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## ONLINE SHOPPING AND (IM)POSSIBILITY OF PRIVACY PROTECTION IN INTERNET BANKING

### ONLINE KUPNJA I (NE)MOGUĆNOSTI ZAŠTITE PRIVATNOSTI U INTERNET BANKARSKOM POSLOVANJU

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#### *Abstract*

We live in the society of World Wide Web, smart mobile devices and social networking, where an individual can be monitored and his current location can be identified. Each of those new-developed technologies are associated with a set of privacy issues. Firstly, those technologies enable people to be monitored and tracked, so various information about specific technology users can be collected. Secondly, collected information about users can be stored, merged and analyzed at any time. Finally, they enable further dissemination and publication in endlessly varied forms. If those technologies are misused many privacy violations can occur. Privacy can be seen as an individual right. Since individuals differ, the definition of privacy as well as the invasion of privacy will mean different things to different people. The aim of empirical research described in this paper was to investigate individual's attitude toward privacy issues when shopping online and/or when using Internet banking services. Furthermore, we wanted to investigate the relationships between different factors that can influence user's online privacy perception. The research results have shown that there is a connection between respondents' privacy perception and their concerns about information that are collected during their online activity. There is also a connection between respondents' privacy perception and their concerns about how government and current regulations protect their privacy.

#### *Sažetak*

Živimo u društvu koje karakterizira upotreba World Wide Weba, pametnih mobilnih uređaja i društvenih mreža, gdje pojedinac može biti nadziran te može biti određena njegova trenutna lokacija. Svaku od ovih novorazvijenih tehnologija prate različiti problemi vezani uz privatnost. Prvo, ove tehnologije omogućavaju da pojedinci budu nadzirani i praćeni pa se na taj način može prikupiti puno informacija o korisnicima određene tehnologije. Drugo, tako prikupljene informacije mogu biti pohranjene, kombinirane te analizirane u bilo koje vrijeme. Na kraju, ove tehnologije omogućavaju daljnje širenje i publikaciju informacija u raznim oblicima. Ukoliko se navedene tehnologije zlobupotrijebe može doći do različitih oblika povrede privatnosti korisnika. Privatnost se može definirati kao osnovno ljudsko pravo. Pošto se pojedinci međusobno razlikuju tako se i shvaćanje pojma privatnosti, ali i povrede privatnosti može razlikovati od pojedinca do pojedinca. Cilj empirijskog istraživanja prezentiranog u ovom radu bio je ispitati stavove ispitanika vezano uz pitanja o njihovoj zabrinutosti za privatnost prilikom korištenja usluga kupovanja/plaćanja robe putem Interneta (online kupnje) i/ili Internet bankarstva. Nadalje, željeli smo ispitati odnose između različitih činitelja koji mogu imati utjecaj na korisnikovu percepciju online privatnosti. Rezultati istraživanja pokazuju da postoji veza između percepcije ispitanika vezano za njegovu online privatnost i njegove zabrinutosti za količinu informacija koje se prikupljaju o njemu prilikom njegove online aktivnosti. Također postoji pozitivna veza ispitanikove percepcije online privatnosti i njegove percepcije postojećih pravnih okvira vezanih uz zaštitu privatnosti osobnih podataka

## 1. Introduction

According to the research data from June 2010, 28% of the world population uses Internet. In Europe 58% of residents are Internet users /1/. In Croatia 53% of residents (older than 15 years) are Internet users /2/. Individuals in Croatia use Internet mostly for gathering data about products and services, for sending electronic mail and for reading daily papers and magazines /3/.

Individuals that participate in a particular online activity knowingly, but sometimes also unconsciously, disclose some information about themselves. The number of Internet users is increasing every day. However, when an individual is in online environment issues regarding securing his privacy are becoming very important. Individuals consider that companies (online companies) invest too little in securing privacy of the information (that they collected about users' online activity). Furthermore, individuals think that companies have an obligation to secure privacy of the collected information. Also, companies should declare how they handle the collected information. Moreover, they should declare what they do if they lose some customer's personal information /4/. According to some authors the benefits of Internet usage are undermined with privacy risks /5/.

