

Fortifying Trust, Security, and Privacy in Online Trading Systems: Unlocking their Paramount Significance

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ABSTRACT

The purpose of the study is to examine the impact of perceived security and perceived privacy on customers trust to accept the use online trading system in an extended form of the tam model with TAM constructs. This research paper tries to study the impact of security and privacy perceptions on customer's trust, also the impact of perceived usefulness and perceived ease of use on customer's intention to use online trading system. For the purpose of the study total of 201 samples were collected through the online survey and the data so collected was analyzed descriptively in SPSS version 24, and the seven hypotheses were tested using PLS-SEM in SmartPLS. The path modeling through PLS indicated that perceived ease of use and privacy has no significant positive relation with behavioral intention and trust respectively but all others hypothesis were accepted and the research showed that trust plays an important role for customers intention to use online trading system.

Keywords: Perceived ease of Use, PLS-SEM, Behavior Intention, Trust, Perceived Usefulness, Privacy, Security, TAM

1. Introduction

The Internet has fundamentally altered the way banks and financial institutions provide online financial services. Stock market related documents issuing organization, service providers, and investing partners are progressively selling, trading, and dealing securities services through the Internet. Using Internet-based order submission protocols, investors may now buy or sell shares or stocks from anywhere. The advancement in the technology has made possible for online stock trading by enabling stock brokerages to offer financial services and products via internet at a low cost (Lee & Ho, 2003). In recent years, online trading has grown at an exponential rate.

Online trading is buying and selling of the stocks be its equity, promoter share, debentures through a brokerage's web and internet supported trading systems (Rameshbhai, 2020). Online share trading began in 1969 with the development of system known as electronic communications networks (Hur, 2016). Online brokers can offer lower fees since processing orders electronically is less expensive and more efficient (Muniandy, 2006).

Online trading services have infiltrated the stock market and are crucial in facilitating electronic trading of shares and contracts (Lee & Ho, 2003; Ramayah, Rouibah, Gopi, & Rangel, 2009). Online trading has emerged as an unquestionable choice for enhancing existing trade systems (Gopi & Ramayah, 2007). Retail investors can trade items in many financial marketplaces using online financial trading platforms. These websites provide direct access to numerous financial markets' options, futures, foreign currencies, indices, stocks, and bonds. Nowadays, online trade is fully established and highly developed.

Davis (1989) and Davis et al. (1989) developed the technology acceptance model (TAM), which has become extensively used to characterize the adoption and use of information technologies (IT). TAM believes that two variables will impact user adoption of any technology: perceived utility and perceived ease of use. TAM, which is founded on the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), claims that user perceptions of usefulness and ease of use impact behavioral intention to use the system. Researchers investigated how investors' perceived security and privacy in relation to internet trading systems influence retail investors' adoption intentions. The major goal of the study is to determine the influence of perceived security, perceived privacy, perceived simplicity of use, and perceived usefulness on customer trust, while the secondary goal is to determine the impact of trust on behavioral intention to use an online trading system.

2. Theoretical background

2.1 The technology acceptance model

The TRA (Fishbein and Ajzen 1975), a model widely employed in social psychology that asserts that a person's conduct is a result of their behavioral intention, was applied to the IS domain by Davis (1989). A development of the TRA is the theory of planned behavior (TPB; Ajzen, 1988, 1991). Similar to TRA, it contends that attitude and subjective norms both influence behavioral intention, but with the addition of perceived behavioral control. TAM (Davis, 1989) states that attitudes toward the use of a particular technology are influenced by both perceived utility and perceived ease of use, whereas attitudes and perceived usefulness predict people's behavioral intentions to utilize the technology. The most crucial criteria in IS adoption, according to TAM, are perceived usefulness and perceived ease of use. According to Davis (1989, p. 320), perceived usefulness is "the extent to which a person believes that using a particular system will improve his or her job performance," while perceived ease of use is "the extent to which a person believes that using a particular system will be free of physical and mental effort."

