Modelling Consumer Trust in Internet Shopping based on the Standard Learning Hierarchy: A Structural Approach

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Abstract

This study aims to demonstrate that consumer trust in the Internet as a shopping medium, inasmuch as it is a concept related to using the Internet for specific commercial purposes, is affected by the overall opinion that consumers have about this medium in general. Furthermore, this opinion is determined by the consumer’s beliefs regarding the Internet. Thus, this study defends and follows the standard learning hierarchy paradigm to model such a sequence of effects.

Based on a critical literature review, the model’s structure is first discussed and justified and then each relation contained in the model is theoretically treated. The conceptualization and reasoning of two main elements of the model –i.e. the attitude towards the Internet and trust in Internet shopping– are especially interesting.

The results provide evidence that supports the proposed sequence of effects. In this sense, regarding the key relation, the attitude towards the Internet exerts a strong influence in determining trust in Internet shopping.

Finally, the main findings are highlighted and discussed, suggesting some academic and managerial implications, as well as guidelines for future research.

KEYWORDS: online consumer behaviour, beliefs, attitude, trust in Internet shopping, CAB paradigm.

Introduction

The Internet, and, more specifically, the Web, has provided a brand new space in which exchange relationships can be developed in computer-mediated environments that allow two-way interactive communication both between the parties themselves and between each of the parties and the medium itself (Hoffman & Novak, 1996). This technology gives the consumer an unprecedented transcendental role in the final result of the exchange relationship, since he is actively involved in the firm’s value creation process (Hoffman & Novak, 1996; Weiber & Kollmann, 1998). For this reason, firms must be conscious of the potential of this electronic market, adapting their marketing strategies to this new communications network. Along these lines, expanding Weiber & Kollmann’s (1998) reasoning, the potential the Web has for improving value to the consumer will not be materialised by firms if thought patterns as regards applying the different marketing tools are not reviewed.

The above thoughts emphasize the need to develop a specific theoretical framework to better understand consumer behaviour in Internet-based electronic markets. That is why
different authors have highlighted the importance of studying certain Internet-related factors –e.g., prior experience in using the Internet, beliefs and general attitudes towards Internet or attitudes towards various aspects of a specific retailer’s web page– and their effects on Web-based consumer decisions (e.g.: Balabanis & Vassileiou, 1999; Helander & Khalid, 2000; Hoffman, Kalsbeek & Novak, 1996; Hoffman, Novak & Peralta, 1999a; Liao & Cheung, 2001; Maignan & Lukas, 1997; Martínez, 2002; Novak, Hoffman & Yung 2000).

Specifically, we theoretically and empirically analyze which are the main antecedents that can help marketing academics and practitioners to understand consumers’ willingness to engage in shopping on the Internet. With this aim, we adapt the hierarchy-of-effects model to explain how consumer beliefs and attitudes toward the Internet as a communication medium can be plausible determinants of trusting in this medium to develop electronic exchanges and, more specifically, commercial transactions.

The contribution of this paper is twofold. First, we propose a consumer trust in Internet shopping model based on the standard learning hierarchy paradigm. With this approach, we propose that, before developing online-buying-related responses –in this case, trust in shopping through the Internet–, consumers should have previously formed an attitude towards this communication medium; i.e. the use of the Internet for commercial purposes only represents one of its possible uses. Likewise, the formation of this overall opinion towards the Internet should be preceded by an evaluation of a set of attributes which define it. Second, we find significant empirical evidences to support this theoretical sequence of effects. Thus, we discuss several academic and managerial implications derived from these results. In particular, we highlight the strong relation found between consumer attitudes toward the Internet as a communications medium –i.e. in general– and their trust in Internet as a shopping medium. In fact, to the best of our knowledge, this is the first study which theoretically relates and empirically supports both concepts.

Therefore, we focus on analyzing certain factors that influence consumer behaviour on the Internet from a generic or overall perspective; that is to say, not considering those
particular issues affecting said behaviour on a certain web site, but contemplating such consumer behaviour on the Internet as a whole. We realise that the results derived from those studies centred on analyzing the factors which influence consumers on a particular web site are necessary for an online firm to direct its efforts towards both improving their understanding and better developing its positioning to its customers. However, we cannot ignore the fact that such web sites are part of a superior electronic infrastructure, the Web. This is the main reason why our study presents this global orientation.

To achieve the above contributions, we first discuss why this hierarchy-of-effects is appropriate. Second, based on an extensive literature review, we suggest a set of salient beliefs regarding the Internet. Furthermore, we hypothesize the expected relations between these beliefs and the consumers’ overall opinion of the Internet. Third, we present and define the concept of attitude towards the Internet. Next, we discuss the controversial concept of trust; in this case, focused on Internet shopping, as well as the expected relation between attitude towards the Internet and trust in Internet shopping. In an empirical study, we gather several measures by which the concepts of the model have been made operative. We estimate the causal model by means of structural equation modelling (LISREL). Finally, we conclude with a series of academic and managerial implications.

