

Received 17 November 2022, accepted 1 December 2022, date of publication 5 December 2022, date of current version 8 December 2022.

Digital Object Identifier 10.1109/ACCESS.2022.3226889

RESEARCH ARTICLE

How Can SMEs Boost Trust Through Third-Party Means? Tracing the Multi-Dimensional Institutional Basis of Online Trust

CONG CAO¹, (Member, IEEE), AND SHANSHAN HUANG

School of Management, Zhejiang University of Technology, Hangzhou, Zhejiang 310023, China

Corresponding author: Cong Cao (congcao@zjut.edu.cn)

This work was supported in part by the National Social Science Foundation of China under Grant 22BGJ037, in part by the Zhejiang Provincial Federation of Social Sciences under Grant 2023N009, in part by the Humanities and Social Sciences Research Project of Zhejiang Provincial Department of Education under Grant Y202248811, and in part by the Zhejiang University of Technology Subject Reform Project under Grant SKY-ZX-20210175.

This work involved human subjects or animals in its research. Approval of all ethical and experimental procedures and protocols was granted by the School of Management, Zhejiang University of Technology, China.

ABSTRACT Consumers are reluctant to engage in e-commerce, due in part, to a lack of trust in the e-merchants, in the e-commerce technology and in the business process. Few prior studies investigating consumers' trust behaviour in relation to e-retailers have addressed different combinations of third-party services and third-party platforms. However, the importance of both of these to the cross-border e-commerce market is self-evident. This paper aims to explore the development of institutional trust in platforms based on the level of the third-party services provided and ultimately, to develop a complete study of online transaction intentions as driven by the platform institutions. An online survey was conducted to collect the data, and 445 respondents completed and returned the questionnaire. Based on the structure of the data, partial least squares structural equation modelling was used to assess the effects of specific factors on institutional trust and on initial trust. Preliminary findings suggest that third-party logistics, payments and certification significantly enhance consumers' trust in an online platform system and in turn, their trust in the e-retailers. Furthermore, the perceived usefulness of a platform and the trustworthiness of word-of-mouth comment can both significantly influence online trust. The study builds an extended online trust model to explore in greater detail. On the one hand, the model will enable platform management to understand users' demands for third-party services better and so improve the platform system. On the other hand, the model can help e-retailers to form a comprehensive understanding of the third-party platform system, and it can guide them in making use of a platform to improve their sales performance.

INDEX TERMS E-commerce, e-WOM, trust transfer theory, institution-based trust, online trust, SMEs, third party.

I. INTRODUCTION

The worldwide impact of COVID-19 has created unprecedented challenges for business organisations in all sectors and industries, forcing many business activities to move online [1]. According to the eMarketer "Retail Ecommerce

The associate editor coordinating the review of this manuscript and approving it for publication was Fabrizio Messina¹.

Sales Worldwide 2020-2025 Report", global e-retailing will reach \$6.5 trillion in 2023. The huge overseas e-commerce consumption market provides the best opportunity for Chinese brands to be sold overseas. The overseas to consumer (2C) markets for domestic small and medium-sized enterprises (SMEs) are mainly concentrated in Europe and America and in regions with high market maturity, high consumption levels and developed economies. Here, there

is a focus on mainstream e-commerce platforms, such as Amazon and eBay. Based on the iResearch “2020-2021 Annual Report of China Cross-border B2C E-commerce Exports Report”, in 2020, Chinese cross-border exports and Business-to-Consumer (B2C) e-commerce turnover in the North American market will have reached 457.3 billion yuan, with a year-on-year growth rate of more than 35%. Among the more than 30,000 consumers interviewed by PayPal, approximately 21% had shopped on Chinese e-commerce sites. China has become an important global destination for cross-border e-commerce shopping. It is anticipated that it will continue to be in a period of rapid growth for cross-border export e-commerce in the future as new emerging markets, such as Brazil, India and Russia, expand. Today, third-party cross-border e-commerce platforms of different types and scales are developing rapidly. Various corresponding aspects of development, such as merchant onboarding, traffic attraction and the realization of successful transactions are also in the pipeline. According to ebrun “2021 Cross-border E-commerce Financial Services Report”, more than 20% of Chinese cross-border e-commerce companies are stationed on Shopee and Lazada, two cross-border e-commerce platforms designed for Southeast Asian markets.

There are two major e-commerce platform-building models: third-party-based and self-hosted. Although an increasing number of sellers are adopting a multi-channel sales model that combines third-party platforms with a self-owned website, third-party platforms remain the obvious choice for most SMEs during their transition period. For SMEs to conduct overseas business while stationing on a third-party platform is fully in line with general developmental trends, and it matches the characteristics of both enterprises and industries. First, with their limited resources, it is unrealistic for most SMEs to either build a self-operated platform or to expect huge traffic within a short period. Second, in terms of risk resistance, most startups lack dynamic counter-risk capabilities in the face of the ever-changing market environment [2]. Finally, from a marketing perspective, third-party platforms serve as communication channels that can help SMEs improve their brand reputation and customer trust [3]. To sum up, stationing on third-party platforms during their early stages is the best choice for SMEs wishing to develop cross-border business.

Today, the orderly development of cross-border e-commerce ecology, as based on third-party platforms, is continuously injecting new vitality into the development of the global commodity economy. At the same time, this has also driven the development of third-party service industries, such as logistics and insurance. However, the cross-border online shopping environment is riskier. Specifically, cross-border transactions and deliveries are far more complex and more risky than domestic e-marketplaces, or traditional offline markets, due to the high information asymmetry between the cross-border buyers and sellers, the poor enforcement of national laws, and language and cultural barriers. Currently, consumers are still unfamiliar with, or are sceptical about, cross-border e-commerce, and a large number of

illegal operators are still misleading consumers through credit fraud and speculation [4]. Trust has always been regarded as the foundation of e-commerce. Consumers’ distrust of merchants and platforms, their doubts about the safety of the online shopping environment, and their concerns about product quality and after-sales service can all hinder transactions. Since May 2021, Amazon has changed its traditional style of technical autonomy, requiring all third-party sellers to comply with relevant laws, regulations and the rules of Amazon’s marketplace, and in the name of creating a fair and healthy business environment, it has cracked down on platform operations. The accompanying store closure and account closure penalties have affected a large number of Chinese merchants. According to Amazon’s official caliber, a total of about 600 Chinese brands and 3,000 accounts were closed in this account ban. Under the third-party platform pattern, the merchants themselves, online word-of-mouth publishers, third-party organizations and the platforms themselves have all become important links in establishing an online chain of trust for individual consumers. Amazon’s ‘ban tide’ is a big warning for the majority of small and medium-sized e-commerce companies going abroad, and this incident itself is a microcosm of e-commerce platform managers beginning to pay attention to website trust construction.

E-commerce trust, or online trust, has also been defined as ‘technological trust’ or ‘institutional trust’ [5]. Scholars in the fields of user behaviour and information technology have gone to considerable lengths to understand how to enhance trust in e-commerce. The former have focused on exploring trust formation [6], while the latter have refined the tools of technology, such as the blockchain. Sadly, even with the most sophisticated algorithms and technologies, a trust crisis is still lurking. It is therefore necessary to explore the causes of trust at source. Most previous trust models have focused on interpersonal trust, and scholars have subdivided interpersonal trust into three major dimensions: competence, integrity and benevolence. However, such studies have several obvious limitations: first, the division into the three dimensions of interpersonal trust is too subjective and one-sided to be verifiable [7]. Second, previous trust models are inadequate to cope with the dynamic evolutionary process of trust within different trust environments [8], and the results for interpersonal trust may be quite different in different contexts. Last, the environment (e-commerce ecology, in this paper) is dynamic, and iteration in business models and changes in the participating subjects will both inject increasing numbers of variables and uncertainties into the process of constructing online trust. Realising this, scholars have integrated the variable ‘word-of-mouth’ into the traditional trust framework and have concluded that objective factors, such as the institutions’ and online reviews, can influence the establishment of subjective trust [9]. Although using word-of-mouth as an antecedent variable when studying trust mechanisms has been a hot topic in the WEB 2.0 era [10], today, under the third-party platform model, word-of-mouth can no longer be used as a

direct antecedent of trust. It has therefore become necessary to backtrack to uncover additional potential variables.

In conjunction with the actual transaction processes occurring on the third-party e-commerce platforms, we assume that buyers will choose a third-party platform with relatively well-developed systems, and that they will then combine their initial perception of platform usage and online reviews to select certain trustworthy suppliers for their final purchase. *But what kinds of systems or services do consumers value? To what extent do online reviews and platform usage influence their initial trust?* These questions require in-depth exploration. At present, the trust mechanism for e-commerce based on third-party platforms still lacks empirically-based guidelines and solid theoretical support. In addition, both domestic and foreign research lacks empirical evidence and analysis regarding how the services offered by third-party e-commerce platforms affect institutional trust. As yet, few scholars have comprehensively combined multiple aspects, such as third-party service systems, user-generated content and platform usage perceptions, to study the trust issue within the third-party platform model. In sum, starting with institutional trust when exploring online trust is in line with real needs and represents a breakthrough in online trust research.

Having combed through the extensive literature and gained insights into actual online shopping situations, this study argues that the trust model can be extended by integrating variables from three directions: websites [11], suppliers [12] and consumers [13]. Specifically, this paper takes its inspiration from studies on user satisfaction [14], interpersonal trust [15] and service-quality evaluation systems [16], [17]. It incorporates variables such as third-party service quality, perceived platform use and electronic word-of-mouth (e-WOM) in constructing a more comprehensive trust model through which to study the mechanism by which institutional trust impacts initial trust and cross-border purchase intention. This paper not only extends the online shopping trust model, but it also provides the first breakdown of the dimensions of institutional trust, as consistent with the current online shopping context. It is important to note that, in this paper, 'cross-border' refers specifically to Chinese enterprises exporting their products overseas. This reflects the objective of the paper and the considerable requirement for Chinese SMEs to sell abroad. Due to the costs of a trial-and-error process, it is necessary for SMEs to fully understand third-party platforms before they decide where to station themselves. This paper hopes to guide SMEs in leveraging the platforms' services and consumer e-WOM so that they can explore the overseas markets more effectively.

