

# The role of gender and education in the formation of loyalty to airline's website

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## Abstract

The objective of this study is to analyse the moderating effects of gender and education on users' loyalty to the website of an airline. We provide a tested model for greater understanding the effects of gender and education on the loyalty of experienced users in utilitarian purchasers of airline's website. The results reveal that website quality, e-satisfaction, e-trust and affective e-loyalty are antecedents of conative e-loyalty in loyalty relationships between passengers and airline websites, as well as the importance of university education in the configuration of loyalty to the website. Consumers with university education are found to be more likely to purchase through the websites of airline companies than those without. Also, according to the most recent literature, the moderating effect of gender has been found non-significant in most of the causal relationships presented in the model studied.

**Keywords:** e-loyalty, e-trust, e-satisfaction, website quality, education.

## 1 Introduction

The number of Internet users in the world doubled between 2005 and 2010, reaching 2 billion in 2010 (ITU 2010). This increase means that Internet purchases grew from 20% of the total in 2005 to 40% in 2010 in the European Union (EU27), with 21% of purchases devoted to travel and holiday accommodation (Eurostat, 2011). At an international level, one of the industries that has taken greatest advantage of this growth has been the airline industry, with online ticket sales of 26.7% of the total (Sita 2009). For the airlines, the benefits of Internet use in the purchase of e-tickets are fundamental in order to know customers better (Akehurst, 2009) and to reduce the distribution costs of the airlines industry (Iata 2010), developing policies in which online commercialisation has driven the electronic boarding card, online selection of seats and increased market share through the improvement of online performance and satisfaction

with the website (Harison and Boonstra 2008). Thus, for these firms it is fundamental to foment their customers' loyalty to their websites.

The data on gender and education show differences in Internet purchases in the countries of the European Unión (UE27). With regard to gender, 15% of men are online shoppers as against 9% of women (Eurostat, 2010). Also, according to Forrester Research (2011), women differ from men with regard to booking trips online in technology engagement, visual content, value, and social media. With regard to education, there is a substantial difference in Internet purchases among the different levels. 21% of those with a high level of education use the Internet to purchase, while the percentage descends to 12% among those with a medium educational level and to 6% among those with the lowest educational level. Furthermore, in relation to the differences of gender and education commented on, the literature has identified moderating effects of gender (Mittal and Kamakura 2001) and of education (Ou 2007) on consumer behaviour.

Previous research has shown that the antecedents of e-loyalty are e-trust, e-satisfaction and website quality (Flavian *et al.* 2006; Cyr *et al.* 2008). The moderating effects of gender and education have also been tested in models of online consumer behaviour (Sánchez *et al.* 2009; Richard *et al.* 2010). In the context of airline companies it has been demonstrated that satisfaction (An and Noh 2009; Hau and Thuy 2011), trust and perceived value are the antecedents of loyalty in the offline environment (Forgas *et al.* 2010); however, there have been no studies identifying these antecedents of loyalty to websites or the moderating effects of the gender and education of the users of airline companies' websites. Identifying the antecedents of e-loyalty to airline companies is especially important bearing in mind that 25.8% of sales are being made directly through their websites and for 2013 is expected to increase to 38% (Sita, 2011). This means that in order to grow in mature markets, such as that of airline travel, airline companies have to reach the greater part of the market to be in a better position to compete with the low cost carriers, such as Ryanair and EasyJet, who sell nearly all their tickets through their websites (Koo *et al.* 2011). In this sense, understanding the differences among consumer profiles, such as the perception of website quality and its influence on satisfaction, trust and loyalty, between men and women and between different levels of education, is fundamental for those airline companies that aim to foment consumers' positive experiences and increase loyalty to their websites (Harison and Boonstra 2008). For this reason, the aim is to identify the antecedents of loyalty to websites and the moderating effects exercised by the gender and education of users who are habitual purchasers on the websites of airlines with point to point destinations, which leads us to consider the purchase of an e-ticket as utilitarian. The utilitarian purchase is defined as giving importance to cognitive aspects (e.g. convenience, time saving, prices) (Overby and Lee 2006), and not hedonic aspects, in which consumers seek amusement to enable them to get away from routine (Kim 2002). To sum up, these are functional or tasked-oriented purchasers, those who according to Bridges and Florsheim (2008) prefer simple websites with the possibility of consulting very rapidly the products and services on offer. The article performs a literature review to allow the design of a structural model of loyalty, with a moderating effects of gender and education, which will be tested with repeat purchasers from the Iberia website, which received 350,000 visits per day and sold 650 million Euros' worth of online tickets during 2010 (Iberia 2011).

## **2 Literature review**

## 2.1 Gender and education

Sex is a biological classification that distinguishes humans between men and women (Fisher and Arnold 1994) while gender identity is a social construct that associates men and women with specific characteristics such as roles, values, attitudes and behaviours (Palan 2001). Gender differences have occupied the attention of researchers in recent decades (Rodgers and Harris 2003), through multi-channel context (Lin, 2011) and are one of the strategies for segmentation of markets (Palanisamy 2004). Sun et al. (2010) posit that gender differences exist due to biological, cognitive, behavioural and social causes. The biological causes are the basis of the cognitive, behavioural and social ones (Costa et al. 2001) with differences in memory, state of mind, levels of aggression, emotions, intellectual skills (Putrevu 2001). At the cognitive level, the differences refer to the ways of processing information, in which women are more intuitive and relationship-oriented (Putrevu 2001) and fully process all the information before taking a decision, while men are selective and less concerned with detail (Meyers-Levy 1988); at the social level, women are more influenced by reference groups (Hwang 2010).

