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Contents

Change of consumers' attitudes in response to an online privacy violation incident

Abstract:
This research examines consumers' attitudes towards the Internet and consumer behavior after they had experienced an online privacy violation incident. This issue is assessed by applying the concept of resilience and coping strategies in reaction to stress. The focus of this empirical research is change in consumers' attitudes and behavior online. Our analysis is performed on a survey data collected from Croatian Internet users who had experienced online privacy violation. The model was estimated by OLS and order probit method. Results show that highly resilient consumers are more likely to continue to use the Internet as frequently as before an online privacy violation incident or even more frequently. Additionally, consumers with higher resilience are also more likely not to increase their level of cautiousness after an online privacy violation incident and are more likely not to change their attitude towards the Internet. Consumers with higher online privacy awareness and online privacy concern are more likely to increase their cautiousness on the Internet after the online privacy violation incident.

Keywords: consumer attitudes towards the Internet; consumer behavior; online privacy violation; resilience; Croatia
JEL classification: D12, D91

Promjena stavova potrošača nakon narušavanja privatnosti u *online* okruženju

Sažetak:
Glavni cilj ovog istraživanja je ispitati stavove potrošača prema internetu i ponašanje potrošača nakon što su doživjeli narušavanje privatnosti u *online* okruženju. Primjenom koncepta otpornosti i strategija suočavanja sa stresom ispituju se promjene u stavovima i ponašanju potrošača u *online* okruženju. Analiza je provedena na anketnim podacima hrvatskih korisnika interneta starijih od 18 godina koji su doživjeli narušavanje privatnosti na internetu, a model je procijenjen OLS i *order probit* metodom. Rezultati pokazuju da će vrlo otporni potrošači vjerojatnije nastaviti koristiti internet jednako često ili čak češće nego prije narušavanja privatnosti na internetu. Osim toga, vjerojatnije je da potrošači koji pokazuju veću otpornost neće povećavati svoju razinu opreza nakon narušavanja *online* privatnosti i da neće promijeniti svoj stav prema internetu. Također, veća je vjerojatnost da će potrošači koji su više osviješteni i zabrinuti za privatnost na internetu povećati svoj oprez na internetu nakon narušavanja njihove *online* privatnosti.

Ključne riječi: stavovi potrošača prema internetu; ponašanje potrošača; narušavanje privatnosti u *online* okruženju; otpornost; Hrvatska
JEL klasifikacija: D12, D91

1 Introduction[1]

Consumers' behavior online has been well-explored from many different angles. However, little is known about consumers' reactions to privacy breach experienced on the Internet. Specifically, a subjective notion of an online privacy violation incident (hereafter: OPVI) might generate quite diverse behavioral outcomes of different individuals.

The aim of this research is to examine consumers' attitudes towards the Internet and consumer online behavior after the OPVI. After a stressful event, do consumers use the Internet as much as before or do they change the way they use the Internet? Are they more cautious online? Do they change their attitudes towards the Internet accordingly? These issues are assessed by applying the concept of resilience and coping strategies in reaction to stress, whereas the focus of this empirical research is the change in online consumers' attitudes and behavior.

The paper proceeds with relevant literature review, followed by the survey data and description of empirical methodology. OLS and ordered probit estimation results are discussed in the core section. The last section brings the conclusion.

2 Literature review

Studies on users' attitudes online emerge from the early days of the Internet (e.g., Schlosser et al., 1999) and gain importance as the online market develops (Cummins et al., 2014). Three main research streams support this study on how people deal with a stressful event and what consumers' responses to the OPVI are: consumer behavior in response to stress, coping strategies and resilience.

Subjective assessment of an incident as a privacy violation might vary from invasion of privacy, stalking behavior to violation of social norms (Moore et al., 2015). OPVI in this research is regarded as a stressful event that might result in changes of consumer behavior online. In distinction to life-event stress, online privacy violation belongs to a consumption-induced source of stress that might result in consumption and non-consumption coping strategies or the combination of both. Non-consumption strategies, for example, involve ignoring the stressful event while deterring from certain online activity, using compensatory strategy, looking for more information and seeking for warranties or completely ceasing the online activity (Moschis, 2007). According to Carver et al. (1989), responses to an online privacy violation incident belong to the problem-focused coping that includes taking actions to remove the threat, planning future strategies, suppressing other activities to further focus on the solution or restraint coping by holding

[1] This work has been fully supported by the Croatian Science Foundation under the Project IP-2019-04-7886.

back. Past research also recognizes situational coping with a specific event and emphasizes that individual differences in coping should be considered (Carver et al., 1989).

Coping is closely related to resilience. Resilience represents an individual's ability to recover from adversity, to overcome adversity and/or to successfully adapt to it (McCubbin, 2001). Although definitions of resilience vary according to research field and context (Budak et al., 2021a), a common understanding is that when exposed to threat or stress, individuals show a certain level of resilience enabling them to fully or partially recover, resist, adjust and finally to stabilize their activity on the new level. The new equilibrium might be achieved by bouncing back, thriving, performing worse or better than before.

