Determinants of online booking loyalties for the purchasing of airline tickets

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HIGHLIGHTS

► We examine the impact of e-quality on consumer's loyalty in the e-commerce context.
► We develop and asses a scale to measure e-quality considering hedonics.
► Internet is reducing the role of traditional intermediaries in the tourist industry.
► Airline companies should design their e-business processes to meet customers' needs.

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ABSTRACT

The aim of the present study is to understand the impact of e-quality on consumer's loyalty in the context of the online airplane ticket purchase. For this purpose, quality is divided in two dimensions: functional quality (based on E-S-QUAL model) and hedonic quality. The methodology applied was administered to 617 consumers of online airplane tickets via an airline's website in 2009. Structural Equation Modeling was applied to study the impact. The results show that the functional and hedonic quality are positive significant for loyalty through perceived value. From a managerial perspective, this paper provides advice for the airline industry in the development of e-commerce to take advantage of the current situation of disintermediation and to achieve the loyalty of customers.

1. Introduction

The Internet has become the method whereby travel suppliers can sell their products and services to potential travelers at anytime and anywhere (Bernstein & Awe, 1999; Connolly, Olsen, & Moore, 1998; Law & Wong, 2003; Lubetkin, 1999). The development of information technology has caused a radical change in the way the tourism industry does business (Ho & Lee, 2007). Currently, online airplane ticket purchases are a common and usual practice for travelers. The rapid growth in the size of the e-travel service business is clear evidence of this practice (Ho & Lee, 2007). Some authors even consider online travel a booming business (Diefenbach, 1998).

Indeed, as Buhalis and Law (2008) explained, the Internet is reducing the role of traditional intermediaries in the tourist industry because customers can deal directly with service suppliers. This phenomenon is called disintermediation, and it allows to airlines to get closer to the customers. Therefore, if an airline uses e-commerce properly, it will "strengthen its position, reinforce its brand and contribute to its profitability", as Buhalis (2004) suggested.

In addition, airline management is forced to determine what its customers want and do not want (Chen & Chang, 2005), recognizing that customer loyalty is a key element in their strategies in the competitive milieu in which they operate (Forgas, Moliner, Sánchez, & Palau, 2010). Loyalty, as the transition from a favorable predisposition to a repeated purchase commitment, is a prior step to the action of purchase, as Oliver (1997) states.

Therefore, as online retailing is increasing in importance, analysis is required to understand the drivers of loyalty within a quality online context because providing quality is not only an imperative for manufacturing companies (Pakdil & Aydin, 2007).

The E-S-QUAL model by Parasuraman, Zeithaml, and Malhotra (2005) is the most applied model for analyzing quality online. Based on the E-S-QUAL dimensions of efficiency, system availability,

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fulfillment, and privacy, several studies have analyzed the relationship between e-quality and loyalty, such as Boshoff (2007), Cristobal, Flavian, and Guinaliu (2007), Forgas et al. (2010), Gallarza and Gil (2006), Huang (2008), Marimon, Vidgen, Barnes, and Cristobal (2010), and Santouridis and Trivellas (2010).

However, the E-S-QUAL model by Parasuraman et al. (2005) does not consider hedonics as an intrinsic dimension for the measurement of the online service provider. In that sense, this paper provides an exploratory analysis about the necessity of including such dimension, obtaining a wider measurement scale.

The above relationship has been analyzed using the functional quality dimensions, but in recent years, some authors have argued for the importance of hedonic quality dimensions on perceived value and loyalty (see, for example, Ahn, Ryu, & Han, 2007; Bauer, Falk, & Hammerschmidt, 2006; Hao-Erl, Wei-Jen, Jia-Ying, Bo-Chuan, & Chia-Shing, 2010; Hausman & Siekpe, 2009; Vázquez-Casielles, del Río-Lanza, & Suárez-Álvarez, 2009).

Following Vázquez-Casielles et al. (2009) we understand hedonic or intrinsic value as the defined as the value obtained from enjoying the search information and/or purchase. Others authors have analyzed different aspects of hedonics. For instance, Childers, Carr, Peck, and Carson (2001) analyze the motivations of hedonics and Chitturi, Raghunathan, and Mahajan (2008) analyze its benefits. Other similar concepts exit in the literature, Mathwick, Malhotra, and Rigdon (2001) consider "playfulness" as other intrinsic value of shopping activity. On the other hand, the same previous authors define another close concept, such as entertainment value, as an appreciation for the retail "spectacle.". The fact that exist many overlapped concepts leads to certain confusion.

According to Zeithaml (1988), perceived value is defined as the judgment or evaluation made by the customer of the comparison between the advantages of, or the utility obtained from, a product, service or relationship and the perceived sacrifices or costs.

