ECONOMICS
& Sociology

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CONSUMERS' NEED OF PRIVACY PROTECTION – EXPERIMENTAL RESULTS

ABSTRACT. Protection of privacy in the information age is a growing challenge. Corporations and other institutions collect data and utilize them for various purposes, not all of which may be in favour of individuals. Yet still little is known of how individuals perceive the value of privacy and what is the individuals' awareness of costs and benefits associated with data sharing. This article presents the experimental research on factors determining privacy behavior of consumers. We provide evidence, that the need of privacy protection depends on gender and is affected by priming. On the other hand, nor the type of purchased good nor the decision-making method had the significant impact in our study on willingness to disclose private data.

Introduction

The development of modern IT, including the Internet, has opened up new opportunities in collecting, storing, processing, and using vast quantities of data, such as data referred to as Big Data. For example, data collections may include millions of records concerning: transactions carried out with payment cards by bank customers, information on the present location of mobile phone users, data on health condition and medical services used by patients, information on content looked for in the Internet, and personal data made available by users in social media. Large data collections are of interest for enterprises; owing to their analysis, they can offer more custom-made services and products, and thus improve their competitive advantage. Such databases are interesting also for a number of state institutions, including healthcare services, police, and tax authorities. It is noteworthy that within the ordinary daily activities, we generate much information about ourselves, which can be exemplified with a simple case of purchasing a train ticket.

To make the transaction and receive a train ticket at a ticket window, it is sufficient to make a payment. It is a bearer ticket and if it is paid for in cash, the data collection about a

buyer is minimal.[1] Quite different situation occurs if a train ticket is purchased over the Internet. As it is necessary to limit the risk of copying tickets and/or selling falsified tickets on the market, in the course of the online purchase a customer is obliged to provide one's full name.[2] Such information has to conform to identity documents of the customer, because he or she may be asked for them during a routine ticket control on a train. Thus, information about a customer identity, the purpose and time of travel, and the seat occupied in a train, if numbered, is gathered simultaneously. In addition, the set of generated information increases significantly if a payment is made online, including the payment system used by the customer, the type of bank or payment card, the time of transaction, as well as the IP number.

The above-mentioned example shows that the volume of information obtained just from a single transaction may be substantial. Data is collected by implicit or explicit consent of customers by a number of entities and is often used for commercial purposes, including public ones. Nevertheless, cases of the improper use of customer data are not so rare, as well as the 'leaks' of sensitive and personal information. Hence, the intense development of IT and the resulting changes in the modern economy that bring many benefits to businesses and their customers pose a number of challenges as well, including especially the protection of private life. For example, Nir Kshetri (2014) discusses a situation of an unauthorised transfer of collected data to third parties by the Nissan company. Although the customers were not aware of the Nissan practice, the data about their location, speed, and the chosen direction were gathered and available on website. Nir Kshetri (2014) presents in his paper the detailed catalogue of benefits and risks that stem from the development of data wholesales from the perspective of protecting privacy and well-being of customers. On the other hand, Preisbusch *et al.* (2016) conducted the analysis of the on-going practices of 881 online stores operating in the US as regards providing information to the PayPal payment service. More than 50% of examined stores provided PayPal with information that could be used to create customer profiles by that service (Preisbusch *et al.*, 2016).

The problems of providing access to personal data, its collection and storage as well as the broader issues of privacy protection, are the subject of a number of analyses within IT, law, economics, and psychology. Nevertheless, studies that try to imitate the actual conditions of decision-making when providing access to data and to analyse factors that affect that decision process with an experiment are less frequent. The goal of this paper is to investigate the factors determining privacy sharing and protection by students while shopping. In this paper, we present the analysis of the individual willingness to provide one's personal data.

The method of the study was the experimental design which simulated purchasing situations. The findings stem from the statistical analysis of obtained experimental data as well as the logit model estimation.

We analysed two groups of factors in the present study, which were expected to affect the willingness of respondents to disclose their personal data. The first group were individual characteristics, such as gender and the time spent using the Internet. The second group were specific experimental conditions, because it was expected that in some conditions respondents would be more ready to share their personal data. Four hypotheses were evaluated in the course of the analysis:

H1: The willingness to disclose personal data depends on gender.
H2: Priming effect increases the willingness to protect one's privacy and reduces the frequency of sharing personal data.

