

# Factors That Influence Internet Users' Privacy Perception

Renata Mekovec<sup>1</sup>, Neven Vrčec<sup>2</sup>,

<sup>1,2</sup> *University of Zagreb, Faculty of Organization and Informatics  
Pavlinska 2, 42000 Varaždin Croatia*

*E-mail(s): renata.mekovec@foi.hr, neven.vrcek@foi.hr*

**Abstract.** *Privacy concerns are identified as one of the main factors that have a negative impact on Internet users' online behaviour. Often, Internet users do not have confidence that a web site will ensure their privacy either in collection nor in future usage of their personal information. In this article we propose a categorization of factors that can influence users' privacy perception during their online activity. Furthermore, we report on a research model for Internet users' privacy perception, and a pilot study performed among online shopping/Internet banking users.*

**Keywords.** privacy perception, online privacy, online shopping, Internet banking

## 1. Introduction

There is no general and commonly accepted definition of the term privacy. Privacy can be described as an ability of an individual to control information about oneself [5]. However, the definition of privacy varies due to distinct contexts, cultures, environments or perspectives. Owing to its complexity the concept of privacy should not be described with only one definition [13]. Privacy is therefore often specified based on its dimensions. Some of the most referred privacy dimensions are [6]: (1) information privacy (an individual can decide who will have access to their information), (2) physical privacy (refers to individual's control over who will have physical access to them, their private life or property), (3) social privacy (an individual can make decisions, have opinions and can act and communicate without any constraints), and (4) psychological privacy (refers to individual's needs for security and intimacy).

With the rapid development and wide usage of new Internet technologies, the perspective of privacy has changed. All characteristics of Internet as a communication media must be

included when defining privacy in online environment (also called online privacy).

Although we can confirm rapid development of many e-business solutions, the privacy issue is very present. Furthermore, we cannot neglect the fact that we have a significant number of customers who are reluctant to share data with web sites. Many users who have the opportunity to use e-commerce do not use it, because they simply do not believe that a specific web site will ensure and protect their privacy [21].

The article is organized as follows. In section 2 the term online privacy is defined and issues regarding online privacy concerns are introduced. In addition a research model of users' online privacy perception is presented. In section 3 the results of a performed pilot study are described. Online privacy perceptions of users who shop online or who performed bank transactions were examined. Section 4 includes the discussion and final conclusions.

## 2. Online Privacy

The term online privacy refers to the individual's act of selective disclosure (of oneself) in online environment. Online privacy is usually defined as Internet users' concern regarding (1) their *control over collection of information* during online activity and (2) *control over usage of information* that were collected [7]. Consequently, online privacy covers users' concerns about: (1) the type and quality of information that a particular web site will collect about them, (2) how much control users have over the collected information and (3) users' awareness of privacy practices [15]. This privacy control process is influenced by many factors, e.g. individual characteristics, location distances and barriers, as well as various social factors. An overview of the factors that can influence Internet users' privacy concerns is presented in the following subsection.

## 2.1. Factors that influence Internet users' privacy concerns

Sheehan and Hoy [20] were among the first to research users' online privacy concerns. Authors identified three factors that influence users' online privacy concerns: (1) *control over information collection and usage of information*, (2) *short-term transaction*, which refers to transaction exchange issues that involve the concern about the kind of information that is being exchanged for a specific benefit, and (3) *established relationship* that addresses issues about existence of relations between a customer and a web site, as well as their previous communication. Another list of various factors that influence the Internet users' privacy concerns is as follows [7]:

1. customer-intrinsic characteristics;
2. customer perceptions, beliefs and attitudes toward direct marketing and/or in-home shopping, trust, mechanisms for information control, and processes of data collection;
3. web site related variables;
4. situational variables.

Some authors propose legislation and government protection as the new group of factors influencing Internet users' privacy [10]. It is important to understand all the factors that can influence users' intentions to use e-commerce applications [3]. In the information society the information represents a value that can be used to gain some kind of social or economic benefit. This valuable asset is often disclosed, yet an individual is rarely aware of the ways this information can be used. Neither is the individual informed about the threats regarding online privacy intrusion [21].

## 2.2. Proposed research model

Internet users' online activities include various types of activities, e.g. communicative, commercial and informative online activities [23]. Yet, distinct online activities involve distinct level of online privacy concerns. Consequently, the decision about personal information disclosure in online transactions is affected by many factors, e.g. perception of privacy protection, possible losses, physical needs or perceived benefits in a particular type of online transaction [1].

