.l.=85)=197.07 (*p*-value=0.0000). **Values significant at 99 per cent

satisfaction with ICT and in turn is an antecedent of intention to recommend the hotel. Therefore, customers who positively value ICT use during their stay are more likely to broadcast their experience in a virtual medium and will tend to develop more loyalty behaviours. Thus, positive word-of-mouth, one of the dimensions of loyalty, is not only influenced by satisfaction but also by online recommendation behaviour.

From the practical perspective, these findings indicate that the introduction of technologies can be a key element for improving satisfaction, and loyalty and can be used as a differentiation strategy (Trimi, 2008; Minghetti, 2003). In this regard, hotels that are sensitised to customer satisfaction must not only improve or extend their technological applications but should also promote their use by facilitating and improving access to ICT. To avoid excessive investment and determine the appropriate level of technology adoption (Sethuraman and Parasuraman, 2005), note should be taken of customer profiles and type of desired positioning (Orfila *et al.*, 2006).

Our results suggest that when customers are satisfied with the hotel's ICT they make good online assessments thereby favouring recommendations in general. Therefore, hotel managers must be aware that customers are increasingly exposed to the virtual universe receiving influences from many internet sites dedicated to the sale or discussion of tourism experiences. Some recent studies have already shown that hotels that receive good online comments have more reservations (Bulchand *et al.*, 2011; Sparks and Browning, 2011; Ye *et al.*, 2009). Thus, e-word-of-mouth has become a key marketing tool as it can accelerate commercial efforts and it enables managers to know and understand their customers' needs and interact with them. Although academic and practical interest in e-word-of-mouth has focused until now on the opportunities and advantages of virtual interaction among consumers, it is also necessary to consider the threats and problems it may present for the firm's image (Chan and Ngai, 2011).

This work also has important academic implications. In the literature on ICT in the tourism sector, studies have focused above all on examining the advantages and/or determinants of developing technologies from the business perspective (e.g. Chathoth and Law, 2011; Sahadev and Islam, 2005). This paper contributes to the recent and still scanty research line aimed at studying ICT adoption from the consumer perspective (Martínez *et al.*, 2006) and in the hotel industry (Chathoth and Law, 2011). Similarly, although word-of-mouth is a traditional subject in the marketing literature, our study attempts to explore its virtual dimension more deeply. This relatively new field of study with its conceptual and empirical deficiencies (Sweeney *et al.*, 2012) is receiving increasing academic and managerial attention (Chan and Ngai, 2011).

Some limitations of this work may inspire future studies in this field. To advance in the study of ICT use and its effects on loyalty, we propose various lines of research. First, the work has focused on higher category hotels located in three geographical areas. It would therefore be interesting to replicate the relations analysed for greater coverage and in other tourism contexts to detect any differences. For example, it could be applied to different types of hotels, such as luxury hotels, resorts or budget hotels to find out whether the same relations are maintained. Cruise holidays and restaurants are also businesses with major opportunities for innovation based on the new technologies.

Furthermore, it would be interesting to use multi-dimensional scales to measure word-of-mouth. In this regard, the fact of having measured word-of-mouth and e-word-of-mouth by intentions (Kim and Cha, 2002; Zeithaml *et al.*, 1996) may be a limitation because it does not reflect some of the dimensions highlighted in the literature. For example, Sweeney *et al.* (2012) point out that word-of-mouth should be measured not only by the typical dimensions of valency and volume of comments

(Harrison-Walker, 2001; Halstead, 2002), but also through aspects related to the content of the message (Sweeney *et al.*, 2012). As regards e-word-of-mouth, different virtual channels that consumers may use to provide assessments of their tourism experiences (Litvin *et al.*, 2008) could also be considered (e.g. blogs, Facebook, forums, web sites, etc.) (Lorenzo *et al.*, 2011). Therefore, future studies could improve the word-of-mouth and e-word-of-mouth scales and that would provide information on new relations between these behaviours and satisfaction or other dimensions of loyalty.

In addition, the tested model could include the moderator effect of online and offline recommendations received by consumers on satisfaction and subsequent loyalty. Litvin *et al.* (2008) suggest that individuals exposed to recommendations may distinguish between the personal and impersonal information they receive when determining the influence of each one on their purchase decision. The absence of face-to-face contact characteristic of virtual interaction can reduce trust and the credibility of the assessments and consequently influence consumer expectations of their future experience. Therefore, the degree of influence of both types of recommendations in the purchase decision could alter the level of satisfaction and the dimensions of loyalty.