Other authors, in the specific case of airline companies, have confirmed the importance of the relationship between perceived value and loyalty, affirming that when the value offered by an airline to their users increases, so does the users' loyalty (Sánchez, Callarisa, Rodríguez, & Moliner, 2006; Sirdeshmukh, Singh, & Sabol, 2002).

Therefore, taking into account the importance of e-quality as a contributor to customer loyalty, the aim of this paper is to expand the understanding of the impact of e-quality on customer loyalty in the context of the online purchasing of airplane tickets. In particular, we develop and assess a scale to measure e-quality, and we assess the impact of e-quality and hedonics on loyalty through perceived value.

It must be highlighted that this paper is one of the first to consider hedonics as an intrinsic dimension of e-quality, extending Parasuraman et al.'s (2005) model and providing important implications for business practice, as e-commerce is a powerful tool for competitiveness.

The paper is structured as follows. After the introduction, a literature review will be explored in the second section. Sample and data collection are described in the third section. The results are presented in the fourth section and are discussed in the final section.

2. The proposed model with framework

There are many attempts in the literature to assess e-quality according various dimensions. There are scales such as SITEQUAL, which has only four dimensions (ease of use, aesthetic design, processing speed, and security). There are consumer and website designer interviews developed by Yoo and Donthu (2001), and there are more extensive models, such as WEBQUAL, developed by Loiacono, Watson, and Goodhue (2002), which is composed of twelve dimensions.

However, according to recent works adapted to different sectors and cases (e.g., Ladhari, 2009), it seems that the most widespread scale used to assess service quality in an electronic context is E-S-QUAL (Parasuraman et al., 2005), which is an adaptation of the well-known SERVQUAL scale designed to assess quality in services in general (Parasuraman, Zeithaml, & Berry, 1988).

Originally, E-S-QUAL was structured into 22 items grouped into four dimensions: efficiency (the ease and speed of accessing and using the site), fulfillment (the extent to which the site's promises about order delivery and item availability are fulfilled), system availability (the correct technical functioning of the site), and privacy (the degree to which the site is safe and protects customer information).

However, in recent years, some authors have included new adaptations to the original scale. For instance, one of the first academics to apply the E-S-QUAL scale, Boshoff (2007), proposed six dimensions instead of the four of the original instrument, and he found the relationship that e-quality has to e-loyalty. More recently, Marimon et al. (2010) applied the instrument to the case of an e-supermarket and discussed the original model and the contribution of Boshoff. Moreover, Marimon et al. (2010) expanded Boshoff's model, adding a new construct analyzing the relationship between loyalty and purchasing. Nevertheless, all the different approaches to the original scale coincide in the existence of an impact of electronic service quality on perceived value and perceived value on e-loyalty (see, e.g., Fuentes-Blasco, Gil-Saura, Berenguer-Contrí, & Moliner-Velázquez, 2010). Therefore, these literature findings allow the following hypothesis:

Hypothesis H1: Higher levels of efficiency in a website impact positively on higher levels of perceived value.

Hedonic quality dimensions, unlike other dimensions such as perceived value or loyalty, have not been widely analyzed, and only few studies have been performed recently. Hedonics is the measurement of enjoyment a customer has in researching a product and purchasing it (Bauer et al., 2006; Childers et al., 2001; Chitturi et al., 2008; Song & Zinkhan, 2008; Vázquez-Casielles et al., 2009). Different studies have analyzed the impact of these dimensions in online purchase intention, loyalty and perceived value.

In the case of e-travel service quality, Ho and Lee (2007) identify five factors: (1) information quality, (2) security, (3) responsiveness, (4) website functionality, and (5) customer relationships. These last two dimensions contribute the most to the overall service quality evaluation of the participants.

More recently, Hausman and Siekpe (2009) analyzed which elements are important for consumers' intentions of purchase and return. The model tests the influence of eight dimensions on these intentions: (1) human factors, (2) computer factors, (3) usefulness, (4) informativeness, (5) entertainment, (6) irritation, (7) attitude toward the site, and (8) flow (according to Csikszentmihalyi, 1997). The results show that all factors are important for purchase and return intentions, although their effect is indirect through attitudes toward the site and flow. Also, this latter dimension contributes more than the former to purchase and return intentions, and entertainment is the dimension that most explains the flow. The authors conclude that these hedonic dimensions should be taken into account for future website designs and marketers (see also Demangeot & Broderick, 2007).

Finally, Bauer et al. (2006) and Vázquez-Casielles et al. (2009), among others, introduced the hedonics dimension as an e-quality dimension when analyzing an e-service quality scale. Their results show that both dimensions are important for a customer's perceived value, and they concluded that hedonics must be

developed to a higher level. Moreover, this relationship has been studied from different points of view, but the majority of authors conclude that the relationship is positive and significant. Therefore, second and third hypotheses can be posed:

Hypothesis H2: Higher levels of hedonics in a website impact positively on higher levels of perceived value.
Hypothesis H3: Efficiency and hedonics are positively correlated.

