

The role of ICT, eWOM and guest characteristics in loyalty

Guest
characteristics

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Abstract

Purpose – This study aims to examine how technologies contribute to consumer loyalty in the tourist industry. To achieve this objective, information and communication technology (ICT) development and electronic word-of-mouth (eWOM) are analysed to explore their direct and indirect effects on satisfaction and loyalty dimensions. The moderating role of customer characteristics (personal and experience-related variables) is also considered to study the complex relationship between satisfaction and loyalty.

Design/methodology/approach – A quantitative study based on a questionnaire structured was developed. The survey was conducted with 386 guests from Spanish hotels. SEM methodology is applied to estimate the structural equation model and multi-group analysis.

Findings – Results confirm significant relationships in the sequence “ICT advancement-satisfaction with ICT-satisfaction with hotel-loyalty”, the mediating effect of eWOM and the moderating effects of the customer characteristics.

Practical implications – ICT can be a key element to improve loyalty and differentiate from competitors. Managers should recognise that customers will have different loyalty behaviours according to their personal characteristics and type of experience.

Originality/value – This paper contributes to the recent and still scanty research line on ICT advancement from the consumer perspective. The novelty lies in the relationships between ICT, satisfaction and loyalty in hotels with particular attention to WOM (both personal and electronic) and the inclusion of different moderating variables.

Keywords Information and communication technologies (ICTs), Word-of-mouth (WOM), Electronic word-of-mouth (eWOM), Satisfaction, Loyalty, Hospitality

Paper type Research paper

论ICT、eWOM、和顾客特点在顾客忠诚中的作用

摘要

研究目的 – 本论文旨在评估科技在旅游产业顾客忠诚中的作用。为此，本论文分析了ICT研发和eWOM对顾客满意和顾客忠诚的直接和间接影响。本论文还分析了顾客特点（个人方面和体验方面的多个变量）在顾客满意和顾客忠诚之间的复杂关系的调节作用。



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研究方法 – 研究样本采集通过结构问卷的方式, 共搜集386位西班牙酒店顾客的问卷, 采用SEM方法做定量分析, 评估了结构方程模型和多组分析。

研究结果 – 研究结果肯定了“ICT发展-顾客对ICT满意-顾客对酒店满意-顾客忠诚”这一系列逻辑关系。此外, 研究结果还肯定了eWOM的间接作用, 以及顾客特点的调节作用。

研究实践意义 – 研究表明ICT可以作为提高顾客忠诚和区分竞争者的关键因素。经营者应该认识到不同的顾客特点和体验类别对顾客忠诚有着不同的作用。

研究原创性/价值 – 本论文对从消费者角度出发研究ICT发展的稀少文献有着显著贡献。其特别之处在于本论文整体研究了对ICT、顾客满意、酒店忠诚、WOM (线上与线下)、以及多个调节变量等一系列关系。

关键词 – : 信息和通讯技术 (ICT)、口碑效应 (WOM)、在线口碑效应 (eWOM)、顾客满意、顾客忠诚、酒店业

1. Introduction

The tourist industry is one of the largest and fastest growing economic sectors in the world (UNWTO, 2017) and is developing in close connection with information and communication technology (ICT). The literature on customer perception of ICT adoption in hotels is not yet very extensive (Dieck *et al.*, 2017). Most contributions offer the managerial perspective rather than the consumer one (Mihalic and Buhalis, 2013). Similarly, research on loyalty in hotels is more limited than other areas (Alrousan and Abuamoud, 2013). In hospitality services, there has been a significant increase in research into traditional word-of-mouth (WOM) and electronic WOM (eWOM) in recent years (Wang and Kubickova, 2017). This behaviour is approached from the receiver's perspective (consulted online reviews before purchase) and from the emitter's perspective (comments made after experience). Very few contributions, however, have studied both perspectives simultaneously (Leung *et al.*, 2015).

Additionally, although the effect of satisfaction on loyalty appears obvious, this relationship depends largely on the type of sector and customer and the mediating and/or moderating variables (Fuentes-Blasco *et al.*, 2017). The literature deals with different moderating variables in the loyalty process such as sociodemographic characteristics and specific factors related to the experience (Walsh *et al.*, 2008; Mason and Moretti, 2015). However, empirical evidence is scanty and some of it shows contradictory findings.

In view of these gaps, we consider the following questions:

Q1. What role do technologies have in consumer loyalty?

Q2. Does the eWOM effect differ depending on whether it is sent or received?