Individual's online privacy concerns are identified as one of the main obstacles that are preventing faster development of commerce based on the Internet technology. According to the research performed by Pew Internet 84% of participants are concerned about the possibility that companies (and other individuals) can gather data about them and their families through Internet. They are also concerned that this collected data can be distributed without their permission /6/.

Considering that technologies used in the information society enable (1) individual's surveillance, (2) monitoring of his activities on particular web site, as well as (3) his online activity in general, issues regarding online privacy are gaining importance. Many have predicted fast spread of e-commerce usage. However, the current data about online shopping do not confirm the predicted fast and exponential e-commerce growth. This article is describing a research performed to investigate Internet user's concerns regarding his privacy when using online shopping/Internet banking services. Further on, the relationship between various identified privacy factors and Internet user's perception of

online privacy was examined. Online privacy can be defined as the ability of Internet user to selectively disclose himself to his environment. Also, online privacy is Internet user's right to decide if he will conceal or disclose his personal information in a particular online transaction. Furthermore, online privacy refers to the individual's right to have the control over information that he has disclosed.

## 2. Problem and research goal

Information about an individual can be easily collected with the usage of new technologies (Internet technologies). There are many ways of accessing those information as well as of analyzing them. Those information are often used by governments, companies or agencies without individual's knowledge or approval. When the individual becomes aware of this, his concerns regarding online privacy are increased /8/. User's privacy concerns during his online activity have negative influence on his intention to purchase goods via Internet /9/. The lack of Internet user's trust, that his privacy will be secured during his online activity, is identified as the main problem that influences e-commerce expansion and growth. Consequently, it is important to understand user's privacy concerns /10/.

Based on the information collected about customers companies are adapting their products to meet customers' needs. In this way the companies obtain customer satisfaction. On the other hand, customers who are receivers of these improved products and services, enjoy the benefits that these services or products offer. Meanwhile, both parties in this relationship suffer some losses. For the customer that is a specific degree in the loss of privacy /11/. Regarding privacy problems, the rights and the obligations of both sides, (customer and company) involved in this products or services exchange should be stressed. Issues like human dignity and human values as well as rights to privacy, anonymity, autonomy, security and protection should be involved /12/. Specific characteristics of the Internet influence types and ways of privacy violations. Owing to that, there is a need to investigate how an individual perceives risks related to possible privacy invasion when he is browsing or shopping online /13/. Buchanan *et al.* /14/ are pointing out that it is very important to have methods and instruments that will enable the identification and the measurement of customer's privacy concerns. When deciding whether he will disclose his personal information to a par-

ticular web site, Internet user also takes into consideration potential benefits that he will obtain in return, e.g. better e-service quality. The quality of e-service can be seen as customer's overall assessment of the delivered e-service. Until now privacy was identified in literature as one relevant dimension of customer's e-service quality. Because of that, it is important to investigate how can specific online privacy factors influence overall customer's e-service quality perception. The study presented in this article meets the following objectives: The investigation of respondents' attitude regarding their privacy concerns when using e-services (principally, online shopping and/or Internet banking). The investigation of (1) respondents' competence in working with a computer and in Internet usage, and (2) respondents' satisfaction with the quality of various Internet services. The investigation and inquiry of the relationships between various privacy factors and respondents' overall online privacy perception when using e-services (online shopping and/or Internet banking). The study presented in this article is justified owing to many reasons. Firstly, Internet is becoming the global communication media, therefore it is important to examine diverse opinions of its users and potential barriers to its further usage. Secondly, based on the results of customers' satisfaction with present e-services the online companies can (1) develop newer versions of the services which will better meet customers' needs or (2) create entirely new services. Thirdly, if online companies are acquainted with the possible reasons/causes of customers' online privacy concerns, they can change or adjust their online services, or find new mechanisms that will ensure a certain level of privacy for their customers. In this article we present the (pivot) study of customers' privacy concerns when using e-services (online shopping and/or Internet banking) as well as of factors that have influence on his online privacy perception.