Translated into an individual consumer experience of online privacy violation, one could continue to use the Internet: (1) in the same manner as before (for the same online activities, as frequently as before, with the same level of caution and with the unchanged attitudes towards the Internet), (2) in a restricted way due to negative experience, or (3) more extensively compared to the online behavior prior to the incident. Changes in consumer attitudes may lead to consequently altering consumer behavior (Glasman and Albarracin, 2006), though not necessarily and not in the same direction. Although behavior might be restored after an OPVI, attitudes might remain unrecovered and an inconsistency between behavior and attitudes might be observed (Maio et al., 2000).

3 Data and methodology

3.1 Survey data

Data were collected by surveying Internet users in Croatia who have recently experienced an online privacy violation incident. Survey was conducted by computer-assisted telephone interviewing (CATI) from January to February 2021. Authors developed the questionnaire, while sampling was based on two-way stratification by counties in Croatia and by the size of settlements. The final net sample consisted of 1,000 Internet users aged 18 or older who experienced a case of privacy violation in an online environment in the last three years (Appendix, Table A1).[2]

[2] For a detailed description of sampling, see Rajh et al. (2021).

3.2 Empirical methodology

Our conceptual model is the following:

$$\boldsymbol{ATT_i} = \alpha + \beta_1 RES_i + \beta_2 PVC_i + \beta_3 SKILL_i + \beta_4 OAW_i + \beta_5 ST_i + \beta_6 GIAS_i + \beta_7 OPC_i + \beta_8 SH_i + \beta_9 TIME_i + \gamma' X_i + \epsilon_i \quad (1)$$

where *ATT* is a general name for four different dependent variables representing consumers' attitudes towards the Internet after OPVI: (1) Internet usage after OPVI, (2) level of cautiousness on the Internet after OPVI, (3) range of activities performed on the Internet after OPVI, and (4) general attitude towards the Internet after OPVI. As for independent variables, *RES* is resilience to online privacy violation, *PVC* is a category of OPVI, *SKILL* represents a measure of consumer's Internet skills, *OAW* is online privacy awareness, *ST* is social trust, *GIAS* is general Internet attitude scale before OPVI, *OPC* is online privacy concern, *SH* is sharing private information online, *TIME* is number of hours spent online during the day and *X* is a matrix of other socio-demographic characteristics of respondents used in the model. Description of all these variables is presented in Table A2 in the Appendix. Items used to calculate variables *ATT, RES, OAW, ST, OPC* and *SH* (Appendix, Table A3,) were measured on a Likert scale ranging from 1 (respondent "does not agree at all") to 5 (respondent "completely agrees"). All variables in the model are included based on the existing literature (see Budak et al., 2021b).

The determinants of *ATT* have been taken from the existing literature on antecedents of privacy concern and adapted for the online environment.

Resilience to online privacy violation (*RES*) was measured using Short Resistance Scale developed by Smith et al. (2008), which we adjusted to an online environment. This scale was chosen for three reasons: (1) it possesses conceptual clarity of resilience scale definition in researching consumers' resilience to online privacy breaches, (2) there is a small number of items (six), which suits telephone surveys, and (3) this scale was developed for the adult population that was also our study's target population. Smith et al. (2008) define resilience as the ability of an individual to "bounce back to the old way", i.e., to successfully recover from a stressful situation. A further point worth noting is that we measure consumer's *subjective* assessment of OPVI, which does not necessarily mean that their privacy was violated in the true sense of privacy violation definition. For example, many respondents categorized "the use of cookies and personalized ads" as a violation of their online privacy. However, as all websites must comply with the ePrivacy Directive[3], if a website complies with the so-called cookie law, the use of cookies and unwanted add-ons is not officially considered a breach of privacy. Privacy violation category (*PVC*) variable denotes OPVI

[3] Available at https://gdpr.eu/cookies/.

type. Consumers with better computer skills (*SKILL*) are expected to be more active online and use the Internet for a wider range of operations. Richard et al. (2010) found that more skilled Internet users have positive attitudes towards websites and show more exploratory behavior online. Online privacy awareness (*OAW*) is defined as individuals' consciousness regarding the importance of online privacy and threats in an online environment, and it includes awareness of privacy policy practices in both public and private sectors (Malhotra et al., 2004). This relates to the individuals' desire for (sensitive) information control and to be familiarized about online privacy issues. The level of social trust (*ST*) was measured based on four statements that reflect the respondents' level of trust in people, state, local public institutions and their community, in line with Naef and Schupp (2009). General Internet attitude scale (*GIAS*) measures individuals' general attitude towards the Internet prior to OPVI and is based on Joyce and Kirakowski (2015).

Online privacy concern (*OPC*) represents apprehension and uneasiness of an individual regarding the (mis)use of their sensitive personal data (Lwin et al., 2007), reflecting the degree of individuals' discomfort when online. The intensity or range of online privacy concern (*OPC*) is subjective and difficult to measure, so we have taken the measurement scales for privacy concern developed in literature and adapted them for the Internet environment. One of the first scales of concern for information privacy was developed by Smith, Milberg & Burke (1996) to measure collection, errors, secondary use and unauthorized access to information as dimensions of an individual's concern for privacy. Our OPC scales are based on Malhotra et al.'s (2004) construct of Internet users' information privacy concerns. It better reflects concerns in the online environment because it comprises attitudes towards collecting personal information, control over personal information and awareness of privacy practices of companies gathering personal information (Anić et al., 2018).

