Belief of Customers in Social Commerce Performed via Social Networking Sites: An Empirical Study from Hồ Chí Minh City

Phan Công Thảo Tiên[*], Đặng Quan Trí[*], Nguyễn Thành Luân[*]

Abstract: While e-commerce emphasizes platform-based trust and security, social media platforms are not liable for users' posts and comments during social commerce (s-commerce) activities. Additionally, the impact of customer trust on their attitudes and willingness to engage in s-commerce remains largely unexplored. This study aims to develop a theoretical model that examines the influence of trustee characteristics on customer trust, attitude, and willingness to buy, using the theory of reasoned action (TRA). A survey was conducted, collecting 200 valid questionnaires from customers in Vietnam who use Instagram, Facebook, Twitter, and TikTok. *Firstly*, the study confirms that perceived reputation, multichannel integration (MTI), and system assurance positively influence customer trust, which subsequently affects customer attitude and leads to a willingness to purchase. *Secondly*, a neural network model was employed to rank the relatively significant predictors obtained from structural equation modeling (SEM). This study contributes to the growing literature on the use of social networking site (SNS) apps in boosting e-commerce businesses. The novel methodology and findings from this study significantly contribute to the existing literature on e-commerce settings. Therefore, for practitioners aiming to build trust in their SNS-based businesses, the findings highlight the importance of trust in s-commerce and recommend an integrated approach based on the key findings of this study.

1. Introduction

E-commerce and social networking sites (SNSs) come together in social commerce, aiming to enhance customers' online shopping experiences (Marsden, 2010). Lal (2017) defines social commerce as a recent form that combines information technology (IT) and communication technology. In electronic commerce, a lack of trust is considered a significant

[*] Hồ Chí Minh City University of Foreign Languages-Information Technology.

Email: tridq@huflit.edu.vn

barrier that inhibits customers from making online purchases (Lal, 2017). When there is a lack of confidence in the online marketplace, customers are more likely to hesitate or even refrain from making online purchases altogether (Asim, Y., Malik, A. K., Raza, B., & Shahid, 2019). The internet is inherently risky due to the absence of human interaction, the inability to physically examine products, and insufficient transaction safeguards. The absence of face-to-face interaction in online purchases amplifies the importance of trust compared to traditional retail settings. Trust plays a crucial role in online transactions, as various factors such as security and privacy are at stake (Algharabat & Rana, 2021).

While both customers and vendors stand to profit from social commerce (s-commerce), one unavoidable drawback is the elimination of the physical distance that has traditionally separated buyers, sellers, and their wares. Having reliable, long-lasting customer relationships is essential for suppliers to solve this problem. Nonetheless, there are still many questions that have not been answered. Although many online businesses use different efficient communication tools such as SNSs, there has been little research conducted on the efficacy of MTI cues such as SNSs, email, blogs, and e-reviews in an online retail environment through controlled experiments. More and more online stores are starting corporate blogs and e-reviews to entice customers and make their online shopping experiences more convenient. One example is how companies like Dell Inc. use bloggers to update their websites and respond to customer concerns (Brengman & Karimov, 2012). Moreover, most of these studies have only focused on the consumers of countries widely recognized as global powers, such as the US, China, and Singapore (Ashraf et al., 2021; Chopdar et al., 2018). These countries possess a comparative online mobile shopping environment with large firms with a high reputation, which leads to a high customer perception of system assurance and trust.

There is a lack of evidence regarding the effectiveness of online shopping in less developed countries such as Vietnam. The potential for future research and practical applications makes s-commerce an enticing field of study (Attar et al., 2021; Calzetta, 2012; Ngai & Gunasekaran, 2007). To address the limitations in earlier research, structural equation modeling (SEM) and artificial neural networks (ANN) are employed, rectifying the flaws in multivariate assumptions. Exploring linear and non-compensatory interactions can further enhance the social commerce framework for s-commerce companies. However, there has been limited research on the factors influencing customer trust in social commerce and the application of dual theory from SEM and ANN in this context (Lim et al., 2021). ANN is computational frameworks inspired by the human central nervous system's data storage and utilization (Lim et al., 2021). Today's ANN algorithms for assessing customer sentiment can be beneficial for emerging businesses (Ooi et al., 2018). Combining the ANN approach with PLS-SEM methods provides additional validation to the results of the SEM study. This approach allows for a precise assessment of the relative strength of each predictor and can capture dynamic, nonlinear interactions between independent and dependent variables (Albahri et al., 2022).

To bridge this knowledge gap, this research investigates the emotional and cognitive processes consumers undergo in response to MTI. It then explores how antecedents of trust in the online shopping environment influence customers' attitudes and willingness to buy online in less developed countries. Specifically, the study claims that incorporating MTI into electronic retail (e-tail) websites, along with reputation and system assurance, will affect online trust and customer attitudes toward new s-commerce businesses, influencing their decision to shop online.

This study employs a sophisticated hybrid two-stage SEM-ANN approach to detect non-linear relationships and enhance understanding of trust in the s-commerce setting. The paper will follow the outlined structure, beginning with the definition of "initial online trust" as a concept of paramount relevance for new e-commerce sites. A theoretical basis, grounded in cue signaling theories, will be presented to elaborate on the impact of integrating social network applications into websites on trust development and the likelihood of customer purchases. The research framework and theories will be derived from this foundation. Subsequently, the data collection and analysis methods will be outlined. The analysis and results will be presented, followed by a discussion and concluding remarks. Finally, some limitations and recommendations for future studies will be provided.

