Journal of Universal Computer Science, vol. 17, no. 9 (2011), 1314-1328
submitted: 8/1/11, accepted: 28/4/11, appeared: 1/5/11 © *J.UCS*

Exploring the Attitudes and Intentions of Non-shoppers in the Acceptance of e-Commerce

Ángel Hernández-García
(Universidad Politécnica de Madrid, Madrid, Spain
angel.hernandez@upm.es)

Santiago Iglesias-Pradas
(Universidad Politécnica de Madrid, Madrid, Spain
s.iglesias@upm.es)

Julián Chaparro-Peláez
(Universidad Politécnica de Madrid, Madrid, Spain
julian.chaparro@upm.es)

Félix Pascual-Miguel
(Universidad Politécnica de Madrid, Madrid, Spain
felixjose.pascual@upm.es)

Abstract: Acceptance of online shopping adoption by individuals has been a concerning issue for researchers in the past decade. However, most research has focused in evaluating the attitudes and intention to use electronic commerce from the shoppers' perspective, neglecting to analyze the behavior and attitudes of those who have not adopted e-commerce yet: the non-shoppers. The objective of this study is to explore and evaluate the behavior and attitudes of the non-shoppers' segment towards the acceptance of business-to-consumer electronic commerce (B2C-EC). The theoretical foundations of the study are provided by the Technology Acceptance Model (TAM) and the Innovations Diffusion Theory (IDT), with the addition of a specific factor related to the nature of B2C-EC: product offering of the e-commerce channel. This framework leads to an attitudinal/behavioral model which seeks to identify the factors perceived by non-shoppers as the most important for the adoption of B2C-EC.
The model has been validated with data from 995 Spanish non-shoppers using the partial least squares (PLS) technique. Findings from the analysis results show that perceived usefulness, perceived compatibility and product offering affect positively the attitude of non-shoppers towards the adoption of B2C-EC and their intention to use it. Among these factors, perceived compatibility stands out as the most relevant factor to foster the adoption of B2C-EC among non-shoppers. Other implications for theory and practice are discussed in the final section.

Keywords: electronic commerce, B2C, acceptance models, TAM, consumer behaviour, perceived compatibility, product offering, non-shoppers
Categories: H.4.0, J.4, K.4.2, K.4.4

1 Introduction

Although information and communications technologies (ICTs) have become more and more popular and widespread in the last decade due to computing advances – mainly in Internet-related ICT–, business-to-consumer electronic commerce (B2C-

EC) –or online commerce between companies and individuals– has failed to reach the expected business figures forecasted in the early 2000s, despite its gradual yearly growth and the relative advantages offered by B2C-EC compared with the traditional market channels –such as time, energy and cost savings, competitive prices, broader selection of products, market globalization and greater access to information [Lin, 07]–.

In Spain, in 2009 a total of 9.54 million people (20.4% of the population) made purchases on the Internet, a figure that can be considered low compared with other European countries [Lööf, 08]. However, this figure represents a 5.6% increase compared with the preceding year [INE, 08].

Therefore it is of great interest, both academically and from a business perspective, to determine the underlying factors behind non-shoppers' reluctance to adopt electronic commerce; that is, to find out which factors are most relevant when non-shoppers decide whether or not they are going to purchase goods and services on a virtual store, and to compare the differences in their attitude towards online shopping with those of the B2C-EC shoppers. This analysis could greatly help to deploy effective marketing strategies focused on each group, if differences are found, or to develop a common strategy if not.

Considering the technological nature of the medium through which B2C-EC transactions are performed, technology adoption models have traditionally been considered adequate for explaining those factors which foster e-commerce use. Moreover, technology adoption models deal with attitudes and behavioral intentions as predictors of actual use, a fact which makes them suitable to study non-adoptants' behavior. These models have been proved valid to explain user behavior in other fields such as the adoption of information systems within organizations, and many studies related to online commerce have used them, but the literature has not usually been focused in non-buyers' perceptions and attitudes. Moreover, existing e-commerce adoption studies, analyzed by [Lim, 01][Chang, 05][Li, 06] tend to focus on explaining the mechanisms of continuity in using electronic commerce [Shim, 01] rather than the conditioning factors which lead consumers to make their first purchase on the Internet.

This study proposes an e-commerce adoption model for users who have never made any prior purchases on the Internet in Spain –i.e., non-shoppers–. The article is presented with the following structure: section 2 proposes the theoretical background and research hypotheses for the model proposal; section 3 explains the research methodology and data analysis, and section 4 presents the findings of the study and a discussion of results, as well as the limitations of the research and implications for theory and practice.