Online sharing of private information (*SH*) represents an individual's preferences about sharing private sensitive information online. The intensity of internet usage, in terms of time spent online (*TIME*), could significantly determine different attitudes towards the Internet. Finally, consumer behavior and attitudes after the OPVI depend on socio-demographic characteristics of individual respondents (Martins et al., 2012; Cummins et al., 2014). The past research has reached no consensus about the significance and direction of relationship, so it would be interesting to shed more light on individual socio-demographics and online privacy concern nexus. Therefore, demographic characteristics of the Internet users were included in the model in terms of gender, age, level of education, occupation and household size. Furthermore, we wanted to examine if there were any regional differences across five regions in Croatia and among respondents living in larger (urban) or smaller (rural) places of residence. The difference in the place of residence size is a proxy for capturing differences between the urban and the rural environment in Croatia. People living in rural environments might be less concerned about privacy when online

because they openly interact more with each other, and privacy is harder to keep in everyday life in smaller places.

Our empirical methodology consists of two parts. In the first step, we test the reliability, consistency, and dimensionality of latent constructs used in our model. The reliability and consistency were analyzed by Cronbach's alpha (CA) coefficient, alpha-if-deleted indicator, and different correlations, while the dimensionality was examined by exploratory factor analysis. In the second step, once the latent constructs (variables) were estimated and tested, the research model was estimated using OLS and ordered probit techniques

4 Results and discussion

4.1 Latent constructs estimation

Table A4 in the Appendix shows descriptive statistics for manifest variables (items) used to estimate latent constructs in our model. Table A5 in the Appendix presents the CA coefficients and item correlations for all items used to estimate latent constructs in our model. Regarding the RES variable, a CA coefficient value of 0.8962 and the results of the measurement scale reliability analysis indicate that the measurement scale used possesses a satisfactory level of reliability. Both analyzed types of correlations indicate a high degree of correlation of each statement with the overall measurement scale, while alpha-if-deleted values indicate that removal of any statement would cause a decrease in CA coefficient, i.e., the scale would become less reliable. The same logic is applied when deciding to keep all the items for ST and OPC variables, with CA coefficient values of 0.7613 and 0.7679, respectively. For OAW and SH variables, alpha-if-deleted values indicate that CA coefficient would increase if item *oaw_1* is removed for OAW and *sh_4* is removed for SH variable, which is what we did.

The convergent validity and dimensionality of the measurement scales was analyzed by exploratory factor analysis. The results (Appendix, Table A6) undoubtedly point to the conclusion that measurement scales for latent constructs are one-dimensional since all items have high factor loadings on only one factor. The results also point to the conclusion that measurement scales have the property of convergent validity, i.e., that the corresponding items have a high factor load on the corresponding factors. Thus, the set of items can be viewed as a single measurement scale that measures the perception of latent constructs. However, there are a few exceptions – items *st_1* and *st_4* used for ST variable, item *sh_4* used for SH variable, and item *oaw_1* used for OAW variable – as these factor loadings are lower than 0.5, they are removed from further analysis. Finally, based on a more detailed psychometric adequacy analysis of the resilience measurement scale (Rajh et al., 2021), we

decided to keep only three items related to this construct with non-reverse direction of causation (*res_1*, *res_3* and *res_5*).

4.2 Model estimation

Results of Model 1 estimation using the OLS method are presented in Table 1. Each column represents a separate model with four different dependent variables. Prior to the analysis of the results, we would like to point out that, as we are dealing with cross section type of dataset (as opposed to panel structure), our analysis only reveals correlations or associations (rather than causation), and all the following results should be interpreted as such.

Table 1 **OLS estimation results**

	Internet usage after OPVI	**Cautiousness on the Internet after OPVI**	**Range of activities on the Internet after OPVI**	**Attitude towards the Internet after OPVI**
	(1)	(2)	(3)	(4)
Resilience to OPVI	0.206***	-0.213***	0.159***	0.218***
	(0.034)	(0.032)	(0.035)	(0.032)
Online privacy awareness	-0.039	0.107***	-0.060*	-0.018
	(0.033)	(0.031)	(0.033)	(0.031)
Social trust	-0.002	-0.095***	0.017	0.123***
	(0.031)	(0.029)	(0.031)	(0.029)
General Internet attitude	0.111***	0.037	0.112***	0.210***
	(0.033)	(0.030)	(0.033)	(0.031)
Online privacy concern	-0.030	0.231***	-0.083**	-0.131***
	(0.034)	(0.032)	(0.034)	(0.032)
Sharing private information online	0.080**	-0.112***	0.078**	0.066**
	(0.035)	(0.033)	(0.035)	(0.033)
Internet skills	0.102***	0.044	0.084**	0.019
	(0.037)	(0.034)	(0.037)	(0.035)
Hours spent online	0.041***	0.004	0.028***	0.016
	(0.010)	(0.010)	(0.011)	(0.010)
Male	0.024	0.049	0.112*	0.032
	(0.063)	(0.058)	(0.063)	(0.059)
Household size	0.037*	-0.018	0.025	0.046**
	(0.022)	(0.021)	(0.022)	(0.021)
Online privacy violation category (benchmark: Unwanted commercials)				
Intrusion into e-mail or SN account	0.026	0.398***	-0.167*	0.025
	(0.100)	(0.093)	(0.101)	(0.094)
Recording locations, conversations, searches, messages	-0.059	0.003	-0.004	-0.210***
	(0.077)	(0.071)	(0.078)	(0.072)
Scam	0.247	0.278	0.168	-0.039
	(0.188)	(0.174)	(0.189)	(0.177)
Personal information theft w/o financial costs	-0.178	0.357***	-0.128	-0.207*
	(0.127)	(0.117)	(0.128)	(0.119)