In addition to filling an identified academic gap, this paper offers the following practical guidance: (i) it provides theoretical guidance for third-party e-commerce platforms wishing to optimize their platform architecture; (ii) it provides theoretical guidance for cross-border e-commerce enterprises choosing a third-party platform on which to be stationed; (iii) it can reduce consumers' cross-border shopping risks and give them a better cross-border online shopping experience;

and (iv) it will help to alleviate the current cross-border e-commerce trust crisis.

II. THEORETICAL BACKGROUND

A. TRUST IN THE ONLINE ENVIRONMENT

The natural information asymmetry and spatial separation qualities of online transactions make end-users bear many risks and uncertainties, such as personal information leakage, low product quality, non-receipt of goods, and Internet fraud. However, studies have found that many people are still willing to spend time and money in online transactions [18]. One important reason for this is that end users trust online merchants and trust can help users cope with the many uncertainties in the online transaction environment in the environment [19] for example, trust can overcome barriers such as the invisibility of online shopping [20]. Therefore, gaining consumers' trust is considered one of the most critical challenges in online marketing [21]. Although many researchers view trust as a key factor in the success of online transactions, research on online trust has so far been very scattered and spread across different disciplines such as sociology and psychology. To investigate how trust affects users in online environments, previous scholars have developed various models of online trust. In some online trust models, scholars have analysed the impact of internal and external factors on trust beliefs. Scholars argue that third-party trust is particularly important in online environments, where unfamiliar parties are willing to trust each other because of the contribution of a reliable third party. Scholars have categorized 12 factors, such as third parties and website providers, as internal factors and proposed a framework containing various sources of trust beliefs to present a multifaceted structure that influences end users' willingness to visit websites [18]. Third parties in this study are presented only as trust seals, experts, and peers, whereas in today's more complex online transaction environment where outsourcing is prevalent, third parties can be various service providers such as logistics, payment, insurance, etc. Therefore, this paper argues that there is a need to redefine the scope of third parties. Moreover, the relationship between third parties and website providers is not addressed in the framework proposed by this scholar, while some scholars have found that the importance of trust is not only reflected in both the trustor and the backer, but also applies to the scenario of third party usage [22], [23]. It is then a question worth exploring whether and how third parties in online transactions can influence the trust relationship between buyers and sellers.

B. TRUST IN THE ONLINE ENVIRONMENT

Trust transfer theory states that if a person or entity is associated with another person or entity, people's trust in the first person or entity will transfer to trust in the other person and entity [24]. The cognitive process of trust transfer is based on the understanding of the relationship between the trustee and the trusted third party [25]. The economist Spence [26] first

proposed signal theory in 1974 for the study of employment relationships in the labour market. Signal theory is suitable for solving adverse selection problems arising from signal asymmetry and is useful for describing the behaviour of two parties (individuals or organizations) when they are in a situation of asymmetric information [27]. Studies have indicated that signals can bridge information asymmetries in markets [28]. In an environment where there is an information imbalance between buyers and sellers, the use of additional information by sellers can help influence buyers' purchase intentions. Increasingly, scholars are focusing on how extrinsic cues affect perceived risk, product perceptions, and behavioural intentions, and guarantee and price are the most frequently investigated cues; however, these relationships are typically not empirically investigated [29].

Based on these two theories, this paper argues that in a cross-border online trading environment with information imbalance, users build trust and purchase behaviour in the online trading environment based on the soundness of the platform system, the orientation of word-of-mouth, and the sense of experience with various third-party services. Moreover, trust building is a complex process, and there should be unused signals at different stages in play. Therefore, this paper argues that the trust mechanism of end-users towards individual sellers when conducting cross-border online transactions is complex. However, previous studies have not addressed this issue [30]. Although online trust research has combined and built on models and theories of interpersonal, fast and impersonal trust [31], the transfer mechanism between impersonal and interpersonal trust has not received extensive attention. To understand the relationship between impersonal trust and personal trust in online transaction environment, it is necessary to construct an online trust transfer model based on third-party service system. First, based on trust transfer theory, this paper treats institutional trust as a kind of impersonal trust, initial trust as interpersonal trust, and takes third-party service perception as information in the formation stage of institutional trust, and takes factors such as platform system and word-of-mouth as signals for initial trust formation. Secondly, this paper incorporates usage perceptions such as ease of use to gain insight into users' trust behaviour based on the technology acceptance model (TAM) model. Next, a two-stage online trust model based on trust transfer theory is finally developed to deeply analyse the trust relationships among various third parties, platform/website parties, retailers, and end users.

III. RESEARCH HYPOTHESIZE AND CONCEPTUAL MODEL

A. INSTITUTION-BASED TRUST

Earlier, Zucker [32] proposed process-based trust, feature-based trust and institution-based trust as the three core factors of trust building. Later, McKnight, et al. [33] proposed institutional trust, interpersonal trust and trust propensity as the three antecedents of initial trust. Other scholars, such as Castelfranchi and Falcone [34], have categorized

interpersonal trust as institutional trust. According to Zucker [32], institution-based trust is based on individual- or firm-specific attributes or intermediary mechanisms. den Butter, et al. [35] state that the establishment of institutional trust relies greatly on professional certification, a service economy, regulation and legislation. These models provide a sound theoretical foundation for e-commerce trust-related research. Novita and Budiarti [36] argue that if individuals believe that the internet does not provide sufficient control, with technological and legal protection, their institutional trust in the internet as a shopping channel will be weak. McKnight and Chervany [19] propose two dimensions to institutional trust: structural assurance and situational normality. According to their research, structural assurance is the belief that success is possible when contextual conditions, such as regulations and safeguards, are present in the context. As a cross-border e-commerce website, the platform should have its own rules and regulations. Structural assurance helps promote trust, and Kaushik, et al. [37] suggest that platform managers should clearly define the rules and norms on their websites and educate merchants concerning their platforms. Anisah and Suhendra [38] contend that situational normality requires the marketplace to provide a normal trading situation; for example, having a technical infrastructure that can ensure secure information communication is a typical example of situational normality for an e-commerce system.

Previous scholars have mostly followed the definition of structure guarantee and situational norms provided by McKnight and colleagues in their studies on institutional trust's effect on e-commerce transaction intention, but no scholars in recent years have related these concepts to the concrete embodiment of online shopping. The reality is that e-commerce technology is constantly upgrading, and consumer demands are constantly increasing. The current transaction situation and the contextual structure of cross-border e-commerce are undoubtedly the richer for these changes. Browsing through cross-border e-commerce websites, whether at home or abroad, it becomes clear that the services consumers expect have expanded from payments to recommendations, insurance and other, increasingly diverse, services. Therefore, a major intention of this paper is to redefine traditional concepts of situational norms and structural guarantees in line with current normal online shopping parameters. Accordingly, in order to discuss the causes of institutional trust more effectively, this paper divides the institutional system of e-commerce platforms into five categories: logistics, payment, insurance, certification and recommendations. The traditional concepts of situational norms and structural assurance are redefined in relation to the current, normal online shopping mode, which has not been done in previous studies.

In the e-commerce environment, verification information provided by the seller will attract a high level of attention from the buyer. If a platform can adopt effective security measures, it will enhance buyers' trust in it. A study by Zhen and Hao [39], working in the context of ridesharing, identified the

transfer mechanism between institution-based trust and interpersonal trust. In this context, legally binding institutional mechanisms, regarding payment security and driver certification, were also beneficial in promoting trust. In the internet environment, where integrity is seriously lacking, digital seal technology, as an example of technology-driven credit construction, can effectively improve economic transactions and security [40], [41]. The certification mechanism serves as a regulatory tool to help protect user privacy and thus stimulate the market [42]. Safety concerns in online shopping can cause consumer fears, and scholars have responded to this dilemma by proposing third-party certification (3PC) programmes as a key strategy for increasing consumer trust in online channels [43].

Third-party logistics (3PL) refers to the outsourcing of a company's own logistics activities to specialized logistics service companies so that it can focus on its own industry. Trust between 3PL providers and users has proved to be a key factor enabling enterprises to expand their businesses. It has been empirically proven that, among other qualities, logistics responsiveness promotes user trust in a company [44], [45]. The Chinese e-commerce marketplace has been creative in issuing a new type of insurance, return freight insurance, as third-party insurance, which not only effectively reduces transaction disputes but also provides incentives for merchants to operate in good faith [46].

Based on trust transfer theory, Lu, et al. [47] developed an online trust model in the third-party mobile payment environment and found that customers' trust in a third-party payment (3PP) service affected their initial trust in the mobile payment service supplier. Various other scholars have also constructed trust models for third-party mobile payment platforms, based on theories such as trust and innovation diffusion, and all of these have shown that perceptions of quality, such as the security of 3PP, can enhance customers' trust [48].

McKnight, et al. [33] comment that payment intermediaries and insurance providers can serve as mechanisms for enhancing system trust. In addition, case studies confirm that third-party insurance (3PI) can enhance consumers' online trust. For example, a German e-commerce company collaborated with an insurance company to provide third-party insurance services to its customers, which resulted in the company receiving the 'Trusted Shop' seal, thereby increasing its consumer trust.

In terms of third-party recommendation (3PR) services, recommendations and referrals are some of the methods used to assess, develop and ensure trust [49]. When enjoying a third-party recommendation service, individual consumers rarely understand how the recommendation system makes decisions. Therefore, algorithmic services of recommendation systems need to be user-centred algorithmic services that require understanding the cognitive processes of users [50]. Scholars believe that interpretability is crucial in the process of building user confidence in AI [51]. It can be argued that when AI systems provide recommendation services to users, information about the quality of third-party recommendation

services such as interpretability and transparency of users' perceptions can help to enhance their trust in the platform.