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[1] It is certainly possible that CCTV cameras are installed at a railway station, which may provide the collection of some biometrical data. Nevertheless, it will not be certain what exact ticket has been purchased.
[2] The example refers to the Polish market. Authors are not aware if the same practices are hold true in other countries.

H3: Persons who use the Internet more often are more ready to provide access to their personal data.

H4: The willingness to share personal data is sensitive to experimental conditions.

The latter of the paper is organized as follows. First, in the literature review section we discuss the outcomes of previous research concerning the theory and practice of giving access to personal data. In the second section, we clarify the research design and the methodology. In the section 3, 4 and 5 we present and discuss the research findings. While in the section 3 we start from the problem of providing personal data in a traditional shopping situation (pollster at mall), in sections 4 and 5 the online shopping situations are examined. The results of the statistical analysis based on the logit model estimation are presented in the section 6. The final remarks are given in the last section.

1. Giving Access to Personal Data – literature review

From the perspective of consumers, the studies of Acquisti and Brandimate (2012) are worth referring to. They voiced the opinion that consumers analyse benefits and risks related to providing access to their personal data. Authors who carry out the economic analysis of privacy indicate that sharing private data may reduce economic costs and inefficiencies. Nevertheless, opposite situations may occur as well. A consumer may incur a loss resulting from the improper use of one's data, an identity theft or price discrimination (Acquisti, Brandimate, 2012).

The authors have also distinguished three markets of private data. The first market is created by traditional transactions of purchasing goods and services, where a consumer provides private information. The above-mentioned example of purchasing a train ticket describes such type of market. The second market consists of transactions between institutions / enterprises that hold consumer data. A good example is the sale of a database that contains contact data of insurance institution customers.[3] On this market, Acquisti and Brandimate (2012) have placed also the transaction of receiving free products or services, e.g. a free e-mail box. In this case, a consumer receives a product in return for sharing private information. The third market consists of transactions in which consumers purchase products and services that increase the privacy protection level, e.g. special software.

The research conducted on privacy behaviour have shown a number of interesting phenomena. For example, Baek, 2014, Chen, and Chen, 2015, Kokolakis, 2015, and Smith *et al.*, 2011 confirmed the existence of the inconsistency between the expressed convictions and behaviour within the disclosure of private information, which is a so-called privacy paradox. One of the inconsistency manifestations as regards Internet users is the frequency with which they automatically accept rules and forms of consent to personal data processing. In their review of studies on providing private data online, A. Beldad, M. de Jong, and M. Steehouder (2011) also refer to that phenomena and stress that generally Internet users do not read the above-mentioned documents or privacy policy documents. Nevertheless, displaying them on the organization website raises trust to that organization and fosters the sense of control over personal data (Arcand *et al.*, 2007, after Beldad *et al.*, 2011). On the other hand, the study by N. Steinfeld (2016) showed that presenting a privacy policy in a prominent way increased a chance that respondents would pay more attention to it and understand it better. If a privacy policy document was displayed on the screen automatically and it was not necessary to open a new screen to read it, respondents read it more often, spent more time on it, and understood it better than if provided with only a link to that document.

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[3] In this example it is assumed that customers had agreed to the use of personal data for commercial and marketing purposes by that institution and third parties.

Sharing private information depends on a number of factors, including, as emphasized by Acquisti and Brandimate (2012), the expected benefits. In 2012, PwC conducted a study on a large group of consumers; its results confirm that the majority of respondents (73%) were ready to share their private information in return for financial benefits (e.g. a lower cinema ticket price) and non-financial advantages (e.g. the option to avoid watching commercials on TV). Furthermore, young persons were more willing to agree to provide their private information. The PwC studies confirmed also that the more information was considered to be 'private', the less positive respondents were about disclosing it. Consumers most often shared information about their gender and marital status (81-93%), consumer preferences and patterns concerning TV channels, online films and games (53-65%), information on online shopping, including the value of income, e-mail address, date of birth, and surname (41-50%). Respondents were much less willing to share information about their present location or history of employment (30%), the online search history, or data on their financial and health situation (11-17%). Data such as a social insurance number and an e-mail address list, the history of phone calls and the passwords to a social network account was considered to be most private. Only a few percent respondents were ready to share information in the latter cases (PwC, 2012). The study shows also that consumers want to maintain control over sharing their private information, expecting transparency from businesses that should inform them of the scope of its use.