Research into gender has revealed an imbalance in favour of men in the use of technology due to socio-economic differences (Bimber 2000), due to technical skills (Shumacher and Morahan-Martin 2001) and due to interest in novelty (Mitchell and Walsh 2004). The same occurred with online shopping, where men show more interest in Internet purchases (Rodgers and Harris 2003; Hasan 2010), spend more money (Cyr and Bonanni 2005) and feel more trusting (Rodgers and Harris 2003), though women who purchase through this medium do so more frequently (Burke 2002) and have more favourable attitudes toward the content of the website (Richard et al. 2010). The studies differ in the results of the moderating effect of gender. We find authors that identify strong moderating effects in men between trust and loyalty, and in women between trust and commitment, towards Internet services providers (Sánchez et al. 2009). Others found there were differences in the results regarding the time consumed in online purchase, e.g. Cyr and Bonanni (2005) state that it is men who consume more time. Richard et al. (2010), in a pharmaceutical context, find that women develop less website involvement. On the basis of the literature referenced, moderating effects of gender on the results, even contradictory in some cases, are observed. Thus, we will propose that the difference in gender acts as a moderating effect.

The influence of educational level on consumer behaviour (Ou, 2007) and on the beliefs and attitudes that individuals develop towards information technologies (Abdul-Gader and Kozar, 1995) has been proved. Thus, individuals with a better educational level are more exposed to technology, professionally or in their leisure time, develop a better predisposition towards it and feel more drawn to purchase through the Internet (Burke, 2002). Ranaweera *et al.* (2005) propose a theoretical model linking website quality, website satisfaction and behavioural intentions with education as one of the demographic variables moderating the relationships among the latent variables. Moderating effects of the consumer's characteristics have been found, notably education, in functional dimensions of website-quality, such as ease of use and utility (Perea et al. 2004) and in the causal relationships between e-satisfaction and e-loyalty and e-trust and e-loyalty (Lin and Ding, 2009).

## 2.2. Website quality

The literature has not generalised a definition of what the quality services of a website would be, but has analysed in different contributions the perception held by the user,

introducing into all of them dimensions relating to the quality of the website which figure in most scales. Thus we find web based services usability (Flavián et al. 2006; Barnes and Vidgen 2006), web site design (Cyr *et al.*, 2008), web quality (Ahn *et al.*, 2007) or the study by Lin (2010) which develops several constructs relating to website quality – functional needs service, information quality, relevance of information, perceived ease of use and perceived usefulness –. To measure it, scales have been developed such as WebQual (Barnes and Vidgen, 2002), Sitequal (Yoo and Donthu, 2001), e-service quality scale (E-S-QUAL) and e-recovery service quality scale (E-RecS-QUAL) (Parasuraman *et al.*, 2005). E-S-QUAL is formed by four central factors: efficiency as regards ease and speed of access and use of the site, degree of fulfilment of the site's promises about delivery and availability of the item, availability of the system with regard to the correct working of the site, and privacy. The E-RecS-QUAL is a subscale and consists of three dimensions: responsiveness, compensation and contact. Shchiglik and Barnes (2004) even developed a scale to measure the quality of airline companies' websites, called Pawqi, though it has been insufficiently tested. In the tourism and leisure sector, Ho and Lee (2007) made a scale of five dimensions – information quality, security, functionality, customer relationship and responsiveness – and Park and Gretzel (2007) identified six dimensions – fulfilment, ease of use, security, visual, responsiveness and information –. On the basis of the literature review, and taking into account that we are referring to utilitarian purchases in the terms of Babin et al. (1994) and, according to Bridges and Florsheim (2008) on the need for websites aimed at functional purchasers to concentrate on ease of navigation, information and availability of products and performance of services, we have focussed on four dimensions: ease of use, security/privacy, information and responsiveness.

Studies carried out in the online environment have shown that website quality is an antecedent of e-satisfaction, of e-trust (Sahadev and Purani, 2008) and of e-loyalty (Flavián et al. 2006); we therefore propose the following hypotheses:

- H<sub>1</sub>: The positive and direct relationship between perceived quality and satisfaction with an airline company's website is moderated by: a) gender; b) education.
- H<sub>2</sub>: The positive and direct relationship between perceived quality and trust in an airline company's website is moderated by: a) gender; b) education.
- H<sub>3</sub>: The positive and direct relationship between perceived quality and loyalty to an airline company's website is moderated by: a) gender; b) education.

### 2.3 e-satisfaction

In general, consumer satisfaction is defined as an overall evaluation (Cyr et al. 2008) of all aspects of the act of consumption in terms of the perceived discrepancies between previously created expectations and the result obtained (Oliver 1999). In the online environment, and taking into account that the authors assume the definitions used for traditional sales channels (Flavian et al. 2006), we define e-satisfaction as the difference between expectations and results in the use of a website for the purchase of products and services (Khalifa and Liu 2001). Previous studies of e-satisfaction posit that satisfaction is an antecedent of trust (Sahadev and Purani 2008), so we propose the following hypothesis:

- H<sub>4</sub>: The positive and direct relationship between satisfaction and trust in an airline company's website is moderated by: a) gender; b) education.