These questions are the reason we chose ICT and eWOM as the central variables of this work. To answer these questions, the main aim is to investigate the contribution of ICT advancement in hotels to satisfaction and loyalty from the consumer perspective. The specific objectives are to analyse the relationship sequence “ICT advancement-satisfaction with hotel ICT-satisfaction with the hotel-loyalty dimensions”, considering the role of written eWOM, and to examine the moderating effect of consumer variables in the above relationship chain (personal consumer characteristics and experience-related variables where consulted online reviews or eWOM received are included).

The novelty of this work is the study of the relationships between ICT, satisfaction and loyalty in hotels, with particular attention paid to WOM behaviour, both general and electronic, and the analysis of the moderating effect of different types of consumer-related variables. This paper therefore contributes to the literature on satisfaction and loyalty by in-depth examination of these processes through variables linked to the development of the technologies in services (Grewal *et al.*, 2017), that is, the introduction of ICT in hotels and

eWOM behaviour. This approach follows recent works that highlight the need to study satisfaction not as an end result but as a global process that embraces both the initial contacts of consumers with the service provider to loyalty-building programmes (Kumar *et al.*, 2017).

2. Theoretical review

2.1 *Information and communication technology advancement in hotels*

ICT advancement is the extent to which a firm adopts the most sophisticated technology (Wu *et al.*, 2006). It is related to the degree of adoption and implementation of technologies to satisfy its customers better than other competitors. Many advantages of ICT adoption have been pointed out in the literature, such as cost reductions, more customer satisfaction, greater operating efficiency, improved customer services or higher productivity (Sirirak *et al.*, 2011).

Although the spread of technologies favours disintermediation, ICT offers significant opportunities for hospitality companies because they represent new instruments to add value to the customer experience (Babu and Subramoniam, 2016). The hotel industry is ranked as one of the leading players in ICT investment (ONTSI, 2016). One of the main opportunities is the use of ICT with a strategic approach (Taylor *et al.*, 2015). Despite these advantages, hotels often do not receive the expected benefits of investment in ICT. The reasons may be the risk of excessive investment or the variety seeking behaviour, typical of the tourism consumer.

The literature has mainly focussed on studying the degree to which hotels introduce technologies and the advantages and disadvantages they provide for the business (Mihalic and Buhalis, 2013; Hua, 2016). Despite particular interest in analysing the influence of ICT adoption and advancement in the relationship between hotels and their customers (Sirirak *et al.*, 2011), few studies on hotels analyse the customer perspective on ICT (Dieck *et al.*, 2017).

2.2 *Word-of-mouth*

WOM behaviour is one of the most significant recognised dimensions in the loyalty literature. It is direct, personal, contains an independent message more credible than advertising (Litvin *et al.*, 2008) and can be both an antecedent and a consequence of consumers' evaluations. Despite the extensive literature, there are some conceptual and operational disagreements.

First, WOM definitions do not agree when it comes to specifying whether the consumer is the emitter and/or receiver of information. According to Harrison-Walker, 2001, WOM is a personal communication between a non-commercial communicator and a receiver. This definition indicates that the consumer is only the emitter. However, while some authors do not refer to the role of the consumer (Goyette *et al.*, 2010), other authors emphasise that consumers are emitters and receivers (Silverman, 2001). If consumers are only emitters, WOM would also include customer communications to companies (e.g. complaints). If receivers are also consumers, WOM could stem from buzz marketing. Second, there is also a lack of consensus over the content of the message containing WOM, if is an active recommendation, a simple comment on a product/service or extremely positive or negative comments (Sweeney *et al.*, 2012). Third, the difference between WOM and loyalty is unclear. Although loyalty contains positive WOM, the two constructs need to be clearly differentiated because not all loyal consumers use WOM communication (Sweeney *et al.*, 2012).

Finally, there are operational disagreements over how to measure this type of behaviour. WOM has been characterised traditionally as having both an evaluative and a conative dimension (Harrison-Walker, 2001). However, other dimensions can be found in the literature such as content and action, cognitive and affective components, quality of the information, credibility of the message or perceived utility (Sweeney *et al.*, 2012; Zhao *et al.*, 2015). Despite the variety of dimensions, most authors measure the construct through intentions (Kim and Cha, 2002).

2.3 Electronic word-of-mouth

With the development of ICT and the wide variety of social networks, traditional WOM has spread to eWOM. This change is already reflected in the definition proposed by Goyette *et al.* (2010), who introduce different forms of spreading such as personal, telephone, email, mailing list or any other communication method. Therefore, WOM would include WOM disseminated through internet. Regarding the role of the consumer, Hennig-Thurau *et al.* (2004) define eWOM as any statement made by customers which is available to a multitude of people and institutions. However, Litvin *et al.* (2008) use a broader focus to define eWOM as all informal communications directed at consumers; therefore, it includes communications not only between consumers but also from businesses to consumers (e.g. viral marketing or online buzz marketing) (Goyette *et al.*, 2010).