A proper understanding of all these privacy concerns is therefore crucial for the development of e-commerce. In addition, identification and systematization of factors that influence Internet users' privacy concerns allows detailed analysis of their interdependency. Based on the results of such analyses, companies that offer their services or products online could improve or modify their offerings. Finally, public and private policy makers can gain some basic understanding of important factors that shape the consumer online behaviour.

In order to investigate the relationship of various privacy factors and Internet users' privacy perceptions a research model is proposed. In the model described in this article, privacy factors are organized in five groups: (1) customer-intrinsic characteristics, (2) situation factors, (3) web site characteristics, (4) customer and web site relationship, and (5) legislation and government privacy protection. The proposed research model is illustrated in Figure 1. Constructs that are measured for every group are also illustrated. In the following paragraphs the observed privacy factors are briefly described.

People perceive and experience same or similar situations differently. Accordingly, when discussing privacy perception *individual characteristics* need to be taken into consideration. Many researchers have studied how various individual characteristics influence online privacy concerns. For example, males are more likely to protect their information online than females [17]. Furthermore, longer period of using Internet decreases online privacy concerns [18]. Individuals that experienced privacy intrusion in the past are more concerned for their privacy protection. Also, they are more cautious when disclosing their personal information online in their present online activity [10].

*Situation factors* are connected to the fact that an individual can react differently in the same situation but under different conditions. Commonly, these situation factors are individual and most often reflect the current mood and needs as well as past experience in a specific situation. The type and quantity of the requested information in online transaction are generally referenced as situational factors that influence the Internet users' privacy perception. Castañeda and Montoro [7] use the term *information sensitivity* to describe individuals' privacy concerns for a specific information type in a specific situation.

Internet users' perception of a particular web site depends not only on their current interaction, but also on the users' evaluation of previous interactions. This evaluation is usually connected with the users' perceptions of the web site that provides an e-service. Therefore, while considering users' online privacy perception, factors referring to the *web site characteristics* can not be neglected. Strong company's reputation positively influences users' trust towards an e-tailer but also decreases their privacy concerns. Metzger [16] stresses that e-tailer reputation can consequently help users to estimate e-tailer's behaviour in their future relationships. Although privacy concerns have a negative impact on e-commerce usage, the cumulative influence of Internet trust and personal Internet interest can overcome the privacy concerns when making a decision

whether or not to disclose the requested personal information [8]. Web sites represent new opportunities to build and manage customer relationships [12] but on the other hand pronounce a conflict between two trends [9]. The first trend can be described as a need to gather and use a large amount of customer personal data to serve the customer better. The increasing threats to customer privacy are presented as the second trend.

Group of factors named *customer and web site relationship* are generally related to individual's perception and attitudes to information collection (performed by a particular web site) during online activity. Fair information practices (FIPs) represent the framework for privacy protection and are now included in many national laws. FIPs include five principles [5]: (1) notice, (2) choice, (3) access, (4) integrity