In brief, previous studies have shown that the credibility of a third-party organization (TPO) is closely related to users' attitudes of trust towards e-retailers. Findings have also revealed that TPO credibility is positively correlated with online users' evaluation of assurance structures [52]. This paper argues that structural assurance and situational regulation require e-commerce platforms to have a comprehensive set of regulations and business processes, in the course of which, a wide range of trusted third-party services will be developed. The presence of reliable, professional and trusted third-party services will make customers realise that they are in a safe and secure transaction environment, thus contributing to the formation of institution-based trust. Thus, we hypothesize:

H1: *Perceived 3PL quality positively affects institution-based trust.*

H2: *Perceived 3PP quality positively affects institution-based trust.*

H3: *Perceived 3PI quality positively affects institution-based trust.*

H4: *Perceived 3PC quality positively affects institution-based trust.*

H5: *Perceived 3PR quality positively affects institution-based trust.*

Institutional factors can positively influence online trust and post-trust behaviour [53]. A study by Leonard and Jones [54] shows that institutional trust can effectively enhance consumers' trust in e-commerce platforms and sellers and ensure smooth e-commerce transactions. Moreover, consumers will tend to screen trusted e-retailers based on their perceptions and knowledge of the overall service system [55]. Trust plays a key role in a business being mutually beneficial, with the precondition that trust has already been established in the authorised institution [56]. This paper argues that institution-based trust implies that users have confidence in the transaction environment of the platform, and this is the threshold for forming initial trust in online shopping. Many studies have concluded that institution-based trust has a significant and positive effect on consumers' purchase intentions [57]. The literature also shows that initial trust plays a partial mediating role in the influence of institutional trust on purchase intention [58]. Thus, we hypothesize:

H6a: *Institution-based trust can positively influence consumers' initial trust in merchants.*

H6b: *Consumers' initial trust in merchants positively affects their purchase intentions.*

B. SOURCE CREDIBILITY THEORY & E-WOM

The e-WOM refers to any positive or negative statement about a product or company made by a potential, actual or former customer via the internet [59], usually done with the help of electronic media, such as online reviews, blog posts, videos or images [60]. e-WOM enables consumers to better evaluate products and identify inaccurate information, in addition to

assisting management in improving their products and services. e-WOM is a hot topic in the field of marketing and consumer behaviour, and numerous studies have confirmed that it significantly influences consumers' purchasing behaviour. Online reviews are a major branch of e-WOM, and in this paper, e-WOM mainly refers to online reviews.

Previous word-of-mouth-related studies were mainly devoted to studying the antecedents of word-of-mouth motivation, which provided theoretical support for merchants' word-of-mouth marketing strategies. Nowadays, the content characteristics of e-WOM, such as text length, have been used as antecedent variables to study their effects on consumer behaviour. Research into the differences in the effect of positive and negative word-of-mouth on consumers' product attitudes and purchase behaviours has become another hot research topic in recent years. Several studies have shown that positive e-WOM-related visual cues have a positive impact on online impulse purchase intention [61]. By combing through the literature, it is easy to see that previous innovations in e-WOM research mainly considered product categories and consumer involvement. For instance, Lohan, et al. [62] demonstrated the moderating role of product category on the effect of negative e-WOM on consumers' initial trust and purchase decisions. In addition, the impact of negative e-WOM on consumers' brand attitudes is greater when the involvement of the consumers is of a high level. In summary, current research is basically still investigating the mechanism of word-of-mouth as an antecedent to influencing consumer behaviour, with only a few scholars examining the role of e-WOM as a mediating variable in the transfer of trust in e-commerce under the third-party platform model.

A search of both national and international literature shows that, in most studies, e-WOM is perceived as an antecedent variable of initial trust, while few studies have explored the relationship between institutional trust and e-WOM. In complex trust models involving third parties, whether and to what extent word-of-mouth can transmit trust among different trustees is a new question to be addressed. The information adoption model (IAM) clarifies that information is adopted because it is credible, and the direct factors for perceived credibility are credible information content and credible information sources [63]. Based on IAM theory, many scholars have studied the e-WOM effect in terms of both content expertise and source credibility. Source credibility theory suggests that credible information sources make information more persuasive. Scholars such as Hovland and Lumsdaine [64] believe that source credibility has the greatest impact on the receiver and can change their attitude. Overall, a vast number of studies have concluded that the channel and the source of information released can significantly influence purchase decisions, especially for new consumers [65]. The literature states that reviewer expertise, review quality and review quantity can all positively influence consumers' purchase intentions [66], [67], [68]. A study by Bhayani [69] found that consumers' purchase intentions for high-risk products are more dependent on the expertise and credibility

of e-WOM. Combining the IAM theory with e-WOM-related studies, this paper introduces the construct of perceived e-WOM credibility, which combines the credibility of both source and content. This paper argues that institution-based trust can serve as a strong basis for word-of-mouth credibility. Specifically, cross-border online shopping has higher risks compared to traditional online shopping, and the online shopping population is dominated by new customers. In this special situation, a reliable set of institutions can endorse the quality of reviews and thus influence purchasing behaviour. Therefore, we propose the following hypothesis:

H7a: *Institution-based trust in the platform positively influences perceived e-WOM credibility.*

H7b: *Perceived e-WOM credibility positively influences initial trust in merchants.*

C. PERCEIVED EASE OF USE AND PERCEIVED USEFULNESS

As the literature shows, the TAM has been utilized in a wide range of different technologies, and different aspects have been tested in different sectors, such as mobile e-banking [70], e-marketing [71]. In the initial TAM, Davis [72] proposed that attitudes towards using technology are determined by two constructs: perceived usefulness (PU) and perceived ease of use (PEOU). Understanding the antecedents of PEOU and PU is even more important in practice, and several systems, representing multimillion-dollar investments, have been rejected due to poor user interfaces [73]. In the TAM structure, the presence of external impacts on PEOU and PU makes it possible to augment the number of determinants [74]. Accordingly, TAM offers several acceptable determinants for the development of models that are capable of better prediction of user behaviour in various application domains [75]. The use of information technology is essentially relationship-building behaviour, whereas trust is at the core of all forms of relationship [76]. Hence, trust naturally becomes the most widely used variable in the extended TAM model. Studies reported in the literature, such as those of Zhao, et al. [77], indicate that trust is now deemed an independent variable, on a par with PEOU and PU. However, the limitation of these models is that it is not possible to know whether trust plays a role in PEOU or PU in influencing attitudes towards IT use [78]. Previous studies, particularly those applying TAM, acknowledge that trust is an antecedent of PEOU and PU [79], [80], [81]. It becomes evident that the position of trust in TAM is disputed by various scholars. Furthermore, we have been unable to find a TAM model that includes both types of trust. Since this paper focuses on the effect of platform institutional trust on initial trust, it is necessary to include both institutional trust and initial trust within an extended TAM. Schoorman, et al. [82] argue that trust aids transactions and makes them effortless by reducing the effort required for consumers to understand, monitor and control the status of the transaction. Therefore, the multidimensional institutional trust referred to in this paper releases consumers from the considerable effort needed to study the operations and regulations affecting

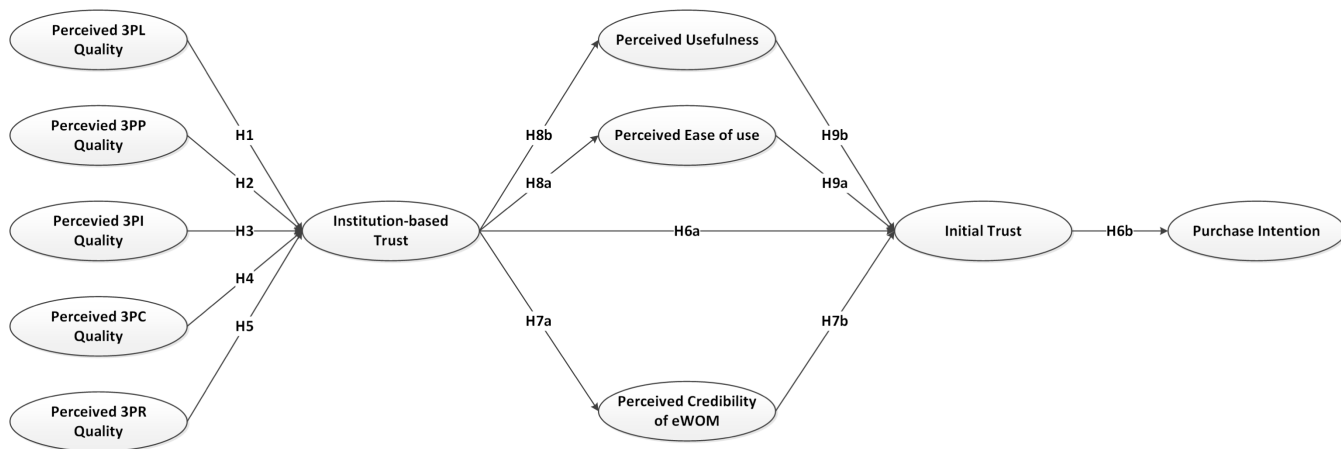


FIGURE 1. Research model and hypotheses.

cross-border transactions. At the same time, it stimulates the users’ perceptions of the quality of the platform and aids cross-border transactions. The hypothesis investigating this is expressed as follows:

H8a: *Institution-based trust positively affects the perceived ease of use of the platform.*

H8b: *Institution-based trust positively affects the perceived usefulness of the platform.*

‘Perceived ease of use refers to the degree to which the prospective user expects the target system to be free of effort’ [74]. In this paper, PEOU refers to how easy it is for consumers to make cross-border online purchases on third-party e-commerce platforms. The ‘Amazon’s choice’ logo, for example, makes it easy for users to search for highly rated products. PU is the subjective perception of users that the use of a certain technology will enhance their productivity and future work performance [83]. In the context of this study, perceived usefulness means that users will choose to accept a third-party e-commerce platform if they believe that its service system can meet their cross-border shopping and online risk-avoidance needs. In the current consumer-driven cross-border e-commerce market, consumers’ perceptions of system quality is the key to successful transactions. In an empirical study of user behaviour on mobile payment platforms, Yang Xuan [84] found that consumers’ perceptions of the value of e-commerce platforms and of merchants, as seen in relation to their own perceptions of usefulness and ease of use, profoundly affected their trust in the platforms and the merchants. Numerous e-commerce studies show that the characteristics and trust that consumers perceive are not separate. Both PU and PEOU have a positive impact on trust [85]. In view of this, the following hypotheses are proposed

H9a: *The PEOU of the platform positively affects initial trust in the merchant.*

H9b: *The PU of the platform positively affects initial trust in the merchant.*

Based on previous research, we thus develop 13 hypotheses, as illustrated in Figure 1.