The complexity of attitudes and behaviour within privacy has been emphasized already in works by A. F. Westin (1967), who divided people according to the intensity of their concerns about privacy into: fundamentalists, pragmatists, and unconcerned. In consecutive years, the approach of that author was used, among other, in studies of consumer attitudes towards privacy (e.g. Equifax/Harris Consumer Privacy Survey 1994-1996).[4] The above-mentioned classification of attitudes was used, for example, in the research on the influence of loyalty programmes on the willingness to share private information by American consumers (Jai, King, 2016). The study demonstrates that consumers differentiate entities to whom they provide private information; for example, their readiness to give consent to online stores to transfer information to data brokers is lower than in the case of third party advertisers. Moreover, younger persons give their consent to the transfer of information more often, and men more often than women. T.-M. Jai and N. J. King (2016) also confirmed that the commitment of consumers increased their willingness to provide personal data. The higher number of loyalty programmes enrolled in by respondents, the greater their readiness to share data. The authors proved that the willingness to provide data is different among analysed groups, i.e. among fundamentalists, pragmatists, and unconcerned about privacy matters. Fundamentalists are restrictive about sharing their data, regardless of the entity such data is to be given to. Nevertheless, in this group men are more ready than women to disclose their data. In the group of respondents pragmatic about privacy issues, all four differentiated variables, namely gender, age, commitment, and the number of loyalty programmes, influenced a decision to share data significantly. On the other hand, in the unconcerned group, what mattered in case of sharing data with brokers was sex, commitment in the event of transferring data to third party advertisers, and age. Younger persons were more willing to provide data also to data brokers.

While the above-mentioned studies focused mostly on sharing data with stores and businesses, a slightly different approach to the privacy problem was chosen by S. Schudy and V. Utikal (2015), who analysed the willingness to provide private data to unknown recipients. The study was conducted on students of two universities in Germany within several experiments. The collected results underlie a statement that for respondents the number of

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[4] To follow an interesting discussion on the limitations of the use of the so-called Westin indexes, see P. Kumaraguru and L. F. Cranor (2005).

persons who will receive private information matters. The higher the number was, the less ready to share information the respondents were. Moreover, S. Schudy and V. Utikal noticed that the respondents were not very willing to give private information to students of the same university. Hence, the experiment participants did not favour their own student group and in fact being a student at the same university discouraged them from sharing their data. For example, women did not want to provide information about their lifestyle to persons from the same university. Moreover, respondents valued specific information differently, as proven by the amounts demanded for sharing data. In this instance, contact data was more expensive than body size information. It is worth emphasizing that the number of persons who agreed or refused to share data each time was low. S. Schudy and V. Utikal interpret that result as the confirmation of the fact that respondents assessed the benefits and costs of sharing information from time to time.

2. Research design and methodology

The experiment on giving access to personal data was carried out at the computer laboratory using a specially designed application. Hence, it is a computerised laboratory experiment (Soliwoda, 2014, p. 66; Anderhub *et al.*, 2001). The respondents were the first-year students at the Faculty of Economics, University of Gdańsk in the academic year 2014/2015. 489 respondents participated in total, including 302 women and 187 men.

The whole study comprised eight stages, which lasted about 30 minutes altogether. In this analysis, a decision was taken to present the results of the first three stages, which concerned purchase situations. In the first stage, respondents were requested to act (by referring to their experience) as a person who is doing shopping in a mall. In the second stage, a simulation of a price search engine was used, where a respondent could look for a seller of an e-book. The third stage simulated purchases at an online pharmacy.

Likewise, in many experimental studies, the respondents were first asked to give their personal data. Moreover, before the start of the experiment approximately half of the respondents read an article displayed on a computer screen concerning Google and its policy in the use of information and advertisement positioning. Students were randomly allocated to this group. The introduction of that element into the study was aimed at verifying the impact of priming on the readiness to share personal data. The priming effect results from the fact that a stimulus received either consciously or unconsciously (the occurrence of a specific concept, idea, or image) makes it easier to recognise similar content in a certain way (Maruszewski, 2011, pp. 59-60). In other words, the process anchors one's thinking and influences the further perception and associations (Kahneman, 2011).