Personal information theft with financial costs	-0.365**	0.741***	-0.205	-0.110
	(0.172)	(0.159)	(0.173)	(0.161)
Other	-0.311**	0.260*	-0.299*	-0.231
	(0.157)	(0.145)	(0.158)	(0.147)
Age (benchmark: 18-34)				
35-50	0.120	-0.022	0.006	0.200**
	(0.084)	(0.077)	(0.084)	(0.079)
50+	0.109	-0.097	0.219**	0.194**
	(0.099)	(0.092)	(0.100)	(0.093)
Education (benchmark: Secondary education or less)				
Higher education	-0.060	-0.081	-0.158**	-0.055
	(0.078)	(0.072)	(0.079)	(0.074)
Occupation (benchmark: Self-employed)				
Manager	0.186	-0.064	-0.072	-0.084
	(0.198)	(0.183)	(0.199)	(0.186)
Professional	0.308*	0.081	0.162	-0.166
	(0.163)	(0.151)	(0.164)	(0.153)
Technician/clerk	0.229	0.015	-0.095	-0.122
	(0.155)	(0.143)	(0.156)	(0.146)
Worker	0.360**	0.037	-0.122	-0.136
	(0.154)	(0.142)	(0.155)	(0.145)
Retired	0.407**	-0.038	0.002	0.016
	(0.163)	(0.151)	(0.164)	(0.153)
Student	0.144	0.033	-0.092	-0.028
	(0.177)	(0.164)	(0.178)	(0.166)
Unemployed	0.453***	-0.084	0.013	0.108
	(0.169)	(0.156)	(0.170)	(0.159)
City size (benchmark: 10,000 or less)				
10,000 – 50,000	-0.021	-0.119	0.130	-0.044
	(0.080)	(0.074)	(0.080)	(0.075)
50,001 – 100,000	-0.100	-0.018	-0.001	-0.048
	(0.128)	(0.118)	(0.129)	(0.120)
More than 100,000	-0.031	-0.147*	0.045	0.067
	(0.089)	(0.082)	(0.089)	(0.083)
NUTS 2 region (benchmark: Pannonian Croatia)				
Adriatic Croatia	0.131	0.027	-0.000	0.074
	(0.082)	(0.076)	(0.082)	(0.077)
City of Zagreb	0.229**	0.122	0.178	0.369***
	(0.114)	(0.106)	(0.115)	(0.107)
North Croatia	0.249***	-0.040	0.107	0.223***
	(0.092)	(0.085)	(0.092)	(0.086)
N	1,000	1,000	1,000	1,000
R-squared	0.153	0.278	0.142	0.254
Adjusted R-squared	0.125	0.255	0.114	0.229

*Notes: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Benchmark levels of certain socio-demographic variables were chosen based on our intuition.*
Source: Authors' calculations.

Resilience to OPVI is significantly associated with all four dependent variables, with the strongest effect for attitude towards the Internet after an OPVI – on average, increase of one standard deviation in resilience, *ceteris paribus*, is associated with an increase of 0.218 standard deviations in attitude towards the Internet after OPVI. A similar interpretation is for the Internet usage after OPVI and the range of activities on the Internet after OPVI. Direction of association is reversed for level of cautiousness on the Internet after OPVI – on average, increase of one standard deviation in resilience, *ceteris paribus*, is associated with a decrease of 0.213 standard deviations in cautiousness on the Internet after OPVI.

Regarding other latent regressors, focusing only on statistically significant results, online privacy awareness is positively associated with cautiousness and negatively with the range of activities; social trust is negatively correlated with cautiousness and positively with general attitude; general Internet attitude before OPVI is positively associated with the Internet usage, range of activities and general Internet attitude after OPVI; online privacy concern is positively correlated with the level of cautiousness and negatively with the range of activities and attitude towards the Internet; and sharing private information online is positively associated with the Internet usage, the range of activities and attitude towards the Internet and negatively associated with the level of cautiousness. Both Internet skills and hours spent online are positively associated with the Internet usage and the range of activities after OPVI.

Regarding OPVI categories, compared to someone who experienced unwanted commercials (somewhat harmless form of OPVI), the greatest effects are for people who had experienced personal information theft with financial costs – they recorded reduced Internet usage after OPVI and increased levels of cautiousness on the Internet after OPVI. Additionally, people who experienced intrusion into e-mail or social network accounts and personal information theft without financial costs also recorded higher levels of cautiousness on the Internet after OPVI.