Satisfaction has been considered the main precursor of loyalty and there is a general consensus that e-satisfaction is an antecedent of e-loyalty (Rodgers et al. 2005), so we propose the following working hypothesis:

H<sub>5</sub>: The positive and direct relationship between satisfaction and loyalty to an airline company's website is moderated by: a) gender; b) education.

## 2.4 e-trust

We define e-trust as a consumer's conviction and belief regarding the behaviour intention of an online seller, who must react in accordance with the e-shopper's interests, be honest in the transactions and deliver the services requested (Kim et al. 2009). E-trust has been the subject of various studies (Casaló et al. 2007) and in the airline sector one study warns of the emergence of opaque practices in some low cost carriers, such as incomplete information or prices much lower than the real final price (Torres et al. 2009), which increase users' distrust of online booking of airline tickets. For this reason, trust in the website is of special importance; there must be no inaccurate information, unauthorised use of credit card information, violation of data privacy or unauthorised transactions (Gefen et al. 2003), since the lack of security, guarantees, regulation and legal protection is the principal reason for not buying through the Internet (Perea et al. 2004). Previous studies have identified as key benevolence, honesty/integrity (Moliner et al. 2007) and competence (Flavián et al. 2006) and have tested the positive relationship of e-trust with e-loyalty (Cyr et al. 2008), so we propose the following hypothesis:

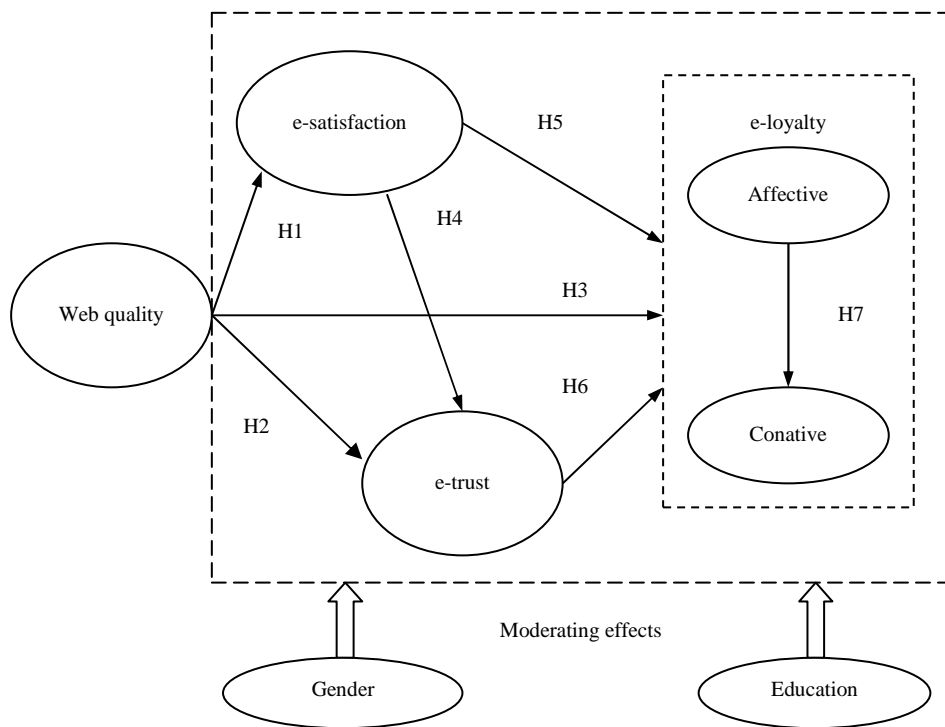
H<sub>6</sub>: The positive and direct relationship between trust and loyalty to an airline company's website is moderated by: a) gender; b) education.

## 2.5 e-loyalty

Oliver (1999) defines loyalty as the commitment involved in the transition from a favourable predisposition (affective loyalty) to a repeated purchase commitment (conative loyalty) as a prior step to the action of purchase, and establishes a scale of effects at four levels. The first, cognitive loyalty, is based on loyalty to functional elements. The second level of loyalty is the affective, based on sentiments and emotions generated by the firm or brand of the product, which is when emotional bonds are established between the customer and the firm. The third stage is conative loyalty, implying a behaviour intention related to repurchase or to recommendation. The last level is behavioural loyalty, implying the action of purchase, and is a consequence of the three previous levels. The academic literature has transferred the concept of loyalty to online sales, defining e-loyalty as the consumer's favourable attitude towards a supplier's website, the result of which is an intention to repeat purchase in the course of time. However, they treat loyalty as a single dimension and very few authors posit affective loyalty as an antecedent of conative loyalty in traditional sales channels (Forgas et al. 2010) and even less so in the online environment (Flavián et al. 2006). For this reason, we propose the following hypothesis:

H<sub>7</sub>: The positive and direct relationship between affective loyalty and conative loyalty to an airline company's website is moderated by: a) gender; b) education.