Parasuraman and Grewal (2000) proposed that customer loyalty in the electronic context grows with the delivery of higher value from service, and they analyzed the chain of service quality-value-loyalty in offline retailing. Following this research, Yang and Peterson (2004) examined the effects switching costs have on customer loyalty through satisfaction and perceived value. The results show that customer loyalty can be created by improving customer satisfaction and product value, and the impact of switching costs is not significant in this relationship. Fuentes-Blasco et al. (2010) also found that perceived value has a direct and significant influence on loyalty to an e-shopping website (see also, e.g., Forsythe, Liu, Shannon, & Gardner, 2006; Huang, 2008), and they also concluded that in an electronic context, there is empirical evidence of the chain of e-service quality-perceived value − e-loyalty. Gallarza and Gil (2006) also studied the existence of a perceived value-satisfaction-loyalty chain considering a tourism experience. The results show that perceived value is a positive and significant antecedent of satisfaction, as is satisfaction for loyalty, although they recognized that future research is needed (see also Cristobal et al., 2007; Santouridis & Trivellas, 2010).

Pura (2005) analyzed the direct effect of perceived value on loyalty in the mobile services sector, concluding that the effect is significant and specifying which value dimensions can help enhance commitment and loyalty. Similar results were found in Forgas et al. (2010), Lin and Wang (2006) and Luarn and Lin (2003).

Parasuraman et al. (2005) presented the most widely used model for the measurement of e-quality. This model is used by different authors to analyze the relationships between e-quality dimensions and perceived value and loyalty thereafter. The authors validated the scale by considering the perceived value as an antecedent of loyalty.

Based on Parasuraman et al.'s (2005) model, Bauer et al. (2006) argued that a hedonic dimension was necessary to analyze online customer behavior, extending the model to a five-dimension model called eTransQual. They concluded that all five dimensions have a significant positive impact on perceived value and customer satisfaction, highlighting the importance of enjoyment for the customer.

Boshoff (2007) analyzed e-quality using a six-dimensional model based on the E-S-Qual dimensions by Parasuramen et al. (2005) and the impact e-quality has on perceived value and loyalty. The results showed that the proposed model fitted well and that the relationship between perceived value and loyalty was significant and high. Additionally, Marimon et al. (2010) proposed a model linking E-S-Qual dimensions with perceived value, loyalty and purchasing behavior within the setting of an online supermarket. They also found that the strongest relationship of the model was that between perceived value and loyalty.

The results of the studies above lead to the following hypothesis:

H4: Higher levels of perceived value in a website impact positively on higher levels of loyalty with regard to that website.

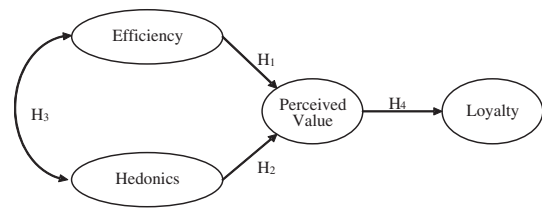Based on the previous four hypotheses, Fig. 1 represents the working causal model proposed.

Fig. 1. Proposed model and hypothesized relationships.

3. Methodology

3.1. Sample design and data collection

The questionnaire used in this study was adapted from the original E-S-Qual scale (Parasuraman et al., 2005) and was administered to consumers of online airplane tickets via an airline's website in 2009.

The online purchases of airplane tickets were selected for one main reason. According to ONTSI (2008), the purchase of travel products represents most of the e-commerce in Spain, namely, 84.1%. This value is well above the second option, leisure products, which represents only 36.5% of the total e-commerce. In addition, 58.7% of e-shoppers are considered constant in the period 2006−2007, meaning their loyalty will be stable in the future.

The fieldwork was completed in July 2010. After excluding some incomplete or invalid questionnaires, 617 valid questionnaires remained. The demographic characteristics of the 617 respondents are summarized in Table 1. No gender bias was detected because exist similar proportion of male and female respondents. Regarding the age of the respondents, the vast majority were less than 35 years of age (58.51%). The educational level of the sample was high, with two-thirds of the sample having a university degree and les of the 15% had only high school degree. Finally, most of the respondents had an annual income between 10,000€ and 30,000€.

During the interview, the travelers could indicate one or more airline websites where they had made their purchases. In total,

Table 1
Demographic characteristics of the response sample.