**An online trust model based on the standard learning hierarchy**

Our model hopes to extend the previous literature by concentrating on the study of certain internal determinants – i.e.: beliefs, attitude and trust – of consumer behaviour on the Internet (real or potential) and on the relationship of consumers with the phenomenon of Internet-based e-shopping.

In this sense, based on those previous ideas from the consumer’s literature on the Internet already cited, in principle, knowledge regarding consumer beliefs and attitudes towards the Internet is essential for understanding consumer behaviour in this medium.
This is mainly due to the fact that it is expected that users’ attitudes as regard certain aspects of the Internet greatly determine their cyber-behaviour (Hoffman et al., 1999a).

With this aim, our model mainly concentrates on the users’ general attitude towards the Internet and on analysing its influence on the trust consumers have in using it as a way to shop. This helps to expand upon the numerous previous studies that look at analysing user attitudes towards a firm’s web page and its effects on the trust consumers might have in said web site and their purchase intentions (see, e.g., Chen & Wells, 1999; Cheskin Research and Studio Archetype/Sapient, 1999; Jarvenpaa et al., 1999; Lee & Turban, 2001).

**Previous considerations about the model’s structure**

The model we propose basically aims to demonstrate the existing relations between what consumers think about the Internet as a communications medium and their trust in using it as a shopping medium. With this purpose, we firstly use the classical attitudes model structure compounded by beliefs or cognitions (C), affect (A) and behaviour (B) –i.e. the ABC model of attitudes–, usually seen as components of attitude which act as determinants of its formation (Schiffman & Kanuk, 1997), to establish the three sections of our model. Secondly, it is necessary to define the order of influence of such components, which implies talking about the attitude hierarchies. Taking into account the three main types of existing hierarchies or sequences for attitude formation –i.e. the standard learning hierarchy (CAB), the low-involvement hierarchy (CBA) and, finally, the experiential hierarchy (ABC) (Solomon, 1997)–, we have followed the *standard learning hierarchy* also called the CAB –i.e. beliefs→affect→behaviour– paradigm (Holbrook, 1986). The basis of this paradigm is that the consumer initially forms beliefs about certain objects by accumulating knowledge with regard to several attributes which define said object. Then, once these beliefs are developed, feelings –i.e. affective responses– are formed. Finally, the consumer’s behaviour-related responses are based on those affective responses (Solomon, Bermossy & Askegaard, 2002).

Nonetheless, considering the above poses a question: why have we followed this hierarchy rather than any other? To be honest, we think that it would have been
plausible to opt for another paradigm. Whatever the case, this depends on the aim of the model. For instance, our aim could have been to explain impulsive buying or, more generally, the experiential aspects of consumption on the Internet, in which case the hierarchy posed by the experiential paradigm could be appropriate. On the contrary, we defend a more reasonable or extended sequence which fits in better with consumers’ buying-behaviour patterns on the Internet. In this way, if we consider that online shopping is still seen by consumers as a risky act, they will not trust in this shopping medium until they reduce their uncertainty levels. This necessarily implies a prior knowledge of this medium, so they first need to have formed an opinion about it. Moreover, online shoppers usually engage in high-involvement behaviours (Wolfinbarger & Gilly, 2001), and so to explain this kind of decision-making it is advisable to use a high-involvement hierarchy; i.e. the CAB paradigm.

Consequently, we maintain that a consumer will develop a series of opinions or beliefs (cognition) regarding the various attributes characterizing the Internet that will determine, at least in part, his overall opinion toward the medium (affect). Furthermore, this opinion will determine his valuation in terms of certain behavioural aspects related to its object. More specifically, it is to be expected that this general feeling influences consumer trust in the Internet as a way to shop.

Research hypotheses

Beliefs regarding the Internet

We have taken into account a set of salient cognitive factors or attributes, whose perceptions are determinants for the general opinion that the user has of the Internet as a media vehicle. Based on the variables dealt with by various other studies made (see Crawford & Shern, 1998; Farquhar, Gordon & Balfour, 1998; Helander & Khalid, 2000; Lohse & Spiller, 1999; Montoya-Weiss, Voss & Grewal, 2003; Zeithaml, Parasuraman & Malhotra, 2002), which concentrate on the valuation of certain aspects of a particular web-site, in this case adapted and broadened for the generic case of the Internet, we have considered the following: (1) web design aspects; (2) interaction speed/time of response; (3) social benefits; and (4) privacy.
In any case, although these attributes are important in order for the consumers to form their attitude towards the medium, these are just a selection; that is, we could have considered a wider set of beliefs. Notwithstanding, we think that this fact would not significantly influence one of our main research purposes; i.e. to test the plausibility of the hierarchy of effects proposed. In the last section of the paper we will discuss this question further.