2 Theoretical background

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is based on Theory of Reasoned Action (TRA) [Ajzen, 80][Fishbein, 75] and assumes that an individual's behavior or intention when performing a task or using a system (behavioral intention, or BI) is the most important predictor for actually performing that task [Davis, 86][Davis,

89a][Davis, 89b]. Davis oriented this behavioral model towards the adoption of technological systems, and in TAM the behavioral intention is conditioned upon an attitudinal factor (A) influenced by two user beliefs: perceived ease of use (PEOU) and the technological system's perceived usefulness (PU). The great advantages of TAM are its ability to achieve a similar or higher level of predictiveness than more complex theories such as TRA or the Theory of Planned Behaviour (TPB) [Gentry, 02], with lower internal complexity [Lin, 07].

The concept of attitude within TRA represents a predisposition in favor of or against a stimulus object [Fishbein, 75]. Applied to the field of electronic commerce, attitude to shop online refers to a consumer's –or potential consumer's, in the case of non-shoppers– disposition towards the use of B2C-EC in general, as well as an inclination towards making a purchase using the Internet, which can be favorable or unfavorable. Therefore, an individual will be more inclined towards using B2C-EC if he has a favorable attitude towards B2C-EC. Consistent with most of technology adoption studies –e.g. [Ajzen, 80] [Venkatesh, 96][Pavlou, 03]–, the potential consumers' attitude towards the use of B2C-EC is proposed as an antecedent of intention to use, and thus:

- H1. A non-shopper's attitude towards the use of B2C-EC has a significant positive relationship with the intention to purchase using the Internet.

Perceived usefulness is "'the degree to which a person believes that using a particular system would enhance his or her job performance" [Davis, 89a]. In the case of electronic commerce, this usefulness relates to the advantages in using B2C-EC for the consumer in terms of shopping efficiency. In all prior studies, a strong relationship has been found between perceived usefulness and attitude to shop online. Therefore, the following hypothesis is proposed:

- H2. Perceived usefulness by non-shoppers in B2C-EC has a significant positive relationship with the user's attitude towards shopping on the Internet.

Perceived ease of use, on the other hand, is "the degree to which a person believes that using a particular system would be free of effort" [Davis, 89a]. Perceived ease of use has sometimes proved to affect perceived usefulness, but in general there is no consensus regarding this assertion; furthermore, some studies demonstrated that there was no significant direct relation between perceived ease of use and attitude towards use [Arinze, 02][Pavlou, 03][Featherman, 03][Lui, 03][McCloskey, 06]. However, given that uncertainty exists regarding the relationship, we will test its nature in our study:

- H3. Perceived ease of use by non-shoppers in B2C-EC has a significant direct positive relationship with the user's attitude towards shopping on the Internet.

- H4. Perceived ease of use by non-shoppers in B2C-EC has a significant direct positive relationship with the perceived usefulness of shopping on the Internet.

2.2 IDT and Perceived compatibility

In Spain, a great number of traditional brick-and-mortar companies seem reluctant to use the Internet channel; even though their presence on the Internet is rising for promotional and marketing purposes, they are not inclined towards doing business directly with individual shoppers on the web. The main reason is that many of them, although recognizing the importance of their visibility on the net, still consider e-commerce as a highly innovative channel, with all the uncertainty and risks associated to innovations. The Innovation Diffusion Theory (IDT) focuses on the study of the adoption and diffusion of innovations, defined as"an idea, practice or object perceived as new by an individual or another unit of adoption" [Rogers, 95], and mentioning five characteristics inherent to every innovation –compatibility, observability, relative advantage, complexity and trialability– which are linked to adoption or rejection decisions [Moore, 96].

Tornatzky and Klein found that only compatibility, relative advantage and complexity were associated with innovative behaviors [Tornatzky, 82], and relative advantage is usually assimilated into TAM's perceived usefulness construct, whereas complexity is the opposite of perceived ease of use [Moore, 91]; perceived compatibility, on the other side, has no corresponding construct in TAM. Technology adoption processes are made in two stages, with the first consisting in the adoptant's decision about whether the technology is compatible with him or not, and then a second where the decision is about whether or not the technology will be useful for him [Venkatesh, 03]. Thus, considering that this study focuses on the attitudes of users who have actually made no decision regarding the adoption of B2C-EC yet, the inclusion of perceived compatibility (PC) in the reference model is reasonable.

Perceived compatibility as a salient attitudinal belief is the perceived consistency of the innovation with the user's habits and beliefs, and its positive influence on consumers attitudes towards the adoption of B2C-EC has been tested empirically in several studies [Chen, 02][Chen, 04][Herrero Crespo, 04][Van Slyke, 04] [Vijayasarathy, 04][Hansen, 05] [Wu, 05][He, 07]. Therefore:

- H5. The perceived compatibility of e-commerce with the beliefs, habits and values of non-shoppers has a significant positive relationship with their attitude towards using B2C-EC.

