International Journal of Human Capital in Urban Management
(IJHCUM)

Homepage: http://www.ijhcum.net/

ORIGINAL RESEARCH PAPER

Adoption of online retail banking practices as a precautionary protective behavior during the Covid-19 Pandemic

F.E.A. Afridi*, B. Ayaz, M. Irfan

Department of Management Sciences, Islamia College, Peshawar, Pakistan

ARTICLE INFO

ABSTRACT

BACKGROUND AND OBJECTIVES: Increase in online banking activities has been observed in the new normal of the Covid-19 pandemic. Previous studies argued that fraudsters tend to prey on unexpected events. This threat is also frightening online consumers of retail banking. Therefore, this study aimed to investigate how online retail banking users can be motivated enough to avoid online banking fraud threats while no compromise on health.

METHODS: The population of the study is online banking customers in Pakistan. This study obtained data from 470 respondents who used online banking services by using questionnaires through an online survey. The structure Equation Modeling approach is used to investigate the relationship among study research variables.

FINDINGS: Findings from a nationwide online survey confirmed the impact of the pandemic on consumer responses for online retail banking intention. Structure Equation Model results found that Perceived Vulnerability $\beta = 0.24$, Perceived Severity $\beta = 0.31$, and Response Efficacy $\beta = 0.32$ has significant impact on precautionary behavior. Surprisingly, Self-Efficacy was not significant to consumer precautionary behavior during the new normal of COVID-19.

CONCLUSION: This study contributes to the literature on online banking and protection motivation theory. Results imply that bankers must invest in online banking and provide a secure environment that prioritizes the safety of the online transaction and create awareness to decrease the threat of fraud during the uncertain situation. The findings of this study particularly call for bankers, retailers' attention to online management of security systems.

NUMBER OF REFERENCES
42

NUMBER OF FIGURES
2

NUMBER OF TABLES
3

*Corresponding Author:
Email: *falaam89@gmail.com*
Phone: +923008588388
Fax: +9291-9218380

Note: Discussion period for this manuscript open until January 1, 2022 on IJHCUM website at the "Show Article.

INTRODUCTION

People and enterprises both are facing multiple unprecedented challenges on multiple fronts due to the novel Covid-19 pandemic outbreak (Aburumman, 2020; Gunay and Kurtulmuş, 2020; Zheng and Zhang, 2020). Besides many other factors, the fear that hard cash could spread the virus encouraged the adoption of online banking for daily routine transaction activities. Consequently, an increase in online banking has been observed (Alkhowaiter, 2020; Moşteanu *et al.,* 2020; Safari *et al.,* 2020). However, previous studies show that with the growing demand for online banking chances of online fraud also increases. This is because fraudsters tend to prey on unexpected events (Islam *et al.,* 2020). Thus, one must not be surprised the novel Covid-19 has an increase in online fraudulent activity. This threat is also frightening online consumers of retail banking and so for retail banks as well as other stakeholders, the need for a secure online banking environment has become a real priority. On the other hand, digital banking is always a preference for account holders. Digital technologies advancement coupled with social networking popularity facilitated the new ways of doing business activities and financial transactions smoothly and effectively (Agarwal *et al.,* 2021). Consequently, this has also attracted fraudsters and criminals. However, fraud is a global problem with a severe negative impact on different businesses and their consumers. According to Craja *et al.,* (2020), in the past two decades, the financial implications of fraudulent activities occurring globally are estimated to amount to up to $7 trillion. However, low self-control and disclosing sensitive information are associated with responding to fraudulent offers. This highlights the greater need that technology user both must be informed, as well as protected from fraud through fraud prevention systems (Ali *et al.,* 2019; Craja *et al.,* 2020; George, 2017). During the Covid-19 outbreak, Pakistan has also experienced an increased shift of consumers towards online retail banking. In the pandemic outbreak more than 20 million financial transactions were performed in the year 2020, a total value of 900 billion PKR using online retail banking services (Arif *et al.,* 2020). However, at the same time, the cybercrime wing of Pakistan has received many complaints of online banking fraud. This also helps to enable banks to realize changes needed in business models to provide a secure safe online banking environment. In emerging economies, retail online banking services are still novel and least understood phenomena of research. Further, the pandemic outbreak situation has become more challenging for developing economies (Kaur and Arora, 2020). However, online banking customers have also certain own responsibilities regarding the use of online banking services safely (Reyns *et al.,* 2019), because banks cannot control the user's devices which they prefer to use, neither their behavior towards online services. Further, previous research shows customer behavior is the major cause behind the victimization of online banking fraud (Mesch and Dodel, 2018). Therefore, threat greater awareness will help consumers to cope better and act accordingly to prevent them when recognizing a threat situation (Fenz *et al.,* 2014). Previously researchers have mainly relied on the technology adoption frameworks to explain consumers' intentions to utilize online shopping services such as self-service, and grocery delivery (George, 2017). Besides, the application of Protection Motivation Theory (PMT) in the consumer research context is novel in the literature as PMT has been primarily studied in health-related contexts (Laato *et al.,* 2020; Perloff and Fetzer, 1986; Ruiter *et al.,* 2003). How online retail banking users can be motivated enough to avoid online banking fraud threats while no compromise on health is the primary motive behind this study.