Finally, regarding demographic factors, gender, age, household size, education level, occupation and settlement size showed to be of no statistical significance, or only weak statistical significance, in explaining variation in any of the four dependent variables. There are, however, two exceptions to this: firstly, compared to people who are self-employed, workers, retirees, and the unemployed showed greater Internet usage even after OPVI; and secondly, compared to young adults aged 18-34, people in age groups 35-50 and 50+ had more positive attitudes towards the Internet after OPVI. Lastly, compared to someone living in Pannonian Croatia, people located in the City of Zagreb (capital of Croatia) and North Croatia use the Internet more and have a more positive general attitude towards the Internet even after an OPVI.

Model 1 was also estimated, using ordered probit technique, to estimate the probability of each outcome of each dependent variable. In this case, dependent variables enter the model as discrete variables with their outcomes ranging from 1 to 5, while latent covariates still enter the equation in their standardized form and are hence interpreted in terms of standard deviations. Results of ordered probit estimations (Table 2) are presented in four different panels, each for different dependent variable, whose discrete outcomes are listed in the first row of each panel.

Table 2 **Ordered probit estimation results**

Panel A: Internet usage after OPVI					
	Much less frequently	**Less frequently**	**The same**	**More frequently**	**Much more frequently**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Resilience to OPVI	-0.004***	-0.050***	0.043***	0.008***	0.003**
	(0.001)	(0.009)	(0.008)	(0.002)	(0.001)
Online privacy awareness	0.001	0.009	-0.008	-0.001	-0.001
	(0.001)	(0.008)	(0.007)	(0.001)	(0.001)
Social trust	-0.000	-0.001	0.001	0.000	0.000
	(0.001)	(0.007)	(0.006)	(0.001)	(0.001)
General Internet attitude	-0.002**	-0.023***	0.020***	0.004**	0.002**
	(0.001)	(0.007)	(0.007)	(0.001)	(0.001)
Online privacy concern	0.001	0.009	-0.007	-0.001	-0.001
	(0.001)	(0.008)	(0.007)	(0.001)	(0.001)
Sharing private information online	-0.001*	-0.020**	0.017**	0.003**	0.001*
	(0.001)	(0.009)	(0.007)	(0.001)	(0.001)
Panel B: Level of cautiousness on the Internet after OPVI					
	Dramatically decreased	**Slightly decreased**	**Remained the same**	**Slightly increased**	**Dramatically increased**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Resilience to OPVI	0.001	0.008***	0.097***	-0.042***	-0.063***
	(0.001)	(0.002)	(0.015)	(0.008)	(0.010)
Online privacy awareness	-0.000	-0.004***	-0.051***	0.022***	0.033***
	(0.000)	(0.001)	(0.014)	(0.007)	(0.009)
Social trust	0.000	0.003***	0.045***	-0.020***	-0.029***
	(0.000)	(0.001)	(0.013)	(0.006)	(0.009)
General Internet attitude	-0.000	-0.001	-0.017	0.007	0.011
	(0.000)	(0.001)	(0.014)	(0.006)	(0.009)
Online privacy concern	-0.001	-0.008***	-0.107***	0.047***	0.069***
	(0.001)	(0.002)	(0.015)	(0.008)	(0.010)
Sharing private information online	0.000	0.004***	0.053***	-0.023***	-0.035***
	(0.000)	(0.001)	(0.015)	(0.007)	(0.010)

Panel C: Range of activities performed over the Internet after OPVI					
	Dramatically decreased	**Slightly decreased**	**Remained the same**	**Slightly increased**	**Dramatically increased**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Resilience to OPVI	-0.007***	-0.044***	0.035***	0.014***	0.001*
	(0.002)	(0.010)	(0.009)	(0.004)	(0.001)
Online privacy awareness	0.003*	0.018*	-0.015*	-0.006*	-0.001
	(0.002)	(0.009)	(0.008)	(0.003)	(0.000)
Social trust	-0.000	-0.002	0.001	0.000	0.000
	(0.001)	(0.009)	(0.007)	(0.003)	(0.000)
General Internet attitude	-0.004***	-0.029***	0.024***	0.009***	0.001*
	(0.002)	(0.009)	(0.008)	(0.003)	(0.001)
Online privacy concern	0.004**	0.025**	-0.020**	-0.008**	-0.001
	(0.002)	(0.010)	(0.008)	(0.003)	(0.000)
Sharing private information online	-0.003**	-0.022**	0.018**	0.007**	0.001
	(0.002)	(0.010)	(0.008)	(0.003)	(0.000)
Panel D: Attitude toward the Internet after OPVI					
	Much more negative	**More negative**	**Unchanged**	**More positive**	**Much more positive**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Resilience to OPVI	-0.016***	-0.093***	0.102***	0.005***	0.002**
	(0.003)	(0.015)	(0.016)	(0.002)	(0.001)
Online privacy awareness	0.001	0.003	-0.004	-0.000	-0.000
	(0.002)	(0.013)	(0.014)	(0.001)	(0.000)
Social trust	-0.009***	-0.055***	0.060***	0.003***	0.001**
	(0.003)	(0.013)	(0.014)	(0.001)	(0.001)
General Internet attitude	-0.014***	-0.084***	0.092***	0.005***	0.002**
	(0.003)	(0.014)	(0.015)	(0.001)	(0.001)
Online privacy concern	0.010***	0.061***	-0.067***	-0.003***	-0.001**
	(0.003)	(0.014)	(0.015)	(0.001)	(0.001)
Sharing private information online	-0.005*	-0.029**	0.031**	0.002*	0.001
	(0.003)	(0.014)	(0.016)	(0.001)	(0.000)

*Notes: Standard errors in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. For presentation purposes we only show estimated coefficients for latent variables of interest; other coefficients are available on request.*
Source: Authors' calculations.