Web design aspects

We define this belief as the consumer’s opinion about the availability, design attractiveness and structure of information on the Web, and especially as regards the websites. Along these lines, Luna, Peracchio & de Juan (2002) suggest that attention should be paid to this issue, since content and structure of information on websites –e.g.: technical capabilities, aesthetic aspects, usability, etc.– are fundamental to determine the degree to which an individual (consumer/visitor) feels comfortable when navigating. Furthermore, based on, and expanding, Montoya-Weiss, Voss & Grewal’s (2003) reflection, which focuses on analysing the influence of the consumer’s design assessment toward certain websites in subsequent evaluations related to a particular online channel, it is expected that consumers will tend to have a higher overall evaluation of the Internet inasmuch as they perceive those issues concerning design on the Web much better.

H1: There is a positive relationship between the consumer’s perceptions of Web design aspects and his overall attitude towards the Internet

Interaction speed or time of response

This belief has been defined as the Internet’s capacity in general, and, more particularly, of different web-sites, to give a response when required, in a similar way to the response that an individual may receive when holding a conversation with another (Shih 1998). It is important to note that we have only considered this aspect of interactivity, since Novak, Hoffman & Yung (2000) empirically support that speed of interaction is the most relevant dimension, being the only one able to both significantly explain the
variance of interactivity and offer acceptable alphas in their study, among all the three taken into account in Steuer’s (1992) three part conceptualization of interactivity; i.e.: (1) speed, (2) mapping and (3) range of interaction. That is why we follow these authors’ findings, considering only that aspect of interactivity.

Furthermore, Lin and Lu (2000) note that response time is the most important factor in the development of the user’s beliefs regarding a specific web-site, such that any deficiency in the response speed in the interactive process will have a negative effect on the user’s perceptions of a given web-site. If we broaden this relation to the Internet (the Web), we can generally assume that consumer perception with regard to the medium’s time of response will have a certain influence on the rest of the valuations and opinions about other aspects of the network (the Net), especially on the overall evaluation toward the Internet as a communications medium.

H2: There is a positive relation between the consumer’s perceptions about interaction speed/time of response and his overall attitude toward the Internet.

Social benefits

In spite of the number of years the Internet has been among us, there is still an intense debate going on with regard to its potential benefits for society (Peterson & Merino 2003). In this respect, Baruch (2001) comments that, even though the majority of the effects produced by Information and Communication Technologies in general, and by the Internet in particular, are positive for society, their excessive use encourages autistic behaviour in individuals. Consequently, there is diversity of opinion over this question. However, we feel that the Internet has become not only a medium which allows a strong improvement in the results of commercial exchange relationships developed by individuals in their role as consumers, but it also implies a great potential for improving their social exchanges with members of a society increasingly less conditioned by space (Watson et al. 2002).

In any case, clearly this belief must have implications for consumers’ overall evaluation of the Internet. However, while there are several contributions which theoretically study this question, to our knowledge there is no consumer model that includes it or, even
more importantly, that analyses its influence in determining the consumer’s attitude towards this medium.

Thus, we suggest the following definition for social benefits: the consumer’s opinion about the Internet’s contribution to the well-being of the whole society. Consequently, it is quite reasonable to pose that better opinions concerning the utility of the Internet for society will produce better overall evaluations –i.e. affective responses– of this medium.

H3: There is a positive relationship between the consumer’s perceptions of social benefits and his overall attitude towards the Internet.

Privacy

We define this belief as the consumer’s opinion regarding the respect of personal information confidentiality and the maintaining of his intimacy by the various agents, fundamentally companies, with which he interacts in Internet applications.

Recent studies have shown the importance that users give to this factor when they consider developing exchanges online and, more precisely, commercial transactions. These are thought to be one of the inhibiting factors, together with security-related aspects, to the massive take-off of B2C Internet-based electronic commerce (Gunasekaran & Love 1999; Havick 1999; Head & Yuan, 2001; Hoffman & Novak 1997; Hoffman, Novak & Peralta 1999a, 1999b; OECD 1997; Rangaswamy & Gupta 1999; Smith, Bailey & Brynjolfsson 1999; Udo 2001).

Certainly, considering the growing relevance that all matters related with consumer privacy has taken on since the 1990s, the Internet has been the most criticized medium with regard to its potential to invade a consumer’s intimacy (Bartel & Grubbs 2000; Richards 1997; Rust, Kannan & Peng 2002). In this sense, Caudill & Murphy (2000) note that, though consumers feel protected by anonymity when buying on physical markets, the situation diametrically changes when they conduct their transactions electronically over the Internet.
As the use of the Internet increases, so will consumer concern about how online firms collect and use their personal information. This is due to the fact that, as Houston (2001) discusses, they firstly need to feel safe to be able to develop trust toward certain online businesses. In this respect, as is seen by looking at our conceptual model, we have opted for establishing a direct relation between this belief and attitude towards the Internet, thus considering an indirect relation between privacy and trust in Internet shopping. This is mainly due, firstly, to the hierarchical paradigm that we follow to establish the structure of the effects. Secondly, this belief concerns the Internet medium in general, and so is not directly related to a specific action that consumers can carry out through this medium; i.e. shopping.