Literature review and theoretical support

This study is based on the PTM, in which the outcome variable is the protective measure of an individual in avoiding threats (Rogers, 1975). This study assumed that increase in online banking is a result of the precautionary behavior of the customers to avoid the Covid-19 threat. The precautionary measure is one way of avoiding threats. Which includes both technical measures and behavioral measures related to internet usage and computers, such as the use of anti-virus software and awareness of conscious care behavior (He *et al.,* 2020). However, research is still limited in this area (Rawwash *et al.,* 2020), and also concerning behavioral change (Craja *et al.,* 2020). Moreover, less is known about security behavior and awareness of the end-users of financial transactions using technology particularly in the context of a pandemic outbreak situation. The threat appraisal process of PTM describes the

evaluation of certain danger levels by individuals associated with a certain event or activity (Ruiter *et al.,* 2003). This study follows the work of Liang and Xue, (2010), which describes the threat appraisal process as a combination of perceived risk, and it is influenced by perceived **v**ulnerability and perceived severity. However, in the case of online retail banking perceived risk describes the potential loss consequently result of certain activity or service. More recently, some studies have applied the PMT model to examine factors affecting COVID-19 preventive behaviors Cyberchondria (i.e., obsessive online searching for health-related information) and information overload, which subsequently affected the threat and coping appraisals (Jungmann and Witthöft, 2020). Yet, among the appraisal variables, only perceived severity, self-efficacy, and response cost (i.e., the cost associated with recommended behavior) were discovered as significant predictors of self-isolation. Recent research studies revealed that understanding of COVID-19 had a significant impact on perceived vulnerability and severity and ultimately intention to follow prevention measures. Such inconsistency in findings warrants further investigation of the framework of the PMT in the context of the COVID-19 pandemic. Therefore the main hypothesis was derived:

H1. Precautionary behavior will be positively related to an increase in consumer online retail banking intention

PMT recently gained attention in research related to security information (Ifinedo, 2012), with the solid good foundation it is deemed applicable for research in the online banking domain. Earlier studies in this domain adopted PMT ranges from security information systems to spyware anti-software adoption (Fenz *et al.,* 2014), and data backing up to the prediction of protective behavior in identity theft (George, 2017). The framework of PMT has been applied to virus outbreaks and pandemics such as SARS and H1N1 and Covid-19 outbreaks (Al-Rasheed, 2020). PMT predicts that higher levels of threat appraisal and coping appraisal will lead to greater motivation to engage in protective behavior (Plotnikoff and Trinh, 2010). Studies show that threat and coping appraisals work independently of each other, and coping appraisals

tend to exhibit greater power than threat appraisals (Bamberg *et al*., 2017). Threat appraisal describes an individual's assessment of a threat based on two factors: perceived vulnerability and perceived severity (Maddux and Rogers, 1983; Rogers, 1975). While the individual's assessment of the ability to cope with the situation is referred to as the coping appraisal. It consists of self-efficacy and response efficacy. The perceived vulnerability is as per PMT a direct predictor of protection motivation (Rogers, 1975). It is the probability of the user's evaluation that a threatening event will happen (Perloff and Fetzer, 1986). However, susceptibility or perceived risk is an important determinant of precautionary action. Some available previous research shows that people who do not victimize tend to perceive themselves as less vulnerable than those who have been victimized by negative events in life (Ruiter *et al.,* 2003). However, it can be argued that vulnerability is a necessary but not a sufficient condition for preventive action. Perceived severity is the belief and it describes event or outcome negative consequences to individual associates as a result of a particular behavior. In other words, it is the user's evaluation of the severity of threatening event consequences to them. In online banking cases, it is the perceived seriousness of the fraud consequences due to online transactions**.** Perceived severity in PMT is also a predictor of protection motivation:

H2. Perceived (a) vulnerability and (b) severity will increase the precautionary behavior of online banking consumers

Fig 1 represents the conceptual frame work of the relationships of study variables. According to PMT the coping-appraisal consists of self-efficacy, and response efficacy, however, both are associated with response costs. Self-efficacy represents the belief that an individual enacts successfully the recommended behavior. While the recommended behavior effectiveness in avoiding or removing the possible harm describes response efficacy. The coping ability amount that individual experiences are the self-efficacy and response efficacy combination minus the response costs. A user evaluates a given coping strategy in the coping appraisal process, to avert a threatening event. This study adopts the definition of (Bandura, 2010) coping appraisal
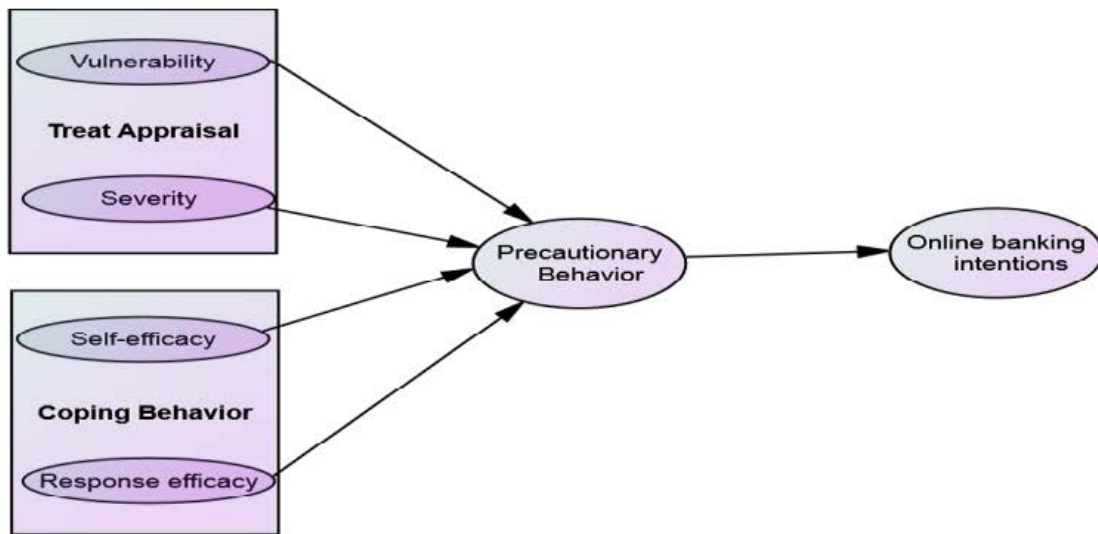
Fig. 1: Conceptual framework of the study

in information security is a user belief incapable of being too certain information protection and take some precautionary measures as compared to those individuals who show less confidence. Therefore, according to PMT:

H3. Perceived (a) self-efficacy and (b) response efficacy will increase the precautionary behavior of online banking consumers

This research used a quantitative method to measure the hypothesized factors (Fig 1) through online self-administrative survey. The current study has been carried out in the KPK province of Pakistan in December 2020.

MATERIAL AND METHODS
Data and sampling

A convenient sampling technique was used where MBA finance program students at NUML University, Pakistan were given the online survey and asked to collect responses as a part of their research assignment. The reason for MBA students was because of their ability to understand the concepts behind an online banking and related customer satisfaction. The students were given four weeks to collect the data before the survey officially closed by the end of December 2020.

Measuring instruments

This research used a quantitative method to measure the hypothesized factors with an online self-administrative survey. Besides demographic information's such as; age, gender, education level, and work status, the survey constitute of questionnaires measuring the main six variables of the study defined as precautionary behavior" (measured with 04 items) "perceive vulnerability" (measured with 05 items), "perceive severity" (measured with 05 items), "self-efficacy" (measured with 04 items), "response efficacy" (measured with 06 items), ", and lastly, the dependent variable of the study online banking intention (measured with 05 items). The items used were formulated from previous studies to ensure the validity of the survey (Nebioglu *et al.,* 2012). A five-point Likert scale ranging from 1= strongly disagree to 5= strongly agree was utilized to quantify all independent variables. To assess the validity of the method, minor modifications were done to improve the comprehension of the survey. The modifications eliminated some items that confused the respondents, however, those items were removed without affecting the measurability of the required variables. The revised items were used in the final survey.