Recent works have explored differences between personal WOM and eWOM (Furner *et al.*, 2016), related to the scope, speed, availability and credibility. Individuals who engage eWOM can share information one-to-one, one-to-many and many-to-many (Chan and Ngai, 2011). This variety of mediums enables the speedy generation of a high volume of information. Unlike personal WOM, eWOM is written, remains accessible over time and can be accompanied by emotional elements (Munar and Jacobsen, 2014). Some authors point out that eWOM is more influential than the personal form due to its speed, convenience, reach and absence of the pressure inherent in face-to-face interactions (Sun *et al.*, 2006). However, today, the question of whether personal WOM has the same influence as eWOM remains largely unanswered.

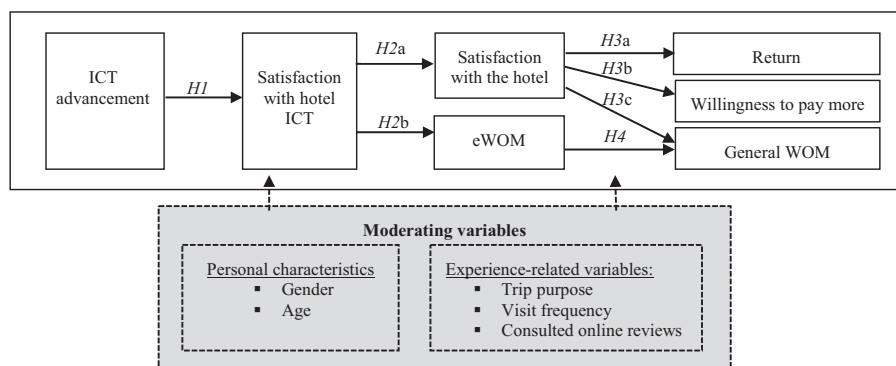
This new virtual context is causing significant changes in shopping situations, such as easy access to prices and other product attributes and better organised and structured information. The hotel industry is probably the most affected by the phenomenon of eWOM (Serra and Salvi, 2014). Although, in the tourist context, the study of WOM in general and eWOM in particular is still limited, some recent studies highlight the effects of positive eWOM on purchase intention by consumers who read these comments (Kim and Lee, 2015).

3. Research hypothesis

This paper analyses the influence of ICT advancement on satisfaction and loyalty and the moderating effect of consumer variables (Figure 1). To study these relationships, ICT is examined from the consumer perspective, considering external use technologies focussed on the relationship with the hotel. We differentiate between general WOM (any medium) and eWOM (internet). Both WOM and eWOM can be a spontaneous behaviour after a purchase or may be determined by the company in its buzz marketing or viral marketing actions.

Most studies in hotels show that the degree of ICT advancement contributes to satisfaction and/or subsequent consequences. According to Sirirak *et al.* (2011), there is a positive relationship between ICT use and satisfaction, return intention and positive WOM. Other contributions highlight that Wi-Fi application is a way of increasing satisfaction and assessments on social networks (Bulchand *et al.*, 2011). Kuo *et al.* (2015) find that several elements of hotel website design are related to WOM intentions. Recently, Chevers and

Figure 1.
Research model



Spencer (2017) show that the availability of different ICTs explains satisfaction. Nevertheless, Sirirak *et al.* (2011) find that ICT in hotels is not related to satisfaction or recommendations.

According to these results, it is quite widely agreed that the development of ICT provides advantages for service delivery, adding value for customers. Bearing in mind the need to include individual perceptions and emotions when explaining technology acceptance (Dieck *et al.*, 2017), it is particularly important to link ICT adoption to consumer satisfaction. Therefore, this paper assumes that customers who perceive greater ICT advancement in the hotel will be more satisfied with those ICT:

H1. Customer perception of ICT advancement in hotels will have a positive influence on satisfaction with hotel ICT.

Furthermore, if customers positively value the advancement of technologies in their experience, it is also assumed that consumers who are satisfied with the hotel's ICT will not only be more satisfied with their experience at the hotel but also will be more willing to make recommendations using these technologies. There would be a link between the assessment of hotel ICT and consumers' subsequent behaviours. In short, satisfaction with ICT will not only influence satisfaction with the hotel but also will encourage positive eWOM:

H2. Customer satisfaction with hotel ICT will have a positive influence on (a) satisfaction with the hotel and (b) eWOM.