H4: There is a negative relationship between the consumer’s perceptions of invasion of his privacy when navigating and his overall attitude towards the Internet.

Attitude towards the Internet

The concept of attitude has been used so often in consumer studies that it can be considered as a key element in most consumer models. One of the most popular and traditional definitions of attitude is that of Fishbein & Ajzen (1975, p. 6): “a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object”. As it can be seen, there is a clear emphasis on the affective dimension of attitude in this definition. Other attitude definitions that emphasize the affective dimension can be found, for example, in Ajzen & Fishbein (1980) or Oskamp (1991). In any case, these are general definitions, requiring a more specific approach to define attitude towards the Internet. In this way, we would previously like to point out that, in keeping with both the spirit of Fishbein & Ajzen’s definition and later attitude definitions, whose specific objective was more related with the Internet –i.e. computers–, this same academic trend has been followed in our study. For instance, Igbaria & Chakrabarti (1990) relate attitude with “affective reactions of individuals toward […] the use of computers in general”. Moreover, Whitley (1997) developed a meta-analysis in which numerous computer attitude studies were compared. One of his main conclusions was that the applied dimension for computer attitude was mainly the affective; i.e. emotional responses towards the use of computers.
Therefore, considering the above, we suggest two definitions for \textit{attitude towards the Internet}, the essence of which is basically the same. Firstly, following the spirit of Fishbein & Ajzen, it can be defined as a predisposition to respond in a consistently favourable or unfavourable manner to the Internet. Secondly, a more free definition is the overall opinion or evaluation that the consumer has of this communications medium.

We firmly believe that considering this variable is necessary in any study which endeavours to understand consumer behaviour in the marketplace, because, as we have already mentioned, said attitudes will be determinants of the user’s cyber-behaviour.

Furthermore, we can develop an analogous reasoning to that other carried out by those studies focused on the advertising hierarchy-of-effects; i.e. the individual’s attitude towards advertising determines his attitude towards a specific advertisement, which, in turn, influences his brand attitude (e.g.: Brown & Stayman 1992; Durvasula et al. 1993; Mehta 2000). Hence, the consumer’s attitude towards the Internet can be considered as an antecedent of his attitude towards both his attitude towards a certain website and a specific online brand (see Bruner & Gordon 2000; Chen & Wells 1999; Stevenson, Bruner & Kumar 2000). In this way, we feel that researchers who are more interested in modelling consumers’ evaluations towards a particular online brand should be aware, before analyzing other variables more directly related with a virtual brand, that a previous treatment of the concept considered here is important in order to better understand those cognitive and affective responses of certain consumers towards said online brand.

\textit{Trust in Internet shopping}

Ever since the Internet was adopted for commercial use, several studies have highlighted that, due to the special characteristics distinguishing the transactions in digital markets from those traditionally carried out in physical markets, there is a need for online companies to generate trust and brand equity so that consumers may develop purchasing processes on the websites (e.g., Barwise, Elberse & Hammond 2000; Butler & Peppard 1998; Cheskin Research and Studio Archetype/Sapient 1999; Reynolds
2000; Rowley 2000). Thus, Hoffman, Novak & Peralta (1999b) state that the lack of consumer trust in this medium is one of the principal inhibiting factors of electronic transactions. Moreover, it is expected that online shoppers will not get involved in a transaction on the Internet unless the perceived level of trust exceeds the minimum level acceptable to the shopper (e.g., Castelfranchi & Tan 2002; Tan & Thoen, 2000); i.e. the trust-level threshold beyond which the consumer is determined to make an online purchase.

But, first of all, what do we understand by trust? The trust concept has traditionally been difficult to define. In fact, McKnight, Choudhury & Kacmar (2002, p. 335) note that researchers have named the state of trust definitions as a “confusing potpourri”, a “conceptual confusion”, and even a “conceptual morass”. In general terms, although consumer trust is a multifaceted or multidimensional construct, we can quote Sirdeshmukh, Singh & Sabol (2002, p. 17) to simply define it as “the expectations held by the consumer that the service provider [in general, the object of trust] is dependable and can be relied on to deliver on its promises”.

To refer more specifically to the Internet domain, what do we understand by trust in Internet shopping? There are several related definitions that can be analyzed. For instance, Urban, Sultan & Qualls (2000) define the trust in the medium to engage in purchases as the opinion held regarding security, clarity in the transactions carried out with companies on the Internet, and in their commitment to respect what has been agreed with the consumers. Secondly, Lee & Turban (2001) note that trust in shopping through the Internet is a bidimensional construct formed by (1) trust in the online businesses and (2) trust in the Internet as a purchasing medium. Lastly, we would like to highlight the Web trust model posed by McKnight, Choudhury & Kacmar (2002). This model is based on the interdisciplinary model of high-level trust concepts defended by McKnight & Chervany (2001), and proposes a multidisciplinary and multidimensional model of trust in e-commerce. In this sense, this model includes four high-level constructs: (1) disposition to trust; (2) institution-based trust, i.e. perceptions of the Internet shopping environment; (3) trusting beliefs, i.e. perceptions of certain Web vendor attributes; and (4) trusting intentions, i.e. intention to engage in trust-related behaviours with a specific Web vendor. Thus, the essence of trust in Internet shopping is mainly related to the second construct of McKnight et al. (2002).
In sum, we define *trust in Internet shopping* as the consumer’s perceptions regarding the credibility or reliability of shopping over the Internet (the Web).