IV. RESEARCH METHODOLOGY

A. MEASURES

The study used a questionnaire to collect data. This was structured in two parts: (i) questions on the respondents’ demographic characteristics; and (ii) the measurement of terms relating to each construct in the research model. Our preliminary questionnaire was based on an extensive review of the existing literature. We then conducted interviews with six experts in the fields of user behaviour and e-commerce and conducted a small-scale preliminary test. Combining the test data and the experts’ feedback, we made corrections to the questionnaire to ensure that its content validity was as good as possible. The final questionnaire had a total of 31 measurement items. All items were measured using a seven-point Likert scale, ranging from ‘strongly disagree’ to ‘strongly agree,’ as detailed in the Appendix. The design of the measurement items is described below.

Institution-based trust was measured by three items that reflect customers’ trust in a platform and include legal protection, usage habits and technical safeguards. These measures were adapted from McKnight and Chervany [19].

Items investigating perceptions of 3PP quality were adapted from Ba and Pavlou [86] and reflect users’ perceptions of the use of third-party payments on three key metrics: payment security, convenience and usefulness. The three items measuring perceived 3PC quality were adapted from a study by Warkentin, et al. [87].

We developed the three items for measuring perceived 3PL quality by referring to a study by Zeithaml, et al. [88]. The three items measuring perceived 3PR quality were adapted from Xiao and Benbasat [89], and we adapted three items measuring perceived 3PI quality from Gefen, et al. [90].

The measure of trust was adapted from a study by Mayer, et al. [91], in which trust was measured by three items:

competence, integrity and benevolence. Although these three dimensions are conceptually distinct, they may be so intertwined that they are inseparable in practice [92]. Therefore, in this study, we consider trust to be a unidimensional construct. This approach is consistent with Corsten and Kumar [93].

The measure of purchase intention was adapted from Venkatesh and Davis [94]. The respondents were asked to indicate the extent to which they would be willing to deal with SMEs on third-party cross-border e-commerce platforms in the future, and whether they would be willing to recommend the supplier to others.

The measures of the perceived ease of use and perceived usefulness of the platform were adapted from Davis [83], and they reflected consumers' evaluation of the platform's product variety, quality and operability.

The perceived credibility of e-WOM was measured using three items that asked buyers about the perceived reasonableness, persuasiveness and accuracy of the reviews they saw. Similar measures were used by Cheung, et al. [95].

B. DATA COLLECTION

This paper mainly studied the mechanism by which multi-dimensional institutional trust influences online trust and purchase intention when consumers conduct cross-border online shopping on third-party e-commerce platforms. Respondents were therefore required to have sufficient familiarity with mainstream third-party cross-border e-commerce platforms, such as Amazon and AliExpress, and to have had at least one cross-border online shopping experience. According to the data, Chinese merchants accounted for 31% of the U.S. Amazon station; they accounted for 58% of the Canadian Amazon station, and for 51% of the Spanish Amazon station. It can be said that Chinese merchants comprise about 40% of the global Amazon store. Because the system design of Amazon.com is relatively good, to ensure that the survey respondents were representative and could understand the questions asked in the questionnaire correctly, they were required to have had at least one online shopping experience on Amazon. With this connection to Amazon, the survey was conducted with the help of the questionnaire distribution channel, provided by Amazon, which randomly distributes online questionnaires to buyers. The questionnaire was carried out using an electronic questionnaire with simple random sampling. This is for personal safety for COVID-19, but also to get a larger, more representative sample. First, we conducted a pilot test. We recruited 20 volunteers who met the requirements to fill out the questionnaire. Then, according to the 20 valid questionnaires collected and the problems encountered in the pilot test, the research team revised and improved the questionnaire and invited experts to review it.

In addition, it was necessary to ensure the ethical, privacy and confidentiality aspects of the questionnaire. The questionnaire complied with the following regulations:

- The principle of voluntary participation.
- Anonymous recording of relevant information.
- No personally identifiable information was collected, and a strict data protection and storage policy was adopted.
- Termination or withdrawal was possible at any time.
- The purpose of the study was disclosed in advance so that it was open and transparent to the subjects.
- Neither the subjects nor the researchers had any vested interest.
- No data were recorded before the questionnaire was submitted.
- Information related to the study was stored on one computer only with the hard disc encrypted, and access was granted only to authorised personnel associated with the study.

Following the online distribution of the survey, 571 completed questionnaires were received within one month. Of these, 126 questionable or invalid responses (e.g. duplicate IP addresses or unreasonable survey completion times) were removed. Ultimately, we obtained 445 valid responses for quantitative data analysis, with a data validity rate of 77.9%. Table 1 shows the demographic information for the dataset. The sample consisted of 189 (42.47%) males and 256 (57.53%) females. A large majority of the respondents were between 18 and 40 years old (82.69%), and 86.29% had an undergraduate education or higher. Nearly 80% of respondents did cross-border online shopping more than twice a month. The results were consistent with our expectations: the majority of consumers involved in cross-border online shopping are relatively young and have a good educational background, which helps them learn and understand how to use e-commerce platforms effectively.

C. ANALYTICAL METHODS

The structural equation model (SEM) is a combination of a structural model and a measurement model, which together, include a latent variable and indicators for all relevant relationships. As a complex statistical analysis technique, SEM requires certain software tools to achieve parameter estimation and data analysis. However, software packages that analyse based on covariance matrices, such as LISREL, AMOS and EQS, can typically handle only reflective models. In addition, those software packages use methods such as maximum likelihood estimation and generalized least squares, which have strict assumptions regarding the distribution of the data and generally require that the variables obey a normal distribution. The variables mentioned in this paper, such as perceived usefulness, involve subjective quality criteria, which measure users' subjective evaluations of products or services. Such perceptual data are often non-normal with a right-skewed distribution, sometimes with double or even triple peaks, so it is difficult to satisfy these statistical assumptions.

Partial least squares (PLS) can estimate complex causal relationships between all potential variables, and it can also

TABLE 1. Sample demographics (N = 445).

Measure	Category	N	Percent
Gender	Male	189	42.47%
	Female	256	57.53%
Age	18-25	172	38.65%
	26-40	196	44.04%
	Over 40	77	17.30%
Education	College	109	24.49%
	Bachelor's Degree	275	61.80%
	Post Graduate Degree	61	13.71%
Region	USA	210	47.16%
	Canada	126	28.37%
	Other	109	24.47%
Online Shopping Frequency	>4 times/month	48	10.71%
	2-4 times/month	299	67.28%
	1 time/month	98	22.01%

handle both a reflective measurement (RM) model and a formative measurement (FM) model [96]. It is worth mentioning that PLS-SEM can maximize the predictive validity even when the measured data deviate from a normal distribution, which is especially necessary when the model is complex [97]. Unlike covariance-based structural equation modelling (CB-SEM), PLS-SEM uses a component-based analysis approach, which has minimal constraints on the variables and can be applied flexibly to more general situations, especially when there is severe multicollinearity among the explanatory variables [98]. In addition, PLS has the advantages of retaining all explanatory variables or sample points, simplicity and robustness, ease of qualitative analysis and higher predictive accuracy [99]. In summary, PLS-SEM was deemed the best fit for this study.

In performing the data analysis, we conducted the following three steps: First, a preliminary test was performed to remove the measurement items in each construct that failed to explain sufficient variance. Second, confirmatory factor analysis was performed to check the model fit, common method bias, as well as the reliability and validity of the model. Third, SEM was performed using Smart PLS 3.3.9 to test the hypotheses.

V. DATA ANALYSIS

A. ANALYSIS OF MEASUREMENT MODEL

The measurement models in this study are reflective. In reflective measurement models, the internal consistency is of great significance because the items of a reflective measurement scale are reflections of the same construct and

need to be correlated with each other [100]. We conducted construct reliability and validity analyses for all the reflective measurement models. To predict the internal consistency of the reliability, we calculated factor loading scores for each measure of each construct. The results indicated that all constructs had a reasonably acceptable factor loading value, ranging between 0.82 and 0.95. Composite reliability (CR) and Cronbach's alpha value are two significant measures of internal consistency reliability. Compared to Cronbach's alpha, composite reliability weights the items based on the individual loadings of the construct indicators and thus provides a more accurate measure of model reliability [101]. Generally, a higher CR value indicates a higher level of reliability. Furthermore, it is accepted that a structure is internally consistent when the Cronbach's alpha is above 0.7 [102]. As tested by Smart PLS software, the Cronbach's alpha values for all latent variables in the proposed model were higher than 0.7, and the CR values corresponding to all latent variables were higher than 0.8. Additionally, the average variance extracted (AVE) denotes the variance extracted from the indicators, including the covariance absorbed by the latent variables, and here, a value greater than 0.5 is considered a good measure of fit [103]. The results show that the AVE values were above 0.7. It is necessary to mention that none of the questions were excluded from the scale because of inappropriate data and the inability to explain the associated variable variance. The full results of the validity and reliability of all constructs are presented in Table 2.

TABLE 2. Validity and reliability of latent constructs.

Latent Constructs	Cronbach's Alpha	Composite Reliability	AVE
PI	0.764	0.895	0.809
IT	0.859	0.934	0.876
PU	0.890	0.932	0.820
PEOU	0.805	0.885	0.720
PCOW	0.936	0.959	0.886
IBT	0.871	0.921	0.795
PLQ	0.819	0.892	0.734
PPQ	0.934	0.957	0.880
PIQ	0.879	0.925	0.805
PCQ	0.841	0.904	0.759
PRQ	0.942	0.962	0.895

Note: PI: Purchase intention; IT: Initial trust; PU: Perceived usefulness; PEOU: Perceived ease of use; PCOW: Perceived credibility of e-WOM; IBT: Institution-based trust; PLQ: Perceived 3PL quality; PPQ: Perceived 3PP quality; PIQ: Perceived 3PI quality; PCQ: Perceived 3PC quality; PRQ: Perceived 3PR quality.