2.2 Literature Review

2.2.1 Perceived Security

Security is a threat that creates a "circumstance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, or modification of data, denial of service, and/or fraud, waste, and abuse" (Kalakota and Whinston, 1997). Security is ability to protect data from prospective threats or to ensure that a framework can counteract attacks that might jeopardize information and administrations (Damghanian, Zarei, & Kojuri 2016).

With regard to the aforementioned definitions, the online trading system security concern can arise from the possibility of data modification by a third party, a lack of protection of the data provided to the system, and the duplication of the data provided, as well as the supplanting or replacing of the original data by new data that may be false and can be used against the customers. Furthermore, as they affect how customers perceive security, factors like encryption, guard, confirmation, and authentication need to be considered as antecedents of perceived security (Chellappa and Pavlou, 2002). With the advent of web-based commercial transactions perceived security risk problems have assumed a more significant prominence (Mann & Sahni 2013).

2.2.2 Perceived Privacy

Information privacy, according to Westin (1968), is "the ability to control how an individual's personal information is acquired and used." Many studies describe privacy in terms of information, referring to it as "the ability of the individual to personally control the information about oneself" (Awad & Krishnan, 2006). Concerns about privacy, internet data use, security, and unauthorized uses of personal information are all on the increase. Customers are hesitant to provide personal information when websites request it because they are concerned about how their data will be used as well as how information transmitted over the internet may be intercepted and used inappropriately.

Because of this, online customers are hesitant to provide any personal or financial information to firms for fear that these companies would use it inappropriately or leak it to other groups (Lim, 2003). Privacy is an essential component of online transactions, as evidenced by several reviews of m-commerce literature, since many customers have expressed worry about privacy (Au & Kauffman, 2008). Customers may be concerned about the service provider's conduct, since they may take advantage of the information offered on the web platform, resulting loss of customers' sensitive information (Xin, Techatassanasoontorn, & Tan, 2013).

Customers may find themselves in insecure situation because they lack control over financial transactions and procedures, and they may believe that their privacy is under threat due to the presence of third parties and mediating parties (Chandra, Srivastava, & Theng, 2010). Other empirical research have found that consumers' adoption of online services is influenced by perceived privacy (Doolin et al., 2005; Mukherjee and Nath, 2007). As a result, this study try to understand if privacy concerns influence the investing decisions of online trading consumers.

2.2.3 Trust

Mayer, Davis, and Schoorman (1995) assert that trust is a behavioral reaction to another person's perceptions of their qualities. Trust becomes a key factor since there is more uncertainty in a virtual transaction than there is in a regular one. One of the main reasons why customers avoid making online purchases is a lack of trust and faith in online businesses (Hoffman, Novak, & Peralta, 1999; Pavlou, 2003). For the claim that PT impacts the intention to utilize online stock trading services, Roca et al. (2009) provided empirical support. The study found that when e-investors' expectations regarding the system's perceived security are satisfied, their trust is increased and they

are more likely to use these online services, especially if the system is successful in achieving their goals.

Trust may be used as a tactical variable, in accordance with Abroud (2012), to lessen the risk associated with conducting business in an uncertain environment. Similar findings have been made by Lee (2009a), Abroud (2012), Abroud et al. (2013), Bhuvanam and Mohan (2015), and Maziriri, Mapuranga, and Madinga (2019). These studies found that investor PT had a significant positive impact on the desire to invest in online trading platforms. Based on an online trading system's reliability and predictability, Abroud (2012) and Lee (2009a) determined PT. Therefore, the goal of this study is to look at how trust affects customer behavior and motivation to utilize an online trading system.

2.3 Hypothesis Development and Research Model

The TAM model is extended in the study model shown in Figure I, which takes consumer trust into account as a factor in determining whether or not users would use the online trading service. As shown in the Figure, trust serves as an exogenous variable to assess how users' acceptance of the online trading system, as well as their perceptions of its value and usage, is influenced.

2.3.1 Perceived Security and Perceived Privacy

Perceived protection is defined as "a measure of the degree to which consumers defend themselves from these risks" (Yousafzai, Pallister, & Foxall, 2003). In their study titled "Trust, Risk, Privacy, and Security in e-Commerce," Pennanen, Kaapu, and Paakki (2006) found that security had a direct impact on trust. Customers worry that their private financial information may be exposed online and used for illegal purposes. Gervey and Lin (2000) determined that security was only one factor in customers' willingness to trust e-commerce transactions.