The conducted study was based on a hypothetic choice and involved simulations, so students were not doing real shopping. However, respondents did give their personal data. By treating the whole situation as unreal, students were able to give false personal data. In order to verify if provided information was true, it was compared with the list of students available in e-registers. Hence, it was possible to identify persons who gave their actual personal data. It is worth emphasizing that the identification was used only and exclusively for the purpose of and during the study. According to applicable regulations, after the experiment the data was deleted and it is no longer possible to recreate personal data of respondents.

3. Sharing Personal Data to a Pollster at a Mall

During the first stage, experiment participants were requested to play the role of a person who is stopped by a pollster in a shopping centre. To make the situation more realistic, the name of the mall was given and its interior was displayed on the screen.

The respondents were informed that a pollster was a researcher working for the University of Gdańsk. The questionnaire concerned financial and insurance issues. The respondent had to decide if to give the answers in return for a fee; if an answer was negative, a respondent moved to the next part of the study. Beyond the questionnaire, a respondent was asked for personal data that was to be filled into a form that looked like a Sodexo brand form, which suggested the relationship with receiving a bonus.

The respondents were allocated randomly to the following two options:

- a simultaneous variant, where a pollster asked a respondent at the same time to fill in the questionnaire and provide data in return for a financial bonus; or
- a stage variant, where a pollster first asked a respondent to fill in the questionnaire for a financial bonus and next, when the questionnaire had been completed, for providing data in return for a higher remuneration.

In addition, there were some differences in the value of the remuneration for filling in the questionnaire and sharing personal data. The respondents were informed that the compensation would be paid by a pollster in the form of a Sodexo voucher to be used at any shop. For filling in the questionnaire one received a bonus of PLN 10.00, while for both filling in the questionnaire and sharing data one got PLN 20 or PLN 30, depending on the questionnaire option (the option was generated randomly). The distribution of the study sample depending on the questionnaire options is presented in *Table 1*.

Table 1. Data sharing in a mall

	Survey variant			
	Stage variant		Simultaneous variant	
	with remuneration for filling in the questionnaire and sharing data			
	PLN 20	PLN 30	PLN 20	PLN 30
Number of respondents	235*		254	
	89	96	121	133
Providing personal data	43%		51%	
	62%	47%	50%	52%

* 50 persons out of 235 did not agree to fill in the questionnaire for a voucher of PLN 10.00 immediately; therefore, they were not asked to provide their data. As a consequence, the total number of respondents in the options PLN 20/PLN 30 is lower by 50 persons than the number of respondents in total.
Source: own study.

The questionnaire options were drawn in the following manner: out of 489 respondents 235 persons filled in the option where they were asked consecutively for completing a questionnaire in return for the PLN 10 voucher, and next for providing their personal data, while 254 persons were asked simultaneously to fill in the questionnaire and share data. In the first case 50 persons immediately refused to fill in the questionnaire and for those persons no further bonus option was drawn for giving personal data. Therefore, the total number of respondents in the PLN 20/PLN 30 options is lower by that difference than the total number of respondents.

The following personal data was required: a name, a phone number, and a personal identification number (PESEL).An online form contained an algorithm that verified the correctness of the PESEL number and did not admit any false data. If a PESEL number was rejected as incorrect, a participant was able to correct it or decide not to give any data and not to receive the Sodexo voucher. It is noteworthy that the whole situation was hypothetical – in reality the students did not receive any financial rewards. Table 1 includes information about

the percentage of persons who provided their personal data in the first part of the study by survey variant.

If the respondents were requested first to fill in the questionnaire, and next asked again to give their personal data, the percentage of respondents giving data was lower by 8 percentage points than in the situation when they were asked for filling in the questionnaire and giving personal data at the same time. The difference is statistically significant, and was confirmed by the similarity test of the structure indices based on the normal distribution, which verifies the hypothesis, that two fractions are equal. $p = 0.0766$ was obtained, and on the significance level $\alpha = 0.1$, it enables to reject the hypothesis of the equality of fractions. It can be supposed that the necessity to take two different decisions, including one related only and exclusively to giving one's personal data, raises the attention of respondents, which consequently leads to the more frequent refusal to give one's data. Respondents would probably have to hear some additional arguments for sharing their personal data, because they are in the central path of information processing. On the other hand, when a decision to provide data was taken together with the decision to fill in the questionnaire, it can be expected that the respondents were not focused so much or fell into the trap of commitment. If they had already agreed, they intended to complete the questionnaire and share their data.