In addition, the Fornell-Larcker criterion was used to estimate the discriminant validity, which is presented in Table 3. The core of Fornell's method is to compare the square root of the AVE of each construct with the shared variance between the constructs, and when the square root of the AVE is greater than the shared variance between the constructs, the

TABLE 3. Discriminant validity.

Latent Constructs	PI	IT	PU	PERU	PCOW	IBT	PLQ	PPQ	PIQ	PCQ	PRQ
PI	0.900										
IT	0.819	0.936									
PU	0.439	0.424	0.905								
PEOU	0.472	0.533	0.116	0.849							
PCOW	0.357	0.376	0.348	0.226	0.941						
IBT	0.611	0.674	-0.063	0.610	0.212	0.891					
PLQ	0.752	0.805	0.275	0.505	0.412	0.741	0.857				
PPQ	-0.562	-0.536	-0.619	-0.072	-0.019	-0.098	-0.373	0.938			
PIQ	-0.314	-0.355	-0.294	-0.390	-0.605	-0.359	-0.428	-0.202	0.897		
PCQ	-0.058	-0.006	-0.025	0.264	-0.207	0.254	0.049	0.167	-0.166	0.871	
PRQ	-0.029	-0.055	-0.169	0.153	0.364	0.250	0.178	0.435	-0.507	0.264	0.946

Note: Values in the bold are square root of AVE.

constructs can be considered to have discriminant validity in relation to each other [104]. The bold numbers in Table 3 are the square roots of AVE, which are significantly higher than the estimated correlation values, proving the discriminative validity of the constructs involved in the measurement model used. To strengthen the accuracy of the assessment results, we used another method to evaluate the discriminant validity of the reflective measurement model, which entailed assessing the cross-loading values of all indicators. The criterion for testing discriminant validity is that the indicators of the reflective measurement model should have their highest loadings on the corresponding latent constructs relative to the other constructs in the structural model involved [105]. Table 4 provides a complete list of cross-loading values for all indicators involved in the constructs of the reflective measurement model. The data in Table 4 show that the items of the reflective measurement model have much higher loadings on their respective latent constructs than on any other construct. Accordingly, these findings meet the cross-loading assessment criteria and provide another strong validation that the measurement model in this paper has satisfactory discriminant validity.

B. ANALYSIS OF THE STRUCTURAL MODEL

The structural model was estimated for the general explanatory power of constructs through the coefficient of determination, R^2 . Stone-Geisser's Q^2 and path coefficient β -values were used to assess the predictive relevance. The outcomes of the structural model are presented in Figure 2. Chin [106] states that when $R^2 > 0.67$, > 0.33 and > 0.19 , it indicates that the degree of explained variance and predictive power are excellent, moderate and barely acceptable, respectively. According to the above criteria, the outcomes indicate that the proposed model has 67.1% explanatory power for purchase intention with $R^2 = 0.671$, and Q^2 of 0.538, thus having

excellent predictive power. Furthermore, the bootstrapping technique of PLS enables analysis of the significance of the relationships between variables. In most circumstances, researchers choose a significance level of 5%, which means that the p -value must be below 0.05 to ensure that the relationship between the two variables is significant [107].

It was found that the relationship between perceived 3PL quality and institution-based trust ($\beta = 0.833$; t -value = 18.540; $p = 0.000$) was positive and significant, providing support for H1. Similarly, H2, which is the relationship between perceived 3PP quality and institution-based trust ($\beta = 0.194$; t -value = 4.280; $p = 0.000$), was also supported. Likewise, the proposed relationship between perceived 3PC quality and institution-based trust ($\beta = 0.192$; t -value = 5.881; $p = 0.000$) was also significant; thus, H4 was supported. However, the relationship between perceived 3PI quality and institutional-based trust was not significant ($\beta = 0.070$; t -value = 1.390; $p = 0.164$), while perceived 3PR quality negatively affected institution-based trust ($\beta = 0.002$; t -value = 0.040; $p = 0.968$), thus, hypotheses H3 and H5 were not supported. In addition, the relationships between institution-based trust and perceived credibility of e-WOM ($\beta = 0.212$; t -value = 3.417; $p = 0.001$), perceived ease of use of the platform ($\beta = 0.610$; t -value = 16.681; $p = 0.000$) and initial trust ($\beta = 0.639$; t -value = 14.013; $p = 0.000$) were all positive and significant, with these findings providing support for H6a, H7a and H8a. In contrast, the β -value between institution-based trust and perceived usefulness of the platform was -0.063 , indicating a negative relationship, and so hypothesis H8b did not hold. Moreover, the relationship between perceived credibility of e-WOM and initial trust ($\beta = 0.073$; t -value = 2.334; $p = 0.020$) was positive and significant, as was the relationship between perceived usefulness of the platform and initial trust ($\beta = 0.430$; t -value = 11.652; $p = 0.000$), so the hypotheses

TABLE 4. Cross loadings among reflective measurement scale items.

Items	PI	IT	PU	PEOU	PCOW	IBT	PLQ	PPQ	PIQ	PCQ	PRQ
PI-1	0.906	0.757	0.398	0.394	0.305	0.553	0.688	-0.531	-0.253	-0.095	-0.032
PI-2	0.894	0.715	0.393	0.456	0.338	0.547	0.666	-0.479	-0.315	-0.007	-0.021
IT-1	0.801	0.940	0.414	0.522	0.382	0.629	0.775	-0.517	-0.360	-0.032	-0.023
IT-2	0.730	0.932	0.379	0.473	0.319	0.633	0.732	-0.486	-0.303	0.023	-0.082
PU-1	0.376	0.365	0.888	0.122	0.301	-0.068	0.234	-0.538	-0.241	-0.011	-0.142
PU-2	0.380	0.378	0.903	0.094	0.298	-0.061	0.244	-0.570	-0.246	-0.015	-0.171
PU-3	0.434	0.409	0.925	0.100	0.344	-0.045	0.268	-0.572	-0.307	-0.042	-0.146
PEOU-1	0.423	0.443	0.079	0.862	0.204	0.552	0.429	-0.026	-0.353	0.237	0.140
PEOU-2	0.424	0.476	0.103	0.864	0.215	0.515	0.451	-0.064	-0.303	0.208	0.123
PEOU-3	0.351	0.437	0.114	0.819	0.152	0.484	0.406	-0.096	-0.339	0.227	0.127
PCOW-1	0.336	0.352	0.328	0.227	0.944	0.188	0.380	-0.020	-0.573	-0.190	0.374
PCOW-2	0.352	0.357	0.311	0.206	0.944	0.216	0.399	-0.011	-0.574	-0.213	0.347
PCOW-3	0.319	0.352	0.344	0.205	0.937	0.194	0.386	-0.025	-0.562	-0.182	0.307
IBT-1	0.586	0.625	-0.049	0.554	0.208	0.897	0.682	-0.111	-0.340	0.224	0.242
IBT-2	0.528	0.609	-0.073	0.547	0.201	0.893	0.662	-0.093	-0.305	0.205	0.220
IBT-3	0.519	0.567	-0.046	0.529	0.155	0.884	0.635	-0.056	-0.316	0.251	0.207
PLQ-1	0.689	0.735	0.200	0.491	0.370	0.693	0.888	-0.320	-0.387	0.023	0.169
PLQ-2	0.620	0.670	0.253	0.441	0.351	0.587	0.838	-0.335	-0.336	0.039	0.160
PLQ-3	0.620	0.662	0.260	0.362	0.338	0.618	0.843	-0.305	-0.376	0.066	0.128
PPQ-1	-0.526	-0.511	-0.587	-0.061	-0.020	-0.103	-0.354	0.941	-0.168	0.159	0.432
PPQ-2	-0.537	-0.511	-0.575	-0.083	-0.014	-0.098	-0.359	0.947	-0.213	0.140	0.397
PPQ-3	-0.518	-0.481	-0.582	-0.054	-0.022	-0.061	-0.329	0.927	-0.188	0.180	0.389
PIQ-1	-0.243	-0.289	-0.268	-0.360	-0.516	-0.312	-0.360	-0.192	0.889	-0.155	-0.445
PIQ-2	-0.305	-0.357	-0.301	-0.360	-0.593	-0.305	-0.392	-0.175	0.905	-0.114	-0.435
PIQ-3	-0.297	-0.312	-0.226	-0.332	-0.523	-0.347	-0.399	-0.176	0.897	-0.174	-0.481
PCQ-1	-0.022	0.012	-0.004	0.242	-0.188	0.238	0.073	0.150	-0.178	0.906	0.252
PCQ-2	-0.046	0.005	-0.008	0.213	-0.185	0.225	0.033	0.131	-0.142	0.879	0.210
PCQ-3	-0.089	-0.038	-0.060	0.236	-0.168	0.199	0.016	0.157	-0.109	0.825	0.228
PRQ-1	-0.027	-0.042	-0.154	0.155	0.372	0.241	0.189	0.416	-0.492	0.239	0.947
PRQ-2	-0.020	-0.044	-0.162	0.143	0.331	0.245	0.180	0.403	-0.465	0.252	0.947
PRQ-3	-0.036	-0.072	-0.164	0.137	0.328	0.224	0.134	0.416	-0.482	0.258	0.944

Note: Bold number indicate outer loading on the assigned constructs.

H7b and H9b were supported. However, H9a did not validate because perceived platform ease of use only insignificantly positively affected initial trust ($\beta = 0.076$; t -value = 1.788; $p = 0.074$). Finally, the relationship between initial trust and purchase intention ($\beta = 0.819$; t -value = 41.721; $p = 0.000$) was positive and significant, and so H6a was supported. The detailed test results for the proposed hypotheses are shown in Table 5.