2. Literature review

2.1. Trust

Trust can be broadly defined as the confidence one has in their pessimistic predictions of how other people will behave, typically based on prior interactions. Exchanges carried out as planned foster confidence that the other party will behave as anticipated, even if the future actions of one or more individuals cannot be guaranteed. Without this level of assurance, people would need to assess every possible scenario for each person nearby before deciding. The need for trust increases as one becomes more dependent on others and vulnerable to their misbehavior. Consequently, trust is inherently complex, multifaceted, and context-specific (Gefen, 2000). Since trust is a critical component of almost every business transaction, reducing perceived risk and transaction costs, it has a significant impact on business partnerships. The success of many business partnerships is heavily influenced by trust, as it also shapes general behavior. Conversely, a lack of trust leads to defensive and controlling communication, diminishing communication effectiveness and distorting crucial information. Trust has become a vital prerequisite for internet commerce due to its advantages, particularly the ability to engage in risky actions without direct control over others (Gefen, 2000).

The level of confidence that members of social networks have in s-commerce platforms can be quantified. Consumer trust in s-commerce platforms is not as straightforward as it may appear to outsiders. The success of s-commerce platforms depends on the trust of their

customers, making it a crucial factor for measuring customer satisfaction (Liang & Zhao, 2020). To assess the influencing factors of social network users' trust in s-commerce platforms, i.e., the evaluation indicators for user trust in s-commerce platforms, a user trust evaluation system is established. Based on the evaluation of these indicators, a model is constructed to enhance the service quality of s-commerce platforms. Lastly, references and recommendations are provided for s-commerce platforms (Yingzi & Zhaoji, 2022).

2.2. Theory of Reasoned Action (TRA)

To explain the interconnected psychological processes that link observable attitudes, convictions, intentions, and actions, Azjen (1980) proposed the theory of reasoned action (TRA). According to this theory, an individual's perspective toward a behavior, influenced by their beliefs, determines their intention to engage in that behavior. Over the years, TRA has been extensively examined through empirical investigations, and several meta-analytical studies have been published within the TRA framework, leading proponents of the theory to consider it reliable for attitude-behavior research. In fact, some researchers have questioned the need for alternative theories, given TRA's strong predictive capability for relevant events. Moreover, TRA can be applied in educational settings, such as schools, where teachers seek to change students' attitudes and intentions to foster improved behaviors. The theoretical foundation for this research lies in the TRA. According to this theory, attitudes and beliefs about the likelihood of a behavior resulting in specific outcomes influence behavioral intention, which was previously believed to be a direct precursor to behavior. Hill et al. (1977) state that an individual's beliefs (attitudes) toward a particular behavior and subjective norms (the perception of approval or disapproval from important others) directly influence their intention, which in turn significantly determines their behavior. Consumer beliefs are among the key factors influencing purchase intent.

3. Hypotheses development

Our study builds upon and expands previous research by examining the relationship between customer trust in the context of s-commerce, specifically focusing on the criteria that contribute to consumer trust in s-commerce providers on SNSs. Consumer perceptions of s-commerce service providers are influenced by the level of trust they have, which, in turn, affects their willingness to make purchases. The research model and hypotheses are illustrated in Figure 1. In line with studies on traditional buyer-seller interactions in the industrial setting, factors that buyers consider trustworthy include the seller's reputation and size (Doney & Cannon, 1997). This is because a seller's reputation and size can serve as indicators of their competence, generosity, and honesty (Jarvenpaa et al., 1999). Customers' perceptions of an online retailer's reputation and size have a significant impact on their level of trust in the business (Jarvenpaa et al., 2000).