The literature contains empirical evidence for the close relationship between customer satisfaction and subsequent behaviours and intentions. Alrousan and Abuamoud (2013) confirm the positive effect of satisfaction on loyalty; Jani and Han (2014) show that satisfaction influences intention to return and recommend; according to Li *et al.* (2014) satisfaction with a tourist event positively influence intentions to visit the destination; and more recently, Liat *et al.* (2017) have confirmed that satisfied guests have a greater intention to recommend and return. Therefore, we posit that satisfaction with the hotel will have a positive impact on return, general WOM and willingness to pay more:

H3. Customer satisfaction with the hotel will have a positive influence on (a) return, (b) willingness to pay more and (c) general WOM.

It is also assumed there is a relationship between general WOM and eWOM. Given that consumers can speak and make recommendations using different means of contact, eWOM can be regarded as a specific way of general WOM. In addition, there are certain limitations to engaging in eWOM behaviour in comparison to general WOM behaviour. Although the internet is fast, convenient and easily accessible, consumers who write online comments need certain media and resources (Wi-Fi, electronic device, etc.) which are not necessary for personal WOM. This issue is important in certain situations where access to technical resources is difficult (e.g. holidays) or for certain consumers who rarely use social media (e.g. baby boomers and silent generation). Therefore, it is assumed that customers who intend to recommend through online media will also intend to do so through other more accessible media:

H4. eWOM will have a positive influence on general WOM.

Finally, the simple effect of satisfaction on loyalty is being called increasingly into question due to the complexity of the relationship (Kumar *et al.*, 2017). This link can be extremely sensitive to factors such as sector of activity, type of customers, shopping context or mediating and/or moderating variables (Fuentes-Blasco *et al.*, 2017). During the past decade, several works have studied the moderating effects of consumer characteristics and variables related to the experience to improve loyalty. However, the empirical evidence is still contradictory.

With regard to gender, men and women have different decision-making processes due to different socialisation processes. Some researchers show that men primarily focus on outcomes, while women are more socially focussed (Chai *et al.*, 2012). Li and Chang (2016) argue that emotional attachment has a stronger effect on eWOM among women than men. Regarding age, Mason and Moretti (2015) show that the effect of value and quality on intention is greater in young people, whereas Walsh *et al.* (2008) do not confirm the moderator effect of age or gender. The recent study by Liat *et al.* (2017) on hotels shows that the difference between generation X and Y does not have a moderating effect. Chevers and Spencer (2017), however, find a significant relationship between age and satisfaction.

Few studies have examined the contribution of experience-related variables to loyalty and the empirical evidence are difficult to compare. According to Walsh *et al.* (2008), the relationship between satisfaction and loyalty is more intense in low-income consumers, loyalty cardholders and recovered customers. Mason and Moretti (2015) show that tourism experience exerts a moderating influence on some of the satisfaction–loyalty relationships. Wong and Li (2015) also find that travel motive moderates the relationships that lead to recommendations or revisit.

In view of these studies, there is a need for greater study of moderating effects on loyalty. Therefore, the moderator influence of two sets of variables on the sequence of relationships is proposed (Figure 1).

4. Research design

4.1 Measures and sampling

The empirical research was conducted in the context of the relationship between hotels and their guests. A quantitative study was carried out using the personal interview method. A structured questionnaire was designed with a set of scales adapted from the literature. The scale of ICT advancement was adapted from Wu *et al.* (2006). Satisfaction with ICT hotel was measured with an *ad hoc* scale, and satisfaction with the hotel was adapted from Kattara *et al.* (2008). eWOM scale was taken from Kim and Cha (2002). General WOM, return and willingness to pay more scales were adapted from Zeithaml *et al.* (1996).

The study was conducted in Spain, the leading European country and second in the world in terms of revenue from tourism (UNWTO, 2017). The information was collected from a sample of hotels extracted from the directory Visiting Spain. Valencia and its metropolitan area were chosen for the study. This city is one of the three largest cities in Spain in terms of population and is a reference for the hospitality industry (INE, 2018). Four- and five-star hotels were selected because higher-class hotels are more likely to invest in technology.

The response rate was 34 per cent. The final sample had a size of 386 surveys obtained from 19 establishments (Table I). We checked for potential problems of non-response. Following Armstrong and Overton (1977), we compared two groups: the 20 per cent earliest respondents versus the 20 per cent latest ones. The Mann–Whitney U test showed that medians between early and late responses were not significantly different.