### 3. The research methodology

The research was performed using a questionnaire. The questionnaire was created based on the review of recent literature in the online privacy scope. The study included 78 respondents (randomly selected). Respondents were individuals that have been using services of online shopping and/or Internet banking for at least one year.

#### 3.1. Instrument

The questionnaire was composed of four parts.

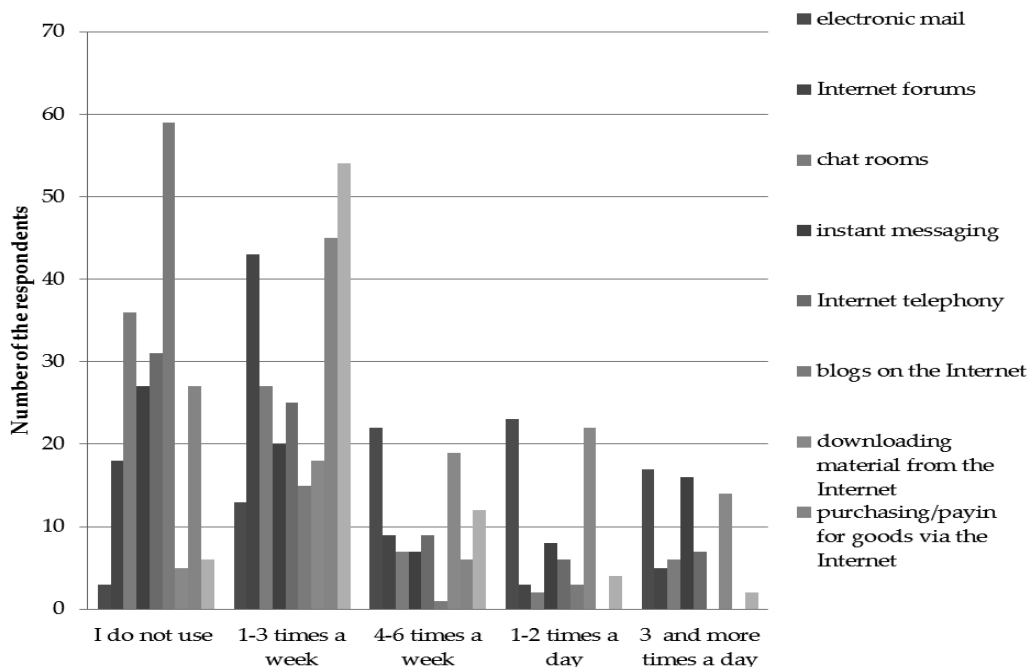
The *first part* of the questionnaire was referring to quantitative and qualitative features of the respondents (gender, age, education, profession and activity in which they work) as well as to length and frequency of specific Internet technologies usage (e-mail, Internet forums, chat rooms, instant messaging, Internet telephony, blogs, downloading material from the Internet, purchase/payment of goods via the Internet, Internet banking).

The *second part* of the questionnaire was referring to respondents' self-evaluation of their competence in working with a computer and in Internet usage. The respondents were able to rate their competence in working with a computer and in Internet usage using the following answers: "none", "weak", "average", "good" or "very good". The *third part* of the questionnaire was referring to the examination of respondents' attitudes regarding their online privacy concerns. This part of the questionnaire included 30 items. Items that were used were created by: (1) using original items from other researches in this field, (2) modifying original items or (3) creating new items. The respondents marked their attitude regarding a particular item (their agreement/disagreement with an item) on a proposed five-point reverse Likert scale (for example '5'= strongly agree, '1'= strongly disagree). The *fourth part* of the questionnaire was referring to respondents' satisfaction with the quality of service when using the following technologies: (1) Internet forum, (2) chat room, (3) instant messaging, (4) purchasing/paying for goods via the Internet, and (5) Internet banking. The respondents could rate their satisfaction with service quality using the following answers: "I do not use", "not satisfied", "satisfied" and "very satisfied".