Focusing on the first dependent variable – Internet usage after OPVI – ordered probit results show that an increase of one standard deviation in resilience to OPVI is associated with a 5.0 percent decrease in probability to use the Internet less frequently, and with 4.3 percent increase in probability to use the Internet the same as before OPVI. This finding is in line with the previous OLS result confirming that Internet users with higher resilience to OPVI are more likely to use the Internet the same or more frequently after an OPVI occurred. A similar interpretation is for general Internet attitude and sharing private information online variables.

Regarding the second dependent variable – level of cautiousness on the Internet after OPVI – results show that an increase of one standard deviation in resilience to OPVI is associated

with a 9.7 percent increase in probability to be as cautious while browsing the Internet as before an OPVI; and also with a decrease in probability of 4.2 percent and 6.3 percent to slightly increase or dramatically increase the level of cautiousness, respectively. This finding is also in line with the previous OLS result confirming that Internet users with higher resilience to OPVI are more likely not to change their level of cautiousness while online. Online privacy awareness and online privacy concern both have similar results – increase in one standard deviation unit in these variables is associated with 5.1 percent and 10.7 percent decrease in probability, respectively, to remain equally cautious on the Internet after an OPVI; 2.2 percent and 4.7 percent increase in probability of slightly increasing the level of cautiousness; and 3.3 percent and 6.9 percent increase in probability of dramatically increasing the level of cautiousness. Thus, people with higher online privacy awareness and online privacy concern are more likely to increase their cautiousness on the Internet after an OPVI. Like these two regressors, social trust and sharing private information online also have very similar results – increase in one standard deviation unit in these variables is associated with a 4.5 percent and 5.3 percent increase in probability, respectively, to remain equally cautious on the Internet after an OPVI; 2.0 percent and 2.3 percent decrease in probability of slightly increasing the level of cautiousness; and 2.9 percent and 3.5 percent decrease in probability of dramatically increasing the level of cautiousness.

Regarding the range of activities performed on the Internet after an OPVI, more resilient individuals are less likely (-4.4 percent) to slightly decrease their range of Internet activities and are more likely to either remain on the same level (3.5 percent) or even increase their range of activities (1.4 percent). Interestingly, individuals with more favorable general Internet attitude are most likely to decrease the range of activities after an OPVI (-2.9 percent) or to remain on the same level (2.4 percent).

Finally, regarding the attitude towards the Internet after an OPVI, individuals who are more resilient, with greater level of social trust and with better general Internet attitude, are most likely not to change their attitude towards the Internet (10.2 percent, 6.0 percent and 9.2 percent, respectively); and are less likely to have more negative attitude (-9.3 percent, -5.5 percent and -8.4 percent, respectively).

5 Conclusion

This paper analyzes consumers' attitudes in the context of reaction to a stressful event, specifically to an experience of online privacy violation. The results show that resilience of consumers helps them maintain similar attitudes and online behavior after a privacy violation incident. Companies and regulators should work on reducing privacy concerns and perceived risks of online users to prevent changing positive attitudes toward the use of the Internet into negative ones. The paper contributes to the existing literature by observing the outcomes of resilience in terms of possible coping strategies adopted by consumers and by combining these two separate streams of research into one conceptual model. What is more, this paper contributes to the existing body of knowledge by identifying the main determinants of adopted coping strategies and resilience outcomes.

This research has its limitations, primarily because the model used in our study was tested on citizens of one country with specific socioeconomic conditions, and without additional empirical verification it cannot be generalized outside these conditions. Further constraint is that our sample, due to legal issues, is under-represented in terms of teenagers younger than 18, who are also active Internet users and online consumers. Likewise, the measured level of variables depicting different attitudes toward the Internet certainly changes over one's lifetime and with the change in the technological environment of citizens, which is why future studies should also include the time component.

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Appendix

Table A1 **Descriptive statistics of respondents' socio-demographic characteristics**