Therefore, based on the above, we believe that consumers’ overall evaluation towards the Internet communications medium, inasmuch as it gathers the opinion toward this public electronic infrastructure which supports their online commercial exchanges, should have an influence on trust in Internet shopping. This, in turn, will determine a more specific level of trust, such as trust in certain Web vendors and, finally, shopping through said vendors. In any case, these latter relations are not studied in this paper.

H5: the more positive the consumer’s attitude towards the Internet, the higher the consumer’s willingness to trust in Internet shopping.

Finally, in Figure 1 we graphically summarize the set of hypotheses which conforms our conceptual model.

**Figure 1. Online trust model based on the standard learning hierarchy**

![Graphical representation of the online trust model](image)

**Research methodology**

**Survey (constructs) measures**
We have used several measuring instruments in the questionnaire\textsuperscript{1} to assess the set of variables contained in the model. These have varied depending on the constructs they were assessing (see figure 2 the measurement model; i.e.: the associations between each construct and its measurement scales).

Thus, in order to measure the fundamental behavioural factors of the Internet considered here, we have used Likert-type scales (seven points – 1: Strongly Disagree – 7: Strongly Agree), to assess the level of agreement or disagreement in relation to various proposed statements for each of them. In this sense, the scales used for measuring such latent variables have varied depending on the number of items considered for each one. So, while some constructs have been measured using just one item –i.e.: social benefits and invasion of privacy–, there is a set of those which were measured using multi-item scales.

In this way, we have developed a three-item scale for “Web design aspects” based on both the literature review realized and a series of discussion groups carried out with Internet users during the questionnaire construction phase, since we were unable to find scales for this concept in previous studies.

Moreover, the three-item scale used for measuring the concept “Interaction speed/time of response” (two of them formulated in a reverse manner) was built based on the Novak et al. (2000) measurement scale for such a concept.

We used differential semantic scales (seven points) to evaluate the user’s overall opinion about the Internet. Due to the affective nature of this variable, we have opted for a three-item scale with similar pairs of bipolar adjectives; i.e. (1) negative/positive; (2) I do not like it/I like it; and (3) unfavourable/favourable.

Finally, we developed a three-item “trust in Internet shopping” scale based on items used by Lee & Turban (2001) and Cheskin Research and Studio Archetype/Sapient (1999).

\textbf{Figure 2: Measurement model}
Survey development

Once the draft questionnaire had been drawn up, and the recommendations normally proposed by specialists in marketing research (e.g., Burns & Bush 2000; Malhotra 1997; Zikmund 1998) taken into account, a pre-test was carried out on a sample of approximately 20 people, all of whom were Internet users. The procedures or techniques used in the pre-test were protocol analysis and an information summary. Consequently, after compulsory modifications, a second and final pre-test was carried out.

Sample and sampling procedure

The study sample (n = 529) was obtained using a non-probability sampling procedure (convenience sample) of Spanish students at the Universidad de Granada who were frequent Internet users. The information was collected by means of a self-administered survey with personal supervision by a technical assistant.

Although the composition of the sample limits the generalization of the results (see Peterson 2001), due to the fact that university Internet users only represent a part of the population of users, Lin and Lu (2000) maintain that the results achieved in these types of samples can be significant and approximate if we consider: (1) the important representational quota of this group in the user population, and (2) the fact that they will ultimately be the most active users and consumers in the marketplace in the near future.
Furthermore, results achieved in these types of samples can be significant and valid to test causal relations (Kardes, 1996). Last, but not least, we feel that this kind of sample allows us to control extraneous and possibly influencing factors that could arise when using a more heterogeneous composition. In any case, we will briefly discuss this question in the last section of the paper.

Results

Analysis of the measurement scales’ reliability.

Previously taking into account that issues related to the validity of multi-item scales used for measuring several constructs existing in our model were theoretically treated, the results show correct levels of reliability for such measures; SPSS software was used in the reliability assessment. Furthermore, the three-item approach towards the Internet scale has a reasonably acceptable alpha coefficient of .90 (see Peterson 1994). On the other hand, the measurement scales for trust in Internet shopping (alpha coefficient of .67) and web design aspects (alpha coefficient of .65) present smaller internal reliability coefficients, though they are still acceptable levels.