### 3.2. Respondents

The research included 78 respondents, of whom 45 (57.7%) were male and 33 (42.3%) were female. The youngest respondent was 19, and the oldest respondent was 60 years old. Average age of respondents was 31.65 years. Most respondents had secondary school education (61.5%), followed by respondents with high school degrees (21.8%). University degree was held by 14.1% of respondents, while fewer respondents had MSc or PhD degree (2.6%). As for the length of particular technology usage answers were as follows. For *electronic mail* the most respondents (51.3% of respondents) said they have been using it for more than 5 years. For *Internet fo-*

*rum*s most respondents stated that they have been using them for a period of 2-3 years. *Chat rooms* are not used by 34.6% of respondents, while 32.1% of respondents said they have been using *chat rooms* for more than 5 years. *Instant messaging* is used by 32.1% of respondents. Most of those who use instant messaging said they have been using them for a period of 2-3 years (24% of respondents). *Purchasing/payment of goods via the Internet* is used by 30.8% of respondents, followed by respondents who have been using this service for a period of 2-3 years (28.2% of respondents). Finally, most of the respondents said they have been using *Internet banking* service for a period of 2-3 years (50% of respondents).



**Graph 1** Number of respondents by frequency of use of: (1) electronic mail, (2) Internet forums, (3) chat rooms, (4) instant messaging, (5) Internet telephony, (6) blogs on the Internet, (7) downloading material from the Internet, (8) purchasing /paying for goods via the Internet and (9) Internet banking, n=78

Number of respondents according to the frequency of usage of: (1) electronic mail, (2) Internet forums, (3) chat rooms, (4) instant messaging, (5) Internet telephony, (6) blogs on the Internet, (7) downloading material from the Internet, (8) purchasing/paying for goods via the Internet and (9) Internet banking is shown in Graph 1. Most respondents use *electronic mail* 4-6 times a week or 1-2 times a day. For *Internet forums* most of the respondents stated that they use them 1-3 times a week or they do not use them at all. Most of the respondents stated that they do not use

*chat rooms* or use them 1-3 times a week. For *instant messaging* also the most respondents said that they don't use it or they use this service 1-3 times a week. The same applies to the frequency of usage of *Internet telephony* and *blogs on the Internet*. Most of the respondents stated that they download material from the Internet 1-2 times a day or 4-6 times a week. Most of the respondents stated that they purchase/pay goods via the Internet 1-3 times a week or that they do not buy goods through the Internet.

Regarding *Internet banking* most respondents stated that they use that service 1-3 times a week or 4-6 times a week.

Given to the self-evaluation of respondents related to general competence (knowledge) of working with computers and information technology, 5.1% of respondents rated their knowledge as *low*, 32.1% of respondents rated their knowledge as *average*, 38.5% of respondents rated their knowledge as *good*, while 24.4% of respondents rated their knowledge as *very good*. Not one of the participants rated their general

knowledge of computers and information technology as *none*.

Table 1 presents the results of self-evaluation of respondents regarding their knowledge of computers and the Internet. Also, it shows the percentages of respondents who evaluate their skills to work with specific tools/programs rated as "none", "low", "average", "good" or "very good".