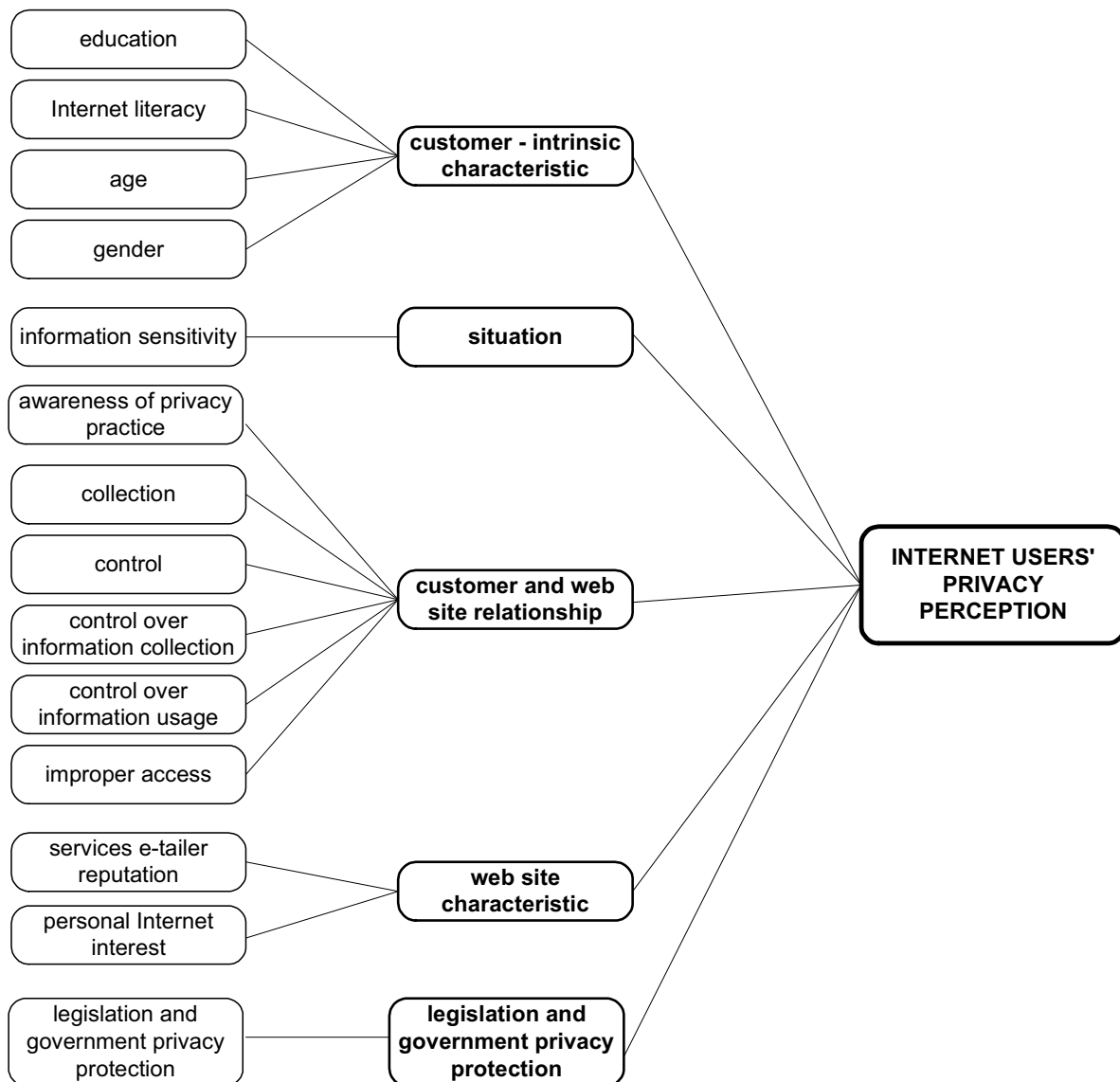


Figure 1. Proposed research model

and security, and (5) enforcement. Internet Users' Information Privacy Concerns scale (IUIPC) [15] introduces two new aspects of information privacy: (1) control and (2) awareness of privacy practice. *Control* refers to the control that individuals have over their personal information that has been collected. *Awareness of privacy practice* implies individuals' understanding and knowledge of practices that are used to manipulate personal information.

*Legislation and government protection* group includes factors referring to customers' perception of how government and legislation protect their online privacy. Customers' perception and awareness of government protection increases their trust in online transactions, and consequently increases e-commerce usage [2]. Internet users believe that government institutions and big companies will help them to protect their information privacy. On the other hand, Internet users also think that the same government institutions will violate their privacy by disclosing personal information without their permission [24].

Many studies have shown that various factors influence Internet users' privacy perception. In this paper we have focused our research on five groups of factors (described above). For the purpose of our research we defined Internet user's privacy perception as Internet users' evaluation and anxiety about the way a particular web site will handle the information that were collected during their online communication.

### 3. Pilot study

First, we developed the scales for the privacy constructs considered in this pilot study. The development of the scales was based on examination of prior work in the field of customer privacy concerns and online privacy. Table 1 provides an overview of the constructs used in this study. In addition, the table contains a list of authors whose work was considered during the development of measurement items. Items were created in three ways: (1) by using original items from previous work, (2) through modification of the original items, and (3) by creating new items. Items were based on the five-point Likert scale (for example '5'= strongly agree, '1'= strongly disagree). Internet user's privacy perception was measured using 4-item scale. Data was also collected about respondent's gender, age, education, and Internet literacy.

Internet literacy was referring to the length and the frequency of usage of particular Internet technologies, as well as to respondents' self-evaluation of their knowledge about Internet.

**Table 1. Scale constructs**

Construct	Authors
Awareness of privacy practices	Malhotra <i>et al.</i> [15] Liu <i>et al.</i> [14] Schwaig <i>et al.</i> [19]
Collect	Malhotra <i>et al.</i> [15]
Control	Malhotra <i>et al.</i> [15]
Control over information collection	Castañeda & Montoro [7]
Control over usage of information	Castañeda & Montoro [7]
Improper access	Malhotra <i>et al.</i> [15]
Information sensitivity	Castañeda & Montoro [7] Berendt & Teltzrow [4]
Legislation and government protection	Dolnicar & Jordaan [10]
Services e-tailer reputation	Sheehan & Hoy [20] Eastlick <i>et al.</i> [11] Teltzrow <i>et al.</i> [22]
Personal Internet interest	Dinev & Hart [8]