Model estimation

Data was analyzed using the LISREL 8.5 software. The method of estimation was that of Maximum Likelihood, giving greater precision (Rummel, 1970). As the results in table 1 show, the goodness-of-fit indices most frequently used —i.e.: overall fit indices (Chi square; Goodnes-of-Fit Index, GFI; Root Mean Square Error of Approximation, RMSEA), incremental fit indices (Adjusted Goodnes-of-Fit Index, AGFI; Normed Fit Index, NFI) and parsimonious fit indices (Parsimonious Goodness-of-Fit Index, PGFI; Akaike Information Criterion, AIC; Critical N)— are quite satisfactory, with the exception of the chi-square test which is affected by the size of the sample.

<table>
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<tr>
<th>Table 1. Fit statistics</th>
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<tr>
<td>Overall fit indices</td>
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<tr>
<td>Chi-square of Satorra Bentler (d.f.; p-value)</td>
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<tr>
<td>GFI</td>
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<td>RMSEA</td>
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<td>Incremental fit indices</td>
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<td>AGFI</td>
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</tbody>
</table>
NFI | 0.95  
---|---  
Parsimonious fit indices  
PGFI | 0.67  
AIC | 172.06  
CRITICAL N | 329.97  

In table 2 we present the main results related to the measurement model; i.e. standardized loadings, composite reliability and extracted variance. As we can see, the reliability indicators of the measurement model show values for the composite construct reliability index of around .70 or above, as well as an extracted variance of around .50 or above. They are, therefore, quite acceptable.

<table>
<thead>
<tr>
<th>Web design aspects</th>
<th>Speed of interaction</th>
<th>Social benefits</th>
<th>Invasion of privacy</th>
<th>Attitude towards the Internet</th>
<th>Trust in Internet shopping</th>
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<tbody>
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<td>WDA1</td>
<td>0.62</td>
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<td>WDA3</td>
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<td>A2</td>
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<td>0.83</td>
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<tr>
<td>Cronbach’s alpha</td>
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<td>0.71</td>
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<tr>
<td>Composite reliability</td>
<td>0.67</td>
<td>0.83</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Extracted Variance</td>
<td>0.41</td>
<td>0.62</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

Structural model: hypothesized path testing

In general, the results support the sequence of effects theoretically proposed by the proposed sequence of effects – i.e.: Beliefs _ Attitudes _ Trust (see figure 3 and table 3).
More specifically, it can be firstly seen how the consumer’s perception of Web design aspects has a strong, positive and direct effect on his overall opinion towards the Internet (beta coefficient of .38, p-value < .001). Thus, hypothesis 1 is supported.

Secondly, the role of the interaction speed/time of response perceptions in the formation of attitude toward the Internet does not have such a strong influence as the previous dimension (beta coefficient of .11), but it can be considered as significant (p-value < .05). Thus, hypothesis 2 is supported.

Thirdly, the consumer’s belief related to social benefits shows a relevant and positive direct effect on attitude toward the Internet (beta coefficient of .36, p-value < .001). Therefore, hypothesis 3 is supported.

Fourthly, for the last of the beliefs towards the Internet considered in this study, perceptions about invasion of privacy when surfing the Web presents a statistically significant negative relation to attitude towards the Internet (beta coefficient of -.15, p-value < .05). Therefore, hypothesis 4 is supported.

Focusing on one of the critical relations of our model, attitude towards the Internet is shown as a powerful determinant of trust in Internet shopping (beta coefficient of .44, p-value < .01). Thus, hypothesis 5 is fully supported.

Likewise, the reliability of the structural model’s fit is equally acceptable for the case of the structural equation which explains attitude towards Internet (.44), though the value of this indicator is weaker for the case of trust in Internet shopping (.20).

Figure 3: Structural model
Lastly, with the aim of analyzing the relevance of the set of beliefs considered in our model which contribute to the formation of attitude towards the Internet, a test of differences between each pair of beliefs has been carried out with the intention of statistically testing the intensity of the influence of such beliefs over attitude towards the Internet (see table 4). In this sense, it can be observed how the most important beliefs are those related to Web design aspects and social benefits, while invasion of privacy and speed of interaction show a secondary influence. Curiously, this result differs when compared with prior studies (see theoretical framework), focused on certain websites,

Table 3. Hypotheses testing

<table>
<thead>
<tr>
<th>Results/Hypothesized path</th>
<th>Expected sign</th>
<th>Standardized coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web design aspects _ Attitude toward Internet</td>
<td>+</td>
<td>.38***</td>
</tr>
<tr>
<td>Interaction speed/time of response _ Attitude toward Internet</td>
<td>+</td>
<td>.11**</td>
</tr>
<tr>
<td>Social benefits _ Attitude toward Internet</td>
<td>+</td>
<td>.36***</td>
</tr>
<tr>
<td>Invasion of privacy _ Attitude toward Internet</td>
<td>-</td>
<td>-.15*</td>
</tr>
<tr>
<td>Attitude toward Internet _ Trust in Internet shopping</td>
<td>+</td>
<td>.44**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reliability of structural equations (R²)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards the Internet</td>
<td>0.44</td>
</tr>
<tr>
<td>Trust in Internet shopping</td>
<td>0.20</td>
</tr>
</tbody>
</table>

where *Coefficient significant at p < .05. ** Coefficient significant at p < .01. *** Coefficient significant at p < .001