Amoroso and Magnier-Watanabe (2012) found in case of mobile wallets, the privacy element has the upper hand in creating trust. According to Kelly and Erickson (2005), the introduction of new technologies and the changing nature of business transactions have made privacy a significantly more essential issue. Many works on privacy have emphasized the importance of privacy in preserving consumer trust. For example, Belanger, Hiller, and Smith (2002) established a link between trust and privacy policy and vendor privacy statements.

H_1 : Perceived security has a positive effect on perceived trust.

H_2 : Perceived privacy has a positive effect on perceived trust.

2.3.2 Perceived Ease of Use and Perceived Usefulness.

Ajzen and Fishbein (1980) assert that perceived usefulness develops when an investor believes that using a certain online stock trading will be beneficial. According to Abroud (2012), investors would make the most of technology to the fullest extent if they realize how internet trading may help them and improve their productivity. The majority of studies found evidence in favor of a positive considerable impact of PU of technology on the propensity to embrace online stock trading (Muniandy, 2006; Hemalatha, 2019).

Many studies have discovered that the PEOU of the system or technology has a favorable considerable effect on investors' adoption intention of online stock trading (e.g., Loh & Ong, 1998; Abroud et al., 2013; Bhuvanam & Mohan, 2015; Hemalatha, 2019). The key benefits of online stock trading, according to Bhuvanam and Mohan (2015), are lower trading fee charges, quicker trade execution, and more flexibility in the types of transactions investors choose to do. An earlier study that looked at the relationship between PEOU and intention in the context of online stock trading came up empty.

Perceived utility and trust in social media connections are connected, according to earlier empirical studies (Mallat, 2007). Similar correlations exist between perceived utility and inclination to adopt technology (Dewan & Chen, 2005; Au & Kauffman, 2008). Perceived usability and trust are linked, as well as perceived usability and intention to use (Zhang & Mao, 2008; Schierz, Schilke, & Wirtz, 2010), according to prior research (Schepers & Wetzels, 2007; Bauer, Reichardt, Barnes, & Neumann, 2005: 189). Such collaborations have also received support from the UTAUT (Venkatesh & Davis, 2000).

H_3 : Perceived usefulness has a positive effect on intention to use online trading services.

H_4 : Perceived ease of use has a positive effect on intention to use online trading services.

H_5 : Perceived ease of use has a positive effect on perceived trust.

H_6 : Perceived usefulness has a positive effect on perceived trust.

2.3.3 Trust

Trust is a behavioral reaction to another person's perceptions of their qualities, claim Mayer, Davis, and Schoorman (1995). Because there is more uncertainty in a virtual transaction than there is in a regular one, trust becomes

essential. One of the main reasons why customers avoid making online purchases is a lack of trust and confidence in online businesses (Pavlou, 2003). According to earlier research, PT is closely related to the uptake of internet stock trading.

For the claim that PT affects the intention to utilize online stock trading services, Roca et al. (2009) provided empirical support. Using a modification of the TAM model that includes trust, Setyanti and Kusuma (2012) explored the impact of trust on the intention to use online banking in the case of Indonesia and found that trust is the main driver of this intention. The majority of research (Mngongose, 2017; Karma & Ibrahim, 2014; Liu, Min, & Ji, 2009) have found that adoption intention has a positive impact on trust.

H₇: Perceived trust has a positive effect on intention to use online trading services.

2.3.4 Research Model

The current study's model was informed by earlier research (Carlos Roca et al., 2009), which examined the effects of trust on behavioral intentions to utilize online trading systems.