4.2 Reliability, dimensionality and validity of measurement scales

Dimensionality was analysed by estimating a first order measurement model estimated (Table II). Internal consistency of the dimensions was assessed considering two indicators: composed reliability (CR > 0.7, Anderson and Gerbing, 1988) and the variance extracted for each scale (AVE > 0.5, Fornell and Larcker, 1981).

Scale validity was tested:

- *Content validity*: The scales were created based on the literature review.
- *Convergent validity*: All the standardised loadings are over 0.6 and significant at 99 per cent.
- *Discriminant validity*: The linear correlation between each pair of latent factors is less than the square root of the AVE in the scales (Table II).

Moreover, the Chi² difference test between the estimation of the model restricting the correlations and the unrestricted model ($\Delta\text{Chi}^2 = 1,633.09$ [$\Delta\text{df} = 21$]) was significant at 99 per cent (p -value < 0.000) (Anderson and Gerbing, 1988).

	Guests distribution (%)
<i>Gender</i>	
Male	59.3
Female	40.7
<i>Age</i>	
≤45 years	58.5
>45 years	41.5
<i>Trip purpose</i>	
Holidays	62.4
Business	37.6
<i>Visit frequency</i>	
≤ 1x/year	52.1
≥2x/year	47.9
<i>Consulted online reviews</i>	Consultation before reserving: 2.90 (± 1.44) (five-point Likert scale) Influence on the decision: 2.64 (± 1.41) (five-point Likert scale)

Table I.
Sample profile

Table II.
Measurement model.
Scale dimensionality,
reliability and
validity

Scales	Items	Stand. λ						
ICT advancement	ICT1: This hotel invests in technology	0.721						
Comp. reliab. = 0.907	ICT2: ICT in this hotel are always the latest technology	0.830 (17.32***)						
AVE = 0.712	ICT3: In relation to competitors, the technology in this hotel is more advanced	0.921 (18.90***)						
$\alpha = 0.901$	ICT4: This hotel takes into account customers' opinions to coordinate and develop ICT to improve the service and satisfy customer needs better	0.888 (19.07***)						
Satisfaction with hotel ICT	SH1: In general, are you satisfied with the technology in this hotel?	1.000						
Satisfaction with the hotel	SICT1: In general, what is your level of satisfaction with this hotel?	1.000						
eWOM	eWOM1: I intend to tell other people on the Internet about the positive aspects of this hotel	0.934						
Comp. reliab. = 0.963	eWOM2: I intend to recommend this hotel to other people through the Internet	0.993 (34.82***)						
AVE = 0.930								
$\alpha = 0.963$								
General WOM	PWOM1: I will make positive comments about this hotel to other people	0.727						
Comp. reliab. = 0.812	PWOM2: I will recommend this hotel to people who ask my advice	0.822 (12.42***)						
AVE = 0.590	PWOM3: I will encourage my friends and family to go to this hotel	0.753 (12.13***)						
$\alpha = 0.797$								
Return	R1: I will consider this hotel as the first choice for accommodation	0.840						
Comp. reliab. = 0.808	R2: I will return to this hotel on my next visit to this city	0.806 (17.08***)						
AVE = 0.677								
$\alpha = 0.806$								
Willingness to pay more	W1: I shall return to this hotel even if the prices go up a little	0.873						
Comp. reliab. = 0.823	W2: I am willing to pay more than in other hotels for the benefits I receive at this hotel	0.799 (18.38***)						
AVE = 0.700								
$\alpha = 0.821$								
Scale correlations	Mean	F1	F2	F3	F4	F5	F6	F7
F1. ICT advancement	3.33	0.844						
F2. Satisfaction hotel ICT	3.58	0.643						
F3. Satisfaction hotel	3.90	0.224						
F4. eWOM	2.75	0.746	0.258		0.964			
F5. General WOM	3.85	0.66	0.645	0.189	0.439	0.768		
F6. Return	3.74	0.70	0.447	0.677	0.253	0.686	0.823	
F7. Willingness pay more	3.45	0.82	0.327	0.612	0.585	0.646	0.751	0.837
			0.498	0.545				

Notes: The elements on the main diagonal represent the square root of the AVE; Fit indexes: $\chi^2_{\text{sat}}(\text{df} = 73) = 172.97$ (p -value = 0.0000); RMSEA = 0.061; CFI = 0.969; BB-NFI = 0.949; BB-NNFI = 0.953; GFI = 0.936; AGFI = 0.892; ***: t -statistic values between brackets (significant at 99%); Stand. λ : Standardised loading; SD: Standard Deviation; Comp. reliab: composite reliability; AVE: average variance extracted

The fit indexes show that the variables converge satisfactorily towards the seven factors. Approaching the meaning of the Robust Chi² statistic with caution and observing the global indicators, global fit is acceptable (RMSEA < 0.08; BBNFI, BBNNFI > 0.9; CFI > 0.9).