	Number	%
Age category		
Between 18 and 25 years	169	27.39
Between 26 and 35 years	192	31.12
Between 36 and 45 years	170	27.55
>45 Years	86	13.94
Total	617	100.0
Gender		
Male	317	51.38
Female	300	48.62
Total	617	100.0
Education level		
High School	89	14.42
Professional capacitation	104	16.86
University degree	414	67.10
Others	10	1.62
Total	617	100.0
Annual income (in Euros)		
<10,000	110	17.83
Between 10,000 and 30,000	255	41.33
Between 30,000 and 50,000	110	17.83
Between 50,000 and 70,000	28	4.54
>70,000	16	2.59
I prefer do not answer	98	15.88
Total	617	100.0

there were 1101 responses, indicating a mean of almost 2 purchases in one year. The airline website most cited was Ryanair, which represented approximately 30% of the total of purchases. The next most cited website was Vueling, with 20%, and it is not until the third position that the Spanish flag carrier, Iberia, appears (Table 2).

3.2. Measures

The questionnaire was structured into five sections. The purpose of the first section was to measuring the e-quality of the service. The second section was devoted to assessing the hedonic dimension. The third and fourth sections assessed perceived value and loyalty. The fifth and last section inquired about the social demographic aspects of the respondent.

Following the advice of Akinci, Atilgan-Ina, and Aksoy (2010) in their reassessing of a scale, some items of the original E-S-Qual scale were removed. Analogously, in the rest of the sections, some items were removed from the original bibliographic source. In addition, the questionnaire was answered by a small pilot sample to check their understanding of the questions. This process yielded 30 items covering seven dimensions:

(1) efficiency (six items),
(2) system availability (two items),
(3) fulfillment (six items),
(4) privacy (three items),
(5) hedonics (five items),
(6) perceived items (five items) and
(7) loyalty (three items)

The first four dimensions were proposed by Parasuraman et al. (2005) in their E-S-Qual scale, and an array of authors have adapted it to specific cases (e.g., Boshoff, 2007; Fuentes-Blasco et al., 2010; Kim, Kim, & Lennon, 2006; Marimon et al., 2010; Meng, 2010; Yen & Lu, 2008). The hedonics dimension was made according to several papers: Ahn et al. (2007), Hausman and Siekpe (2009), Ho and Lee (2007) and Vázquez-Casielles et al. (2009). The last two dimensions were adapted from Parasuraman et al. (2005), although, for perceived value, we included some items adapted from other authors (e.g., Bauer et al., 2006; Cronin, Brady, & Hult, 2000; Gallarza & Gil, 2006; Marimon et al., 2010; Zeithaml, 1988). For loyalty, we included items adapted from Huang (2008), Marimon et al. (2010) and Song and Zinkhan (2008). All adapted statements were measured on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Annex A includes a column with the references of the studies used for the items listed.

4. Results

The data analysis was performed in two steps: the first was to assess the reliability of the measurement scales; the second was to study the causal model using Structural Equation Modeling (SEM). SEM makes it possible to analyze the full model that embodies a set of variables by which latent factors are regressed on other factors, as dictated by theory and observed measurements of the appropriate factors. In other words, in SEM, certain latent variables are connected by one-way arrows, the directionality of which reflects hypotheses bearing on the causal structure of variables in the model (Byrne, 1994). Besides, according to Schumacker and Lomax (2004) SEM offers more flexible assumptions than regression, mainly (1) by tolerating interpretation even in the face of multicollinearity, (2) by use of confirmatory factor analysis to reduce measurement error by having multiple indicators per latent variable, (3) offers the desirability of testing models overall rather than coefficients individually, (4) by the ability to test models with multiple dependents, (5) permits rigorous analysis of all the variance components of each observed variable (common, specific, and error), (6) maps reflective and formative observed variables, (7) analyzes all the paths, both measurement and structural, in one analysis, (8) is an umbrella concept for analyses such as mediation and moderation, and (9) offers the ability to handle difficult data such as non-normal data, and incomplete data.

Afterward, just to confirm the results obtained a specific analysis about the mediator effect of perceived value between e-quality and loyalty was lunched.

4.1. Factor analysis for final model

The preliminary study on the scales' dimensionality was done by an array of exploratory principal components factor analyses with a Varimax rotation (Hair, Anderson, Tatham, & Black, 1998) using the Kaiser criteria of eigenvalues greater than 1 (see Table 3). Next, the psychometric properties of the scales of measurement were analyzed.

The first exploratory factor analysis was conducted by examining the items efficiency, system availability, fulfillment, privacy and hedonics. Two factors with eigenvalues greater than 1 appeared, explaining 67.12% of the variance. The first factor, labeled "efficiency", gathered nine items: all six items of efficiency, the first of system availability and the first two of fulfillment. Note that all these items come from the original E-S-Qual (Parasuraman et al., 2005). Another array of all five hedonic items loads on the second

Table 2
Websites of purchase.

Website of purchase	Number	%
Iberia.com	179	16.26%
Ryanair.com	330	29.97%
Vueling.com	222	20.16%
Easyjet.com	116	10.54%
Spanair.com	136	12.35%
Other airline websites	118	10.72%
Total	1101	100.0%

Table 3
Exploratory principal components factor analyses with Varimax rotation.