**Table 1** Percentage of respondents according to their knowledge of computers and the Internet, and their competence to work with specific tools, n=78

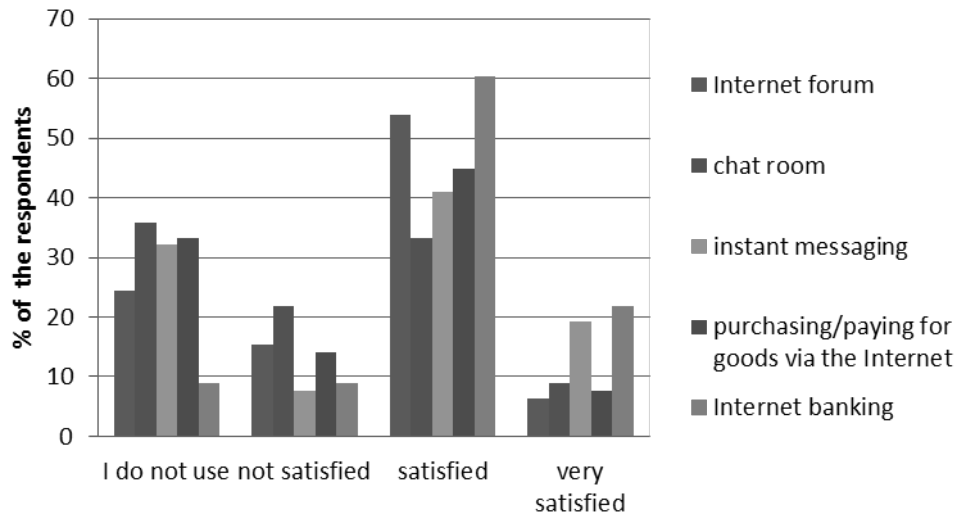
Tools	Level of knowledge					Total
	None	Low	Average	Good	Very good	
General knowledge of computers and information technologies	0.0	5.1	32.1	38.5	24.4	100.0
Work with tool for word processing	1.3	5.1	9.0	38.5	46.2	100.0
Working with a spreadsheet tool	3.8	9.0	11.5	38.5	37.2	100.0
Working with tools for making presentations	6.4	7.7	11.5	26.9	47.4	100.0
Working with tools for databases managing	12.8	24.4	30.8	20.5	11.5	100.0
Working with Internet browser	0.0	3.8	10.3	28.2	57.7	100.0
Working with Internet search engines	0.0	2.6	5.1	29.5	62.8	100.0
Working with the program for receiving / sending e-mail	1.3	2.6	16.7	35.9	43.6	100.0

#### 4. Results

To examine the influence of certain factors (factors of online privacy) on respondents' perception of online privacy, 8 measurement scales involving 30 items have been used. Respondents noted their agreement/disagreement with a particular item using the five-point Likert scale (reverse Likert scale). Following measurement scales (constructs) were used: (1) Collection - COL, (2) Control over information collection - CIC, (3) Control over the use of information - CUI, (4) Improper access - IA, (5) Legislation and government protection - LGP, (6) Services e-tailer reputation - STR, (7) Personal Internet interest - PII and (8) General perception of online privacy GPOP.

Scale *Collection* (COL) referred to the respondent's perception of the amount of information collected about him while using e-services (online shopping

and/or Internet banking). Scale *Control over information collection* (CIC) referred to the perception of the respondent regarding the control that he has over the process of collecting information about him during his online activities (while using online shopping and/or Internet banking). Scale *Control over the use of information* (CUI) referred to the respondent's attitude towards the purpose and the manner of usage of information that he has disclosed to the other side (online company) during particular online transactions. Scale *Improper access* (IA) was related to the respondent's opinion on how to prevent improper access to his data (owned by a company). Scale *Legislation and government protection* (LGP) was related to the respondent's perception of the existing legislation regarding the protection of individual's privacy. Scale *Services e-tailer reputation* (STR) was related to the respondent's perception of the reputation of company/bank whose services he



**Graph 2** Percentage of the respondents with regard to satisfaction with the quality of the following services: Internet forums, chat rooms, instant messaging, purchasing/paying for goods via the Internet and Internet banking, n = 78

uses. Scale *Personal Internet interest* (PII) referred to whether respondent's interest in obtaining certain information can override his concerns about invasion of privacy. Scale *General perception of online privacy* (GPOP) was used to measure the respondent's privacy perception when using online shopping and/or Internet banking service.