After reviewing the literature and detailing the relationships between constructs in the hypotheses with the moderating effects of gender and age, we propose the model shown in Fig. 1



**Fig. 1** The proposed structural model

### 3 Methodology

For the measurement of Website quality we have taken into account the orientations of Benckendorff (2006) who in his study of airline companies' websites posits as determinants for the consumer the basic factors (e.g. ease of use and information) and pivotal factors (e.g. responsiveness and security/privacy). On the basis of this study, we have measured the Website quality construct by reference to the contributions of the following authors: for the construction of the ease of use and security and privacy dimensions we have taken 3 and 4 items, respectively, from Casaló et al. (2007). The information dimension is based on 3 items from Ho and Lee (2007) and Li, Tan and Xie (2002). The Responsiveness dimension is based on 2 items from Ho and Lee (2007) and Parasuraman et al. (2005). To measure trust we use 4 items from Flavian et al. (2006). Finally, to measure both satisfaction (3 items) and loyalty (4 items) we followed Oliver (1999). The items of the scale were adapted to the terminology appropriate for the airlines market.

The items of the questionnaire were valued by means of a 5 point Likert scale where 1 = Totally Disagree and 5 = Totally Agree. To avoid the loss of quality implicit in Internet surveys (Heerwegh and Loosveldt 2008), the interviews were carried out face to face by interviewers especially trained for this study. To test the items of the questionnaire a pre-test with 50 personal interviews was carried out during February 2009. This allowed the wording of some of the items of the questionnaire to be improved. Then during March and April 1163 personal interviews were carried out in Barcelona airport, with passengers of the airline company Iberia who were waiting in the queue to check-in baggage at the counters of Iberia for the Barcelona-Paris (Orly) route. The population consisted of individuals aged over 18 years, travelling tourist class, who had travelled with Iberia at least three times during the previous year and had bought their tickets through the company website. This decision was taken due to the requisites of the model itself, which requires the accumulation of experiences with the same website company and the profile obtained of the sample is similar to that obtained for online shoppers in Spain by the 2009 Study of Electronic Commerce of Spanish Government (Ontsi 2010) (see table 1).

**Table 1** Sample profile

Demographic characteristics	Number	Frequency (%)
Gender		
Male	608	52.27
Female	555	47.73
Age		
18-24	109	9.37
25-34	225	19.34
35-49	462	39.72
50-64	298	25.62
Over 65	69	5.95
Education		
Non University degree	609	52.36
University degree	554	47.64
Income of households		
Below average	118	14.10
Average	489	38.10
Above average	556	47.80

The study of the data used structural equation models by means of a multi-group analysis. The models were estimated from the matrices of variances and covariances by Robust Maximum Likelihood Estimation with EQS 6.1 statistical software (Bentler 1995). We carried out a study of the dimensionality, reliability and validity of the web quality scale to ensure that we were measuring the construct that it was intended to measure. This analysis also permitted us to refine the scale, eliminating non-significant items.

In the case of web quality, the items sharing the same dimension were averaged to form composite measures (Bandalos and Finney 2001; Bou-Llusar et al. 2009). Composite measures of web quality are combinations of items to create score aggregates that are then subjected to confirmatory factor analyses (CFA) together with the rest of the scales considered in the study, in order to validate them. In CFA, the use of composite measures is useful for two reasons. First, it enables us to better meet the normal-distribution assumption of maximum likelihood estimation. Second, it results in

more parsimonious models because it reduces the number of variances and covariances to be estimated, thus increasing the stability of the parameter estimates, improving the variable-to-sample-size ratio and reducing the impact of sampling error on the estimation process (Bandalos and Finney 2001). Thus, a composite measure for each dimension of website quality was introduced as an indicator variable in the analyses conducted to assess the dimensionality, reliability and validity of the scales. Subsequently, the invariance of the instrument of measurement was verified, in order then to be able to compare the regression coefficients of each of the samples (moderating effects).

## 4 Findings

In the first phase of the analysis we focused on the study of the psychometrical properties of the website quality scale for the whole sample. With regard to the measurement of website quality, from the confirmatory factor analysis of the 12 items that finally make up the scale, we obtain four dimensions: ease of use, security and privacy, information, and responsiveness. As can be observed in table 2 the probability associated with chi-squared reaches a value higher than 0.05 (0.38224), indicating an overall good fit of the scale (Jöreskog and Sörbom 1996). The convergent validity is demonstrated in two ways. First because the factor loadings are significant and greater than 0.5 (Bagozzi and Yi 1988); and second because the average variance extracted (AVE) for each of the factors is higher than 0.5 (Fornell and Larcker 1981). The reliability of the scale is demonstrated because the composite reliability indices of each of the dimensions obtained are higher than 0.6 (Bagozzi and Yi 1988).