C. GOODNESS OF FIT

PLS-SEM did not yield overall goodness of fit (GoF) indices, and so the R^2 value was regarded as the primary method for assessing the explanatory power of the model [108].

However, Tenenhaus, et al. [109] propose a calculation method for GoF index that can be applied to the PLS-SEM to estimate model fit. This is a method that measures the GoF by using the geometric mean of the average communality score (AVE value) and the average R^2 value (for endogenous structures), calculated by the following formulation:

$$GoF = \sqrt{AVE \times R^2} \text{ [109].}$$

Wetzels, et al. [110] validated this method and specified indicators to assess the results of the GoF analysis: $GoF > 0.36$, $GoF > 0.25$, and $GoF > 0.1$ indicate excellent, moderate and barely acceptable model fit, respectively. Based on the contributions of the scholars mentioned above, we calculated

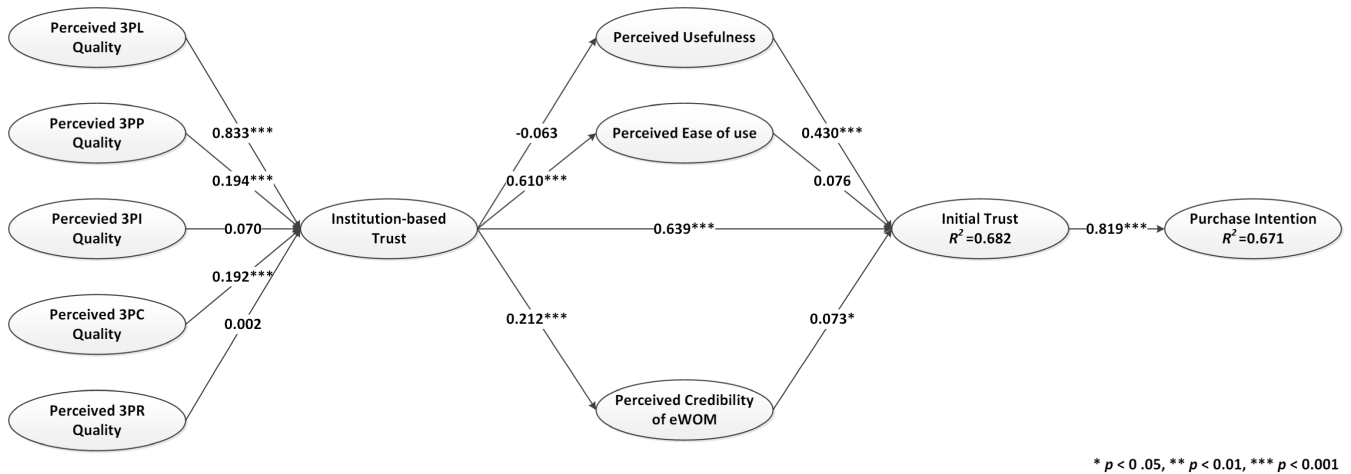


FIGURE 2. Outcomes of structural model.

TABLE 5. Hypothesis assessment.

Relationship Between Constructs	β -value	t-value	p-value	Decision
H1 (+): Perceived 3PL Quality→Institution-based Trust	0.833	18.540	0.000	Supported
H2 (+): Perceived 3PP Quality→Institution-based Trust	0.194	4.280	0.000	Supported
H3 (+): Perceived 3PI Quality→Institution-based Trust	0.070	1.390	0.164	Rejected
H4 (+): Perceived 3PC Quality→Institution-based Trust	0.192	5.881	0.000	Supported
H5 (+): Perceived 3PR Quality→Institution-based Trust	0.002	0.040	0.968	Rejected
H6a (+): Institution-based Trust→Initial Trust	0.639	14.013	0.000	Supported
H6b (+): Initial Trust→Purchase Intention	0.819	41.721	0.000	Supported
H7a (+): Institution-based Trust→Perceived Credibility of e-WOM	0.212	3.417	0.001	Supported
H7b (+): Perceived Credibility of e-WOM→Initial Trust	0.073	2.334	0.020	Supported
H8a (+): Institution-based Trust→Perceived Ease of Use	0.610	16.681	0.000	Supported
H8b (+): Institution-based Trust→Perceived Usefulness	-0.063	0.976	0.329	Rejected
H9a (+): Perceived Ease of Use→Initial Trust	0.076	1.788	0.074	Rejected
H9b (+): Perceived Usefulness→Initial Trust	0.430	11.652	0.000	Supported

the GoF indices of the models involved in this study, and the GoF index value for the aforementioned conceptual model was calculated as 0.571, indicating an extremely well-fitting model.

On the basis of the results of the above comprehensive analysis, both the measurement model and the structural model were validated. Moreover, these results revealed that the theoretical model has outstanding explanatory power and predictive relevance.

VI. DISCUSSION

A. KEY FINDINGS

Among the several possible antecedents of institution-based trust, the positive relationship between perceived 3PL quality and institution-based trust indicates that the results of this study are consistent with related empirical studies by Lai, et al. [111], which examined the relationship between

3PL and online trust. This result also reinforces the finding of Kaynak and Avci [112] that the adoption of a reliable 3PL service provider can enhance institutional trust. When they are able to enjoy high-quality 3PL services, users’ institution-based trust can increase significantly. This implies that logistics, as a major infrastructure in e-commerce, plays a crucial role in the development of e-commerce platforms. In addition, there are ways that platform administrators can improve the quality of their logistics, such as by cooperating with reliable 3PL service providers.

The results also indicated that perceived 3PP quality contributes to building institution-based trust. Whether a third-party payment institution is protected by financial regulators or has obtained a banking licence, it reflects the level of compliance of the institution. The more compliant a third-party payment institution is, the more transparent and convenient its business status and payment process will be, thus giving its

consumers a better cross-border payment experience. These findings are consistent with previous studies that claim that a robust third-party payment system can strengthen consumers' trust in online shopping platforms [113]. The importance consumers place on a stable, error-free transaction experience makes the reliability of the payment service the most important factor of all dimensions of consumer perceptions of service quality [114]. This study is also in line with prior literature that found a positive relationship between third-party payment systems and platform user satisfaction [115]. Since e-commerce platforms can influence consumers' adoption preferences through the perceived value of third-party mobile payment platforms, especially for small and medium-sized platforms, efforts should be made to improve the quality of third-party payment systems to enhance users' confidence in cross-border online shopping.

The positive relationship between perceived 3PC quality and institution-based trust supports a study by Cheng, et al. [116], which found that less-transparent firms would benefit more from third-party authority certification compared to more transparent firms. Furthermore, the results of this study support the findings of Lobbers and Benlian [117], who found a positive correlation between third-party certification and institutional trust in the context of SMEs. Due to the growing consciousness of quality and ecological issues, product certification is of increasing relevance in consumer decision-making [118]. Platforms thus need to resort to reliable third-party certification bodies to establish an authoritative institution, especially during the initial stages of development.

However, this study did not find that perceived 3PI quality contributed to building institutional-based trust. It has been found that people's perceptions of the insurance business are a reflection of social and economic factors [119]. Thus, it appears that consumers' perceptions of third-party insurance services will vary across regime systems. In addition, our findings showed that perceived 3PR quality harms institutional trust. According to previous studies, overly accurate recommendations can raise concerns about privacy breaches [120]. Therefore, third-party platforms should improve the algorithms of their recommendation systems by incorporating consumer psychology.

There was a positive relationship between institutional-based trust and the perceived ease of use of the platform. This implies that users will perceive a set of interactions performed on a trusted platform to also be more convenient. This agrees with Mensah [121], who claims that trust in the internet is an influential predictor of both intention to use and perceived ease of use. An easy-to-use platform simplifies the shopping threshold for users in the face of complicated cross-border online shopping operations, but this must be based on the credibility and authority of the platform itself.

The results of this study also show that institution-based trust has a significant and positive effect on the perceived credibility of word-of-mouth. This implies that a trustworthy platform leads to the word-of-mouth of the suppliers on the

platform being more convincing. This finding is strongly supported by previous studies showing that e-trust can effectively enhance the perceived credibility of information quality and e-loyalty [122].

The study showed a significant positive relationship between perceived usefulness and initial trust. However, this relationship did not hold between perceived ease of use and initial trust. This finding validates previous research, which suggests that perceived usefulness directly affects willingness, and that perceived ease of use indirectly affects willingness through perceived usefulness [123]. Compared with the ease of online shopping operations, consumers pay greater attention to the efficiency and success rate of cross-border online shopping on a particular platform. The higher the consumers' expectations concerning the success rate of transactions on the platform, the more they will trust the merchants on the platform. Therefore, cross-border e-commerce enterprises should pay more attention to infrastructure construction.

In addition to perceived usefulness, buyers' perceptions of e-WOM credibility also positively influenced their initial trust in a merchant. This finding is in line with existing research [124], [125], which confirms that both perceived usefulness and perceived e-WOM credibility can have a significant positive effect on initial trust. Previous studies have concluded that the magnitude of e-WOM influence and the success of e-WOM marketing depend largely on the level of e-WOM credibility. According to Shankar, et al. [126], the findings show that among the factors contributing to e-WOM credibility, the quality, value and consistency of the e-WOM enhance initial trust. Due to the inherent characteristics of social media (such as interactivity and a focus on user-generated content), business and industry are paying increasing attention to the importance of social media as a way of supporting market-driven, consumer-oriented organizations [127]. Pono, et al. [128] found that users' trust in sellers is influenced by information quality, service quality and the sellers' WOM. As a result, SMEs need to manage their user-generated content, such as online reviews, more effectively, so they can be integrated as a part of their marketing strategy. However, SMEs must resist undesirable behaviours, such as frantic comment deletion and comment scraping. Only a true and reasonable rate of positive reviews will increase buyer trust.

Finally, the finding that initial trust can positively influence purchase intentions corroborates previous research. Nissen and Krampe [129] found that, whether in China or elsewhere, a supplier's reputation is indeed the most important factor influencing consumers' willingness to shop with and to pay a given supplier. Thus, the only way to create a broader market is to operate with integrity, no matter when or where.

