

The Impact of Privacy Concerns on Online Purchasing Behaviour: Contributions to an Integrative Model

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ABSTRACT

This study aims to analyse how privacy concerns about the Internet has an impact on the consumer's intention to make online purchases. A research model was developed establishing that this impact takes place via the connection of privacy concerns with the theories of trust and risk, the theory of planned behaviour and the technology acceptance model. The empirical study was based on an online survey that allowed data collection on a sample of 900 individuals. The results confirmed the acceptance of all proposed hypotheses and the overall validation of the research model. Implications and further research suggestions are presented.

KEY WORDS: Privacy, E-commerce, Purchase Behaviour.

INTRODUCTION

In recent years, the number of electronic commerce (EC) users increased significantly. According to Eurostat, between 2004 and 2010, the penetration rate of EC doubled in the European Union (EU). However, despite this increase, the proportion of consumers that purchase online is reduced in most European countries. In 2010, only 31% of EU consumers made online purchases in the last 3 months and only 14% of company's turnover is generated from the EC. Searching the reasons for this phenomenon, we note that privacy concerns about personal information are the second most important motivation for non-adoption of EC by EU consumers, just after security concerns.

The privacy of personal information is recognized as a fundamental theme in marketing literature in offline (Jones, 1991) and online contexts (Miyazaki and Fernandez, 2000). However, the literature has underestimated the role of privacy concerns in EC context, since this variable has been introduced in online shopping models that are, in essence, focused on trust (Chen and Barnes, 2007) or on perceived risk (Van Slyke et al. 2006). Moreover, the published studies have focused mainly on the direct impact of privacy concerns in online purchase intention (Eastlick et al., 2006) or in online actual purchase (Brown and Muchira, 2004). Thus, these studies don't provide a theoretical framework robust enough to explain how privacy concerns exerts their influence on relevant variables of consumer behaviour that precede the pre-behavioural or behavioural constructs. We consider this fact a gap in the literature that matters overcome.

As such, the research question that guides this study is the following: how privacy concerns in the Internet influence online purchasing behaviour?

ONLINE PRIVACY CONCERNS

Westin (1967) defined information privacy as an individual's ability to control the conditions in which their personal information is collected and used.

Protecting the privacy of information in online commercial transactions began to be the focus of attention of the authorities, including the Federal Trade Commission (FTC) in the

United States. This entity devised a set of guidelines called Fair Information Practices, based on research conducted up to that time, namely the study of Smith et al. (1996).

Despite a few pioneering studies addressed the issue of online privacy in general, such as Miyazaki and Fernandez (2000) and Sheehan and Hoy (2000), no studies have provided a specific theoretical framework to privacy concerns in the context of the Internet. The exception arises from the study of Malhotra et al. (2004), which presents a conceptual framework and develops a scale specific to online privacy concerns. The authors argue that Internet user's information privacy concerns focus on three major dimensions: collection, control and knowledge. Collection is defined as the individual's level of concern about the amount of personal data possessed by others, in comparison with the benefits received. In turn, control reflects the ability of consumers to be heard on how personal data is used and on its access, modification and extinction. Finally, knowledge is reflected in the individual's degree of information about the organization's privacy practices.

Privacy concerns have been incorporated in numerous papers on online consumer behaviour, which have given empirical support to its influence on trust, perceived risk and other variables included in consumer behaviour models widely disseminated in the literature, such as the theory of planned behaviour (TPB) and the technology acceptance model (TAM).

RESEARCH MODEL

The proposed research model aims to understand how privacy concerns on the Internet exert its influence in online purchasing behaviour. The conceptual framework of this study consists of privacy theories, trust theories, risk theories, TPB and TAM. The last four theories and models are conceptually and empirically related to privacy concerns.