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</tr>
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</table>
which gave a critical importance to this latter factor in determining the consumer’s opinions toward such sites (see Lin and Lu 2000).

| Table 4. Comparison of the intensity of relations between beliefs and attitude towards Internet |
|-----------------------------------------------|---------|---------|
| Comparison of standardized coefficients       | Chi-square* | p-value |
| Web design aspects → Attitude vs. Interaction speed → Attitude | 104,53  | 0,0000  |
| Web design aspects → Attitude vs. Social benefits → Attitude | 1,52    | 0,217   |
| Web design aspects → Attitude vs. Invasion of privacy → Attitude | 166,06  | 0,0000  |
| Interaction speed → Attitude vs. Social benefits → Attitude | 53,48   | 0,0000  |
| Interaction speed → Attitude vs. Invasion of privacy → Attitude | 2,29    | 0,13    |
| Social benefits → Attitude vs. Invasion of privacy → Attitude | 77,04   | 0,0000  |

* Chi-square test of differences of the fitted model considering both, the estimated model and another model where the degrees of relations (coefficients) among variables have been considered as equally influencing.

General discussion

The empirical viability of the online buying model based on the standard learning hierarchy proposed in this research seems to be supported. Therefore, consumers’ beliefs towards the Internet have exerted a significant influence on their overall attitude towards such a medium. Furthermore, perceptions regarding Web design aspects and social benefits can be considered as having the greatest impact on their overall opinion towards the Internet, followed by a minor intensity of influence by both their beliefs about the interaction speed and their perceptions about invasion of privacy when navigating.

Notwithstanding, it is interesting to note how consumers’ beliefs towards the speed of interaction when navigating prove to be really weak, especially if we consider prior studies, which conclude that response time was the most important factor in the development of the user’s beliefs towards a specific web-site (see Lin & Lu 2000).

Likewise, focusing on the critical relations of our model, attitude towards the Internet has been shown as a powerful determinant of trust in Internet shopping.

In short, the modelling approach presented here appears to be adequate to explain online consumer behaviour, though further analysis is necessary in order to further explain some of the critical constructs of such a model – i.e.: attitude towards the Internet and,
more especially, trust in internet shopping, for which a weak level of reliability has been obtained –, including other variables not considered at this moment.

Likewise, we mentioned in the introduction of this paper that the set variables and the structure that define the conceptual model are generic or related to the consumers’ perceptions about the Internet in its entirely. However, this must not imply that our results may be overlooked by those studies concerning with consumer modelling in certain web sites. In this sense, we underline the fact that any research which aims to understand the consumer’s shopping behaviour on a particular website should consider these generic issues –i.e.: those defined by the structure of our conceptual model– in conjunction with the rest of the variables and factors that are more specifically related to that site; i.e.: its usability, contents, structure of such contents, policy of privacy, etc.. In this way, it will be possible to work with more exhaustive models that will explain the customers’ behaviour more efficiently.

**Managerial implications**

By extension, the results obtained reveal several questions that we consider of general interest for firms and organizations present on the Internet.

Firstly, due to the intensity of some of the relations between variables, we recommend that, on the one hand, particular attention be paid to all aspects associated with the design of websites. In this sense, inasmuch as the customer/visitor perceives not only that the information available is useful, but that it is also presented in an attractive and well-structured way, so facilitating his/her navigational process, and that, in sum, the design of web site is coherent, the website will be better valued.

Secondly, firms’ privacy policies –i.e. how they gather and use the information generated by their customers/visitors during their navigation processes– should be established in such a way that does not go beyond their customers/visitors limits of tolerance. Otherwise, their efforts to gather information would tarnish the customers’/visitors’ opinion of their web sites.
Finally, considering the strong relation existing between attitude and trust, one of the efforts that firms should make to improve their customers’ trust in shopping through their web sites must be focused on strengthening the attitude towards their sites.

**Limitations and future research**

This research has several limitations that may stimulate future research. These limitations are listed below, along with some future research guidelines.

We are aware of the fact that in future studies we will need to make a more in-depth analysis of those beliefs that determine attitude towards the Internet. Thus, we will be able to establish and measure the influence of this cognitive dimension on the consumer’s affective responses as regards the Internet. Consequently, our suggestion is to form Internet-user discussion groups with the aim of obtaining an exhaustive set of attributes that defines this cognitive dimension.

A second area for future research concerns a more extensive study of other factors that give a better explanation of trust in Internet shopping. This is needed because attitude towards the Internet explains this construct only in part. On the one hand, this was expected, although we feel that, in this case, it is non transcendental, inasmuch as we were mainly interested in validating the basic structure presented by our conceptual model. On the other hand, this result is logical if we consider that we have related an overall affective response about the Internet in general with a buying-related response; i.e. trust in Internet shopping. Thus, we can complete the explanation of this concept considering specific factors related to the use of the Internet as a shopping medium.