Figure 1: Research Model
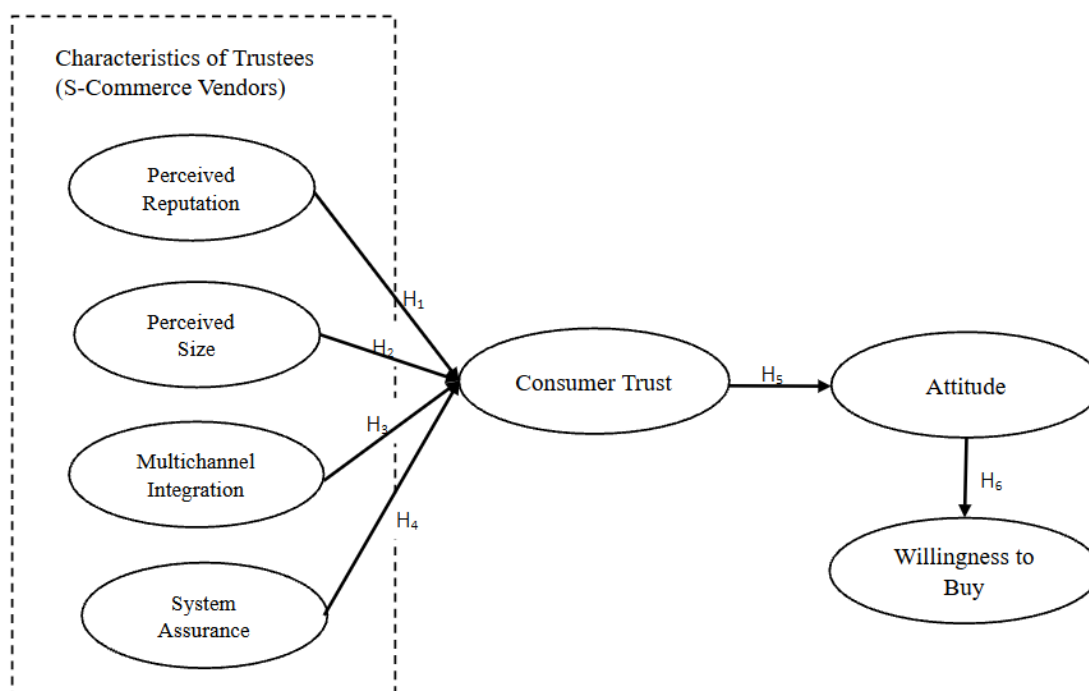
How highly customers regard a vendor in terms of ethics, trustworthiness, or a solid professional reputation is known as reputation (Doney & Cannon, 1997). Research suggests that a company's reputation represents an invaluable long-term commitment of time, money, and attention to the needs of its clients. Building a reputation is more challenging than destroying one, making it a fragile asset (Yaniv & Kleinberger, 2000). Without proper protection, a vendor's reputation can easily be damaged or ruined (Kartalia, 2000). A vendor with a good reputation is less likely to jeopardize it by acting opportunistically (Chiles, John F. Mcmackin, et al., 1996). Reputation has been positively associated with buyer trust in the seller in classical marketing literature (Shankar Ganesan, 2019). The perceived reputation of a seller by consumers has also been found to strongly correlate with their level of trust while shopping online. Therefore, we assume that:

H1. The level of consumer trust in an e-commerce vendor is positively correlated with the vendor's perceived reputation.

In addition to market share and total size, the size of a seller has been used to characterize it (Doney & Cannon, 1997). A significant overall size and market share indicate that many customers choose to trust the company because it consistently fulfills its commitments to them. A company with a sizable market share must cater to a broader range of customers, which is why it has been able to maintain its market position (Griffin & Hauser, 1993). Moreover, a larger organizational size implies that the business is likely to

possess the necessary resources and networks to foster trust and loyalty (Chow & Holden, 1997). Larger businesses also tend to have better-developed websites that facilitate transactions (Teo & Pian, 2004). Lastly, a large scale in the online shopping environment demonstrates that the seller is capable of assuming the risk of product failure or transit losses and compensating customers fairly (Jarvenpaa et al., 2000). Therefore, it is evident that:

H2. The level of consumer trust in an e-commerce vendor is positively associated with the vendor's perceived size.

With the development of the internet as a commercial channel, companies are increasingly recognizing the value of having multiple channels for interacting with customers and the importance of integrating these communication modes (such as phone calls, faxes, catalogs, online stores, emails, physical stores, etc.). Gulati and Garino (2000) discussed various methods for determining the optimal level of integration between virtual and physical activities, considering the benefits and drawbacks from the vendor's perspective. One of the key dynamic competencies required for e-business transformation is channel integration to provide a multichannel service (Elizabeth & Wilson, 2003). Vendors should always offer customers the option to communicate in the manner they find most comfortable. By expanding assisted service to online clients and facilitating a seamless purchasing experience, merchants can effectively enhance customer satisfaction and trust. For vendors with physical locations, physical distribution plays a crucial role in establishing trust and communication, ensuring that products are available to customers in the right quantities, at the right times, and in the right locations. Therefore, the following assertion is made:

H3. In an e-commerce setting, the level of consumer trust is positively correlated with the vendor's multichannel integration.

The reliability and security of a vendor's online transaction system, which enables secure and efficient internet transactions, are referred to as "system assurance". Previous studies have indicated that consumers perceive disclosing credit or debit card information online as a significant risk. Concerns regarding the security and reliability of online transactions are frequently expressed by consumers (Ambrose et al., 1998). Moreover, Kini and Choobineh (1998) asserted that establishing and maintaining consumer trust relies on the system's assurance features accessible to users. This is evident from:

H4. The level of consumer trust in an e-commerce vendor is positively associated with the vendor's system assurance.

Recent research on trust development, particularly in the context of e-commerce, has utilized TRA as a theoretical foundation (McKnight & Chervany, 2001; McKnight et al., 2000). It is hypothesized that trust has a direct relationship with attitudes towards purchasing from a vendor and an indirect relationship with consumer willingness to make purchases through the mediation of purchasing attitudes. Trust can be defined as a conviction, attitude, anticipation, or belief regarding the intentions and anticipated

behavior of a trading partner. Buyers who are motivated by trust tend to focus more on positive motivations due to their sense of connection and identification with the vendor. Therefore, it follows that:

H5. Consumer trust in e-commerce vendors is positively associated with favorable attitudes towards purchasing from the vendors.

H6. Customers' willingness to make purchases through an e-commerce vendor is positively correlated with their level of trust in the vendors.