As it was mentioned before, perceived compatibility and perceived usefulness are related to the two stages of adoption, and hence a relation between the two is suggested. The consistence of the potential user's habits and beliefs with the technology to adopt seem to fit with the belief that this technology may be more useful to the adoptant than another technology which does not correspond to his lifestyle. Prior studies seem to confirm the existence of this significant relationship between compatibility and perceived usefulness [Chen, 04][Wu, 05], and thus it is proposed:

- H6. The perceived compatibility of e-commerce with the non-shopper's beliefs, habits and values bears a significant positive relationship with the user's perceived usefulness of shopping on the Internet.

2.3 Product offering

Electronic commerce offers a great opportunity to deliver a vast selection of products, available worldwide. Even more, the product offering of Internet surpasses the one from traditional channels to the point that some products cannot be found anywhere else [Machlis, 99]. The efficacy of B2C-EC product offering may be explained not only in terms of the breadth of products available, but also by product pricing strategies –usually, with more competitive prices than traditional commerce due to disintermediation, high efficiency in the delivery and customization of digital products– and channel fit [Chen, 04]. In general, lower prices are expected to be found in the electronic commerce channel [Jarvenpaa, 97]. These advantages regarding product offering of the B2C-EC channel when compared with the offline channel, are expected to have influence both in the attitudes of shoppers and potential shoppers, since they are offered a wider range of products with less costs, and perceived usefulness of the e-commerce channel, due to the access to products only available through this channel [Atchariyachanvanich, 07]. Therefore:

- H7. Product offering of the B2C-EC channel has a significant positive relationship with non-shoppers' perceived usefulness of B2C-EC
- H8. Product offering of the B2C-EC channel has a significant positive relationship with non-shoppers' attitudes towards shopping on the internet

2.4 Research model

With the formulated hypothesis form the literature review, the research is based on a model which allows us to determine the most influential factors in the conformation of non-shoppers' attitudes and intentions [<see> Fig. 1]. This model takes into account the original TAM constructs, as well as the product offering of the electronic commerce channel and the perceived compatibility between the use of these systems and the current habits, values and beliefs of the potential adoptant.

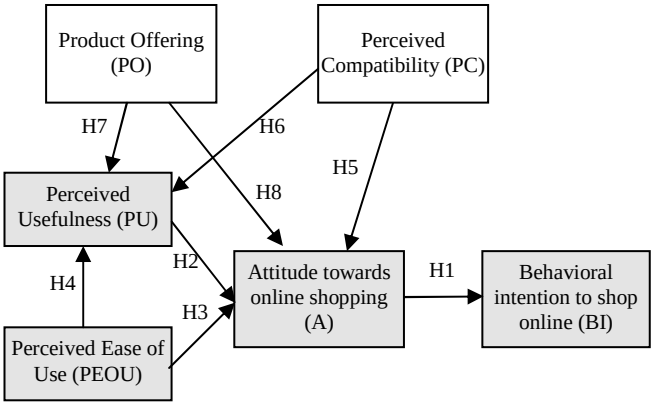

Figure 1: Proposed research model (greyed boxes are the original TAM constructs)

3 Data analysis and results

3.1 Procedure and sample

The research consisted on the analysis of the answers of Spanish non-shoppers from a household panel to a telephone survey based on previously validated scales and made during the second semester of 2009. Before posing the questions, a brief introduction to the purpose of the research survey was explained and demographic data were collected for future segmentation analysis and representativeness consistence (see [<see> Tab. 1] for a detailed view of the sample demographics). From the 2302 people surveyed, 995 (43.2 percent of the total) claimed to have never shopped on the internet; all their responses were valid. Prior to the survey, the measurement instrument was reviewed by technology acceptance scholars and PhD candidates, in order to assess the clarity and correct translation of questions, and was subject to a successful validation pre-test from a sample of 30 people.

The scales for TAM constructs were taken from [Davis, 89a] [Davis, 89b], while the measurement instruments for product offering and perceived compatibility were elaborated based on the items proposed by [Chen, 04] and [Moore, 91], respectively (see [<see> Tab. 5] in Appendix 1 for further details). All items were formulated as Likert-7 scales, with 1 corresponding to "totally disagree" and 7 to "totally agree".

3.2 Measurement instrument and structural model validity assessment

Responses from the survey were analyzed using the partial least squares (PLS) approach. The software tool used for analysis was PLS Graph, version 3.00, build 1130.

Item reliability [<see> Tab. 2] was assessed through observation of the standardized loadings of the latent variable indicators, all of which were considered of a reflective nature. All items have a factor loading higher than the acceptable threshold of 0.60 [Hair, 98][Chin, 98a], and even from the 0.70 limit value determined by [Nunnally, 78], with significance values corresponding to $p<0.001$. Significance of interaction effects and main effects has been analyzed through a bootstrap resampling procedure with 500 subsamples.