	Efficiency	Hedonics		Perceived value		Loyalty	
	Standardized loadings				Standardized loadings		Standardized loadings
Eff1	.788		PeV1	.695		Loy1	.857
Eff2	.786		PeV2	.833		Loy2	.869
Eff3	.791		PeV3	.747		Loy3	.746
Eff4	.749		PeV4	.836			
Eff5	.741		PeV5	.861			
Eff6	.808						
Sya1	.767						
Sya2							
Ful1	.776						
Ful2	.732						
Ful3							
Ful4							
Ful5							
Ful6							
Pri1							
Pri2							
Pri3							
Hed1		.830					
Hed2		.838					
Hed3		.776					
Hed4		.798					
Hed5		.773					

Table 4
Confirmatory principal components factor analyses with Varimax rotation. Internal consistency and reliability of the constructs.

Efficiency	Standardized loadings (*)	Hedonics	Standardized loadings (*)	Perceived value	Standardized loadings (*)	Loyalty	Standardized loadings (*)
Eff1	.806	Hed1	.785	PeV1	.695	Loy1	.857
Eff2	.821	Hed2	.849	PeV2	.833	Loy2	.869
Eff3	.784	Hed3	.816	PeV3	.747	Loy3	.746
Eff4	.745	Hed4	.769	PeV4	.836	Cronbach's alpha: .766	
Eff5	.768	Hed5	.773	PeV5	.861	Range for Cronbach's alpha removing one item: .596−.792	
Eff6	.838	Cronbach's alpha: .870		Cronbach's alpha: .852			
Sya1	.790	Range for Cronbach's alpha removing one item: .824−.866		Range for Cronbach's alpha removing one item: .798−.854		Range for correlations of the items and the sum of the subscale: .498−.673	
Ful1	.825						
Ful2	.814	Range for correlations of the items and the sum of the subscale: .615−.772		Range for correlations of the items and the sum of the subscale: .550−.752			
Cronbach's alpha: .934							
Range for Cronbach's alpha removing one item: .924−.928							
Range for correlations of the items and the sum of the subscale: .723−.795							

*All significant at p-value = .01.

factor, labeled "hedonics". The KMO index was .935, and the Barlett test was 4564.64 (df = 91), with a significance of .000. These values prove that the classic measurement of e-quality has its own scale and hedonics is an independent scale, which is different from the findings of Hao-Erl et al. (2010).

The second exploratory factor analysis was conducted by taking the array of items of perceived value. The KMO index was .848, and the Barlett test was 1269.26 (df = 10), with a significance of .000, forecasting a good analysis (see Table 3). Only one factor with eigenvalues greater than 1 appeared, explaining 63.52% of the variance.

The third exploratory analysis was performed by taking the three items of loyalty from Annex A. The three items together in the same factor explain 68.22% of the variance. The KMO measure was .661, and the Barlett test was 478.70 (df = 3), with a significance of .000. Thus, the unidimensionality for the four scales was proved. Only one factor with eigenvalues greater than 1 appeared, explaining 68.22% of the variance.

Table 4 shows the four confirmatory factor analyses (CFAs) taking the refined list of items from the previous four EFAs. Next step was assessing reliability of each of these factors. Acceptable levels were achieved in all criteria usually used for this purpose (Hair et al., 1998). Cronbach's α and composite reliability in every case exceeded the threshold value of .7 for internal consistency (Nunnally & Bernstein, 1994).

Then, we calculated the internal consistency of the dimensions while considering two indicators: the composed reliability coefficient, whose minimum threshold is .7 (Anderson & Gerbing, 1988; Bagozzi & Yi, 1988), and the variance extracted for each scale, whose value must be over .5 (Fornell & Larcker, 1981). These indexes were acceptable for all the factors.

Discriminant validity, which verifies that each factor represents a separate dimension, was analyzed through linear correlations or standardized covariances between latent factors by examining whether inter-factor correlations are less than the square root of the average variance extracted (AVE) (Fornell & Larcker, 1981) (Table 5). Additionally, the items generation process for both
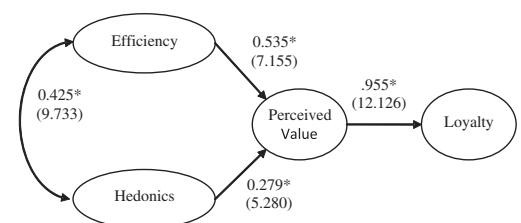
constructs was extracted from different previous authors, providing some guarantee that both constructs are different. In spite of all this, we have pointed out that the correlation of the two antecedents of perceived value needs to be analyzed with caution, due to the pioneering role of this study. Thus more research is needed in order to definitively confirm that efficiency and hedonics are really different, consistent and stabilized dimensions in different settings. However, a multicollinearity test among the items of the two independent factors (efficiency and hedonics) was performed and the results showed minimal collinearity, with the variance inflation factor (VIF) of all items ranged between values far below the common cut-off threshold.