Under the trust-risk model, there is a broad consensus in the literature about the influence of personal characteristics on trust and risk beliefs (Mcknight et al. 1998). Privacy concerns can be seen as a personal characteristic that will ultimately influence how the individual perceives a situation where personal information is requested to accomplish an online transaction (Malhotra et al., 2004). Thus, a consumer with a high degree of privacy

concerns is more likely to feel a low level of trust (Eastlick et al., 2006) and a high level of perceived risk within an online purchase (Van Slyke et al., 2006). Hence, the following hypotheses are proposed: *privacy concerns on the Internet have a negative effect on trust in EC (H1a) and a positive effect on perceived of EC (H1b).*

Moorman et al. (1992) argue that trust reduces perceived uncertainty and therefore perceived vulnerability. In the case of an online purchase, this means that it is expected that trust mitigates the perceived risk of the transaction (Pavlou, 2003). Therefore, the following hypothesis is proposed: *trust in EC has a negative effect on perceived risk of EC (H2).*

It is expected that an individual with high privacy concerns associate to online shopping activities a psychological burden, which reduces its levels of pleasure, namely, its intrinsic motivation (Davis et al., 1992). According to the study of Venkatesh et al. (2002) in the context of technology adoption, intrinsic motivation has a negative impact on perceived usefulness and perceived ease of use. In this study, it is proposed that these relationships will occur on the adoption of EC. Thus, the following hypotheses are proposed: *privacy concerns on the Internet have a negative effect on the perceived usefulness of EC (H3a) and on the perceived ease of use of EC (H3b).*

Supported in TAM, we can assert that perceived ease of use is a determinant of perceived usefulness (Davis et al., 1989). Within EC, if the consumer develops the belief that saves time and effort when buying online, then the saved resources can be reallocated to other tasks, which represent an increase of the utility of EC (Ha and Stoel, 2009). Hence, the following hypothesis is proposed: *perceived ease of use of EC has a positive effect on perceived usefulness of EC (H4).*

A consumer with higher privacy concerns in the context of Internet will have a greater tendency to understand that there are not satisfied all conditions to accomplish an online purchase. Thus, following Fygensen and Pavlou (2006), privacy concerns influence the facilitating conditions and thus have a negative impact on the perception of control over making online purchases. Therefore, the following hypothesis is proposed: *privacy concerns on the Internet have a negative effect on perceived control over EC use (H5).*

In the context of online consumer behaviour, trust mitigates uncertainty and thus acts as a

facilitating condition with a positive impact on consumer perception of control over making online purchases. (Pavlou and Fyngensen, 2006). Thus, the following hypothesis is proposed: *trust in EC has a positive effect on perceived control over EC use (H6)*.

In the path of Venkatesh (2000) study on technology adoption, it is proposed that higher consumer's beliefs about their ability to buy online and the absence of barriers to accomplish transactions, conducts to a greater control over EC use. In turn, this increased control will lead consumers to associate a lower degree of difficulty to buy over the Internet. Hence, the following hypothesis is proposed: *perceived control over EC use has a positive effect on perceived ease of use of EC (H7)*.

According to Ajzen (1991), TPB states that attitudes are a function of relevant beliefs to the individual. Within the EC, trust and perceived risk are beliefs that work, respectively, as key facilitators (Ha and Stoel, 2009) or inhibitors (Fenech and O'Cass, 2001) of the development of a positive evaluation of online purchasing results. Therefore, the following hypotheses are proposed: *attitude towards the use of EC suffers a positive effect of trust in EC (H8a) and a negative effect of perceived risk of EC (H8b)*.

TAM introduces the concepts of perceived usefulness and perceived ease of use, arguing that these beliefs are fundamental in explaining and predicting attitudes (Davis et al., 1989). In the context of online purchasing behaviour, these relationships mean that the larger the consumer's beliefs about the improved performance resulting from the EC use and its ability to make online purchases without effort, the better will be the individual's evaluation of the expected results of those transactions (Pavlou and Fyngensen, 2006). Thus, the following hypotheses are proposed: *attitude towards the use of EC suffers a positive effect of perceived usefulness of EC (H9a) and of perceived ease of use of EC (H9b)*.

TAM sustains that perceived usefulness is a determinant of intention to adopt a particular technology. In the field of online buying behaviour, the higher the consumers' beliefs about the improved performance of purchase from the use of EC platforms, the greater the likelihood of these can be used to make purchases online (Pavlou, 2003). Hence, the following hypothesis is proposed: *perceived usefulness of EC has a positive effect on intention to use EC (H10)*.

Within the TPB, perceived behavioural control is a determinant of behavioural intention (Ajzen, 1991). It is expected that the higher the consumer's beliefs about the control over making online purchases, the greater their intention to accomplish these transactions (Lwin and Williams, 2003). Therefore, the following hypothesis is proposed: *perceived control over EC use has a positive effect on intention to use EC (H11)*.