Convergent validity assessment [<see> Tab. 2] consisted on the analysis of the constructs' composite reliability and average variance extracted (AVE). Values obtained were superior to 0.85 and 0.50, respectively, higher than the limit values of 0.7 and 0.5 [Hair, 98][Fornell, 81].

Discriminant validity was tested comparing the square root of AVE with the bivariate correlations between constructs, as recommended by [Gefen, 05] [<see> Tab. 3]. It can be observed in [<see> Tab. 3] that the square root of the AVE is higher than all the bivariate correlations between each construct and the rest of constructs, which assures that the indicators are correctly measuring their correspondent construct and none of the others.

Demographic characteristics		**Frequency**	**Percentage**	**Agg. percentage.**
Gender				
	Male	304	30.6	30.6
	Female	691	69.4	100.0
Age				
	18-24	207	20.8	20.8
	25-34	70	7.0	27.8
	35-49	479	48.1	76.0
	50-64	190	19.1	95.1
	>65	49	4.9	100.0
Town size				
	<10000	207	20.8	20.8
	10000-20000	109	11.0	31.8
	20000-50000	142	14.3	46.0
	50000-100000	50	5.0	51.1
	>100000	487	48.9	100.0
Socio-economic status				
	High / Mid-high	296	29.7	29.7
	Medium	520	52.3	82.0
	Medium-Low	150	15.1	97.1
	Low	29	2.9	100.0
Family members				
	1	51	5.1	5.1
	2	155	15.6	20.7
	3	233	23.4	44.1
	4	358	36.0	80.1
	>5	198	19.9	100.0
No. of sons				
	No sons	545	54.8	54.8
	0-5 yr. old sons	111	11.2	66.0
	6-16 yr. old sons	339	34.1	100.0
Academic level				
	No studies	11	1.1	1.1
	First grade	43	4.3	5.4
	Second grade	685	68.8	74.3
	Third grade	252	25.3	100.0
Employment type				
	Full time	453	45.5	45.5
	Part time	79	7.9	53.5
	Unemployed	463	46.5	100.0

Table 1: Sample demographics

Construct	**Item**	**Factorial loading**	**Composite reliability**	**AVE**
Behavioral intention	BI1	0.84	0.91	0.78
	BI2	0.91		
	BI3	0.90		
Attitude towards use	ATU1	0.89	0.92	0.79
	ATU2	0.91		
	ATU3	0.87		
Perceived ease of use	PEOU1	0.84	0.87	0.68
	PEOU2	0.80		
	PEOU3	0.83		
Perceived usefulness	PU1	0.85	0.92	0.79
	PU2	0.93		
	PU3	0.89		
Perceived compatibility	PC1	0.86	0.94	0.75
	PC2	0.91		
	PC3	0.87		
	PC4	0.90		
	PC5	0.78		
Product offering	PO1	0.79	0.86	0.60
	PO2	0.78		
	PO3	0.70		
	PO4	0.83		

Table 2: Item reliability and convergent validity assessment

	BI	ATU	PEOU	PU	PC	PO
BI	**0.88**					
ATU	0.63	**0.89**				
PEOU	0.36	0.45	**0.83**			
PU	0.51	0.64	0.61	**0.89**		
PC	0.57	0.67	0.40	0.61	**0.86**	
PO	0.43	0.57	0.57	0.56	0.53	**0.78**

Table 3: Discriminant validity assessment: Bivariate correlations (in the main diagonal, the square root of the construct's AVE).

The analysis of the structural model [<see> Fig. 2] showed significant paths for all relations at the $p<0.001$ level, except between perceived ease of use and attitude towards use, which was a non-significant relation. This result is consistent with recent literature on the adoption of e-commerce by shoppers [Arinze, 02][Featherman, 03][Lui , 03][Pavlou, 03][Wu, 05][McCloskey, 06].

From the observation of the structural path coefficients, all significant paths showed values over 0.2, except for the product offering-perceived usefulness relation. Therefore, it can be affirmed that all the proposed relations have a strong influence, except the aforementioned PO→PU, which can be considered moderate. In other words, attitude of non-shoppers towards the use of Internet for purchasing purposes is influenced by perceived compatibility, perceived ease of use and product offering. Perceived usefulness is greatly determined by perceived compatibility and perceived ease of use and, to a lesser extent, by product offering. And finally, attitude towards use has a strong relation to non-shoppers' intention to use B2C-EC.

With regards to R^2 values, the model offers a good explanation of attitudes of non-shoppers towards B2C-EC [<see> Tab. 4], with 54 percent of the perceived usefulness variance explained and 56 percent of the attitude towards use. However, the factors considered explain only a 39 percent of the intention to adopt e-commerce.