4.2. Final model

The standardized solution of the causal model is presented next (see Fig. 2). The initial dimensionality proposal was confirmed after a second-order confirmatory factorial analysis with EQS 6.1 software (Byrne, 1994).

The measurement model was estimated with the robust maximum likelihood method from the asymptotic variance−covariance matrix (Jöreskog & Sörbom, 1996). The fit indexes obtained in the measurement model estimation show that the variables measured converge toward the factors established in the confirmatory factor analysis (see Fig. 2), as χ^2 Satorra−Bentler is 514.04 with 205 degrees of freedom and a p-value of .000. χ^2/df is 2.50, which is lower than the acceptance limit of 5 (Hair et al., 1998). The RMSEA is .057, the CFI is .918 and the BB-NNFI is .908 (Byrne, 1994; Hu & Bentler, 1999). Taking the signification of the robust χ^2 statistic and observing the global indicators, we can state that the global fit is acceptable.

Once the model has been assessed and validated, the analysis is extended to examine the mediator role of perceived value between its antecedents (efficiency and hedonics) and loyalty.

Table 5
Correlation matrix of latent factors.

	AVE	Efficiency	Hedonics	Perceived value	Loyalty
Efficiency	.639	.799[a]			
Hedonics	.638	.395	.798[a]		
Perceived value	.635	.567	.469	.796[a]	
Loyalty	.682	.487	.465	.723	.825[a]

[a] Diagonal elements are the square roots of average variance extracted (AVE).

*significant at p-value = .01

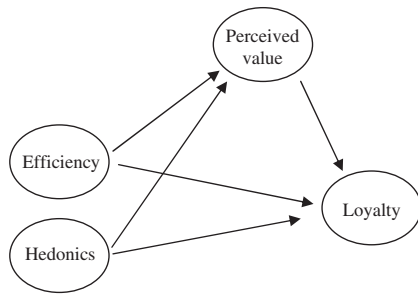**Fig. 2.** Standardized solution of the causal model.

Fig. 3. Model assessing the mediating effect of perceived value between e-quality and loyalty.

4.3. Mediating effect of perceived value

The methodology proposed by Baron and Kenny (1986) to examine the mediator effect of a variable has been extensively used in different settings (e.g. Bontis, Booker, & Serenko, 2007; Petnji, Marimon, & Casadesus, 2011 in the banking sector) and adapted to different statistical approaches (recently, Kong, Cheung, & Song, 2012 in the hospitality industry, using structural equation modeling). Fig. 3 shows the model for examining the mediating effect of perceived value between e-quality (efficiency and hedonics) and loyalty.

Four control variables were included in the analysis: age, gender, education, and annual income. Table 6 shows the three required regressions suggested by Baron and Kenny (1986): (i) regressing the mediator on the independent variable, (ii) regressing the dependent variable on the independent variable, and (iii) regressing the dependent variable on both the independent variable and on the mediator.

Table 6 shows that (i) regression 1 confirms that the independent variables (in this case there are two independent variables: efficiency and hedonics) affect the mediator (perceived value), (ii) regression 2 confirms that the independent variables affect the dependent variable (loyalty), and (iii) regression 3 confirms that the mediator affects the dependent variable. Additionally, the effects of the independent variables on the dependent variable are less pronounced in the third regression than in the second. Nevertheless, the influence of the independent variables still remains significant in the presence of the mediator, thus the effects of the independent variables are partially mediated in the presence of the mediator. Moreover, the adjusted R^2 in regression 3 of the complete model (where the two dimensions of e-quality and perceived value

are regressed on loyalty) increased by 22.7 per cent compared with that in the model that only includes e-quality dimensions as independent variables, thus confirming that perceived value mediates partially between each dimension of e-quality and loyalty.

5. Conclusions

This study investigates the impact of e-quality on loyalty by constructing a comprehensive model considering hedonics as an intrinsic dimension of e-quality and through perceived value. Therefore, the aim of the present study is to expand knowledge about the drivers affecting a consumer's loyalty, as Chen (2008) claims. Because of the novelty of considering hedonics as an intrinsic dimension of e-quality, the objective of the paper is twofold.

First, based on the original E-S-Qual scale (Parasuraman et al., 2005) we have proposed and assessed a scale that takes hedonics into consideration in order to measure e-quality in the e-commerce context. Once the scale had been validated, the second objective was to analyze the impact of both dimensions on loyalty through perceived value. The sample was composed of 617 questionnaires from travelers who had purchased at least one online airplane ticket in 2009 in Spain.