**Table 2** Analysis of the dimensionality, reliability and validity of the Website quality scale (Fully standardized solution)

Items	Factor	
	loading	t-Value
Ease of use (CR=0.88; AVE=0.74)		
The company's website is easy to use	0.85	fixed
It is easy to find the information I am looking for (schedules, flights)	0.86	29.40
It is easy to make the booking	0.82	26.05
Security and privacy (CR=0.86; AVE=0.66)		
I feel secure with the electronic payment system of this company	0.82	fixed
The website has the technical capacity to ensure that my data will not be intercepted by third parties	0.80	27.00
I feel safe giving the company my personal data	0.79	30.18
The website does not use my personal data without my consent	0.69	21.30
Information (CR=0.82; AVE=0.66)		
The information of the website is good, accurate and concise	0.79	fixed
The information is useful and resolves doubts	0.81	28.19
The website provides me with information adapted to my preferences	0.72	23.88
Responsiveness (CR=0.81; AVE=0.71)		
I think that in the event of problems (complaints) they respond quickly	0.84	fixed
I think that it tells me what to do in case of problems	0.81	24.32

Note: Fit of the model: Chi-squared=46.1809, df=44, P=0.38224; RMSEA=0.043; GFI= 0.98; AGFI=0.965.

CR= Composite reliability  
AVE=Average Variance Extracted



Table 3 shows the discriminant validity of the construct considered, evaluated through average variance extracted-AVE (Fornell and Larcker 1981). For this a construct must share more variance with its indicators than with other constructs of the model. This occurs when the square root of the AVE between each pair of factors is higher than the estimated correlation between those factors, as does occur here, thus ratifying its discriminant validity.

**Table 3** Discriminant validity of the scales associated with online quality

	1	2	3	4
1. Ease of use	0.86			
2. Security and privacy	0.30	0.82		
3. Information	0.33	0.29	0.81	
4. Responsiveness	0.22	0.34	0.33	0.84

Below the diagonal: estimated correlation between the factors.

Diagonal: square root of AVE.

Subsequently, following Bandalos and Finney (2001), Bou-Llusar et al. (2009), once composite measures have been formed of the items sharing the same dimension in the web quality scale, we analyze the psychometrical properties of the scales forming the model. As can be observed in table 4, the probability associated with chi-squared reaches a value higher than 0.05 (0.37064), indicating a good overall fit of the scale (Jöreskog and Sörbom 1996). Convergent validity is demonstrated on the one hand because the factor loadings are significant and higher than 0.5 (Bagozzi and Yi 1988) and, on the other hand, because the average variance extracted (AVE) for each of the factors is higher than 0.5 (Fornell and Larcker 1981). As for the reliability of the scale, the indices of composite reliability of each of the dimensions obtained are higher than 0.6 (Bagozzi and Yi 1988).

**Table 4** Analysis of the dimensionality, reliability and validity of the scales of measurement (Fully standardized solution)

Items	Factor	
	loading	t-Value
Website quality (CR=0.79; AVE=0.57)		
Ease of use	0.77	fixed
Security and privacy	0.65	20.41
Information	0.80	27.10
Responsiveness	0.57	16.23
e-Satisfaction (CR=0.88; AVE=0.74)		
The website meets my expectations	0.85	fixed
All the contacts with the company website are satisfactory	0.80	30.60
In general I am satisfied with the company's website	0.87	37.27
e-Trust (CR=0.86; AVE=0.66)		
The information offered by the website is sincere and honest	0.78	fixed
In general the website fulfils its commitments	0.81	29.15
The website takes an interest in its users' needs	0.72	22.03
The website has the technical capacity to do its job well	0.77	23.02
Affective e-loyalty (CR=0.91; AVE=0.84)		
I like the company's website	0.90	fixed
I think it is a good website	0.92	44.89

Conative e-loyalty (CR=0.86; AVE=0.77)

I shall continue to buy from the company's website	0.86	fixed
I shall continue to recommend the company's website	0.88	30.10

Note: Fit of the model: Chi-squared=64.0310, df=61, P=0.37064; RMSEA=0.018; GFI= 0.990; AGFI=0.981.

Table 5 shows the discriminant validity of the construct considered, since the square root of the AVE between each pair of factors is higher than the correlation estimated between the factors, thus ratifying its discriminant validity.

**Table 5** Discriminant validity of the scales associated with the model

	1	2	3	4	5
1. W-quality	0.75				
2. W-satisfaction	0.33	0.86			
3. W-trust	0.32	0.35	0.81		
4. Affective w-loyalty	0.35	0.40	0.37	0.82	
5. Conative w-loyalty	0.33	0.37	0.34	0.44	0.88

Below the diagonal: estimated correlation between the factors.

Diagonal: square root of AVE.

#### 4.1 Invariance test

Multi-group analysis is a procedure that has permitted us to verify the fit of the model with the data and the invariance of the factor structure in the groups studied. As Byrne (2001) recommends, this type of analysis must begin with a suitably tested fit in each of the separate samples, considering it to be the base model with which other more restrictive models will be compared.

We will focus below on the development of the invariance of the instrument of measurement. This analysis is prior to the verification of the differences in the parameters that are common to the study variables between the groups considered (Byrne 2006).

The first step refers to the model considered individually for each of the samples. As we observe in table (6), the model fits well, separately, in the two samples, males ( $\chi^2=123.374$ ; df=63) and females ( $\chi^2=158.385$ ; df=63). The second step is the simultaneous estimation of the model in both samples, to verify that the number of factors is the same, i.e. that they have the same form, and again the model also fits adequately ( $\chi^2=281.759$ ; df=126). The third and last step refers to the equality of the factor loadings in the two groups (metrical invariance). The model with all the loadings equalised worsens ( $p<0,05$ ) so we posit an alternative model with restricted factor loadings, partly equalised, as proposed by Hair et al. (2006), finally obtaining a model that does not worsen significantly.