Variable	N	Mean	St. dev.	Min.	Max.
Gender*					
Female	513	0.51	0.5	0	1
Male	487	0.49	0.5	0	1
Age	1,000	43.31	15.88	18	86
Age categories*					
18-29	253	0.25	0.43	0	1
30-39	184	0.18	0.39	0	1
40-49	186	0.19	0.39	0	1
50-59	187	0.19	0.39	0	1
60+	190	0.19	0.39	0	1
Number of people in the household	1,000	3.35	1.42	1	10
Education*					
Primary or less	20	0.02	0.14	0	1
Secondary	518	0.52	0.5	0	1
Tertiary	426	0.43	0.49	0	1
PhD or post-graduate	36	0.04	0.19	0	1
Occupation of the respondent*					
Self-employed	50	0.05	0.22	0	1
Manager	45	0.05	0.21	0	1
Professional	160	0.16	0.37	0	1
Technician/clerk	191	0.19	0.39	0	1
Worker	191	0.19	0.39	0	1
Retired	159	0.16	0.37	0	1
Student	111	0.11	0.31	0	1
Unemployed	93	0.09	0.29	0	1
Income of respondents' household*					
Up to 2,500 HRK**	12	0.01	0.11	0	1
2,501–3,500 HRK	26	0.03	0.16	0	1
3,501–5,000 HRK	64	0.06	0.24	0	1
5,001–6,500 HRK	80	0.08	0.27	0	1
6,501–8,000 HRK	98	0.1	0.3	0	1
8,001–10,000 HRK	131	0.13	0.34	0	1
10,001–12,000 HRK	130	0.13	0.34	0	1
12,501–15,000 HRK	123	0.12	0.33	0	1
15,001–20,000 HRK	74	0.07	0.26	0	1
More than 20,000 HRK	39	0.04	0.19	0	1
No answer	223	0.22	0.42	0	1
NUTS 2 region* of respondent***					
Pannonian Croatia	263	0.26	0.44	0	1
Adriatic Croatia	353	0.35	0.48	0	1
City of Zagreb	163	0.16	0.37	0	1
North Croatia	221	0.22	0.42	0	1
Place or residence size*					
10,000 or less	309	0.31	0.46	0	1
10,001–50,000	296	0.3	0.46	0	1
50,001–100,000	79	0.08	0.27	0	1
More than 100,000	316	0.32	0.47	0	1

*Notes: "St. dev." denotes standard deviation. * These variables were converted into binary variables for each possible outcome, so that the arithmetic mean in this case represents the percentage of respondents with a given outcome for each variable. ** 1 EUR = 7.53 HRK. *** Definition of NUTS 2 regions is available at: https://ec.europa.eu/eurostat/web/nuts/nuts-maps.*
Source: Authors' calculations.

Table A2 **Description of variables in the model**		
Variable	**Description**	**Values**
ATT1	Internet usage after OPVI*	1 – Much less frequently, 2 – Less frequently, 3 – The same, 4 – More frequently, 5 – Much more frequently
ATT2	Level of cautiousness on the Internet after OPVI	1 – Dramatically decreased, 2 – Slightly decreased, 3 – Remained the same, 4 – Slightly increased, 5 – Dramatically increased
ATT3	Range of activities performed on the Internet after OPVI	1 – Dramatically decreased, 2 – Slightly decreased, 3 – Remained the same, 4 – Slightly increased, 5 – Dramatically increased
ATT4	Attitude toward the Internet after OPVI	1 – Much more negative, 2 – More negative, 3 – Unchanged, 4 – More positive, 5 – Much more positive
PVC	OPVI category	1 – Unwanted commercials, 2 – Intrusion into e-mail or SN account, 3 – Recording locations, conversations, searches, messages, 4 – Scam, 5 – Personal information theft w/o financial costs, 6 – Personal information theft with financial costs, 7 – Other
RES	Resilience to online privacy violation	1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree
SKILL	Average Internet skills	1 – Not at all, 2 – Not so well, 3 – Okay, 4 – Well, 5 – Very well
ST	Social trust	1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree
OAW	Online privacy awareness	1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree
GIAS	General internet attitude scale	1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree
OPC	Online privacy concern	1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree
SH	Sharing private information online	1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree
TIME	Time spent online for private and work-related reasons	0 – 24
WEB	Diversity of online activities	1 – Never, 2 – Rarely, 3 – Sometimes, 4 – Often, 5 – Very often
Gender	Gender of respondent	1 – Male, 0 – Female
Age	Age category of respondent	1 – 18–29, 2 – 30–39, 3 – 40–49, 4 – 50–59, 5 – 60+
Education	Education of respondent	1 – Primary school or less, 2 – Secondary education (high school), 3 – Tertiary education (university, college), 4 – Post–graduate education (PhD, MBA, ...)
Income	Average household income of respondent	1 – Up to 2,000 HRK*, 2 – 2,501–3,500 HRK, 3 – 3,501–5,000 HRK, 4 – 5,001–6,500 HRK, 5 – 6,501–8,000 HRK, 6 – 8,001–10,000 HRK, 7 – 10,001–12,000 HRK, 8 – 12,501–15,000 HRK, 9 – 15,001–20,000 HRK, 10 – More than 20,001 HRK, 11 – Does not want to answer
Region	NUTS 2 region** of respondent	1 – Pannonian Croatia, 2 – Adriatic Croatia, 3 – City of Zagreb, 4 – North Croatia
Settlement	Settlement size of respondent	1 – 10,000 or less, 2 – 10,001–50,000, 3 – 50,001–100,000, 4 – More than 100,000

*Notes: * OPVI stands for "Online Privacy Violation Incident". * 1 EUR = 7.53 HRK. ** Definition of NUTS 2 regions is available at: https://ec.europa.eu/eurostat/web/nuts/nuts-maps*
Source: Authors' calculations.