Our research aims to develop a model that explains willingness to make purchases in e-commerce, drawing on TRA, trust literature, and the perspective of online mobile purchasing outlined earlier. Specifically, our model incorporates trustee characteristics of e-commerce vendors, including perceived reputation, perceived size, MTI, and system assurance. We argue that consumers' inclination to engage in online mobile purchases can be influenced by their attitudes towards e-commerce vendors. The proposed theoretical model is outlined below:

4. Methodology

4.1. Data gathering process

Users of s-commerce in Hồ Chí Minh City, Vietnam, were surveyed for this research. The participants in the research were all living in Hồ Chí Minh City and had used Shopee, Facebook, or TikTok to make an online purchase in the past. Overall, 200 questionnaires were fully completed by women and men of varying ages and educational backgrounds. A preliminary survey instrument was evaluated by eight individuals with over ten years of management experience in s-commerce to ensure the authenticity of the material; the tool was slightly modified based on their suggestions. The question "Have you participated in internet commerce before?" is an example of a shopping interception question. An online survey was conducted, and among the 200 surveys sent out, only those with complete responses were received. According to Hair et al. (2011), a study's sample size should be equal to or greater than 10 times the number of formative indicators used in construction or the number of structural routes specified in the structural model. In this investigation, the sample size of 200 clearly exceeds the minimum required sample size of 40 (Hair et al., 2017a). The sample size was determined using a G-Power analysis with a statistical power of 0.80, a margin of error of 0.05%, an effect size of 0.15, and five predictor variables. The number of usable observations exceeds the minimal sample size of 92. Of the participants, 41% were men and 59% were women. Additionally, 43% were between the ages of 15 and 24. 36% were between the ages of 25 and 34. 9% were between the ages of 35 and 44. 7% were between the ages of 45 and 54, and 5% were between the ages of 55 and 64.

The percentage of college graduates is as follows: 15% have an associate's degree, 23% have a bachelor's degree, 36% have an advanced degree, 25% have a master's degree, and 1% have additional certifications. Among the mobile commerce platforms, 25% of respondents relied on Facebook, 38% relied on TikTok Shop, and 37% relied on Shopee.

4.2. Operationalization of measurements

The questionnaire consists of two sections: one focuses on demographics, while the other includes important inquiries regarding consumer beliefs, attitudes, and purchasing preferences. Vietnamese translations are provided throughout the survey to ensure responders can understand the questions. The researcher's survey incorporates references from previous successful studies. Each response is rated on a seven-point Likert scale, where 1 indicates strong disagreement and 7 represents a high level of agreement. The table below, corresponding to Table 1, outlines the components and their sources of measurement.

Table 1: Components and Measurements

Constructs	Items	References
Perceived Reputation (PCR)	PCR1. This s-commerce vendor is well-known. PCR2. An s-commerce vendor's reputation is built on honesty. PCR3. An s-commerce vendor's reputation is built on fairness. PCR4. An s-commerce vendor's reputation is built on consumer needs.	(Doney & Cannon, 1997); (Shankar Ganesan, 2019)
Perceived Size (PCS)	PCS1. This s-commerce vendor is a huge corporation. PCS2. This s-commerce vendor operates globally.	(Houghton et al., 2000)
Multichannel Integration (MTI)	MTI1. I can order online and pick up things at this s-commerce vendor's physical locations. MTI2. I can return the things I purchased online to any of this vendor's physical locations and receive a refund. MTI3. I can request after-sales services for any product I purchased online from this merchant. MTI4. I can request after-sales assistance online for any product I purchased from this merchant offline. MTI5. This s-commerce vendor's online and physical stores frequently have the same prices. MTI6. I can select whether to interact with this merchant offline or online (for example, browsing for and purchasing things).	(Gulati & Garino, 2000)

Constructs	Items	References
System Assurance (STA)	STA1. This s-commerce vendor's online transaction system is stable. STA2. This s-commerce vendor's online transaction system is reliable. STA3. This s-commerce vendor's online transaction system is dependable. STA4. This s-commerce vendor's online transaction system is secure.	(Kini & Choobineh, 1998)
Consumer trust (CST)	CST1. This s-commerce vendor is trusty. CST2. This online vendor provides authentic data. CST3. S-commerce vendor honors its commitments and promises. CST4. This s-commerce vendor looks out for my best interests. CST5. The conduct of this s-commerce vendor is as I had anticipated.	(Doney & Cannon, 1997); (Macintosh & Lockshin, 1997)
Attitude (ATT)	ATT1. It's a pleasure to shop from this vendor via the Internet. ATT2. It's a good idea to shop from this vendor via the Internet. ATT3. It's appealed to shop from this vendor via the Internet. ATT4. I appreciate the idea of shopping from this s-commerce vendor via the Internet.	(Taylor & Todd, 1995)
Willingess to Buy (WTB)	WTB1. I would visit this vendor's website again. WTB2. I would buy from this s-commerce vendor. WTB3. In the next three months, I intend to make an online buy from this s-commerce vendor. WTB4. In the coming year, I intend to make an online buy from this s-commerce vendor. WTB5. I'm willing to purchase online goods or services from this vendor.	(Macintosh & Lockshin, 1997)

5. Results

5.1. Assessing the outer measurement model

The univariate normality of the data was checked before testing the measurement model. The values of skewness and kurtosis were all within acceptable ranges of 2 and +2, and 7 and +7, respectively, demonstrating univariate normality (Hair et al., 2014). Afterward, we utilized principal component analysis and exploratory factor analysis in SPSS 25 to search for signs of post-hoc common method bias (CMB) using the Harman one-factor test. Only 29.22% of the variance could be attributed to the single greatest factor, suggesting a likely

absence of CMB in the data. The reliability, convergent validity, and discriminant validity of the constructs were assessed using the measurement model.