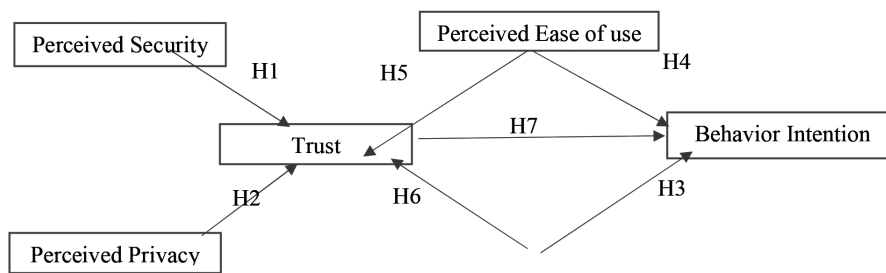


Figure 1 Research Model

3. Research Methodology

3.1 Instrument Development

In this analysis, we employed previously validated scales to verify the validity and reliability of the instruments used in our research model. All concepts were scored on a seven-point Likert scale that ranged from “strongly disagree” to “strongly agree.” All of the elements were culled from earlier studies. Davis (1989)’s earlier work served as the inspiration for the items measuring evaluated usefulness and perceived ease of use. The perceived security and privacy scales were measured using items taken from Cheung and Lee (2001), O’Cass and Fenech (2003), and Flavia’n and Guinal’u (2006). Both Koufaris and Hampton-Sosa (2004) and Jarvenpaa et al. (2000) provided the trust scales. Bhattacharjee’s (2001) earlier work served as the basis for the items assessing continuing intention. All the items for the constructs were modified to match them according to the sense of online trading system.

3.2 Data collection

With the use of Google Forms, a survey was performed online for the study’s purposes, and some data were also gathered offline by asking participants to rate a topic on a 7-point Likert scale. The internet platform was used to gather 201 samples in total, while physical form filling was used to acquire 40 samples. The research questionnaire was divided into two sections, the first of which asked about the respondents’ age, gender, education, and age group as well as their demographics, and the second of which asked about the study’s constructs (trust, perceived security, perceived privacy, perceived ease of use, and perceived usefulness).

3.3 Data Analysis Method

The seven hypotheses were investigated using PLS-SEM in SmartPLS, and the data from the respondent surveys was analyzed descriptively in SPSS version 24. For the purpose of researching theory creation and causal model prediction, PLSSEM is based on a composite factor model (Hair et al., 2011). The structural model and the measurement model make up the PLS-SEM model. In the first, latent variable dependability and validity are examined (Ringle et al., 2020). In the latter, latent variable path analysis is necessary to examine the impact and interactions of latent variables (Hair et al., 2017).

PLS-SEM is a causal-predictive method that is comparable to SEM and is more effective at determining the causes of target structures (Hair et al., 2017). While requiring a lower sample size, it allows for a more thorough knowledge of intricate structural measures and route models (Hair et al., 2017).

4. Data Analysis and Result

4.1 Demographic Characteristics

Table 1. Demographic profile of the respondents

Demographic variable	Category	Frequency (n = 223)	%
Gender	Male	115	51.6
	Female	108	48.4
Age Group	18-25	77	34.5
	26-35	96	43.0
	36-45	38	17.0
	46-55	12	5.4
Education	High School	50	22.4
	Bachelors	98	43.9
	Masters	67	30.0
	Above Masters Level Education.	8	3.6
Employment Status	Student	58	26.0
	Employed	79	35.4
	Self Employed	44	19.7
	Unemployed	42	18.8
Average Investment			
	up to 2 lakhs	94	42.2
	2 to 5 lakhs	79	35.4
	5 to 10 lakhs	43	19.3
	Above 10 Lakhs	7	3.1

4.2 Measurement Model

Using SmartPLS 4.0, structural and measurement models were both tested. The measuring model's convergent and discriminant validity was examined. Factor loadings, Cronbach's alpha, composite reliability, and average variance extracted were used to assess convergent validity (Fornell and Larcker, 1981; Tenenhaus et al., 2005). According to Hair et al. (2017), convergent validity requires that the outer loading of all items be greater than 0.7, the composite reliability be greater than 0.7, and the average variance extracted (AVE) be bigger than 0.5.