Not all the obtained results were in line with the expectations. It was expected that the percentage of provided data would grow with the increase of the offered bonus (the remuneration in the form of Sodexo bonuses). In the case of the simultaneous request for filling in the questionnaire and giving personal data, the percentage of provided data increased slightly, but the difference proved to be statistically insignificant. On the other hand, when data was requested after the questionnaire had been completed in return for additional remuneration, the percentage of shared information was much lower when the offered amount was higher (the difference was statistically significant at the significance level 0.05). This phenomenon probably results from the fact that attributing the value separately to obtained data resulted in the situation where respondents became suspicious about the purpose of the study. The high reward for providing data could have been an alarming factor, which attracted the attention of respondents and made them protect their privacy.

Due to the lack of differences in the results of the simultaneous option depending on the value of the amount and to simplify the analysis, in the last part of this study (in the model analysis), we divided the sample into two experimental groups: with the simultaneous selection and the selection in stages, without differentiating due to the value of the remuneration for sharing data. When conducting the model analysis, responses of 50 persons who refused to fill in the questionnaire in the stage option were removed from the study sample.

4. Sharing Data During Online Shopping

During the second part of the study, the participants of the experiment saw a simulation of a price comparison website, i.e. a site with a list of stores and prices of a selected product available from the stores. The purchased good was an e-version of a macroeconomics handbook, which students were requested to buy.

The students were informed that the two best offers were displayed – in the first store the price of the product was PLN 90, and in the second one it was PLN 100. There were three randomly generated study variants: with no comments from customers visible under the offer of the store (1), with visible anonymous comments of users displayed under the offer (2), and with comments signed by their authors (3) – the name of the author was fictitious.

The study was constructed in the following manner. In the store, where the price was lower (PLN 90), respondents had to give their personal data. Participants were requested to give their name, address, e-mail, and phone number.

In the store offering the book for PLN 100 the participants did not have to share their personal data. The objective of that stage was to verify if students would follow the price and select a cheaper store, giving their personal data, or, in order not to disclose their personal data, they would opt to buy in the more expensive store. The variant without any comments did not contain any clues, while the variant with comments could prime the respondents. The comment in the cheaper store was as follows:

'Everything is fine. The transaction was problem-free, but I do not understand why I need to give my personal data in the online store (address and phone number)'.

A shorter comment was given in the store with more expensive goods:

'The transaction was fast and effective. Thank you. The store is reliable'.

The distribution of the study sample and data provision in the second part of the study are presented in *Table 2*.

Table 2. Providing data when buying an e-book

	Survey variant		
	with no comments	with anonymous comments	with comments signed by their authors
Number of respondents	118	265	106
Providing personal data	47%	22%	23%

Source: own study.

As a result of the random division of the sample, unequal groups were obtained in terms of comments; nevertheless, the groups were so large that conclusions can be drawn. As expected, the presence of comments affected significantly the choice of a store with a more expensive product but where no personal data was required. In the 'no comment' version, the cheaper product was purchased and data was given by 47% participants. In the version with comments, the percentage was halved and did not exceed 23%.

Moreover, no differentiation was noted depending on whether the comments were anonymous or not. That factor will not be taken into consideration in the model analysis. During the model analysis, two variants will be distinguished in this part of the study – with and without comments.

5. Providing Data when Shopping at an Online Pharmacy

The third part of the study was the simulation of shopping at an online pharmacy. A website of a pharmacy with a basket containing a product was presented on the screen. At this stage of the study, there were two product variants: condoms and cosmetics, i.e. intimate and neutral goods. The price of both products was equal and amounted to PLN 50. Respondents were requested to complete the shopping at the online pharmacy.

Contrary to the two previous stages, the third stage could not have been completed without filling in the personal data form, necessary for the fictitious dispatch of goods. The following data had to be provided: a name, an address, a phone number, and an e-mail. Students who did not want to give their personal data could have entered any lines of characters or give fictitious data.