Table 2: Descriptive Statistics and Reliability Coefficients for Constructs

	Loadings	Cronbach's alpha	Rho_a	Composite reliability	AVE
ATT1	0.850	0.880	0.880	0.917	0.735
ATT2	0.840				
ATT3	0.868				
ATT4	0.871				
CST1	0.878	0.924	0.925	0.942	0.766
CST2	0.895				
CST3	0.889				
CST4	0.858				
CST5	0.856				
MTI1	0.735	0.892	0.897	0.917	0.649
MTI2	0.784				
MTI3	0.823				
MTI4	0.836				
MTI5	0.825				
MTI6	0.827				
PCR1	0.865	0.871	0.872	0.912	0.722
PCR2	0.864				
PCR3	0.861				
PCR4	0.806				
PCS1	0.892	0.738	0.738	0.884	0.792
PCS2	0.889				
STA1	0.870	0.861	0.865	0.905	0.705
STA2	0.827				
STA3	0.859				
STA4	0.802				
WTB1	0.840	0.923	0.924	0.942	0.765
WTB2	0.909				
WTB3	0.897				
WTB4	0.869				
WTB5	0.855				

The findings in Table 2 demonstrate good internal consistency and reliability of the items, with all construct item loadings being greater than 0.7, Cronbach's alpha exceeding 0.7 for each construct, and composite reliability surpassing the 0.7 threshold (Leong et al., 2020). Moreover, our measurement approach exhibits sufficient convergent validity, as evidenced by the average variance extracted (AVE) from each construct being greater than 0.5 (Hair et al., 2011). Discriminant validity is determined using the Fornell-Larcker value (the square root of AVE) and cross-loadings. Table 3 reveals that, for the Fornell-Larcker value, the correlations along the diagonal between comparable latent variables (in bold type) are higher than those between dissimilar latent variables. All indicators' outer loadings are greater than their cross-loadings, as evaluated through the cross-loading assessment. The results of the cross-loadings analysis are presented in Table 4, providing evidence of discriminant validity in these two tests. Once validity and reliability are established through a measurement model assessment, a structural model evaluation can be conducted.

Table 3: Fornell Larker Criterion

	ATT	CST	MTI	PCR	PCS	STA	WTB
ATT	0.857						
CST	0.833	0.875					
MTI	0.701	0.805	0.806				
PCR	0.706	0.710	0.711	0.850			
PCS	0.748	0.797	0.729	0.738	0.890		
STA	0.779	0.785	0.746	0.726	0.770	0.840	
WTB	0.837	0.840	0.722	0.684	0.786	0.792	0.874

Table 4: Cross loadings

	ATT	CST	MTI	PCR	PCS	STA	WTB
ATT1	**0.850**	0.726	0.594	0.594	0.694	0.661	0.711
ATT2	**0.840**	0.716	0.636	0.599	0.647	0.700	0.734
ATT3	**0.868**	0.678	0.535	0.586	0.605	0.617	0.683
ATT4	**0.871**	0.734	0.635	0.637	0.618	0.691	0.738
CST1	0.767	**0.878**	0.701	0.642	0.686	0.710	0.796
CST2	0.772	**0.895**	0.732	0.632	0.714	0.722	0.749
CST3	0.718	**0.889**	0.733	0.645	0.704	0.689	0.763
CST4	0.688	**0.858**	0.676	0.600	0.656	0.606	0.650
CST5	0.698	**0.856**	0.681	0.587	0.727	0.704	0.713

|	ATT	CST	MTI	PCR	PCS	STA	WTB
MTI1	0.465	0.541	**0.735**	0.589	0.528	0.589	0.550
MTI2	0.565	0.653	**0.784**	0.450	0.535	0.516	0.556
MTI3	0.488	0.592	**0.823**	0.470	0.555	0.528	0.476
MTI4	0.682	0.735	**0.836**	0.722	0.687	0.690	0.645
MTI5	0.524	0.651	**0.825**	0.503	0.521	0.545	0.571
MTI6	0.630	0.693	**0.827**	0.679	0.673	0.719	0.673
PCR1	0.570	0.632	0.586	**0.865**	0.654	0.600	0.587
PCR2	0.593	0.590	0.592	**0.864**	0.556	0.589	0.539
PCR3	0.615	0.600	0.634	**0.861**	0.668	0.616	0.622
PCR4	0.621	0.590	0.605	**0.806**	0.626	0.665	0.574
PCS1	0.679	0.714	0.644	0.676	**0.892**	0.681	0.698
PCS2	0.652	0.704	0.653	0.638	**0.889**	0.689	0.700
STA1	0.716	0.699	0.652	0.649	0.674	**0.870**	0.701
STA2	0.679	0.702	0.623	0.528	0.674	**0.827**	0.702
STA3	0.638	0.636	0.623	0.629	0.656	**0.859**	0.653
STA4	0.572	0.589	0.607	0.643	0.573	**0.802**	0.593
WTB1	0.713	0.733	0.646	0.629	0.727	0.695	**0.840**
WTB2	0.788	0.765	0.691	0.644	0.713	0.717	**0.909**
WTB3	0.727	0.730	0.627	0.570	0.677	0.689	**0.897**
WTB4	0.715	0.706	0.586	0.542	0.659	0.659	**0.869**
WTB5	0.711	0.738	0.604	0.601	0.658	0.701	**0.855**