4.3 Common method bias test

We checked for potential common method bias problems applying Harman’s one-factor method. Following Podsakoff et al. (2003), we ran a measurement model loading all items on one latent construct. Fit indices were Chi²_{Sat}(df = 92) = 2164.13; RMSEA = 0.242; CFI = 0.522; GFI = 0.458. Comparing this estimation with the results of the measurement model with the seven latent variables (Table III) (ΔChi²_{Sat} = 2,669.53; Δdf = 21; p-value < 0.000001), we can determine that the single-factor estimation had a significantly poorer fit.

4.4 Measurement invariance test

We evaluate measurement model invariance across different subsamples based on the moderator variables. In the first stage, we ran a multi-group measurement model on the two groups determining for each moderator variable. Based on Steenkamp and Baumgartner’s (1998) recommendations, we estimated the multi-group measurement models with restrictions imposing equality on the factor loadings for each observable variable on its latent factor (Table III). Comparing the fit indices between non-restricted and restricted models for each moderator variable, the maximum difference of CFI is 0.007 (estimation based on consulted online reviews), below the recommended threshold of 0.01 (Chen, 2007). In addition, none of the increase in Chi²_{Sat} is significant (p-value > 0.01). According to Chen (2007) these results allow us to assume the measurement invariance of the measurement scales.

5. Results

5.1 Direct effects

The hypotheses were tested through analysis of the causal model (Figure 2). The quality of fit, analysed using different measures is acceptable (RMSEA < 0.08; BBNFI, BBNNFI > 0.9; CFI > 0.9) and the results indicate the existence of significant causal relations.

Moderator variable	Fit indices	Chi ² _{Sat} (df)	RMSEA	CFI	GFI	BB-NFI	BB-NNFI
Gender	Non restricted model	252.78 (142)	0.064	0.967	0.913	0.930	0.951
	Restricted model	262.13 (150)	0.062	0.967	0.911	0.927	0.953
	ΔChi ² _{Sat} = 8.72, Δdf = 8; p-value = 0.367						
Age	Non restricted model	270.28 (142)	0.069	0.961	0.906	0.923	0.942
	Restricted model	281.01 (150)	0.067	0.960	0.902	0.920	0.944
	ΔChi ² _{Sat} = 9.72, Δdf = 8; p-value = 0.285						
Trip purpose	Non restricted model	251.14 (142)	0.065	0.967	0.912	0.924	0.949
	Restricted model	264.56 (150)	0.066	0.964	0.907	0.924	0.949
	ΔChi ² _{Sat} = 12.31, Δdf = 8; p-value = 0.138						
Visit frequency	Non restricted model	212.49 (142)	0.052	0.977	0.921	0.934	0.965
	Restricted model	224.46 (150)	0.052	0.975	0.918	0.930	0.965
	ΔChi ² _{Sat} = 11.97, Δdf = 8; p-value = 0.153						
Consulted online reviews	Non restricted model	224.76 (142)	0.055	0.957	0.915	0.895	0.935
	Restricted model	235.77 (150)	0.058	0.950	0.910	0.885	0.929
	ΔChi ² _{Sat} = 11.49, Δdf = 8; p-value = 0.176						

Table III.
Fit indices of the multi-group measurement models estimations

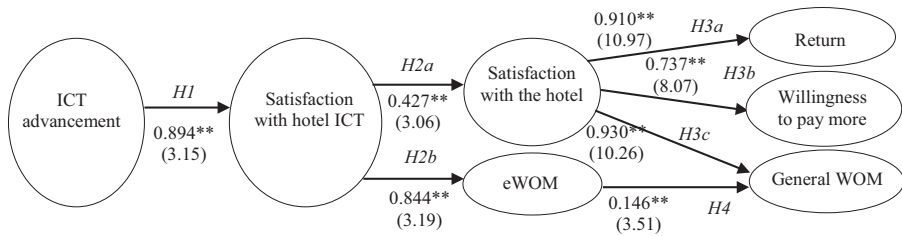


Figure 2.
Estimated model

Notes: Chi² Sat. (df = 85) = 197.07 (*p* -value = 0.0000); RMSEA = 0.061; CFI = 0.965; BB-NFI = 0.942; BB-NFI = 0.954; GFI = 0.926; AGFI = 0.891; **value significant at 99%

The relationship between ICT and satisfaction with ICT is significant at 99 per cent, supporting *H1*. Similarly, there is a significant effect of satisfaction with ICT on satisfaction with the hotel and eWOM, supporting *H2a* and *H2b*. Satisfaction with the hotel positively and significantly influences return, willingness to pay more and general WOM, supporting *H3a-c*, respectively. In addition, eWOM significantly influences general WOM, supporting *H4*.