Internal consistency of measurement scales was measured with Cronbach Alpha coefficient. Based on the results of the analysis of internal consistency it can be concluded that all measurement scales have a satisfying consistency. The Cronbach Alpha coefficient ranged from .704 to .838. The recommended lower limit for Cronbach Alpha coefficient is .70 /15/. Consequently, it follows that all measurement scales can be used for further analysis. In order to examine the relationship between specific privacy factors (constructs) and respondents' general online privacy perception analysis was performed. Pearson's coefficient was used as a measure of the strength of the linear relationships between the observed instances.

Table 2 shows the correlations between the observed constructs and user online privacy perception and correlations between the constructs themselves. The strongest correlation (positive) was established and tested between respondent's *general online privacy perception* (scale GPOP) and construct *Collection - COL* ( $r = .379, p < 0.01$ ). This is followed by a correlation between respondent's *general online privacy perception* (scale GPOP) and construct *Legislation and government protection - LGP* ( $r = .359, p < 0.01$ ). Also, a positive correlation was identified between respondent's *general online privacy perception* (scale GPOP) and construct *Control over information collection - CIC* ( $r = .283, p < 0.01$ ).

Correlation between *Legislation and government protection - LGP* and *Improper access - IA* can be marked as the strongest correlation ( $r = .601, p < 0.01$ ). Construct *Improper access - IA* also correlated (positive correlation) with a *Services e-tailer reputation* (STR) ( $r = .437, p < 0.01$ ).

**Table 2** Correlations between observed constructs (privacy constructs) and user online privacy perception and correlation between constructs themselves, n = 78 (\* p <0.05, \*\* p <0.01)

	COL	CIC	CUI	IA	LGP	STR	PII	GPOP
COL	1							
CIC	.424**	1						
CUI	.278*	.334**	1					
IA	.278*	.434**	.563**	1				
LGP	.363**	.498**	.471**	.601**	1			
STR	.201	.297**	.163	.437**	.299**	1		
PII	-.076	-.160	-.097	-.065	-.234*	.048	1	
GPOP	.379**	.283*	.190	.077	.359**	.073	-.119	1

Significant positive correlations were identified and tested between construct *Collection* - COL and *Control over information collection* - CIC ( $r = .424$ ,  $p < 0.01$ ), as well as between construct *Collection* - COL and *Legislation and government protection* - LGP ( $r = .363$ ,  $p < 0.01$ ). Furthermore, positive correlations were observed between construct *Collection* - COL on one hand, and constructs *Control over the use of information* - CUI ( $r = .278$ ,  $p < 0.05$ ) and *Improper access* - IA ( $r = .278$ ,  $p < 0.05$ ) on the other hand.

Statistically significant correlations were identified and tested between *Control over information collection* - CIC on one hand and the following constructs on the other hand: *Legislation and government protection* - LGP ( $r = .498$ ,  $p < 0.01$ ), *Improper access* - IA ( $r = .434$ ,  $p < 0.01$ ), *Control over the use of information* - CUI ( $r = .334$ ,  $p < 0.01$ ) and *Services e-tailer reputation* - STR ( $r = .297$ ,  $p < 0.01$ ).

Statistically significant positive correlations were observed between *Control over the use of information* - CUI on one hand and constructs *Improper access* - IA ( $r = .563$ ,  $p < 0.01$ ) and *Legislation and government protection* - LGP ( $r = .471$ ,  $p < 0.01$ ) on the other hand. Furthermore, positive correlation was identified between *Legislation and government protection* - LGP and *Services e-tailer reputation* - STR ( $r = .299$ ,  $p < 0.01$ ). The only negative correlation was identified between the *Legislation and government protection* - LGP and *Personal Internet interest* - PII ( $r = -.234$ ,  $p < 0.05$ ).

According to the results of the conducted Mann-Whitney U test it can be concluded that when gender is concerned there was no difference in the answers of respondents regarding the observed privacy constructs and their online privacy perception.