With regard to the level of education, as we observe in table (7), the model fits well, separately, in the two samples, non-university ( $\chi^2=112.363$ ; df=63) and university ( $\chi^2=181.881$ ; df=63). In the simultaneous estimation of the model in both samples, again the model also fits adequately ( $\chi^2=294.244$ ; df=126). With regard to the equality of the

factor loadings in the two groups, when this restriction is introduced into the model we observe that the model fit is not significantly worse than that of the previous step, as deduced from the comparison between the  $\chi^2$  of steps 2 and 3 ( $\Delta\chi^2=300.558$ ;  $\Delta df=6.311$ ;  $p=0,788>0,05$ ), so the invariance of the factor loadings is ratified.

**Table 6** Invariance measurement test (Gender)

	S-B $\chi^2$	<i>df</i>	$\Delta \chi^2$	$\Delta df$	<i>p</i>	RMSEA (90%CI)	SRMR	CFI	NNFI
Individual groups:									
Males	123.374	63				0.041 (0.030-0.051)	0.018	0.99	0.99
Females	158.385	63				0.052 (0.042-0.062)	0.026	0.98	0.97
Measurement of Invariance:									
Simultaneous model	281.759	126				0.047 (0.039-0.054)	0.022	0.99	0.98
Model with restricted factor loadings (equalised)	313.100	136	31.334	10	0.00050	0.048 (0.041-0.055)	0.035	0.99	0.98
Model with restricted factor loadings (partly equalised)	193.294	140	7.204	6	0.30239	0.026 (0.016-0.034)	0.021	0.99	0.99

**Table 7** Invariance measurement test (Studies)

	S-B $\chi^2$	<i>df</i>	$\Delta \chi^2$	$\Delta df$	<i>p</i>	RMSEA (90%CI)	SRMR	CFI	NNFI
Groups / individuals:									
Non-University	112.363	63				0.052 (0.044-0.061)	0.023	0.98	0.97
University	181.881	63				0.052 (0.042-0.062)	0.026	0.98	0.97
Measurement of Invariance:									
Simultaneous model	294.244	126				0.048 (0.041-0.056)	0.022	0.99	0.98
Model with restricted factor loadings (equalised)	300.558	136	6.311	10	0.788	0.046 (0.039-0.053)	0.026	0.99	0.98

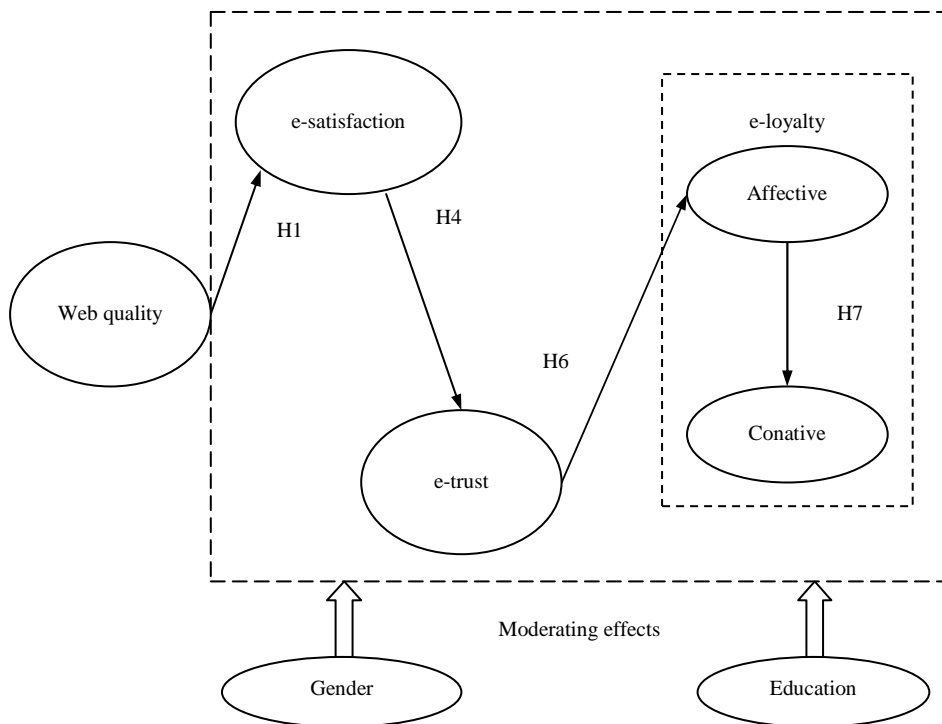
## 4.2 Causal relationships and moderating effects

After verifying the invariance of the instrument of measurement, we can incorporate the structural part into the resulting final model, to establish the causal relationships between website quality, e-satisfaction, e-trust and e-loyalty. In a first model the causal relationships were considered from the theoretical point of view (Figure 1), but the

result was that the iterative process did not converge, so the outputs obtained lacked trust. Therefore, an alternative model was proposed which considered the following sequence of relationships: website quality → e-satisfaction → e-trust → e-loyalty (Fig 2): in this case an adequate model fit was obtained, confirming hypotheses H<sub>1</sub>, H<sub>4</sub>, H<sub>6</sub>, H<sub>7</sub> and rejecting hypotheses H<sub>2</sub>, H<sub>3</sub>, H<sub>5</sub> of the original model. Furthermore we estimate the existence of significant differences in the causal relationships, to analyze the moderating effect exercised by the different groups considered. We add the restrictions that permit calculation of these significant differences between the parameters estimated, through the comparison of the  $\chi^2$  of the restricted structural model with the  $\chi^2$  of the unrestricted structural model, as shown in tables (8 and 9). All this enables us to test the hypotheses put forward.