5.2 Moderator effects

Initially, the Chi² difference test was significant, at 90 per cent at least, for the five moderator effects comparing restricted and non-restricted models (Table IV). A multi-sample analysis based on segments identified in each category of the moderator variables was considered. Again, the causal models were estimated in each segment, introducing the restriction as the null hypothesis and establishing that the regression coefficients in the structural model are the same in the subgroups (Iglesias and Vázquez, 2001). With the Lagrange multiplier test, significant differences can be observed between parameters. For reasons of brevity, Table IV shows only the relationships where differences are significant together with the global fit indices for each structural model.

Results with regard to personal variables (Table IV) show that the strength of the relationship between eWOM and general WOM is significantly more intense in women than men, and the relationship between satisfaction with the hotel and general WOM is significant stronger in young people. Regarding experience-related variables, satisfaction with ICT has more influence on eWOM in business trips in a significant way; however, satisfaction with the hotel on holidays has more influence on return. Moreover, satisfaction with the hotel has more effect on general WOM and return when visit frequency is higher.

Finally, the results show unequal influences in the relationships regarding consulted online reviews. When guests are more influenced by online recommendations, the relationships between ICT and satisfaction with ICT and between satisfaction with the hotel and WOM and return are stronger. However, when online recommendations have less impact, satisfaction with the hotel has less effect on willingness to pay more.

6. Discussion and conclusions

6.1 Conclusions

The results show that a guest's perception of the hotel's adoption of technologies makes a positive contribution to loyalty, and especially to eWOM behaviour. The use the hotel makes of ICT influences satisfaction with ICT. That satisfaction encourages both eWOM and satisfaction with the hotel, and consequently loyalty dimensions. Although some studies do

Moderator variables	Standardised λ		ΔChi^2 (df = 1)	<i>p</i> -value
Gender	<i>Male</i> (N = 229)	<i>Woman</i> (N = 157)		
eWOM → General WOM	0.289	0.356	7.13	0.008
Chi ² _{Sat} (df = 170) = 282.36; RMSEA = 0.061; CFI = 0.965; GFI = 0.901				
ΔChi ² _{Sat} = 26.85; Δdf = 7; <i>p</i> -value = 0.0004				
Age (Average value)	≤45 years (N = 226)	>45 years (N = 160)		
Satisfaction with hotel → General WOM	0.644	0.625	4.78	0.029
Chi ² _{Sat} (df = 170) = 315.09; RMSEA = 0.070; CFI = 0.953; GFI = 0.887				
ΔChi ² _{Sat} = 23.26; Δdf = 7; <i>p</i> -value = 0.0015				
Trip purpose	Holidays (N = 241)	Business (N = 145)		
Satisfaction with hotel ICT → eWOM	0.629	0.687	7.88	0.005
Satisfaction with hotel → Return	0.602	0.577	6.29	0.012
Chi ² _{Sat} (df = 170) = 281.37; RMSEA = 0.063; CFI = 0.967; GFI = 0.912				
ΔChi ² _{Sat} = 51.97; Δdf = 7; <i>p</i> -value < 0.0000				
Visit frequency (Average value)	≤1x/year (N = 201)	≥2x/year (N = 185)		
Satisfaction with hotel → General WOM	0.573	0.626	7.19	0.007
Satisfaction with hotel → Return	0.593	0.611	12.71	0.000
Chi ² _{Sat} (df = 170) = 250.99; RMSEA = 0.053; CFI = 0.971; GFI = 0.907				
ΔChi ² _{Sat} = 16.81; Δdf = 7; <i>p</i> -value = 0.0180				
Consulted online reviews (Average value)	≤ 3 (N = 205)	>3 (N = 181)		
ICT advancement → Satisfaction with hotel ICT	0.362	0.484	12.69	0.000
Satisfaction with hotel → General WOM	0.533	0.742	9.65	0.002
Satisfaction with hotel → Return	0.481	0.719	7.88	0.005
Satisfaction with hotel → Willingness to pay more	0.558	0.526	2.92	0.088
Chi ² _{Sat} (df = 170) = 257.79; RMSEA = 0.055; CFI = 0.952; GFI = 0.902				
ΔChi ² _{Sat} = 32.32; Δdf = 7; <i>p</i> -value < 0.0000				