B. THEORETICAL AND MANAGERIAL IMPLICATIONS

Cross-border e-commerce is an important way of building trade between countries on an international scale. Today, cross-border e-commerce opens up new paths for SMEs to

capture overseas markets, but with more entrants, intensified product homogenization, higher consumer bargaining power, soaring customer acquisition costs and various other challenges, the initial trust and sustainable purchase intentions of consumers are crucial to the survival of SMEs selling abroad. The steady growth and significant increase in e-retailing rely heavily on the massive expansion of cross-border e-commerce third-party platforms, and this has stimulated a great deal of interest in how platforms influence consumers' online shopping intentions. Trust has always been considered the foundation of e-commerce. Consumers are reluctant to engage in e-commerce, partly due to a lack of trust in e-merchants, e-commerce technology and business processes, as well as an absence of reliable, executable systems [130]. Among the many potential determinants of online purchase intention, the trust and reputation of online retailers have been studied from various perspectives [131]. While interpersonal trust has received extensive attention in the literature, there has been little research into institution-based trust. Moreover, the impact of a platform's multidimensional institutional system in the third-party online retail environment remains poorly understood. This paper aimed to provide a new research perspective on online trust by further exploring the impact of institution-based trust derived from the institutional system of the platform.

Regarding its theoretical implications, building on the perspectives of the technology acceptance model, the source reliability theory, the e-WOM effect and institution-based trust, this study fills some gaps in previous studies by investigating the effects of various factors on initial trust and purchase intention. In addition, this study singles out third-party services, such as third-party logistics, third-party certification and third-party insurance, to investigate the mechanism of the formation of institutional trust, and in doing so, it adds a theoretical contribution to the expansion of the trust model. The theoretical framework of the model can be applied to other forms of multilateral mechanisms to boost trust creation and to achieve a competitive advantage in e-commerce.

Regarding its managerial implications, this study shows that consumers' institutional trust in a platform is the first step in building initial trust in a merchant. Therefore, SMEs should select their third-party platform carefully before stationing. This paper suggests that SMEs should focus on whether a platform is endorsed by an authoritative third-party certification institute, and they should pay attention to the platform's logistics system and payment system. In addition, SMEs should pay more attention to building their own reputations. The above are suggestions intended for small and medium-sized merchants, and the advice for platform operators is as follows: First, platform operators must recognize that the platform and the merchants are on the same side, and that the promotion of the platform essentially depends on their having a sound and reasonable institutional system. Second, platform operators also need to focus on improving the quality of cross-border payments, cross-border logistics, and third-party certification services to create a trustworthy system.

C. RESEARCH LIMITATIONS AND FUTURE RESEARCH

Risk and trust were once hotly debated topics in the field of e-commerce. Some scholars have explored the relationship between the two, stating that risk can hinder the formation of trust [132]. Some scholars have also divided risk into multiple dimensions on this basis to study more specific influence mechanisms. However, the fact is that risk factors are difficult to avoid and we can hardly say that there is any behaviour in human activity that is completely zero risk. Many studies have shown that in any e-commerce environment, the primary issue remains trust [133]. In cross-border e-commerce, trust is particularly important due to the "distance" between the buyer and the seller [134]. Therefore, this paper returns to trust itself to explore the factors other than risks that affect trust. In the third-party cross-border e-commerce environment, the platform and third-party service providers build a bridge between buyers and sellers and shorten the distance between them. Some scholars have called for website service providers to improve the quality of their websites as a matter of urgency [132], but this literature did not explore what specific third-party means could increase buyers' confidence and willingness to buy. Precisely, the innovation of this paper is in using specific third-party services as the source of trust to explore the mechanism of trust transmission between platform parties, platform sellers, and consumers. Complex trust models are blossoming, and the antecedents of trust are richer today. In this paper, we choose to place the antecedents of trust on multidimensional third-party services, which has the advantage of helping platform parties and sellers to more clearly align third-party services and develop implementable corrective service solutions.

Because the focus of this study is on exploring how multidimensional institutional trust affects consumers' initial trust in merchants, this paper does not distinguish between positive and negative word of mouth. Therefore, subsequent research could make such a distinction and explore the differences between positive and negative word of mouth in constructing initial trust. Considering the data sources and the time available, this study did not strictly control the sample size, and the sample was collected in countries with different regimes. The factors derived from the research as influencing initial trust may therefore not be sufficiently representative. Subsequent studies could target the collection of samples from consumers across countries with different regimes and then supplement these with qualitative experiments, such as in-depth interviews, to explore, for example, the differences between individualist and collectivist samples. In addition, due to the limited data volume, the online shopping context in this study did not distinguish between different product categories, and subsequent studies could examine consumer trust behaviours when purchasing different categories of goods.

VII. CONCLUSION

Objectively, there is a wealth of research on the antecedents and consequences of online trust and purchase intention,

TABLE 6. Measures of constructs.

Construct	Measures	Sources
IBT	IBT1. It is my habit to use third-party e-commerce platforms for cross-border shopping.	[19]
	IBT2. I believe that the network technology used by third-party e-commerce platforms is secure.	
	IBT3. I believe that the current law can protect my interests when I encounter online fraud.	
PPQ	PPQ1. I believe that third-party payment can guarantee the safety of my funds in the process of payment.	[86]
	PPQ2. When conducting cross-border online shopping on third-party platforms, it is convenient and quick to use third-party payment.	
	PPQ3. Using third-party payments is very helpful to me when making cross-border online purchases on third-party platforms.	
PCQ	PCQ1. I believe the goods certified by the third-party organization are safe.	[87]
	PCQ2. I believe that the information on the goods certified by the third-party organization is reliable.	
	PCQ3. I think it is necessary to consider whether the goods are certified by a third party when shopping online across the border.	
PLQ	PLQ1. After I successfully placed my order, the third-party logistics provided by the platform can respond quickly.	[88]
	PLQ2. Third-party logistics can ensure the good quality of goods in the process of distribution.	
	PLQ3. In post-sales, third-party logistics can deal with issues such as returns properly and efficiently.	
PRQ	PRQ1. The products recommended by third parties are often the ones I want to buy.	[135]; [136]
	PRQ2. The products recommended by the third party can meet my pursuit of personalization.	
	PRQ3. Third-party recommendations can reduce the cost of my online shopping time and improve the quality of my online shopping decisions.	
PIQ	PLQ1. Third-party insurance can be proactive in providing coverage when quality issues arise with products purchased online.	[90]
	PLQ2. I think the terms of third-party insurance are reasonable.	
	PLQ3. I think third-party insurance premiums are cost-effective.	
PU	PU1. The third-party e-commerce platform has enough foreign products for me to choose from.	[83]
	PU2. The goods offered on third-party e-commerce platforms are of better quality.	
	PU3. I will be able to buy the goods at a more favorable price on the third-party e-commerce platform.	
PEOU	PEOU1. I think the third-party e-commerce website interface is simple and the cross-border shopping operation is smooth and fast.	[83]
	PEOU2. I think the third-party e-commerce platform offers ease of payment, return, and complaint process.	
	PEOU3. With the help of a third-party e-commerce platform, I can buy cross-border goods smoothly even without a high level of foreign language skills.	
PCOW	PCOW1. I think the reviews posted by other buyers are convincing.	[95]
	PCOW2. I think the reviews posted by other buyers are objective and fair.	
	PCOW3. I think the reviews posted by other buyers are accurate.	
IT	IT1. I believe that the product information posted by SMEs on third-party e-commerce platforms is true and reliable.	[91]; [93]
	IT2. I think that the SMEs on third-party e-commerce platforms have a friendly service attitude.	
PI	PI1. I would like to regularly conduct cross-border online shopping on third-party e-commerce platforms.	[94]
	PI2. I would recommend third-party e-commerce platforms and platform merchants to others.	

but a large research gap remains in the study of trust in online purchases relating to the institutional level of the platform. Even where similar studies do exist, few seem to have been able to flesh out the institutional factors. Accordingly,

we proposed and found that users relied on the different services involved in the transaction process when using third-party e-commerce platforms for their cross-border online purchases. In this paper, we report that consumers' trust in SMEs

trading through a platform relies heavily on institution-based trust in the third-party platform, on perceived usefulness and on the e-WOM of the merchant. Among several factors that affect institution-based trust, the quality of the third-party logistics and the payment and authentication services can significantly enhance consumers' institutional trust in a platform. The biggest research limitation of this paper is that, due to limitations in funds and time, the paper does not cover the effects of culture-related factors on cross-border online shopping behaviours. However, the theoretical framework of the paper provides a suitable research basis for scholars in the field of consumer behaviour or e-commerce so that scholars around the world can adapt the model to their local conditions and further enrich the research by including perspectives on social or cultural systems.

APPENDIX

See Table 6.