The results fulfilled the required standard, as shown in Table 2. Two items from the areas of Behavior Intention (BI) and Privacy (PRV) were also removed. When evaluating measurements that are not intended to be connected with one another and are unrelated, the heterotrait-monotrait (HTMT) criterion is utilized (Hair et al., 2017). The HTMT criterion is more stringent when calculating the average correlations of the indicators across constructs than other popular techniques, such as cross-loading (Hair et al., 2017). Henseler et al. (2015) said that discriminant validity must be less than 0.90 to be considered acceptable, and Table 3 demonstrates that discriminant validity is really established.

Table 2. Convergent validity test results

Variables	Outer Loading	CA	CR	AVE
BI1	0.892			
BI2	0.795	0.748	0.788	0.664
BI3	0.752			
PEOU1	0.863			
PEOU2	0.882	0.822	0.827	0.738

PEOU3	0.83			
PRV1	0.88			
PRV2	0.915	0.808	0.914	0.716
PRV4	0.732			
PU1	0.892			
PU2	0.828	0.871	0.88	0.721
PU3	0.847			
PU4	0.829			
SEC1	0.898			
SEC2	0.892			
SEC3	0.856	0.901	0.904	0.771
SEC4	0.865			
TRU1	0.868			
TRU2	0.861	0.868	0.877	0.715
TRU3	0.818			
TRU4	0.836			

Table 3 Discriminant validity heterotrait-monotrait (HTMT) criterion

Variables	BI	PEOU	PRV	PU	SEC	TRU
BI						
PEOU	0.463					
PRV	0.201	0.091				
PU	0.567	0.492	0.175			
SEC	0.055	0.045	0.533	0.067		
TRU	0.458	0.257	0.202	0.334	0.377	

4.3 Structural Model

Prior to analyzing the study's hypotheses, we first investigated the issue of collinearity in the research regression to ensure that it was free of bias and that the independent variables in the regression model were not connected. The variance inflation factor (VIF) scores must be checked before assessing the structural model as a consequence. According to Table 4, which shows that all of the VIF scores for the variables are less than 3.3, multicollinearity is not a possibility (Hair et al., 2017).

Table 4. Variance inflation factor (VIF) results

	BI	PEOU	PRV	PU	SEC	TRU
BI						
PEOU	1.225					1.21
PRV						1.293
PU	1.269					1.232
SEC						1.264
TRU	1.108					

Table 5. Structural Model and Hypothesis Testing

Hypothesis	β	Standard deviation	T statistics	P values	Decision
PEOU \rightarrow BI	0.174	0.067	2.589	0.010	Supported
PEOU \rightarrow TRU	0.121	0.066	1.836	0.066	Rejected
PRV \rightarrow TRU	-0.093	0.07	1.333	0.182	Rejected
PU \rightarrow BI	0.327	0.065	5.023	0.000	Supported
PU \rightarrow TRU	0.251	0.068	3.698	0.000	Supported
SEC \rightarrow TRU	0.284	0.067	4.241	0.000	Supported
TRU \rightarrow BI	0.255	0.063	4.038	0.000	Supported

Table 5 concluded the structural model and hypothesis testing, where security has positive impact on the trust ($H1: SEC \rightarrow TRU, \beta: 0.284$ and p -value: 0.000), at the same time there is no significant impact of privacy aspect on the trust of the users of the online trading system ($H2: PRV \rightarrow TRU, \beta: -0.093$ and p -value: 0.182), similarly ($H3: PU \rightarrow BI, \beta: 0.327, p$ -value: 0.000) reflected the fact that perceived usefulness has significant positive relation on the Behavior Intention. Again, ($H4: PEOU \rightarrow BI, \beta: 0.174, p$ -value: 0.010) signifies the positive impact of PEOU on BI. Likewise, ($H5: PEOU \rightarrow TRU, \beta: 0.121, p$ -value: 0.066), is not supported which implies there is no significant positive relation of PEOU on TRU. ($H6: PU \rightarrow TRU, \beta: 0.251, p$ -value: 0.000) is supported shows that PU has significant positive impact on TRU. And, at the end ($H7: TRU \rightarrow BI, \beta: 0.255, p$ -value: 0.000) supported implies significant positive relation with BI.