Predictive relevance of the model was also tested, through a Stone-Geisser's (Q^2) test using a blindfolding procedure [Krafft, 05] with a distance omission of 7, according to the recommendation by [Wold, 82]. All cross-validated redundancy measures were positive [<see> Tab. 4], and therefore we can state that the model has predictive relevance [Chin, 98b]. Furthermore, the GoF index for PLS Analysis proposed by [Amato, 04][Tenenhaus, 05] had a value of 0.63, which may be considered relatively high.

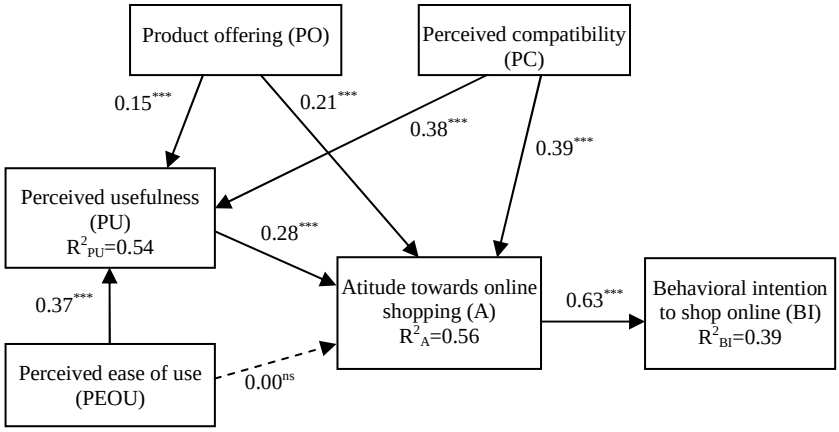

Figure 2: Analysis results from the research model

	R^2	Q^2	GoF
BI	0.39	0.31	
ATU	0.56	0.40	
PU	0.54	0.38	
Overall model			0.63

Table 4: Construct variance explained, cross-validated redundancy (Q^2) and goodness-of-fit values.

4 Conclusions and discussion of results

The study of non-shoppers' attitudes towards B2C-EC is an under-researched field. Most studies which deal with them focus mostly in offering classifications according to their psychographic characteristics –e.g. [Swinyard, 03]– or in the barriers for e-commerce adoption –e.g. [Udo, 01]–, but despite the multiple studies on e-commerce adoption, their attitudinal drivers have been neglected in favour of frequent and occasional shoppers. The technology acceptance model offers a research framework which allows us to study these attitudinal beliefs and their behavioral intention to use e-commerce *even* if they have not made any purchase, from the assumption that behavioral intention is a strong predictor of actual use [Ajzen, 91]. Our study offers a new perspective that confronts our results to the existent research on shoppers' attitudes, based on the validation and predictive ability of the proposed model.

The main finding of our research is that, although the results do not differ much from those found in e-shoppers' studies, perceived compatibility, and not perceived usefulness, is the most influential factor in the attitudes of non-shoppers towards B2C-EC commerce. This influence has proved to be strong both directly *and* indirectly through perceived usefulness, which means that non-shoppers main driver for adoption of e-commerce relies in the cohesion between their lifestyle and e-commerce. One reason for this finding may be that despite efforts being made to reconcile work and family life, present work conditions in Spain tend towards two different ways: long commuting times and work shifts –i.e., more time far from home–, and more time working at home; both of this are consistent with the advantages offered by e-commerce when compared with offline shopping, and thus the results from our study may reflect that same perception from a potential adoptant's perspective.

Consistent with this, and in order to increase sells via B2C-EC via an integration of Internet use in the lifestyle, institutional measures should be promoted to extend its use in Spain. The authors believe that the introduction and generalization on the use of mobile internet and social networks in Spain –at the present time leaded by Facebook and the local network Tuenti– may contribute to create a digital culture in which e-commerce barriers will lower due to an increase of perceived compatibility. Thus, the implementation of mobile Internet social networks around a company's virtual store appears as a big chance to attract new consumers into B2C-EC via

perceived compatibility, while at the same time taking advantage of more access to financial sources [Castillo-Merino, 10].

Non-shoppers also seem to find no special value from ease of use, apart from it contribution to the global perceived usefulness of B2C-EC –a result consistent with previous studies–; that is, perceived ease of use *per se* does not affect their attitudes towards using e-commerce. Swinyard and Smith already labelled a non-shopper typology as "technology muddlers", representing a large group with low computer literacy and low Internet usage [Swinyard, 03]. For them, technology is something they struggle with and tend to avoid, so it is difficult to assume that e-commerce is compatible with their beliefs and values. Our results suggest that these kind of users will not adopt e-commerce disregarding how easy it is for them to use it, but that their attitude could vary should they consider B2C-EC useful for their purposes.