5.2. Assessing the structural model

Next, we examined the relationships and explanatory power of the structural model to assess their robustness. This study utilized SmartPLS with 5,000 introductory samples to analyze the structural model. The bootstrapping approach was employed to determine the statistical significance of parameter estimations, enabling the generation of reliable standard errors or t-values (Monecke & Leisch, 2012). The data in Figure 2 and Table 5 confirm H1, H3, and H4, demonstrating that PCR, MTI, and STA are positively correlated with increased levels of customer trust ($\beta = 0.313$, $p < 0.01$; $\beta = 0.368$, $p < 0.01$; $\beta = 0.236$, $p < 0.01$). H5 is supported by substantial effects of consumer trust on users' attitudes ($\beta = 0.833$, $p < 0.001$). The likelihood of willingness to buy increases with the user's attitude

toward the s-commerce setting (β = 0.483, p 0.001; 2 = 0.226, p 0.001), confirming H6 as well. However, H2 did not show significant positive effects on consumer trust (β = 0.046, p > 0.01).

Table 5: Path coefficient results

		Original sample (O)	Sample mean (M)	T statistics (|O/STDEV|)	P values	Results
H1	PCR -> CST	0.313	0.304	3.744	0.0000	Supported
H2	PCS -> CST	0.046	0.047	0.565	0.5720	Not Supported
H3	MTI -> CST	0.368	0.369	3.916	0.0000	Supported
H4	STA -> CST	0.236	0.245	2.989	0.0030	Supported
H5	CST -> ATT	0.833	0.833	30.811	0.0000	Supported
H6	ATT -> WTB	0.837	0.839	32.277	0.0000	Supported

Figure 2: Structural Model Evaluation
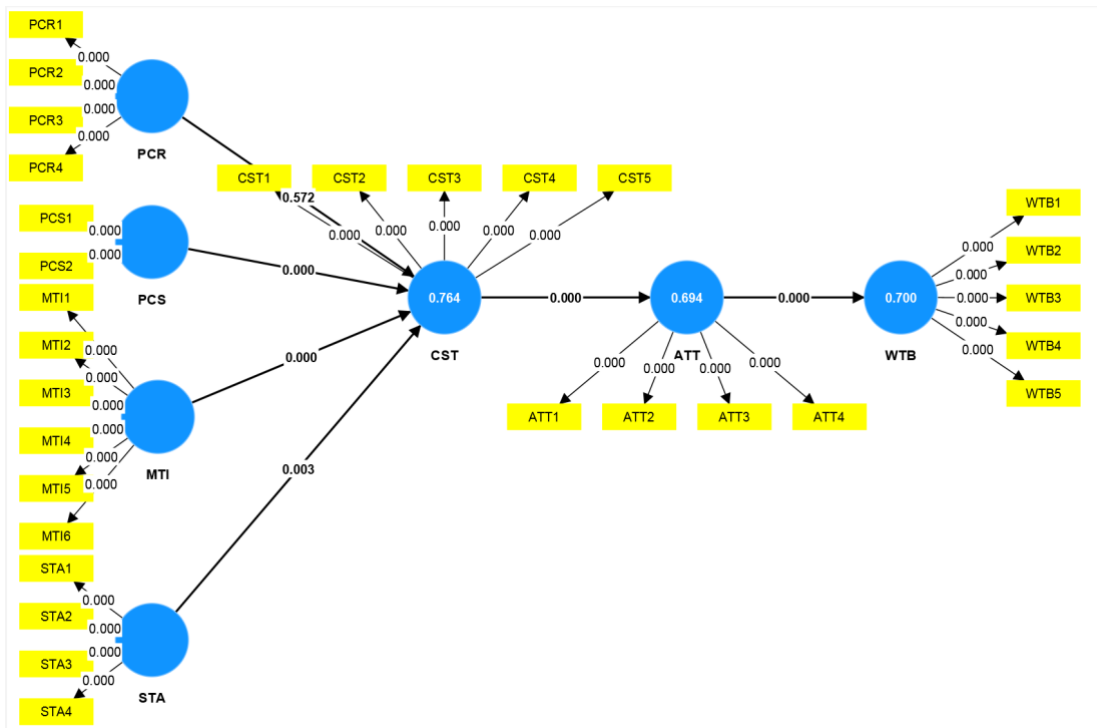
Upon examining the explanatory power of the study model, it is revealed that our formulation explains 69.4% of the variance in attitude, 76.4% of the variance in consumer

trust, and 70.0% of the variance in willingness to buy through s-commerce. Furthermore, a small standard error of the mean relative error (SRMR = 0.052) indicates an excellent level of model fit. These findings demonstrate that the proposed model possesses strong explanatory power, as the exogenous variables can account for a significant portion of the variance in the endogenous variable (Hair et al., 2016).