Structural equation modeling

Structural Equation Modeling (SEM) variance-based approach is applied to assess the relationships of the study variables (Henseler, 2017). Smart PLS3 was used because it helps the researcher to relate the set of multiple dependent and independent variables. Further, it is considered one of the best techniques for evaluating hypothesized relationships in a complex design.

RESULTS AND DISCUSSION

This study analyzed data obtained from 470 respondents who used online banking (male, female: mean age = 40.03, SD = 13.41). Respondents were employed (59.9%), self-employed (15.6%), part-timer (17.9%), and 6.6% had a different (work) status.

Reliability and Validity Analysis

This study follows the recommended two-step approach in literature. The scale's reliability was evaluated and tested first. Follow by the second step in which the model was evaluated to test the model's structure ability to best predict a certain outcome. Table 1 reported the obtained value for Cronbach's alpha exceeded the recommended value of 0.7. Further, Composite Reliability (CR) also exceeded the recommended value of 0.7 (Anderson and Gerbing, 1988). The Average Variance Extracted (AVE) values

also exceed the recommended value of 0.5 (Bagozzi and Yi, 1988). The Cronbach alpha and composite reliability values of the measured all constructs of the study indicate the high internal consistency of the measurement model (Table 1).

For discriminant validity, the alternative Heterotrait-Monotrait ratio of correlations (HTMT) superior to traditional approaches were applied (i.e. cross-loadings and the Fornell-Larcker criterion recommended by to assess discriminant validity). The HTMT value less than 0.85 indicated the discriminant validity has been achieved successfully for the reflective construct (Henseler *et al.*, 2015) as can be seen in Table 2.

Hypothesis testing

The structural model assessment is examined by running the bootstrapping with 5000 samples (Efron, 1992). It allows the researcher to any parameter estimate of interest. This assessment is done by examining the R2 of the structural model and the predictive relevance of the model by using Q2 (Geisser, 1974). The coefficient of determination, the R2 is the proportion of variance explained by the independent variable in the dependent variable (Figueiredo *et al.*, 2011). The R2 values are all higher than the recommended value of 0.26 Cohen (1988). Further, the results for the predictive relevance of the model (Q2) are greater than zero, as suggested

Table 1: Measurement Model

Constructs	Cronbach's Alpha	CR	AVE
Online banking	0.912	0.904	0.712
Precautionary behavior	0.930	0.910	0827
Perceived severity	0.854	0.901	0.746
Perceived vulnerability	0.887	0.917	0.721
Response efficacy	0.924	0.901	0.725
Self-efficacy	0.920	0.912	0.764

Table 2: Heterotrait-Monotrait Ratio (HTMT)

Constructs	Online Banking	Precautionary Behavior	Perceived Severity	Perceived *vulnerability*	Response Efficacy	Self-Efficacy
Online Banking	-					
Precautionary Behavior	0.67					
Perceived Severity	0.63	0.84				
Perceived *vulnerability*	0.48	0.73	0.78			
Response Efficacy	0.72	0.79	0.82	0.64		
Self-Efficacy	0.68	0.71	0.80	0.56	0.55	-