The analysis carried out to establish the causal relationships between the variables being studied is adequate, because the probability of the chi-squared is higher than 0.05, GFI is close to unity and RMSEA is close to zero.

With regard to the moderating effects by gender differences, table 8 shows us that no significant differences occur in the relationships of website quality with e-satisfaction, e-satisfaction with e-trust, and e-trust with affective e-loyalty. However significant differences do occur between affective e-loyalty and conative e-loyalty, with a higher value in men (0.909) than in women (0.891), gender exercising a moderating effect on this causal relationship ( $\Delta\chi^2=11.83$ ;  $p=0.0005<0.05$ ).



**Fig. 2** The structural model finally analyzed

With regard to moderating effects due to differences in the educational level, table 9 shows significant differences in all the relationships, with greater influence in the university-educated sample. This is so in the relationship between website quality and e-satisfaction, with a higher value in the university-educated (0.897) than in the non-university-educated (0.873), identifying the moderating effect ( $\Delta\chi^2=51.8$ ;  $p=0.000<0.05$ ). It is also so in the relationship between e-satisfaction and e-trust, with

higher values for the university-educated (0.999) than for the non-university-educated (0.987), confirming the moderating effect ( $\Delta\chi^2=7.8$ ;  $p=0.005<0.05$ ). The significant differences are confirmed again in the relationship between e-trust and affective e-loyalty, a greater influence being identified in the university group (0.940) than in the non-university group (0.928), confirming the moderating effect of education ( $\Delta\chi^2=5.2$ ;  $p=0.023<0.05$ ). Finally, significant differences also occur between affective e-loyalty and conative e-loyalty, with a higher value among the university-educated (0.943) than among the non-university-educated (0.923), education again exercising a moderating effect ( $\Delta\chi^2=44.0$ ;  $p=0.000<0.05$ ).

**Table 8** Relationships obtained (Gender)

		Men		Women		$\Delta\chi^2$	$p$
		Parameter	$t$	Parameter	$t$		
H <sub>1a</sub>	W-Quality → E-Satisfaction	0.916	3.3	0.915	12.1	0.002	0.9640
H <sub>4a</sub>	E-Satisfaction → E-trust	0.990	21.7	0.990	21.7	0.001	0.9750
H <sub>6a</sub>	E-Trust → Affective e-loyalty	0.933	20.0	0.933	20.0	0.001	0.9750
H <sub>7a</sub>	Affec. e-loyalty → Con. e-loyalty	0.909	19.4	0.891	19.4	11.83	0.0005

MODEL FIT  
Chi-cuadrado=135,5195; df=145; P=0,70193; RMSEA=0,037; GFI=0,972; AGFI=0.954.

**Table 9** Relationships obtained (Education)

		Non-University		University		$\Delta\chi^2$	$p$
		Parameter	$t$	Parameter	$t$		
H <sub>1b</sub>	W-Quality → E-Satisfaction	0.873	10.3	0.897	3.1	51.8	0.000
H <sub>4b</sub>	E-Satisfaction → E-trust	0.987	22.5	0.999	20.7	7.8	0.005
H <sub>6b</sub>	E-Trust → Affective e-loyalty	0.928	20.9	0.940	20.4	5.2	0.023
H <sub>7b</sub>	Affec. e-loyalty → Con. e-loyalty	0.923	23.8	0.943	21.2	44.0	0.000

MODEL FIT  
Chi-squared=128,7656; df=146; P=0,84419; RMSEA=0,040; GFI=0,969; AGFI=0.948.

## 5 Discussion

The study was carried out on the basis of a theoretical model with causal relationships identified by the literature among website quality, e-satisfaction, e-trust, affective e-loyalty and conative e-loyalty, and subsequently adjusted so that the iterative process would converge, with the result that in the new model emerging only hypothesis H<sub>1</sub>, H<sub>4</sub>, H<sub>6</sub>, and H<sub>7</sub> were maintained. Consequently, the results of the SEM provided support for a proposed structural model to examine the hypotheses. The model was tested to verify the hypotheses relating to gender and to education in a utilitarian purchase with experienced customers, and the results (tables 8 and 9) confirm that to achieve conative e-loyalty, website users must feel affect towards the website (affective e-loyalty). Website users also need to trust (e-trust), be satisfied (e-satisfaction) and perceive the quality of the website (website quality) (Flavián *et al.* 2006).

The present study contributes to the existing literature by providing empirical support for the research into e-loyalty to an airline's website. Results from this study suggest that e-satisfaction is a strong determinant of e-trust, and e-trust is the antecedent of

loyalty to the website. Furthermore, the same causal relationship occurs between affective loyalty and conative loyalty as in the off-line model, developed by Forgas *et al* (2010), who deal with perception of the service, satisfaction, trust and loyalty of the passenger towards the airline companies. This means that for the intention to revisit, purchase and recommend the website to exist, affect towards it has to be produced, in the same way as in order to fly again with the same airline company, affect towards it has first to be produced.