Under the TPB and the TAM, it is known that the attitude toward behaviour is a fundamental determinant of behaviour intention (Ajzen, 1991, Davis et al., 1989). Within EC, it is also possible to assert that a better consumers' evaluation on the results of making online purchases, will result on a higher likelihood of accomplish those transactions (Lwin and Williams, 2003). Thus, following hypothesis is proposed: *attitude towards the use of EC has a positive effect on intention to use EC (H12)*.

RESEARCH METHODOLOGY

The data for this study were collected from an online survey which was administered to a non-random sample consisting of 900 individuals.

The questionnaire consisting of 7 points Likert scales, was built from the adaptation of the scales presented in the studies of Dinev and Hart (2006) for privacy concerns, Pavlou (2003) for trust, Schlosser et al. (2006) for perceived risk and behaviour intention, Park et al. (2004) for perceived usefulness, Koufaris (2002) for the perceived ease of use, Zahedi and Song (2005) for perceived behavioural control and Dubinsky and Lim (2005) for attitude.

RESULTS

Structural equation modelling was used to validate the research model. It was adopted a two phases modelling strategy, following the indications of Gerbing and Anderson (1988), which consists in independent estimation and analysis of the measurement model and then the structural model.

The results obtained in the confirmatory factor analysis indicated an appropriate overall fit of the measurement model ($\chi^2 = 1606.568$, $p = 0.000$; $\chi^2/df = 3.440$, $RMSEA = 0.0521$, $CFI = 0.985$). The χ^2 statistic indicates that the variance-covariance matrices observed and estimated differ considerably, however, it is known that this indicator penalizes more complex models and that are tested with larger samples, as is the case in this study, and thus should be given primacy to other indicators (Hair et al., 2010). The χ^2/df and RMSEA are below the maximum recommended values of 5 and 0.07, respectively, and CFI is above the minimum threshold of 0.90 (Hair et al. 2010). With reference to the indications of Fornell and Larcker (1981), Hair et al. (2010) and Netemeyer et al. (2003), the results presented in Table 1 suggest that the scales used in the measurement model have the following psychometric properties:

- Unidimensionality, because the model has an adequate overall fit;
- Reliability, given that the average variance extracted (AVE) and the composite reliability indicators (CR) exceed, respectively, the minimum recommended values of 0.50 and 0.70;
- Convergent validity, given that the factorial loadings of free parameters are statistically significant at the 0.05 level ($|t| \geq 1.96$), the standardized loadings are higher than the minimum value of 0.50 and the AVE and the CR are higher than the recommended values;
- Discriminant validity, because the square root of each construct's AVE is larger than its correlations (in modulus) with other constructs;
- Nomological validity, since that are statistically significant and in the right direction all correlations related to the hypothesis formulated in the research model.