Table 3: Hypothesis results

Hypothesis	(β)	SE	T Statistics	P Values	Results
Precautionary Behavior ----> Online Banking	0.64	0.07	8.91	0.000	Supported
Perceived Severity ----> Precautionary Behavior	0.31	0.13	2.33	0.002	Supported
Perceived *vulnerability* ----> Precautionary Behavior	0.24	0.11	2.11	0.004	Supported
Response Efficacy ----> Precautionary Behavior	0.32	0.12	2.70	0.001	Supported
Self-Efficacy -----> Precautionary Behavior	0.08	0.12	0.64	0.053	Not-supported
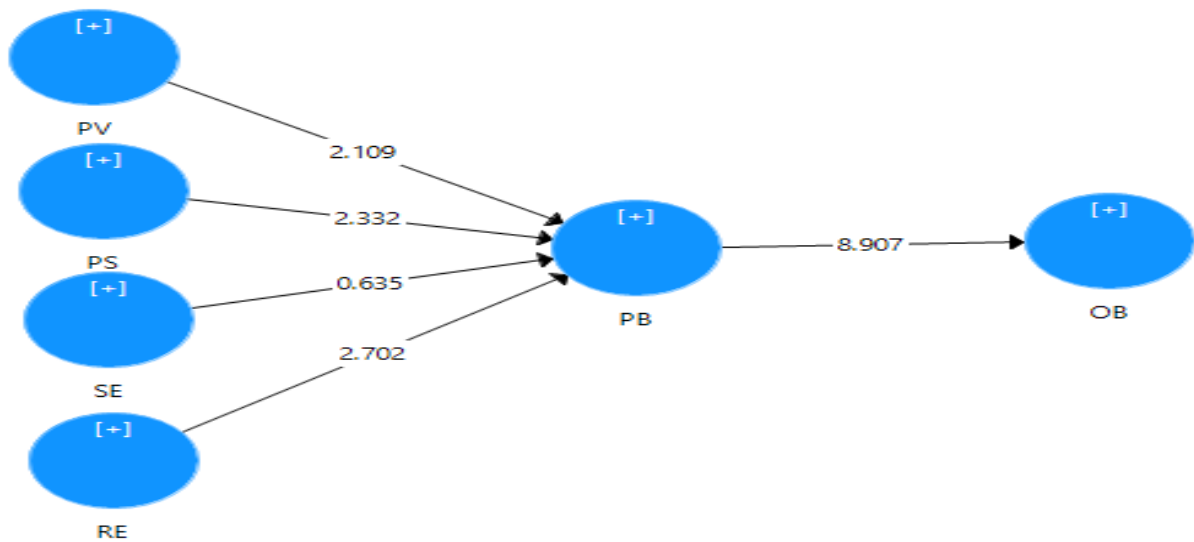
Fig. 2: Bootstrapping Result

by (Hair *et al.*, 2016). These results indicate that the model has good predictive relevance for all of the endogenous variables. The f2, represent small, medium, and large effects, where values of 0.02, 0.15, and 0.35 respectively, while effect size values lower than 0.02 indicate that there is no effect. Therefore, the results confirm that the effect sizes of precautionary behavior on online banking are considered strong (f2 = .564) and that vulnerability, severity, self-efficacy, and response efficacy have an effect (2.135, 0.055, and 1.057, respectively). This indicates that perceived vulnerability had the biggest effect on the latent variable precautionary behavior. Fig. 2 and Table 3 provide the results of the hypothesis testing. The results of the inner model of the structural model verify that perceived vulnerability (β = 0.24), perceived severity (β = 0.31), and response efficacy (β = 0.32), significantly influence the precautionary behavior level of consumers, which are supporting hypotheses H1, 2a, 2b, and 3a respectively. However, hypothesis 3b of the study was not significant as the p-value is greater than 0.005.

The findings reveal that precautionary behavior had a significant effect on perceived severity (H2a) β = 0.31, and vulnerability (H2b) β = 0.24. This signifies how the public communication of preventive actions and their effectiveness is crucial in generating a unified response against the pandemic. Our result further confirms previous findings that coping appraisals tend to have a greater association with behavioral intentions than threat appraisals, possibly because if people already adopted protective behavior, they may no longer feel vulnerable to the threat; thus, the association between threat appraisal and intention may seem