Finally, future studies could improve the explanation of loyalty by differentiating between behaviours and intentions. Given that consumers engage in behaviours that differ from their intentions, it would be interesting to investigate the extent to which consumer intentions and attitudes are a cause or effect of their behaviours. If the consequence of intentions is to engage in repeat purchase and/or recommendation behaviour it can be proposed that said intentions will have a positive effect on behaviours which, in turn, will favour positive attitudes towards future purchases (Moliner and Berenguer, 2011).

Notes

1. Word of Mouth Marketing Association (WOMMA) (www.womma.org/) is an official trade association founded in 2004 and dedicated to word-of-mouth and social media marketing. The members are innovative companies committed to progressing of the word-of-mouth marketing industry through advocacy, education, and ethics.

2. We have chosen this term from among the many used in the literature: electronic word-of-mouth, e-word-of-mouth, online word-of-mouth, online criticism from consumers, online recommendations, etc. (Chan and Ngai, 2011).

3. Buzz marketing is a marketing technique that attempts to promote a product or service by generating word-of-mouth in the target audience. It is, therefore, word-of-mouth planned by the firm (Carl, 2006). Buzz marketing carried out online is also known as viral marketing, which makes use of the huge impact of social networks on human relationships and the variety of technological possibilities that exist to reach different audiences (Lorenzo *et al.*, 2011). The term viral refers to the way information spreads among consumers like a biological virus "infecting" individuals with a message through online media. This message is usually based on a joke, drawing, game or video which is put into circulation by independent, individual third parties and is more credible than a traditional advertisement (Porter and Golan, 2006). Although in the academic literature, the differences between buzz marketing, viral marketing and electronic word-of-mouth are clear (Goyette *et al.*, 2010), in the business context the terms are more confused (Aguilar *et al.*, 2014).

4. In Nielsen's (2006) study, individual participation in virtual communities follows the "90-9-1" rule, according to which 90 per cent of users of these communities only seek information but never contribute comments, 9 per cent write sporadically and 1 per cent actively participate.

5. Although the literature recognises that the use of multi-item scales provides greater reliability, there is a notable precedent in the use of simple scales to measure satisfaction (e.g. Mittal and Kamakura, 2001; Kattara *et al.*, 2008). For decades, various authors have highlighted certain advantages of single-item scales over multi-item ones. For example, LaBarbera and Mazursky (1983) defend this type of scale, arguing that some multi-item scales for satisfaction are ambiguous as they include items on aspects like concerns, preferences, likelihood of return or recommendations, which require other specific scales. Yi (1990) also states that a single measure of global satisfaction can be reasonably valid. More recently, the works by Bergkvist and Rossiter (2009) and Diamantopoulos *et al.* (2012) offer empirical evidence to show that simple scales have the same predictive validity as multi-item scales, pointing out that multi-item scales are unnecessary. From the empirical perspective, the use of single-item scales has also been defended for practical reasons, as it minimises interviewee tiredness, rejection rate and time for collecting information and also facilitates subsequent analysis of the data (Reichheld, 2003).

6. These hotels were obtained from the directory Visiting Spain (www.visitingspain.es) and from the business economic information database Sistema de Análisis de Balances Ibéricos (SABI). In this last source, the hotels were located on the basis of the Spanish classification of economic activities codes Clasificación Nacional de Actividades Económicas (CNAE) and/or the Tax on Economic Activities Impuesto de Actividades Económicas (IAE).

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About the authors

Dr Beatriz Moliner Velázquez is a PhD and has a Degree in Economics by the University of Valencia. She is an Assistant Professor in Market Research Department, Faculty of Economy at the University of Valencia (Spain). Her research interests are loyalty, complaining behaviour, satisfaction/dissatisfaction and word-of-mouth behaviour in services marketing. Her work has been published in international journals such as *Journal of Business and Industrial Marketing*, *Service Business: An International Journal*, and *Journal of Services Marketing*, among others. Dr Beatriz Moliner Velázquez is the corresponding author and can be contacted at: beatriz.moliner@uv.es

Dr María Fuentes Blasco is a PhD and an Associate Professor in Marketing at the Pablo de Olavide University (Spain). Her research interests are marketing modelling and e-marketing. Her work has been published in international journals such as *Industrial Management & Data Systems*, *Service Industries Journal* and *Industrial Marketing Management*, among others.

Irene Gil Saura is a PhD and a Professor in Marketing at the University of Valencia (Spain). Her research interests are customer orientation, services and retailing. Her work has been published in several international journals such as the *Annals of Tourism Research*, *Journal of Consumer Behaviour*, *Tourism Management*, *Industrial Marketing Management*, *The Service Industries Journal*, *Industrial Management & Data Systems*, *International Journal of Hospitality Mangament*, among others. She has been a Visiting Professor at several universities such as the University of Paris I and Rennes I (France).