In the following part of the experiment, respondents were offered a proposal of getting a discount on shopping in return for sharing some additional personal information.

Therefore, in the first stage of analysis we calculated how many respondents gave real personal data, and who provided false, incomplete, or random data. The other situation means the refusal to share personal data in the study. The distribution of the sample and the results of the study have been presented in *Table 3*.

Table 3. Sharing data when shopping at the online pharmacy

	Survey variant	
	Condoms set (initmate good)	Cosmetics set (neutral good)
Number of respondents	256	233
Providing personal data	52%	51%
Sharing additional personal information for a discount	46%	43%

Source: own study.

The variant of the questionnaire concerning the purchase of a set of condoms or a set of cosmetics was attributed randomly to the respondents. The first group contained 256 and the second 233 respondents. There were no differences in providing data depending on the type of purchased product in the simulation of the pharmacy. Therefore, it can be concluded that the sense of shame did not affect the readiness to protect one's privacy.

In the course of the study, after the address data was given as necessary for sending the product, the next stage offered a discount of PLN 10 in return for filling in a questionnaire. A respondent had to decide if to use the discount offer or complete the shopping. Persons who declared that they wanted to receive the PLN 10 discount (to pay PLN 40 for the product instead of the original price of PLN 50) could have resigned from the discount after reading the questions and click the option 'skip and return to shopping'. In both cases, after completing or resigning from completing the questionnaire, the test was over.

Those who selected the discount option were asked to complete a short questionnaire by giving their height, weight, the date of birth, and the date of birth of their next of kin. Such information is personal and the objective of the question was to verify what percentage of respondents would share it, even though it was not necessary to complete the survey. The percentage of persons who disclosed such data has been presented in *Table 3*. The differentiation due to the type of product is not statistically significant. About 45% respondents decided to provide information in return for the hypothetical discount (*Table 3*).

In the next part of the study, namely the model analysis, both situations of data disclosure will be taken into account.

6. Factors that Affect the Willingness to Disclose Data – a Model Analysis

In order to assess the influence of the studied factors on the willingness to provide data, the model analysis was used including the estimation of the ordered logit model. In this model, the explained variable reflects the willingness to share personal data. This is an unobservable variable y*. Information about providing personal data by students at each experiment stage is observed in the study. Such information has been used to construct the observable variable y.

For each stage binary variables were created, representing the personal data made available by the respondent, i.e. the variables that equal 1 when the person gave the data and

0 where no or false data was given. During the third stage (an online pharmacy), there were two such variables – one for the data required to complete shopping and the other for data given in the questionnaire for a discount. Next, a variable was created, being the sum of binary variables, i.e. considered to move in a range of 0 to 4, where 0 means that the person never gave any data during the study, 1 means a person who shared data during one of the stages, and analogously 2, 3, and 4 denoting the number of situations when a person shared information in the course of the study.

The unobservable variable y^* is the willingness to share personal data. When the ordered variable y takes specific values, it means it has or has not exceeded a set threshold value of the hidden variable y^* (Książek, 2010, p. 104).

The ordered logit model is defined as follows:

$$y_i^* = \beta_1 priming_i + \beta_2 internet_i + \beta_3 female_i + \beta_4 excond1_i + \beta_5 excond2_i + \beta_6 excond3_i + u_i,$$

where

priming is a binary variable where 1 denotes priming article occurrence in the experiment,
internet refers to the number of hours spent online every day by respondents; the ordered variable takes values from 1 to 4, where 1 means less than 1 hour online every day, 2 denotes 1-3 hours, 3 means 3-5 hours, and 4 denotes using the Internet for more than 5 hours every day,
female is a binary variable, where 1 denotes women and 0 men,
ex_cond_1 is a binary variable that denotes the study variant in section 1 of the experiment, where 0 stands for the stage variant, and 1 is the simultaneous variant,
ex_cond_2 is a binary variable that determines the experimental conditions in part 2, where 0 means the variant without comments, while 1 is the variant with comments,
ex_cond_3 is a binary variable that determines the experimental conditions in part 3, where 0 means the variant with the set of cosmetics, and 1 is the variant with the set of condoms.

The results of the ordered logit model estimation have been presented in *Table 4*.