From the results, the first conclusion is that hedonics is an intrinsic dimension of e-quality. This statement is in accordance with the studies of Bauer et al. (2006) and Vázquez-Casielles et al. (2009). Concretely, we could conclude that efficiency is a summary of the E-S-Qual dimensions defined by Parasuraman et al. (2005). In addition, we could also conclude that hedonics is an additional dimension. However, the influence of both dimensions on perceived value is different because efficiency contributes to a greater degree than hedonics.

The second conclusion is the existence of a significant relationship between e-quality and hedonics with loyalty through perceived value. In keeping with the recent work of Fuentes-Blasco et al. (2010), and as it was proposed by Parasuraman and Grewal (2000) and Gallarza and Gil (2006), the chain e-quality-perceived value-loyalty is positive and significant.

Both conclusions highlight the importance of considering hedonics as a quality dimension for keeping the loyalty of current consumers. For instance, designing a friendly website would facilitate, on the one hand, communication with customers, providing a channel where travelers could receive comprehensive, timely and relevant information in a virtual environment to assist their decision-making process (Law, Leung, & Wong, 2004); and, on the other hand, it would keep them loyal for future online purchases. In

Table 6
Regression analysis of service quality and perceived value on loyalty.

	Regression 1	Regression 2	Regression 3
	(Efficiency & hedonics) → perceived value standard β	(Efficiency & hedonics) → loyalty standard β	(Perceived value, efficiency & hedonics) → loyalty standard β
Control variables			
Age	−.011	−.061	−.061
Gender	.090	−.005	−.028
Education	.080	.032	−.032
Annual income (€)	−.029	−.054	−.036
Independent variables			
Efficiency	.492*	.410*	.122*
Hedonics	.245*	.317*	.169*
Perceived value	–	–	.606*
Adjusted R^2	.392	.366	.593

*Significant at $p < .001$.

other words, the consumers, apart from achieving their goals, want to enjoy the experience of purchasing.

From a managerial perspective, this paper provides advice for the airline industry in the development of e-commerce to take advantage of the current situation of disintermediation and to achieve the loyalty of customers.

First, an efficient website could increase the ability of the company to build and maintain a long-term relationship with their customers based on their needs and requirements (Andreu, Aldás, Bigne, & Mattila, 2010; Suárez-Álvarez, Díaz-Martín, & Vázquez-Casielles, 2007). Therefore, airlines should develop adequate e-business strategies based on the overall concept of *efficiency* proposed in this work, which involves the dimensions of efficiency, system availability and fulfillment. Management, therefore, should assure not only a fashion front-end but also a transactional back-end capable of providing prompt, complete and secure transactions and replies to customers' queries (Caruana & Ewing, 2010).

Second, airline companies should design and update their e-business processes to meet customers' needs and wishes without forgetting the dimension of hedonics. Because the concept of loyalty includes an emotional behavioral component (Casalo, Flavián, & Guinalíu, 2008), namely, to have a fun and enjoyable experience, which is a critical aspect for building loyalty in an e-commerce relationship (Ha & Stoel, 2009). Childers et al. (2001) pointed out that the hedonics dimension is so important that its absence could influence a customer's attitude toward the website. Given that customers today compare prices between companies and are highly sensitive to price, airline companies should differ themselves from their competitors by developing this dimension by means of building a strong community and developing functionalities with a hedonic concept.

Finally, e-commerce is a powerful tool for airlines to approach and know customers. The proper development of an e-commerce strategy can impact the firm in both the short-term and long-term. In the short-term, some benefits are the increase of direct sales toward the Internet, which could improve financial rates. In the long-term, a firm may achieve other organizational performance, such as delivering better service to customers, enhancing their competitiveness and maintaining their position in the market.

The hedonics dimension is growing in importance in the current research, but more research is needed because its characteristics and impacts are not well-known yet. We propose deep research in order to design a new scale considering "hedonics" as an intrinsic dimension. The main limitation in this paper is geographical, as in the majority of empirical studies. To resolve this problem, it is proposed that the sample be widened to other European countries in future research.