Based on the results of Kruskal-Wallis tests, it can also be concluded that with respect to their education and age there was no difference in the answers of respondents regarding the observed privacy constructs and their privacy perception.

Further on, given to the results of the conducted correlation analysis negative correlations were identified between (1) *the length of use* and (2) *frequency of use of computer and Internet technology*, and (3) *self-respondents regarding knowledge of computing and the Internet*, on the one hand, and user's online privacy perception on the other hand. Statistically significant negative correlations, were identified between the respondent's general perception of online privacy (GPOP scale) and *frequency of use of Internet telephony* ( $r = -.399$ ,  $p < 0.01$ ), *the length of use of electronic mail* ( $r = -.389$ ,  $p < 0.01$ ), *frequency of use of electronic mail* ( $r = -.314$ ,  $p < 0.01$ ), *the length of buying/paying for goods via the Internet* ( $r = -.271$ ,  $p < 0.05$ ), *the length of chat rooms usage* ( $r = -.269$ ,  $p < 0.05$ ), *frequency of instant messaging usage* ( $r = -.199$ ,  $p < 0.05$ ) and *length of instant messaging usage* ( $r = -.226$ ,  $p < 0.05$ ).

The fourth part of the presented questionnaire was used to investigate respondents' satisfaction with the quality of certain e-services. The graph 2 shows the percentage of respondents with regard to satisfaction with the quality of the following services: (1) Internet forums, (2) chat rooms, (3) instant messaging, (4) shopping/paying for goods via the Internet and (5) Internet banking. As for *Internet forums* the most of the respondents said they were satisfied with the quality of service. The most of the respondents stated that they are not using *chat rooms*. The most of those respondents who use chat rooms said they were satisfied with the quality of service. Also,

most respondents stated that they are satisfied with the quality of service when it comes to the remaining services (*instant messaging, shopping/payment of goods via the Internet, Internet banking*). The results of the correlation analysis between respondents' satisfaction with the quality of certain e-services and measurement scales (privacy constructs) suggest that there are no statistically significant correlations between the observed instances.

## 5. Conclusion

According to the Pew Internet estimation people who are born in the period of general introduction of digital technology and who become familiar with digital technology usage (they are called digital natives) will continue to use the Internet and will continuously disclose a large amount of their personal information in order to stay connected (online) and take advantage of social, economic and political benefits. Their intention of disclosing personal information will not change as they age, become parents or accept more responsibilities /16/. This indicates that the existing problems related to privacy in the future will not be so important. On the other hand, Gartner Inc. /17/ provides that in 2011 e-business will face new expectations such as the complexity of international web sites (operating international websites), new user requests, problems related to the detection of possible fraud. Likewise, Gartner Inc. notes that there is still a problem with privacy, and suggests that companies should not wait for the government to find a solution to this problem. It is inherent in human psychology to always preserve one's own feeling of security, which definitely involves protection of personal privacy. With the introduction of modern technologies the human needs regarding privacy protection are spreading into the virtual environment as well. Although we acknowledge the appearance of digital natives and their easy-going attitude towards personal information disclosure, negative aspects and risks of such actions need to be stressed.

The study presented in this article addresses the issues connected to invasion or violation of privacy which increasingly occur. To measure respondents' concerns regarding online privacy issues, average ranks (means) of observed privacy factors (constructs) were calculated. Average ranks of investigated privacy factors ranged from 3.25 to 4.45 (five point Likert scale). Results suggest that respondents were mostly concerned about: (1) their control over

the future use of their information (scale CUI, mean is 4.45), (2) possible improper access to information collected about them during their online activities (scale IA, mean is 4.38) and (3) existing legislation related to the one's privacy protection (scale LPG, mean is 3.98). The research we have undertaken has shown a way towards confronting the aforementioned privacy issues. The results presented in this paper can serve businesses that offer their services or products through the web site to understand and learn about the possible factors affecting the user's concern for their privacy (during their online activities).

## Notes

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