Table 6: R-square

	R-square	R-square adjusted
ATT	0.694	0.693
CST	0.764	0.759
WTB	0.700	0.699

5.3. Neural network analysis

Hypothesis testing with PLS-SEM allowed for the integration of structural equation modeling (SEM) and artificial neural networks (ANN) in the analysis. Sigmoid functions were employed in both the activation and result layers. Through multiple stages of the learning process, errors can be reduced, and prediction accuracy can be enhanced.

The learning process involves several steps that refine the model and enhance the reliability of predictions. Specifically, 90% of the samples were allocated for training, while the remaining 10% were used for testing. The predictive accuracy of the ANN model was evaluated by calculating the root-mean-square error (RMSE) (Leong et al., 2020).

The study variables exhibit marginal fluctuations between the training and testing phases. Table 7 presents the RMSE values, which are 0.531 for training and 0.532 for testing. Additionally, a sensitivity analysis was conducted to evaluate the impact of each predictor on trust in e-commerce, as shown in Table 8. The final weighted average was obtained by dividing the weighted average of the relative importance of each implanted neuron by that of the most important neuron. The results indicate that MTI, PCR, and STA are the most significant predictors of customer trust in s-commerce, with normalized relative importance values of 100%, 73%, and 66%, respectively.

In PLS-SEM and ANN, the Path Coefficient and Normalized Relative Importance are utilized to determine the order of importance, respectively. These findings further confirm that MTI ranks first in both ANN and PLS-SEM, considering the magnitude of its impact. This suggests the ability to model both linear and non-linear associations between variables (Lee et al., 2020). Thus, the utilization of a two-stage analysis approach (PLS-ANN) in this investigation is highly justified.
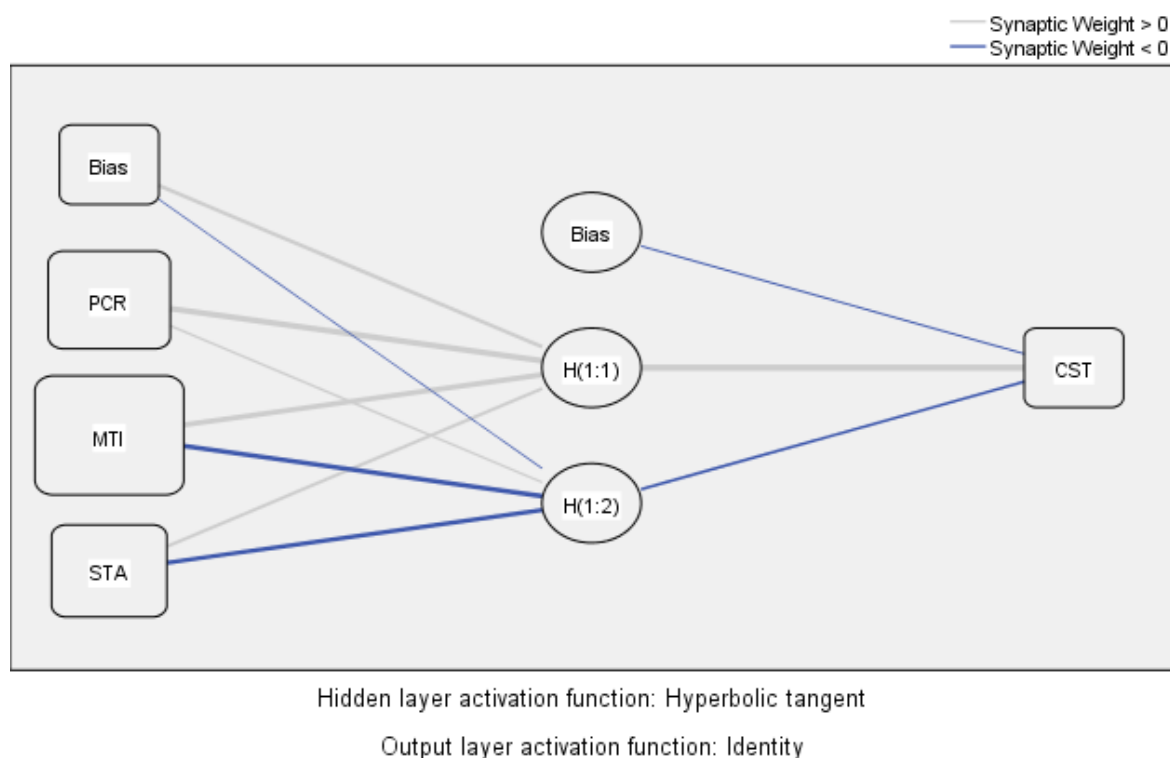
Figure 3: ANN Networks Result