With regards to product offering of the electronic commerce channel, results from the study have found that non-shoppers find it important when considering their attitude towards B2C-EC and, to a lesser extent, useful. This finding unveils a great opportunity to obtain new customers for B2C-EC companies through innovative and competitive pricing strategies unavailable at the present time for traditional shops, such as dynamic pricing and up-to-date best price offers, or by establishing themselves in niche markets where they can profit from a worldwide target audience in their competition with specialized offline shops.

On the downside, our study presents one noticeable limitation. Whilst there is a good explanation of non-shoppers' attitude towards acceptance of e-commerce, and there seems to be a strong relation between this attitude and intention to shop online, the 39 percent explained variance of behavioral intention suggests that we have been able to explain what may drive non-shoppers to adopt B2C-EC, but not to explain what refrains non-them from completing their first purchase. Given this situation, and based on the informal comments received from the respondents while taking the survey, the authors propose a further research in two lines: first, the concept of trust and risk in B2C-EC to expand TAM-IDT models [Karavasilis, 10], although it is important to remark at this stage that trust may develop in two steps (predisposition to trust and confirmation of online trust and building of trust ties); in the authors' opinion, only initial trust and the risk associated to online transactions would apply to this kind of study; second, the perceived presence, that is, if there is any special product characteristic that requires physical interaction or inspection –some of the respondents mentioned that they ″liked to see what they were buying″).

Finally, and in order to be able to establish generalization for our study, the authors suggest the need for a contrasting research between B2C-EC non-shoppers, first-time shoppers and frequent buyers in Spain, so that assumptions of frequent shoppers' behaviour may be confirmed, given that most of B2C-EC acceptance studies are performed mainly in American, Asian and Northern European contexts, with different rates of Internet adoption, lifestyle and cultural traits.

References

[Ajzen, 80] Ajzen, I.; Fishbein, M.. *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall (1980*).*

[Amato, 04] Amato, S.; Esposito Vinzi, V.; Tenenhaus, M. *A global goodness-of-fit index for PLS structural equation modeling*. Oral Communication to PLS Club, HEC School of Management, France (2004).

[Arinze, 02] Arinze, B.; Ruth, C. 2002. Factors affecting behavioral intentions to adopt electronic shopping on the world wide web: a structural equation modeling approach. In *Managing Web Usage in the Workplace: A Social, Ethical and Legal Perspective*, M. Anandarajan and C. A. Simmers, Eds. IGI Publishing, Hershey, PA (2002), 107-128.

[Atchariyachanvanich, 07] Atchariyachanvanich, K.; Okada, H.; Sonehara, N. Theoretical Model of Purchase and Repurchase in Internet Shopping: Evidence from Japanese Online Customers. *ICEC 2007, Ninth International Conference on Electronic Commerce: The Wireless World of Electronic Commerce*, Minneapolis, MN, US (2007).

[Castillo-Merino, 10] Castillo-Merino, D.; Plana-Erta, D. Financial Needs for a Competitive Business Model in the Knowledge Society. International Journal of Knowledge Society Research (IJKSR), 1, 4 (2010), 69-79

[Chang, 05] Chang, M.K.; Cheung, W.; Lai, V.S. Literature derived reference models for the adoption of online shopping. *Information & Management* 42 (2005), 543–559

[Chen, 02] Chen, L.; Gillenson, M.L.; Sherrell, D.L. Enticing online consumers: an extended technology acceptance perspective. Information & Management, 39, 8 (2002), 705-719.

[Chen, 04] Chen, L.; Gillenson, M.L.; Sherrell, D.L. Consumer acceptance of virtual stores: a theoretical model and critical success factors for virtual stores. *ACM SIGMIS Database*, 35, 2 (2004), 8-31.

[Chin, 98a] Chin, W.W. Issues and Opinion on Structural Equation Modeling. *Management Information Systems Quarterly*, 22, 1 (1998)

[Chin, 98b] Chin, W.W. The Partial Least Squares Approach to Structural Equation Modeling. In*: Modern Methods for Business Research*, George A. Marcoulides (Ed.). Lawrence Erlbaum Associates, Publisher, Mahwah, New Jersey London (1998).

[Davis, 86] Davis, F.D. *A technology acceptance model for empirically testing new end-user information systems: theory and results*. Doctoral dissertation, Sloan School of Management. Massachusetts Institute of Technology (1986).

[Davis, 89a] Davis, F.D. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13, 3 (1989), 319-340.

[Davis, 89b] Davis, F.D.; Bagozzi, R.P.; Warshaw, P.R. User Acceptance Of Computer Technology: A Comparison Of Two Theoretical Models. *Management Science*, 35, 8, (1989), 982.