Table A3 **Description of items used to build latent constructs**		
Latent construct	**Items**	**Description**
Resilience to online privacy violation (RES)	res_1	I bounced back quickly after the most recent online privacy violation incident.
	res_2	I had a hard time making it through after the most recent online privacy violation incident.
	res_3	It didn't take me long to recover from the most recent online privacy violation incident.
	res_4	It was hard for me to snap back when the most recent online privacy violation happened.
	res_5	I came through the most recent online privacy violation incident with little trouble.
	res_6	It took me a long time to get over the most recent online privacy violation incident.
Social trust (ST)	st_1	In general, I trust people.
	st_2	In general, I trust state public institutions.
	st_3	In general, I trust local/municipal public institutions.
	st_4	In general, I trust my local community (e.g., neighbors, people that surround me).
Online privacy awareness (OAW)	oaw_1	I keep myself updated about privacy issues and the solutions that companies and the government employ to ensure our online privacy.
	oaw_2	Web sites seeking information about me should disclose the way the data are collected, processed, and used.
	oaw_3	A good online privacy policy should have a clearly visible disclosure.
Online privacy concern (OPC)	opc_1	I am concerned about my online privacy.
	opc_2	I am concerned about extensive collection of my personal information on the Internet.
	opc_3	I am concerned about my privacy violation when using the Internet.
Sharing information online (SH)	sh_1	I don't mind sharing private information publicly on the Internet.
	sh_2	I don't mind posting my current location publicly on the Internet.
	sh_3	I don't mind posting with whom I am at the moment publicly on the Internet.
	sh_4	I see no problem in sending my credit card data when buying online.

Source: Authors' calculations.

Table A4 **Construct item descriptive statistics**

Latent construct	Item	Mean	St. dev.	Min.	Max.
Resilience to online privacy violation (RES)	res_1	2.93	1.22	1	5
	res_2	2.57	1.23	1	5
	res_3	3.32	1.21	1	5
	res_4	2.41	1.18	1	5
	res_5	3.55	1.16	1	5
	res_6	2.24	1.20	1	5
Social trust (ST)	st_1	3.39	0.93	1	5
	st_2	2.35	1.05	1	5
	st_3	2.50	1.03	1	5
	st_4	3.32	1.03	1	5
Sharing private information online (SH)	sh_1	2.22	1.11	1	5
	sh_2	2.28	1.24	1	5
	sh_3	2.37	1.28	1	5
	sh_4	2.31	1.26	1	5
Online privacy awareness (OAW)	oaw_1	2.85	1.05	1	5
	oaw_2	4.12	1.07	1	5
	oaw_3	4.31	0.88	1	5
Online privacy concern (OPC)	opc_1	3.31	1.03	1	5
	opc_2	3.69	1.08	1	5
	opc_3	3.5	1.07	1	5

Note: "St. dev." denotes standard deviation.
Source: Authors' calculations.

Table A5 **Item correlations and Cronbach alphas**

Latent construct	Item	Inter-item correlation	Item-rest correlation	Cronbach alpha	Alpha-if-deleted
Resilience to online privacy violation (RES)	res_1	0.6101	0.6623	0.8962	0.8867
	res_2	0.5828	0.7398		0.8748
	res_3	0.6129	0.6543		0.8879
	res_4	0.5746	0.7637		0.8710
	res_5	0.5799	0.7484		0.8734
	res_6	0.5787	0.7516		0.8729
Social trust (ST)	st_1	0.4983	0.4755	0.7613	0.7487
	st_2	0.4137	0.6053		0.6792
	st_3	0.3870	0.6491		0.6544
	st_4	0.4734	0.5124		0.7295
Sharing private information online (SH)	sh_1	0.3828	0.5817	0.7392	0.6504
	sh_2	0.3502	0.6361		0.6178
	sh_3	0.3480	0.6399		0.6155
	sh_4	0.5772	0.2972		0.8038
Online privacy awareness (OAW)	oaw_1	0.4130	0.0006	0.3244	0.5846
	oaw_2	0.0437	0.2563		0.0837
	oaw_3	-0.0427	0.3300		0.0002
Online privacy concern (OPC)	opc_1	0.5281	0.5964	0.7679	0.6912
	opc_2	0.5499	0.5798		0.7096
	opc_3	0.4927	0.6239		0.6602

Source: Authors' calculations.

Table A6 **Exploratory factor analysis results**						
Latent construct	**Item**	**F1**	**F2**	**F3**	**F4**	**F5**
Resilience to online privacy violation (RES)	res_1	0.666				
	res_2	0.747				
	res_3	0.701				
	res_4	0.799				
	res_5	0.823				
	res_6	0.831				
Social trust (ST)	st_1			-		
	st_2			0.808		
	st_3			0.819		
	st_4			-		
Sharing private information online (SH)	sh_1		0.654			
	sh_2		0.756			
	sh_3		0.762			
	sh_4		-			
Online privacy awareness (OAW)	oaw_1					-
	oaw_2					0.525
	oaw_3					0.526
Online privacy concern (OPC)	opc_1				0.641	
	opc_2				0.632	
	opc_3				0.665	

Notes: Principal factor method was used, and factors were rotated using orthogonal varimax rotation. Factor loadings lower than 0.5 were dropped and are not reported ("-").
Source: Authors' calculations.

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