Hidden layer activation function: Hyperbolic tangent

Output layer activation function: Identity

Table 7: RMSE Values of ANN

Neural Network	TRAINING			TESTING			TOTAL
	N	SSE	RMSE	N	SSE	RMSE	
1	180	300.263	0.515	20	36.105	0.550	200
2	184	286.236	0.535	16	28.472	0.543	200
3	178	334.264	0.556	22	42.539	0.536	200
4	177	315.150	0.558	23	38.420	0.535	200
5	179	325.472	0.543	21	26.082	0.533	200
6	180	335.092	0.515	20	33.625	0.500	200
7	179	309.710	0.517	21	43.894	0.510	200
8	182	318.696	0.522	18	38.518	0.522	200
9	175	293.399	0.514	25	44.317	0.560	200
10	181	321.391	0.537	19	34.027	0.526	200
Means		313.967	0.531		36.600	0.532	
SD		16.558	0.017		6.213	0.018	

Table 8: Sensitivity Analyses: Normalized Importance of Constructs for ANN Model

Neural Network	PCR	MTI	STA
1	0.256	0.342	0.402
2	0.336	0.312	0.352
3	0.287	0.333	0.380
4	0.348	0.372	0.280
5	0.281	0.441	0.278
6	0.225	0.376	0.399
7	0.312	0.328	0.360
8	0.299	0.372	0.329
9	0.265	0.381	0.354
10	0.270	0.356	0.374
Means	0.306	0.418	0.276
Normalized Importance	73.00%	100.00%	66.00%

Notes: Input: PCR, MTI, STA; Output: CST.

6. Discussion

Overall, the findings support the hypothesized model of consumers' trust in online social businesses. As expected, it has been discovered that factors such as PCR, MTI, and STA of s-commerce vendors play a role in determining consumer trust in online social merchants. Specifically, the findings indicate that all measures of PCR, except for PCS, have strong positive correlations with consumer trust, which aligns with previous research on this topic (Jarvenpaa et al., 2000). This demonstrates that both businesses and consumers lose faith in each other when no assurances are given regarding the quality of products. With the prevalence of the internet and easily accessible information, consumers are becoming increasingly cautious about engaging with companies that have a history of unethical practices, especially those that have been publicly exposed.

Unsurprisingly, MTI is associated with customer trust. Perceived size and MTI are closely related concepts. It means that the larger a corporation is, the more money it is willing to invest in electronics. They choose to establish a single channel that consolidates multiple channels to interact with customers, rather than having several channels to reduce costs and provide easier access for customers. It is important to note that due to the sudden outbreak of the COVID-19 pandemic and social distancing regulations, companies are increasingly recognizing the importance of integrating similar channels. Consumers are

progressively grasping the concept of this specialized service, which enables them to easily interact with companies through an integrated online channel. This benefits not only the company but also society and consumer health.

The findings demonstrate that among all the antecedents of trust, system assurance has the greatest impact on consumer trust. This indicates that establishing and maintaining consumers' faith in internet sellers critically depends on the reliability and security of an s-commerce vendor's online transaction system. When making purchases online, security and privacy are the top concerns for online shoppers.

There are positive correlations between consumer attitudes and the readiness to buy from a vendor, as well as between consumer attitudes and trust in the seller. The study's findings reveal that trust in an e-commerce seller is significantly and positively correlated with vendor attitudes, and positive attitudes are positively correlated with customers' willingness to make purchases.

7. Conclusion

This study contributes to the existing literature by providing valuable insights into trustee characteristics, such as the perceived reputation and system assurance of an s-commerce vendor, which are crucial determinants of consumer trust (Mayer et al., 1995). This empirical investigation focuses on vendor and consumer attributes within an s-commerce context. The study findings reveal that the system assurance of an s-commerce provider has a greater impact on customer trust compared to other factors. Additionally, we introduce the concept of multichannel integration as a distinctive characteristic of s-commerce firms in the study model. Contrary to previous studies that found no positive correlation between MTI and consumer trust, our research demonstrates that consumers exhibit higher levels of trust in an online retailer when their communication channels are integrated in various ways.

Moreover, system assurance emerges as a significant aspect of online s-commerce that influences consumer trust across different national contexts. Online retailers should emphasize the security and reliability of their online transaction systems, as well as enhance their perceived reputation through publicity and advertising. The website design should highlight information that reflects the company's positive reputation, the measures taken to safeguard consumer privacy, and the security measures implemented during online purchases. Finally, sellers should employ diverse trust-building techniques to encourage customers to complete transactions online, such as offering fast delivery, improved after-sales support, and detailed product information.

Although our empirical findings do not support the relationship between a vendor's perceived size and consumer trust, further research is warranted to explore the underlying reasons. The study's conclusions, which indicate no correlation between consumer

perceptions of a company's size and their trust in that company, contradict conventional studies on trust and marketing. It is worth investigating whether the impact of a company's perceived size on customer trust is limited to large, well-known brands. Additionally, further investigation is needed to identify other factors that may mitigate the effect of a seller's perceived reputation on trust in their online store.

Notably, this study not only fails to find the hypothesized relationship between consumer perceptions of a company's reputation and their propensity to make a purchase, but also does not provide conclusive evidence on whether this idea has a significant impact on trust in countries outside of Vietnam. This challenges the claim made by P. M. Doney et al. (1998) that trust is rooted in a country's unique cultural norms. Furthermore, the data allows for the identification of cross-national associations between consumer assurance and future spending. While previous studies have primarily focused on a single nation's culture, exploring countries with diverse cultural backgrounds would likely yield different outcomes.

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