[Featherman, 03] Featherman, M.S.; Pavlou, P.A. Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies*. 59, 4 (2003), 451-474.

[Fishbein, 75] Fishbein, M.; Ajzen, I. Belief, *Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley (1975).

[Fornell, 81] Fornell, C.; Larcker, D.F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18, 1 (1981), 39

[Gefen, 05] Gefen, D.; Straub, D.W. A Practical Guide to Factorial Validity Using PLS-Graph: Tutorial and Annotated Example. *Communications of the Association for Information Systems* 16 (2005), 91-109

[Gentry, 02] Gentry, L.; Calantone, R. A comparison of three models to explain Shop-bot use on the web. *Psychology and Marketing* 19, 11 (2002), 945–956.

[Hair., 98] Hair, J.F.; Anderson, R.E.; Tatham, R.L.; Black W.C. *Multivariate Data Analysis*, 5th Edition. Englewood Cliffs, NJ: Prentice Hall (1998).

[Hansen, 05] Hansen, T.; Beckmann, S.C. Understanding consumer adoption of online grocery shopping: Results from Denmark and Sweden. In Kornum, Niels & Bjerre, Mogens (Eds.), *Grocery E-commerce: Consumer Behaviour and Business Strategies*, 97-121. Cheltenham, UK: Edward Elgar (2005)

[He, 07] He, Q.; Duan, Y.; Fu, Z.; Li, D. Factors affecting online e-payment adoption: A company perspective. In M. Khosrow-Pour (Ed.), *Web Technologies for Commerce and Services Online (Advanced Titles in Electronic Commerce Series, vol. 3)*. Hershey, PA: Idea Group (2007)

[Herrero Crespo, 04] Herrero Crespo, A., Rodríguez del Bosque Rodríguez, I., García de los Salmones Sánchez, M.. La compatibilidad percibida en la adopción del comercio electrónico B2C: un análisis sobre la base del Modelo de Aceptación de Tecnología. *XIV Congreso Nacional de ACEDE*. Murcia (2004).

[INE, 08] Instituto Nacional de Estadística (National Statistics Institute). *New Communication and Information Technologies. Survey on the Equipment and Use of Information and Communication Technologies (ICT-H) in Households*. National Statistics Institute (2008)

[Jarvenpaa, 07] Jarvenpaa, S.L.; Todd, P.A. Consumer Reactions to Electronic Shopping on the World Wide Web. *International Journal of Electronic Commerce*, 1, 2 (2007), 59-88.

[Karavasilis, 10] Karavasilis, I., Zafiropoulos, K.; Vrana, V. A Model for Investigating E-Governance Adoption Using TAM and DOI. *International Journal of Knowledge Society Research (IJKSR)*, 1, 3 (2010), 71-86.

[Krafft, 05] Krafft, M.; Götz, O.; Liehr-Gobbers, K. Die Validierung von Strukturgleichungsmodellen mit Hilfe des Partial-Least-Squares (PLS)-Ansatzes. In *Handbuch PLS-Pfadmodellierung, Schäffer-Poeschel*. F. Bliemel, A. Eggert, G. Fassott and J. Henseler, (Eds.), Stuttgart (2005), 71–86.

[Li, 06] Li, N.; Zhang, P. What Makes Customers Shop Online?. In J. Fjermestad and N.C. Romano Jr., eds., *Electronic Customer Relationship Management. Advances in Information Management Systems*, Volume 3. M.E. Sharpe, Armonk, NY (2006), 149-176

[Lim, 01] Lim, N. Customers' Beliefs Behind Business-to-Consumer Electronic Commerce. *AJIS*, 9, 1 (2001), 70-78

[Lin, 07]Lin, H.F. Predicting consumer intentions to shop online: An empirical test of competing theories. *Electronic Commerce Research and Applications*. 6, 4 (2007), 433-442.

[Lööf, 08] Lööf, Anna; Seybert, Heidi. *Internet usage in 2009 – Households and Individuals*. Issue number 46/2008. Data in focus, Eurostat (online resource) Available at: http://eeurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-QA-09-046/EN/KS-QA-09-046-EN.PDF (date of retrieval: 02-09-2010)

[Lui, 03] Lui, H.K.; Jamieson, R. TRiTAM: A Model for Integrating Trust and Risk Perceptions in Business-to-Consumer Electronic Commerce. *16th Bled eCommerce Conference, eTransformation*. Bled, Slovenia (2003)

[Machlis, 99] Machlis, S. Online Shoppers Want On-time Delivery. *Computerworld*, 33, 10 (1999), 43.

[McCloskey, 06] McCloskey, D.W. The Importance of Ease of Use, Usefulness, and Trust to Online Consumers: An Examination of the Technology Acceptance Model with Older Consumers. *Journal of Organizational and End User Computing*, 18, 3 (2006)

[Moore, 91] Moore, G. C.; Benbasat, I. Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research, 2*, 3 (1991), 192-222.