The study included 78 respondents of whom 42.3% were female and 57.7% were male. Respondents ranged from 19 to 60 years of age. 61.5% of respondents had a secondary school degree, 21.8% had a high school degree, 14.1% had a university degree and 2.6% had an MSc/PhD degree. All respondents were individuals who had used online shopping or Internet banking service for at least a year. Each construct (scale) was tested for internal consistency of the scale items with a reliability test. The reliability test was performed using Cronbach's Alpha coefficients. The coefficients were above the proposed .70 in almost all of the cases. The coefficients for constructs *Awareness of privacy practices*, *Control* and *Information sensitivity* were around .60, so those constructs were excluded from further analyses.

Next step was the investigation of relations proposed in the research model. The relationships between Internet users' privacy perception (IUPP) and groups of privacy factors: (1) *Customer and web site relationship* - CWSR, (2) *Web site characteristics* - WSC, and (3) *Legislation and government protection* - LGP, were examined using the Spearman correlation coefficient analysis. To explore relationships

between Internet users' privacy perception (IUPP) and group of factors named *Customer intrinsic-characteristics* a Kruskal-Wallis test (for age, gender and education) and a Spearman correlation coefficient analysis (for Internet literacy - IL) were used. Results of the performed correlation analyses are presented in Table 2. The results of correlation analyses indicate that there is a positive correlation between Internet users' privacy perception and the following groups of factors: (1) *Customer and web site relationship* ( $r^s = .306$ ,  $p < 0.01$ ) and (2) *Legislation and government protection* ( $r^s = .369$ ,  $p < 0.01$ ). On the other hand, Internet users' privacy perception does not correlate with the group *Web site characteristics*. There is a significant negative relationship between Internet users' privacy perception and overall Internet literacy ( $r^s = -.378$ ).

**Table 2. Correlations between observed groups of privacy factors and Internet users' privacy perception, n=78, (\*\*p<0.01)**

	CWSR	WSC	LGP	IL	IUPP
CWSR	1.000				
WSC	.057	1.000			
LGP	.597**	.067	1.000		
IL	-.159	-.054	-.140	1.000	
IUPP	.306**	-.064	.369**	-.378**	1.000

According to the results of the performed Kruskal-Wallis tests there was no difference in the answers of the respondents regarding their privacy perception with respect to their gender, age and education.

#### 4. Discussion and conclusion

Online privacy is often seen as an exchange of Internet users' personal information for a specific benefit or a negative consequence [2]. Because of various privacy threats that Internet users face during their online activity, they are becoming increasingly reluctant to give, and/or allow the sharing of their personal information. Therefore, there is a need to understand Internet users' privacy concerns and their privacy perception [15]. As the first step towards this goal, this article proposes a categorization of factors that should be included when examining Internet user's privacy perception. The results of the performed analyses indicate that (1)

respondents' perception of their relationship with a particular web site and (2) their perception of current privacy protection regulative have impact on respondents' privacy perception. *Respondents' perception of their relationship with a particular web site* referred to their attitude/anxiety towards: number of information that is being collected; the purpose of this collation; future usage/improper usage of this information. *Respondents' perception of current privacy regulation* referred to their attitude about the quality of protection offered to them by the current regulations during their online activity. The results indicate that respondents who were more concerned about information that are collected during their online activity were also more concerned about their online privacy. In addition, respondents with a higher level of dissatisfaction with the current privacy protection reported a higher level of online privacy concerns. On the other hand, respondents who reported a higher level of Internet literacy reported a lower level of privacy concerns.

When dealing with issues related to users' online privacy concerns the main goal for online companies is to decrease those concerns. The findings presented above suggest that online companies ought to seek ways to minimize users' concerns about the information requested in an online transaction (and their future usage/missusage). Online companies must work proactively to persuade users that the requested information is managed in a way that protects and obeys their privacy requirements. In addition, results suggest that respondents are sensitive to a specific privacy requirement - privacy regulation. Therefore online companies must prove that they respect and act according to the current privacy norms. Further on, results suggest that respondents who are more familiar with Internet usage and are more experienced in online environment are less sensitive to privacy concerns. This can implicate that those users are more acquainted with possible consequences (positive or negative) of their online behaviour.

The main limitation of this research is a relatively small number of respondents. However, this study was performed as a pilot study. With this pilot study we tried to (1) examine the willingness of respondents to provide the necessary survey data and (2) the ability to measure the selected measurement scale. Future work will be focused on the development of a new privacy perception model and on an empirical analysis on a wider scale.

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