Table 4. Ordered Logit Estimates

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Ordered logistic regression                    Number of obs   =        439
                                               LR chi2(6)      =      33.75
                                               Prob > chi2     =     0.0000
Log likelihood = -678.03022                    Pseudo R2       =     0.0243


─────────────┬──────────────────────────────────────────────────────────────
   sum_udost │     Coef.   Std. Err.      z    P>|z|    [95% Conf. Interval]
─────────────┼──────────────────────────────────────────────────────────────
     priming │ -.2860364   .1710515   -1.67   0.094   -.6212911    .0492183
    internet │  .3495097   .1041253    3.36   0.001    .1454279    .5535915
      female │  .3572106    .178119    2.01   0.045    .0081039    .7063174
   ex_cond_1 │ -.0974595   .1729531   -0.56   0.573   -.4364414    .2415223
   ex_cond_2 │ -.9201916   .2116973   -4.35   0.000   -1.335111   -.5052724
   ex_cond_3 │  .0736387   .1707865    0.43   0.666   -.2610967    .4083741
─────────────┼──────────────────────────────────────────────────────────────
       /cut1 │ -1.075595    .386325                   -1.832778   -.3184124
       /cut2 │  .0731622   .3833868                   -.6782621    .8245866
       /cut3 │  1.179433    .385451                    .4239633    1.934904
       /cut4 │  2.346291   .3987689                    1.564719    3.127864
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Source: own study.

The model is statistically significant; therefore, information brought into the model by the variables is significant. However, such information explains the willingness to share one's personal data to a small extent, because the value of pseudo-R^2 amounts to only 0.0243.[5] Two tests were used to verify the parallel regression assumption, the Brant test, and the Wolfe-Gould test. Both tests indicate that the proportional odds assumption is not violated.

The variables *internet*, *female* and *ex_cond_2* are statistically significant on the significance level 0.05; moreover, the *priming* variable is significant with the significance level 0.1. Variables *ex_cond_1* and *ex_cond_3* are not significant. The estimation of the model without such variables gives an almost unchanged estimation of parameters (unnoticeable after rounding up) and the model matching. Hence, after eliminating insignificant variables, the following model has been obtained:

$$\hat{y}_i^* = -0.29 \, priming_i + 0.35 \, internet_i + 0.36 \, female_i - 0.92 excond2_i.$$

The estimated parameters lead to the following interpretation. Priming has a negative impact on the willingness to share one's data, which means that without priming respondents were more willing to provide their personal data. The willingness to share data is positively affected by the time spent online. The more one uses the Internet every day, the more one is ready to provide one's data. Women made their data available more often than men, which is shown by the positive coefficient of the *female* variable parameter. The readiness to share data was affected negatively by the experimental conditions in the second part of the study. Those who completed the online questionnaire in the version with comments about the store shared their data less often. It can be concluded that comments had an additional priming effect that reinforced the need to protect one's privacy.

Conclusions

The obtained results were used to evaluate the formulated hypotheses. The first hypothesis was supported – it was confirmed that the readiness to disclose data in the study changed with gender. However, contrary to the results obtained by other authors, women shared their private data more often than men in the course of the study.

The second hypothesis was proven as well – there was a significant impact of priming on the readiness to share one's data. Priming, both in the form of an article about a loosely related subject read at the beginning of the study and as comments made available in the second part of the study and concerning the online store that solicited data resulted in the desire to protect one's data, and hence reduced the willingness to make data available.

The findings of the model analysis demonstrate that persons who use the Internet more often are more willing to share their data. This fact conforms to the third hypothesis put forward in the study.

The results of the study do not allow to confirm the last hypothesis. The obtained results of data disclosure were differentiated due to the experimental conditions in two out of three parts of the study. However, the study does not reveal significant impact of the decision-making method (together with the decision concerning the questionnaire or separately) on data provision. Neither was there any significant impact of the type of purchased goods, either neutral or intimate, on the willingness to share one's data during online shopping.

At the end, the authors would like to add that for further research it would be advisable to repeat the experiment on different age groups.

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[5] A low R^2 level is not treated in this method as the model utility assessment – the model is not rejected due to the low value of pseudo R^2 (Książek, 2010; Wooldridge, 2002).

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