Table 1. Evaluation of the reliability and construct validity

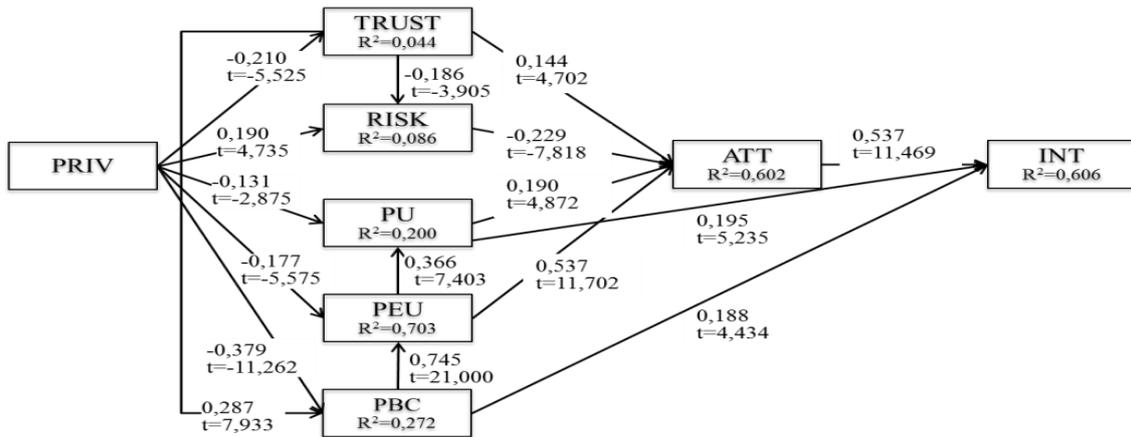
Construct	Standardized loadings	t value	AVE	CR	Construct								
					PRIV	TRUST	RISK	PU	PEU	PBC	ATT	INT	
PRIV	0,876 to 0,949	95,028 to 98,265	0,836	0,953	0,914								
TRUST	0,793 to 0,928	23,377 to 24,790	0,702	0,875	-0,200	0,838							
RISK	0,615 to 0,856	22,606 to 43,486	0,522	0,883	0,219	-0,207	0,722						
PU	0,770 to 0,812	28,435 to 35,962	0,619	0,867	-0,266	0,214	0,028	0,787					
PEU	0,780 to 0,922	16,940 to 55,952	0,751	0,923	-0,467	0,349	-0,223	0,385	0,867				
PBC	0,931 to 0,949	51,135 to 82,187	0,879	0,967	-0,419	0,357	-0,177	0,416	0,806	0,937			
ATT	0,811 to 0,938	41,664 to 68,461	0,791	0,938	-0,573	0,414	-0,361	0,411	0,686	0,601	0,889		
INT	0,932 to 0,937	25,026 to 33,035	0,880	0,956	-0,447	0,293	-0,227	0,464	0,614	0,561	0,692	0,938	

Note: values below the diagonal represent correlations between constructs; values of the diagonal are the square root of AVE; all correlations are significant at 0.001 (two-tailed).

Regarding the structural model, the results evidence its appropriate overall fit ($\chi^2 = 1684.758$, $p = 0.000$; $\chi^2/df = 3.517$; $RMSEA = 0.0529$; $CFI = 0.984$). Analysing the estimated parameters of structural relationships, from Figure 1, we conclude that, in all cases, the standardized loadings have a signal compatible with the direction of the relationships proposed in the research model and are statistically significant at the 0.05 level ($|t| \geq 1.96$). As such, we accept all the hypotheses proposed in the research model.

The variance explained (R^2) of the beliefs that mediate the relationship between privacy concerns and attitude vary between 0.044 for trust and 0.703 for perceived ease of use. Together, the determinants of attitude towards the use of EC and intention to use EC explain, respectively, 60.2% and 60.6% of its variance, values that can be considered acceptable.

Figure 1. Structural model



DISCUSSION AND CONCLUSIONS

Broadly speaking, the results confirm the acceptance of all proposed hypotheses and the overall validation of the research model. It was also produced empirical evidence that supports the acceptance of innovative hypotheses within the context of EC that have been proposed in the research model: privacy concerns have a negative impact on perceived usefulness (H3a) and on perceived ease of use (H3b) and perceived behavioural control has a positive impact on perceived ease of use (H7).

We would highlight as main theoretical contributions of this study the following: the creation and validation of an empirical model that explains how privacy concerns exerts its impact on behavioural intention, helping to overcome a literature gap; the concatenation of various theories and models of consumer behaviour (theories of trust and risk, TAM and TPB) in mediating the relationship between privacy concerns and behaviour intention; the reinforcement of privacy theories, since it was evidenced the impact of privacy concerns on behaviour intention; the connection of trust and risk theories, TPB and TAM at the level of consumer beliefs through perceived behavioural control.

The results of this study also have some managerial implications, including: a reminder that EC sites have a special care about its users' personal information privacy, given the negative impact that privacy concerns have on online purchasing behaviour; some indications on how EC sites could improve its users' attitudes and intentions, by acting on

their determinants.

This study has some limitations. First, we can point to the use of a non-random sample. Moreover, the study opted not to include actual online purchase behaviour in the research model explaining only purchase intention. In addition, the questionnaire contained questions about the EC sites in general, which may contain some ambiguity to the respondent, in that their response may vary depending on the site in question.

As recommendations for future research we propose: the construction and validation of a model on the determinants of privacy concerns; the conduction of a longitudinal study that includes actual online purchase behaviour in the research; the application of the proposed research model in different countries and online sectors.

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