Table IV.
Results of the multi-group analysis

not confirm these relationships (Sirirak *et al.*, 2011), our results are in line with most of the empirical evidence in hospitality that show the positive effect of technology (Bulchand *et al.*, 2011).

eWOM depends on satisfaction with ICT and in turn may be an important antecedent of general WOM. Customers who positively value the use of ICT during their stay are more likely to disseminate their experience online and will tend to develop more loyalty behaviours. Thus WOM is not only influenced by satisfaction but also by eWOM. Furthermore, gender, age, frequency of visit and consulted online reviews moderate the effects on general WOM, while trip purpose only moderates the effects on eWOM. Women, younger consumers, business guests, those who visit the hotel more frequently and those who receive more online recommendations are the groups where some influences on general WOM are more intense. WOM of these groups is more sensitive to certain variables, mainly to satisfaction. There could be a connection between receiving and engaging in eWOM. If consulted online reviews moderates certain relations linked to ICT, then ICT-savvy

customers who have perhaps found, assessed, and booked the hotel using ICT are likely to be those who also review it using ICT.

6.2 Theoretical implications

The present study contributes to the recent and still scanty research line on ICT advancement in hotels from the consumer perspective. While WOM is a traditional topic in the marketing, this research attempts to further its virtual dimension. WOM has been approached by differentiating the medium used (general and electronic) and according to the consumer's role (posted eWOM and consulted eWOM).

The findings also contribute to the body of knowledge on satisfaction and loyalty antecedents and provide theoretical suggestions for academic research into the hospitality industry. First, technologies are part of the services provision and, consequently, should be included in the classical models that explain loyalty. Second, the relationship between general WOM and eWOM implies that the virtual dimension should also be reflected in current models of loyalty, not only as an added dimension to traditional WOM but also as an antecedent.

Finally, examination of eWOM must differentiate between recommendations received and made insofar as they affect different stages of the purchase process. Recommendations received participate in the pre-purchase stage and can condition expectations, whereas recommendations made are part of the post-purchase stage and are a key indicator of loyalty. The most recent literature on eWOM shows a special interest in both perspectives, although only a few works deal with them simultaneously (Leung *et al.*, 2015). Hence, a theoretical model is suggested that collects received eWOM and made eWOM dimensions.

6.3 Practical implications

ICT can be a key element in improving satisfaction and loyalty and as a differentiation strategy. Hotels that are sensitised to customer satisfaction should improve or extend technological applications and also encourage their use by providing access to ICT. Therefore, hotels which invest in customer-facing ICT are likely to have a strong customer-focus anyway, leading to greater loyalty and likelihood of posting eWOM reviews. The optimum level of investment should be determined taking into account customer profile and desired positioning.

Hotel industry should also consider both the above-mentioned perspectives of eWOM, first, to focus on stimulating consumer exposure to online media (receiver approach) and, second, to increase the likelihood of eWOM generation (sender approach). Recent studies show that hotels that receive good online comments have more reservations (Bulchand *et al.*, 2011). If customers who recommend online tend to recommend the hotel through other media, managers should improve the actions designed to get their satisfied customers to write comments (e.g. by increasing the media, facilitating access to them or offering more and better incentives). In addition, hotels should recognise that customers would have different loyalty behaviours in relation to their personal characteristics and type of experience. Hotels could easily have that information before the customer visit to adapt their strategies to each consumer profile.

6.4 Limitations and future research

First, this research has focussed on higher-category hotels located in three geographical areas. It would be interesting to replicate the studied relationships for greater coverage and in other tourism contexts to detect possible differences (e.g. luxury hotels, resorts,

budget hotels or cruises). Second, general WOM and eWOM have been measured through one-dimensional scales. Different dimensions highlighted in the literature (e.g. valence and volume) and different virtual channels (e.g. blogs, Facebook and websites) could also be considered. Third, loyalty dimensions have been measured from the intentional perspective. Although most empirical studies of the hospitality industry are measured intentions rather behaviours (Kim *et al.*, 2015), there may be significant differences. Future studies could differentiate them and investigate the influence of these intentions on loyalty behaviours.

Finally, the moderator effect of online and offline recommendations received by consumers on satisfaction and loyalty could be included. Some authors argue that offline recommendations have greater influence (Chan and Ngai, 2011) because the absence of face-to-face contact can reduce trust. Similarly, we propose to continue studying WOM by differentiating between the emitter and receiver approach. It would be interesting to analyse the extent to which consumers who consult and use online recommendations to make purchase decisions are more likely to post comments on their experiences.

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