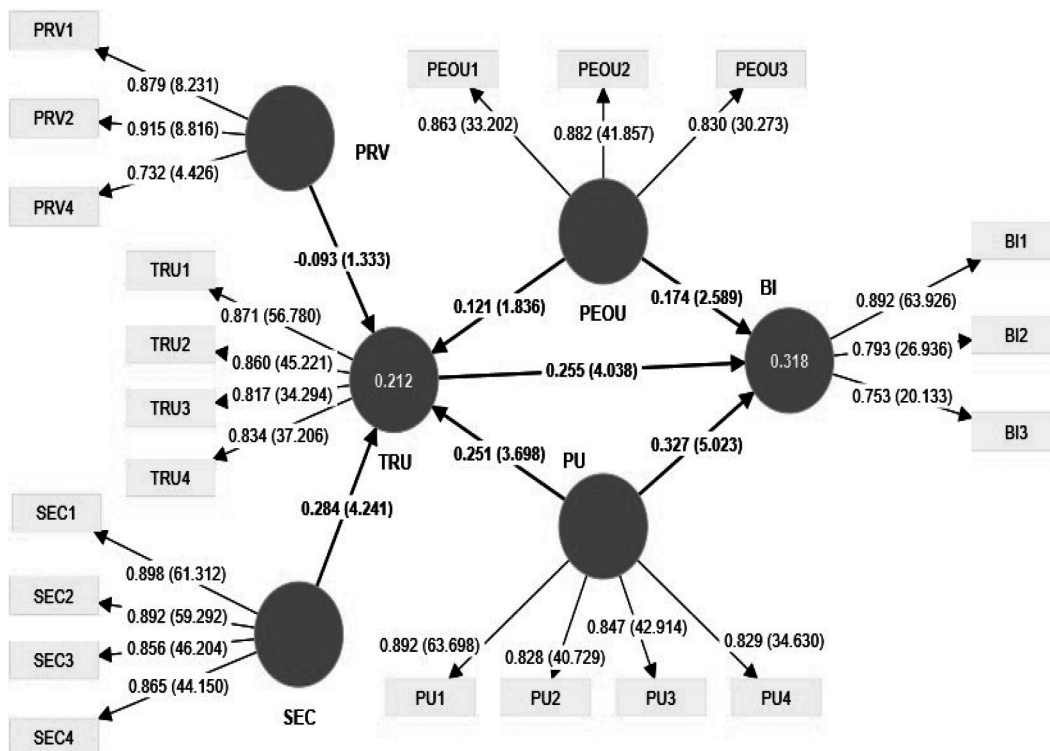


Figure 2: Structural Model

5. Conclusion

With the increase of the internet usage and increase of investors the use of the online stock trading has gradually increased with time and thus the issues related to the security and privacy factors has also been surfaced. With respect of the rising security and privacy factors trust of the investors towards the online trading system plays a crucial role towards behavior intention of the investors to use the online trading system. Thus the privacy and security factors of the online trading system should be taken in to consideration and should be maintained to the greater standard to ensure the safe guard of the important information of the customers. In this research among two of the main important factors regarding trust of the customers towards the online trading system, privacy has no significant positive relation towards the trust of the individuals whereas security do have significant positive

relation towards the trust of the users on the online trading system.

Thus keeping in mind with reference to this research security of the online trading system needs to be more strengthened and should be kept intact. The result of this study indicates that trust of the online trading system plays an important role towards the intention to use the system. In the same way perceived ease of use has no significant relation on the trust but in contrary perceived usefulness do have significant positive relation on the trust, it indicated that perceived usefulness creates trust among the users. Thus the system needs to be developed in the way that it creates the sense of usefulness among the users. Again PU and PEOU both have positive relation with BI that indicates that PU and PEOU both factors are important for maintaining the intention of usage of the individual towards the system.

In this research we witness factors impacting the trust and BI of the individuals towards the online trading system. With regard to this increasing case of the data breach and data theft people are more concerned towards the security of data. And thus the broker and broker house should take steps to maintain more secured system to the users. Thus we respect to this research we can see that system providers are responsible to maintain the safe and secured system as many factors impact the BI of the users.

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