Acknowledgments

Annex A

Efficiency (first e-quality dimensions)	
EFF1 this site makes it easy to find what I need.	Barnes and Vidgen (2002), Casalo et al. (2008), Chakrabortya, Srivastavaa, and Warren (2005), Collier and Bienstock (2006), Cristobal et al. (2007), Ho and Lee (2007), Holloway and Beatty (2008), Hu (2009), Kima, Lehtob, and Morrison (2007), Marimon et al. (2010), Parasuraman et al. (2005), Song and Zinkhan (2008), Vázquez-Casielles et al. (2009), Wang, Beatty, and Mothersbaugh (2009), Wolfinbarger and Gilly (2003)
EFF2 it makes it easy to get anywhere on the site.	Marimon et al. (2010), Parasuraman et al. (2005)
EFF3 it enables me to complete a transaction quickly.	Ho and Lee (2007), Holloway and Beatty (2008), Hu (2009), Kima et al. (2007), Marimon et al. (2010), Parasuraman et al. (2005), Wang et al. (2009), Wolfinbarger and Gilly (2003)
EFF4 information at this site is helpful.	Bauer et al. (2006), Casalo et al. (2008), Collier and Bienstock (2006), Cristobal et al. (2007), Francis (2007), Holloway and Beatty (2008), Hu (2009), Kima et al. (2007), Marimon et al. (2010), Parasuraman et al. (2005), Vázquez-Casielles et al. (2009), Wang et al. (2009), Wolfinbarger and Gilly (2003)
EFF5 it loads its pages fast.	Bauer et al. (2006), Collier and Bienstock (2006), Cristobal et al. (2007), Marimon et al. (2010), Parasuraman et al. (2005), Vázquez-Casielles et al. (2009)
EFF6 this site enables me to get on to it quickly.	Casalo et al. (2008), Marimon et al. (2010), Parasuraman et al. (2005), Wolfinbarger and Gilly (2003)
System availability (second e-quality dimensions)	
SYA1 This site is always available for business.	Ahn et al. (2007), Bauer et al. (2006), Hu (2009), Marimon et al. (2010), Parasuraman et al. (2005), Wolfinbargen and Gilly (2003)
SYA2 This site does not crash.	Hu (2009), Marimon et al. (2010), Parasuraman et al. (2005)
Fulfillment (third e-quality dimensions)	
FUL1 this site makes items available for delivery within a suitable time frame.	Marimon et al. (2010), Parasuraman et al. (2005)
FUL2 it sends out the items ordered.	Marimon et al. (2010), Parasuraman et al. (2005)
FUL3 it has the items in stock the company claims to have.	Marimon et al. (2010), Parasuraman et al. (2005)
FUL4 it is truthful about its offerings.	Marimon et al. (2010), Parasuraman et al. (2005)
FUL5 it changes and guarantees commitment to an amendment or cancellation of reservations	Vázquez-Casielles et al. (2009)
FUL6 It provides availability of services for the individual needs of customers (get invoices, promotions, etc.)	Vázquez-Casielles et al. (2009)

(continued)

Efficiency (first e-quality dimensions)	
Privacy (fourth e-quality dimensions)	
PRI1 it protects information about my web-shopping behavior.	Marimon et al. (2010), Parasuraman et al. (2005), Ranganathan and Ganapathy (2002)
PRI2 it does not share my personal information with other sites.	Collier and Bienstock (2006), Francis (2007), Ho and Lee (2007), Holloway and Beatty (2008), Kim et al. (2006), Marimon et al. (2010), Parasuraman et al. (2005), Wang et al. (2009), Wolfinbarger and Gilly (2003), Yoo and Donthu (2001)
PRI3 this site protects information about my credit card.	Collier and Bienstock (2006), Francis (2007), Ho and Lee (2007), Holloway and Beatty (2008), Kim et al. (2006), Marimon et al. (2010), Parasuraman et al. (2005), Vázquez-Casielles et al. (2009), Wang et al. (2009), Wolfinbarger and Gilly (2003), Yoo and Donthu (2001)
Hedonics	
HED1 I enjoy the multimedia information, suggestions and recommendations provided to the customer on this website	Vázquez-Casielles et al. (2009)
HED2 I think it is great fun to browse this site	Hausman and Siekpe (2009), Vázquez-Casielles et al. (2009)
HED3 when interacting with this website, I do not realize the time elapsed	Ahn et al. (2007)
HED4 I enjoy sharing comments and experiences from other travelers	Proposed by the authors
HED5 I really enjoy shopping at this travel agency's website	Ho and Lee (2007)
Perceived value	
PEV1 the prices of the products and services available at this site (how economical the site is).	Marimon et al. (2010), Parasuraman et al. (2005)
PEV2 the overall convenience of using this site.	Bauer et al. (2006), Marimon et al. (2010), Parasuraman et al. (2005)
PEV3 the extent to which the site gives you a feeling of being in control.	Marimon et al. (2010), Parasuraman et al. (2005)
PEV4 the overall value you get from this site for your money and effort.	Bauer et al. (2006), Marimon et al. (2010), Parasuraman et al. (2005)
PEV5 the experience has satisfied my needs and wants	Cronin et al. (2000), Gallarza and Gil (2006), Zeithaml (1988)
Loyalty	
LOY1 I encourage friends and relatives to do business with the website.	Marimon et al. (2010), Parasuraman et al. (2005), Song and Zinkhan (2008)
LOY2 I say positive things about the website to other people.	Marimon et al. (2010), Parasuraman et al. (2005), Song and Zinkhan (2008)
LOY3 I will do more business with the website in the next few years.	Marimon et al. (2010), Parasuraman et al. (2005), Huang (2008), Song and Zinkhan (2008)

Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.tourman.2012.05.006.

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