The following contributions refer to the moderating effects of gender and educational level. With regard to the hypotheses on the moderating effect of gender on loyalty to the airline website, table 8 indicates that only  $H_{7a}$  is accepted, and  $H_{1a}$ ,  $H_{4a}$  and  $H_{6a}$  are rejected, so it cannot be affirmed, unlike in previous studies (Sánchez *et al.* 2009; Richard *et al.* 2010), that gender acts as a moderator. For this reason, if we take into account that perceptions change with the acquisition of experience in technology (Luam and Lin 2005), we can affirm that, as shown by the results, gender differences do not condition online purchases and tend to disappear with greater experience of use (Hernández *et al.* 2011), particularly in a context like that of the European Unión, where this study was undertaken, and where regular use of the Internet has become increasingly more balanced between men and women: 68% of men and 62% of women (Eurostat 2011). Consequently, and contrary to other research into gender differences in online consumer behaviour (Sánchez *et al.* 2009, Cyr and Bonanni 2005, Richard *et al.* 2010), the results of this study suggest that in utilitarian Internet purchases, such as that of an e-ticket to travel from one airport to another, there is no influence of gender on the relationships of website quality with e-satisfaction, e-satisfaction with e-trust and e-trust with affective loyalty. It is our understanding that the significant difference, stronger in men than in women, between affective loyalty and conative loyalty, is not a sufficient indicator to establish that the gender differences are maintained.

Another of the contributions of the study is the significant differences obtained in the model's causal relationships between university-educated and non-university-educated passengers in a utilitarian purchase via the Internet. In this case and in relation to the hypotheses on the moderating effect of educational level on airline website loyalty, in table 9 we can observe that hypotheses  $H_{1b}$ ,  $H_{4b}$ ,  $H_{6b}$ , and  $H_{7b}$  are fulfilled, because all the relationships are significant, so the level of education does moderate loyalty to airline company websites. Users with university studies show greater loyalty to the website, confirming other findings of the academic literature in relation to education's moderating effect on the intention to shop online (Perea *et al.* 2004) and on loyalty to an Internet Service Provider (Lin and Ding 2009).

## 6 Conclusions

The aim of this study is to identify the moderating effects of gender and education on the process of website loyalty formation in utilitarian purchase of airlines. The results show that the process leading to conative e-loyalty in the context of experienced purchasers of e-tickets passes through e-quality, e-satisfaction, e-trust and affective e-loyalty. In this process, the importance of satisfaction as a consequence of e-quality and as an antecedent of e-trust has been highlighted. To improve e-satisfaction, airline management needs to improve the passengers' expectations of the website, on the basis of improving the quality dimensions of the website.

From the theoretical viewpoint, there are few studies that analyse the moderating effects of gender and of education on online utilitarian purchasers from websites of brick and

mortar firms. In relation to airlines, there is no study analyzing the moderating effects of gender and education on e-loyalty to the airline website. For this reason, this study provides a better understanding of the effects of education on the loyalty of experienced users to an airline website. Though experts in purchasing through the website, significant differences occur throughout the sequence of positive and direct relationships - website quality→e-satisfaction→e-trust→affective e-loyalty→conative e-loyalty - with stronger relationships in the group of university-educated users. It is also confirmed that gender has ceased to be a moderating variable in online utilitarian purchases as individuals acquire experience. This contribution offers new results to the literature on gender differences in online consumer behaviour. On the one hand, the results are different from those of previous studies that had found gender differences. On the other hand, it confirms the sparse recent literature on e-shoppers, in general, in which gender differences are not identified either.

As practices implications for airlines, this study makes evident the need to improve the ease of use, security and privacy, information, and responsiveness of the website, identifying the weaknesses perceived by non-university users. They should also increase the trust non-university users with strategies that: 1) strengthen the rules and principles of exchange that these users consider acceptable; 2) improve procedures that increase the level of welfare, so they do not perceive opportunistic behaviours; 3) enhance the technical characteristics of the website to respond to the needs of users with a lower level of education, since this is fundamental for improving affective e-loyalty, which is the step prior to conative e-loyalty. From a segmentation perspective, they could use the more educated group as consumer motivators for their website, their services and their brand.

## **7 Limitations and future research**

Any study has limitations and the main one here is that the sample does not consider the passengers of the other two airline companies operating the same route, one traditional, Air France, and one low-cost, Vueling; nor other companies that operate on other routes. It would be fruitful, for future studies, to expand the sample in this direction. Also the results were obtained in a specific industry, that of airlines, and one must be cautious in generalizing them to other sectors. Future research should also incorporate into the model verified in this study variables like the price of the ticket and switching costs, to be able to observe the influence they exercise on loyalty to the airlines' websites.

Lastly, it should be mentioned that loyalty is a continuous variable that receives feedback from new transactions. This paper has tested the model with cross-sectional data, but the process itself and the great dynamism of the sector studied lead us to propose, in order to enrich the study, the testing of the hypotheses in time series.

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