weaker than coping appraisal. The significant influence of precautionary online behavior on the threat appraisals (e.g., severity and vulnerability) is following earlier studies, which indicated that consumer tends to perceive COVID-19 as threatening and engage in precautionary online behavior as a protection motivation (Hu *et al*., 2020). In the coping appraisal process response efficacy (H3a) β = 0.32 positively influenced precautionary behavior. That is, those who perceive precautionary action to be an effective protectionary measure against COVID-19 and are capable of acting are more likely to display stay-at-home intentions. Such results confirm previous research where the coping appraisals were positively correlated with other preventive behavioral intentions such as mask-wearing, hand-washing, and social distancing. Yet, given that result was not significantly related to the self-efficacy variable (H3b) β = 0.08, self-efficacy proved to be the essential link between political orientation and stay-at-home intention. However, this is likely due to polarized response to COVID- 19 including media coverage. This finding lends support that cues from political leaders and biased media rhetoric can exert substantial influence in shaping followers' understanding of issues like COVID-19. Lastly, the increase in consumers' intentions to engage in online retail banking was positively impacted by precautionary behavior (H1) as anticipated by the main hypothesis of the study. Further, this study model confirms the findings of Painter and Qiu, (2020) geolocation analysis that political beliefs play a significant role in people's compliance behaviors with social distancing orders, which also shows a correlation with increased e-commerce shopping behavior. Overall this study suggestion based on finding is in line with the study of (Kaur and Arora, 2020) which suggest that valuable banks efforts are needed to facilitate usability and reliability of online banking services especially in designing website interface with improved security features. As banking retailers are struggling to attract customers back to their financial transactions, they must care for the safety of customers from online fraud. Consumers need reassurance to find online retail banking as a safe activity to perform (Agarwal *et al.,* 2021). Failure to do so will likely make consumers feel vulnerable and avoid retail banking. Retail bankers are also advised to streamline the transaction process so that consumers can feel that safe and quick with minimal human contact.

CONCLUSION

The purpose of this study was to discover the factors that contribute to individual differences in precautionary online banking intention amid COVID-19. This study finding suggests that bank retailers should emphasize the protectionary effect (e.g., safety, hygiene) of engaging in online banking. On the other hand, for awareness regarding fraud, bank retailers may highlight key sensitive information not to share through different campaigns, including the use of social media to promote safe online banking as a social marketing theme. This will also benefit online banking modes as a more reliable and convenient method of the shop online. The significant findings from the PMT model help validate the theory in the consumer research setting and open a new window of research, where PMT may be applied to other contexts of consumer behavior that involve risk and need for protection (e.g., identity theft). Doing so, this study advances the current knowledge on the PMT literature and offers deeper insights into the factors that shape the public's perception of pandemics. The results of the study can be helpful to practitioners and scholars in safe banking education, training, and awareness campaigns, thereby also empowering online retail banking users to act effectively or to avoid themselves against increasing online fraud threats. The Covid-19 pandemic caused an unprecedented shift in the behavior of consumers, there is a need to investigate online retail banking as an essential means to minimize social contact to avoid spreading of the infectious coronavirus. To that end, this study finding provides empirical evidence that consumers intend to increase the use of online retail banking services based on their motivations to protect themselves from the perils of COVID-19 as a precautionary behavior. Like any piece of research, this research study has some limitations, however, that also provide future research opportunities. Indeed, the first limitation is the sample context-specific to Pakistan. Although, the COVID-19 pandemic is a global health crisis, however, different countries implemented different strategies, and some countries have been

more successful in containing the virus than others. Therefore, a future study to compare different countries will warrant a deeper understanding of the influence of financial climates on consumer behaviors in a crisis. The second limitation arises because the intention is widely considered as a good indicator of actual behavior, the intention-behavior gap has been also well acknowledged in the literature. While the third limitation is associated with a cross-sectional methodology weakness. Because of the pandemic outbreak, the situations (e.g., policy, case number increase rate) have been changing rapidly. Yet, assessing consumer response at a single point in time cannot capture the dynamic changes. An investigation to evaluate the longitudinal changes in the impact of the COVID-19 on consumer intention to use online retail banking will help us understand the full scope of the impact over time as the level of threat changes with the situation. Just like other survey studies the last limitation of the study is the fact that this is a self-reported survey that cannot determine causal relationships between the research variables. To confirm the causal relationships future studies should investigate the relationships with an experimental design.

AUTHOR CONTRIBUTIONS

F. Afridi made research designs, processed the data with the help of Smart PLS3 and preformad analysis of the processed data. B. Ayaz reference data for background and conducted a literature review M. Irfan conducted data collection, prepared revised manuscript and further observation of the truth of the field data.

ACKNOWLEDGEMENT

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this manuscript. Also, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/ or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

ABBREVIATION

AVE	Average Variance Extracted
CR	Composite Reliability
HTMT	Heterotrait-Monotrait ratio of correlations
OB	Online banking
PB	Precautionary behavior
PMT	Protection Motivation Theory
PS	Perceived Severity
P-value	Probability value
PV	Perceived vulnerability
R^2	Coefficient of determination
RE	Response Efficacy
SD	Standard Deviation
SE	Self-efficacy
SEM	Structure equation modeling

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