[Moore, 96] Moore, G. C.; Benbasat, I. Integrating Diffusion of Innovations and Theory of Reasoned Action Models to Predict Utilization of Information Technology by End-Users. In *Diffusion and Adoption of Information Technology*, K. Kautz and J. Pries-Hege (eds.), Chapman and Hall, London (1996), 132-146

[Nunnaly, 78] Nunnally, J.C. *Psychometric Theory* (2nd ed.). McGraw-Hill, New York (1978)

[Pavlou, 03] Pavlou, P.A. Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7, 3 (2003), 69-103

[Rogers, 95] Rogers, E.M. *Diffusion of Innovations* (4th ed.). New York: Free Press (1995)

[Shim, 01] Shim, S.; Eastlick, M.A.; Lotz, S.L.; Warrington, P. An online prepurchase intentions model: The role of intention to search. *Journal of Retailing* 77 (2001), 397–416.

[Swinyard, 03] Swinyard, W.R.; Smith, S.M. Why people (don't) shop online: A lifestyle study of the internet consumer. *Psychology & Marketing*; 20, 7 (2003), 567

[Udo, 01] Udo, G.J. Privacy and security concerns as major barriers for e-commerce: a survey study. *Information Management & Computer Security*, 9, 4 (2001), 165-174.

[Tenenhaus, 05] Tenenhaus, M.; Esposito Vinzi, V.; Chatelin, Y.M.; Laurob, C. PLS path modeling. *Computational Statistics & Data Analysis*, 48, 1 (2005), 159-205

[Tornatzky, 82] Tornatzky, L.G.; Klein, K.J. Innovation Characteristics and Innovation Adoption Implementation: A Meta-Analysis of findings. *IEEE Transactions on Engineering Management*, 29 (1982), 28-45

[Van Slyke, 04] Van Slyke, C.; Belanger, F.; Comunale, C.L. Factors influencing the adoption of web-based shopping: the impact of trust. *ACM SIGMIS Database* 35, 2 (2004), 32-49

[Venkatesh, 96] Venkatesh, V., Davis, F.D., 1996. A model of the antecedents of perceived ease of use: development and test. *Decision Sciences* 27, 3 (1996), 451-481.

[Venkatesh, 03] Ventakesh, V., Morris, G., Davis, G., Davis, F. User acceptance of information technology: Toward an unified view. *MIS Quarterly* , 27, 3 (2003), 425-478.

[Vijayasarathy, 04] Vijayasarathy, L.R. Predicting consumer intentions to use on-line shopping: the case for an augmented technology acceptance model. *Information & Management*, 41 (2004), 747–762

[Wold, 82] Wold, H. Soft modeling: the basic design and some extensions. In *Systems under indirect observations: Causality, structure, prediction* (Part 2). K.G. Jöreskog y H. Wold (Eds.). Amsterdam, North Holland (1982), 1-54.

[Wu, 05] Wu, J.H.; Wang, S.C. What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information & Management* 42 (2005), 719–729

Appendix 1

	Item	Question	Source
BI	BI1	I have the intention to use e-commerce in the next six months	Adapted from [Davis, 89b]
	BI2	I am likely to buy some product using e-commerce in the next six months	
	BI3	I will consider the idea of using e-commerce in the next six months	
ATU	A1	I like the idea of using e-commerce to buy products	Adapted from [Davis, 89b]
	A2	I think that using e-commerce to buy products is a good idea	
	A3	I think that using e-commerce is a smart idea	
PEOU	PEOU1	I think it would be easy to find what I want to shop in an online shop	Adapted from [Davis, 89a]
	PEOU2	I think tha using e-commerce would be easy to learn for me	
	PEOU3	I think that using e-commerce would be easy to use to buy things	
PU	PU1	I think that using e-commerce would allow me to shop in less time	Adapted from [Davis, 89a]
	PU2	I think that using e-commerce would allow me to improve my shopping efficiency	
	PU3	I think that using e-commerce to shop would be useful for me	
PC	PC1	Using e-commerce fits with the way I like to buy	Adapted from [Moore, 91]
	PC2	Using e-commerce fits with the way I like to do things	
	PC3	Using e-commerce is coherent with my habits	
	PC4	Using e-commerce suits my lifestyle	
	PC5	Using e-commerce suits my way of searching information for products	
PO	PO1	Using e-commerce would allow me to access to a wider selection of products	Adapted from [Chen, 04]
	PO2	Using e-commerce would allow me to get lower prices	
	PO3	e-commerce sites have products that are difficult to find in traditional stores	
	PO4	Overall, I like the product offering in e-commerce shops	

Table 5: List of questionnaire constructs and items.