Finally, with regard to the sampling procedure, the use of students as participants might affect the generalizability or the external validity of the findings. We treated this question in the methodological section, where we justified that the use of this kind of sample can be useful for certain research situations. Whatever the case, working with representative samples of Internet users, particularly for research studies such as this, which are not restricted to any website in particular, requires more in-depth research in
order to deal with it adequately, given its complexity and its interest from a methodological standpoint.

**Footnotes**

1 See Appendix 1 for more detail on the questionnaire

2 Due to the fact that some of the scales used for measuring the constructs were based on English scales, there were some problems with the translations of several items. Thus, we rephrased those that we considered problematic.

3 See Appendix 2 for the sample’s “demographics and Internet access profile”.

4 In order to test the two-by-two differences between the coefficients obtained for each belief-attitude relation, we first set the loadings of both relations as equal and then we estimated the model again. Then, we compared the chi-square value obtained for the new model with the original. In this sense, we used the difference between both models as an estimator of the difference. If the test is significant, it means that there are differences between both models, so there are significant differences between both coefficients of the relation in the original model.
References


Cheskin Research and Studio Archetype/Sapient (1999), “Ecommerce trust study”.


Appendix 1: The Questionnaire

Beliefs regarding the Internet

Consumer rating scales have been used, where respondents had to assess their level of agreement or disagreement in relation to various proposed statements for each item.

Web design aspects (seven-point Likert scale ranging from 1: strongly disagree to 7: strongly agree): In order to measure web design aspects, some focus groups were carried out with Internet users. Given that, during the questionnaire construction phase, we could not establish a scale for measuring this construct, we provided the discussion group members with some guidelines based on a specific literature that had been previously reviewed (Crawford & Shern 1998; Farquhar, Gordon & Balfour 1998; Helander & Khalid 2000). The three-item scale was the following:

“The information is well structured on the web pages”

“Design of the web pages makes it easier to look for information”

“Web pages are attractive”

Interaction of speed/time of response (seven-point Likert scale ranging from 1: strongly disagree to 7: strongly agree): In order to measure this concept three of the items used by Novak, Hoffman and Yung (2000) were adapted to reflect the user’s perception regarding speed of interaction when navigating:

“Interaction with web pages is slow and boring” (Reversed)

“The Internet is quick”

“Web pages that I usually visit do not download quickly enough” (Reversed)

Social benefits and Invasion of privacy (seven-point rating scale ranging from 1: strongly disagree to 7: strongly agree): We use one item for measuring each concept. Respectively:

“A medium such as the Internet makes quality of life and society as a whole a lot better”

“When I surf the Internet, I feel my privacy has been invaded”

Attitude towards the Internet

Differential semantic scales (seven points) were used to evaluate this concept. Due to the affective nature of this variable, a three-item scale with similar pairs of bipolar adjectives has been used. Users were asked to indicate their opinion on the following seven-point scale:

Negative .......................................................... Positive
I do not like it ……………………………………….. I like it

Unfavourable ………………………………………... Favourable

Consumer online buying-related responses

*Trust in Internet shopping.* A three-item scale (seven-point rating scale ranging from 1: strongly disagree to 7: strongly agree) was modified from items used by Lee and Turban (2001) and Cheskin Research and Studio Archetype/Sapient (1999):

“The Internet is a reliable source of in-home shopping”

“On-line companies fulfil their obligations properly to the customer”

“Purchase conditions on the Internet are clear”

Appendix 2: Sample’s demographics and Internet access profile

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Frequency (age)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>262</td>
<td>49.53</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>265</td>
<td>50.09</td>
</tr>
<tr>
<td></td>
<td>Missing data</td>
<td>2</td>
<td>0.38</td>
</tr>
<tr>
<td>Age (average)</td>
<td>(21.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own PC</td>
<td>No</td>
<td>62</td>
<td>11.72</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>467</td>
<td>88.27</td>
</tr>
<tr>
<td>Have online connection at home</td>
<td>No</td>
<td>286</td>
<td>54.06</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>243</td>
<td>45.93</td>
</tr>
<tr>
<td>Places where usually get access to the Internet</td>
<td>At home</td>
<td>236</td>
<td>44.61</td>
</tr>
<tr>
<td></td>
<td>At web cafés and similar</td>
<td>224</td>
<td>42.34</td>
</tr>
<tr>
<td></td>
<td>At family’s house</td>
<td>78</td>
<td>14.74</td>
</tr>
<tr>
<td></td>
<td>At University</td>
<td>398</td>
<td>75.24</td>
</tr>
<tr>
<td></td>
<td>At friend’s house</td>
<td>150</td>
<td>28.36</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>14</td>
<td>2.65</td>
</tr>
</tbody>
</table>