REFERENCES

- [1] K. S. Al-Omouh, S. Ribeiro-Navarrete, C. Lassala, and M. Skare, "Networking and knowledge creation: Social capital and collaborative innovation in responding to the COVID-19 crisis," *J. Innov. Knowl.*, vol. 7, no. 2, Apr. 2022, Art. no. 100181, doi: [10.1016/j.jik.2022.100181](https://doi.org/10.1016/j.jik.2022.100181).
- [2] F. P. Hilmersson and M. Hilmersson, "Networking to accelerate the pace of SME innovations," *J. Innov. Knowl.*, vol. 6, no. 1, pp. 43–49, Jan. 2021, doi: [10.1016/j.jik.2020.10.001](https://doi.org/10.1016/j.jik.2020.10.001).
- [3] L. Li, F. Su, W. Zhang, and J.-Y. Mao, "Digital transformation by SME entrepreneurs: A capability perspective," *Inf. Syst. J.*, vol. 28, no. 6, pp. 1129–1157, Nov. 2018, doi: [10.1111/isj.12153](https://doi.org/10.1111/isj.12153).
- [4] F. Zhang and Y. Yang, "Trust model simulation of cross border e-commerce based on machine learning and Bayesian network," *J. Ambient Intell. Humanized Comput.*, vol. 2021, pp. 1–11, Mar. 2021, doi: [10.1007/s12652-021-03066-3](https://doi.org/10.1007/s12652-021-03066-3).
- [5] A. F. Salam, L. Iyer, P. Palvia, and R. Singh, "Trust in e-commerce," *Commun. ACM*, vol. 48, no. 2, pp. 72–77, Feb. 2005, doi: [10.1145/1042091.1042093](https://doi.org/10.1145/1042091.1042093).
- [6] Y. Yang, "Research on the optimization of the supplier intelligent management system for cross-border e-commerce platforms based on machine learning," *Inf. Syst. e-Bus. Manage.*, vol. 18, no. 4, pp. 851–870, Dec. 2020, doi: [10.1007/s10257-019-00402-1](https://doi.org/10.1007/s10257-019-00402-1).
- [7] G. Liu, Q. Yang, H. Wang, X. Lin, and M. P. Wittie, "Assessment of multi-hop interpersonal trust in social networks by three-valued subjective logic," in *Proc. IEEE Conf. Comput. Commun.*, Toronto, ON, Canada, Apr. 2014, pp. 1698–1706.
- [8] A. A. Irissappane and J. Zhang, "A case-based reasoning framework to choose trust models for different E-marketplace environments," *J. Artif. Intell. Res.*, vol. 52, pp. 477–505, Apr. 2015, doi: [10.1613/jair.4595](https://doi.org/10.1613/jair.4595).
- [9] T. Mavlanova, R. Benbunan-Fich, and G. Lang, "The role of external and internal signals in e-commerce," *Decis. Support Syst.*, vol. 87, pp. 59–68, Jul. 2016, doi: [10.1016/j.dss.2016.04.009](https://doi.org/10.1016/j.dss.2016.04.009).
- [10] P. Zhang, Y. Ge, and H.-M. Lee, "E-WOM's impact on app development," *J. Comput. Inf. Syst.*, vol. 60, no. 5, pp. 418–427, Sep. 2020, doi: [10.1080/08874417.2018.1517283](https://doi.org/10.1080/08874417.2018.1517283).
- [11] Z. A. Bakar, S. M. Sazili, M. K. Zaini, and J. Ali, "Information elements of a website that promotes trust in e-commerce," in *Proc. Int. Conf. User Sci. Eng.*, Dec. 2010, pp. 55–58, doi: [10.1109/IUSER.2010.5716723](https://doi.org/10.1109/IUSER.2010.5716723).
- [12] R. Yadav and S. Bhatnagar, "Channel collaboration in e-commerce: A study on channel relationship from the perspective of vendors selling on online platforms, the e-retailers," in *Transforming Organizations Through Flexible Systems Management*, P. K. Suri and R. Yadav, Eds. Singapore: Springer, 2020, pp. 223–241.
- [13] M. Brengman and F. P. Karimov, "The effect of web communities on consumers' initial trust in B2C e-commerce websites," *Manage. Res. Rev.*, vol. 35, no. 9, pp. 791–817, Aug. 2012, doi: [10.1108/01409171211256569](https://doi.org/10.1108/01409171211256569).
- [14] X. Pan, H. Wang, W. You, M. Zhang, and Y. Yang, "Assessing the reliability of electronic products using customer knowledge discovery," *Rel. Eng. Syst. Saf.*, vol. 199, Jul. 2020, Art. no. 106925, doi: [10.1016/j.res.2020.106925](https://doi.org/10.1016/j.res.2020.106925).
- [15] J. C.-A. Tsai and S.-Y. Hung, "Examination of community identification and interpersonal trust on continuous use intention: Evidence from experienced online community members," *Inf. Manage.*, vol. 56, no. 4, pp. 552–569, Jun. 2019, doi: [10.1016/j.im.2018.09.014](https://doi.org/10.1016/j.im.2018.09.014).
- [16] S. S. Pawar and P. Yalla, "Trust-based quality awareness using combinatorial auction web service selection in service-based systems," *Int. J. Adv. Intell. Paradigms*, vol. 14, nos. 3–4, pp. 297–309, 2019.
- [17] J. Ejdy and A. Gulc, "Trust in courier services and its antecedents as a determinant of perceived service quality and future intention to use courier service," *Sustainability*, vol. 12, no. 21, p. 18, Nov. 2020, doi: [10.3390/su12219088](https://doi.org/10.3390/su12219088).
- [18] J. Salo and H. Karjaluoto, "A conceptual model of trust in the online environment," *Online Inf. Rev.*, vol. 31, no. 5, pp. 604–621, Oct. 2007, doi: [10.1108/14684520710832324](https://doi.org/10.1108/14684520710832324).
- [19] D. H. McKnight and N. L. Chervany, "What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology," *Int. J. Electron. Commerce*, vol. 6, no. 2, pp. 35–59, Dec. 2001, doi: [10.1080/10864415.2001.11044235](https://doi.org/10.1080/10864415.2001.11044235).
- [20] S. P. W. Shek, C.-L. Sia, and K. H. Lim, "A preliminary assessment of different trust formation models: The effect of third party endorsements on online shopping," in *Proc. 36th Annu. Hawaii Int. Conf. Syst. Sci.*, 2003, p. 10.
- [21] P. Baah-Peprah and R. Shneor, "A trust-based crowdfunding campaign marketing framework: Theoretical underpinnings and big-data analytics practice," *Int. J. Big Data Manage.*, vol. 2, no. 1, pp. 1–24, Jan. 2021, doi: [10.1504/IJBDM.2022.119453](https://doi.org/10.1504/IJBDM.2022.119453).
- [22] P. Briggs, B. Simpson, and A. De Angeli, "Personalisation and trust: A reciprocal relationship?" in *Designing Personalized User Experiences eCommerce*, C.-M. Karat, J. O. Blom, and J. Karat, Eds. Dordrecht, The Netherlands: Springer, 2004, pp. 39–55.
- [23] P. Durkan, M. Durkin, and J. Gillen, "Exploring efforts to engender online trust," *Int. J. Entrepreneurial Behav. Res.*, vol. 9, no. 3, pp. 93–110, Jun. 2003, doi: [10.1108/13552550310476184](https://doi.org/10.1108/13552550310476184).
- [24] K. H. Lim, C. L. Sia, M. K. O. Lee, and I. Benbasat, "Do I trust you online, and if so, will I buy? An empirical study of two trust-building strategies," *J. Manage. Inf. Syst.*, vol. 23, no. 2, pp. 233–266, Oct. 2006, doi: [10.2753/MIS0742-1222230210](https://doi.org/10.2753/MIS0742-1222230210).
- [25] L. P. Robert, A. R. Denis, and Y.-T.-C. Hung, "Individual swift trust and knowledge-based trust in face-to-face and virtual team members," *J. Manage. Inf. Syst.*, vol. 26, no. 2, pp. 241–279, Sep. 2009, doi: [10.2753/mis0742-1222260210](https://doi.org/10.2753/mis0742-1222260210).
- [26] M. Spence, "Job market signaling," *Quart. J. Econ.*, vol. 87, no. 3, pp. 355–374, 1973.
- [27] B. L. Connelly, S. T. Certo, R. D. Ireland, and C. R. Reutzel, "Signaling theory: A review and assessment," *J. Manage.*, vol. 37, no. 1, pp. 39–67, Jan. 2011, doi: [10.1177/0149206310388419](https://doi.org/10.1177/0149206310388419).
- [28] A. O. Maslov, "Spence's signalling theory in the context of information economy theory," *Actual Problems Econ.*, vol. 130, pp. 21–32, Jan. 2012.
- [29] S. Erevelles, A. Roy, and L. S. C. Yip, "The universality of the signal theory for products and services," *J. Bus. Res.*, vol. 52, no. 2, pp. 175–187, May 2001, doi: [10.1016/s0148-2963\(99\)00069-7](https://doi.org/10.1016/s0148-2963(99)00069-7).
- [30] J. Choi and L. V. Geistfeld, "A cross-cultural investigation of consumer e-shopping adoption," *J. Econ. Psychol.*, vol. 25, no. 6, pp. 821–838, Dec. 2004, doi: [10.1016/j.joep.2003.08.006](https://doi.org/10.1016/j.joep.2003.08.006).
- [31] W.-C. Kong and Y.-T. Caisy Hung, "Modeling initial and repeat online trust in B2C e-commerce," in *Proc. 39th Annu. Hawaii Int. Conf. Syst. Sci. (HICSS)*, 2006, p. 120.
- [32] L. G. Zucker, "Production of trust: Institutional sources of economic structure, 1840–1920," *Res. Organ. Behav.*, vol. 8, pp. 53–111, Jan. 1986.
- [33] D. H. McKnight, L. L. Cummings, and N. L. Chervany, "Initial trust formation in new organizational relationships," *Acad. Manage. Rev.*, vol. 23, no. 3, pp. 473–490, Jul. 1998, doi: [10.5465/amr.1998.926622](https://doi.org/10.5465/amr.1998.926622).
- [34] C. Castelfranchi and R. Falcone, "On the Trustee's side: Trust as relational capital," in *Trust Theory*. Hoboken, NJ, USA: Wiley, 2010, pp. 281–303.
- [35] F. A. G. den Butter, J. Liu, and Y.-H. Tan, "Using IT to engender trust in government-to-business relationships: The authorized economic operator (AEO) as an example," *Government Inf. Quart.*, vol. 29, no. 2, pp. 261–274, Apr. 2012, doi: [10.1016/j.giq.2011.05.004](https://doi.org/10.1016/j.giq.2011.05.004).

- [36] D. Novita and A. P. Budiarti, "Perceived security, trust, privacy, and continuance intention of e-commerce customer," *Oper. Manag. Inf. Syst. Stud.*, vol. 2, no. 1, pp. 1–13, Mar. 2022.
- [37] K. Kaushik, N. K. Jain, and A. K. Singh, "Antecedents and outcomes of information privacy concerns: Role of subjective norm and social presence," *Electron. Commerce Res. Appl.*, vol. 32, pp. 57–68, Nov. 2018, doi: [10.1016/j.elerap.2018.11.003](https://doi.org/10.1016/j.elerap.2018.11.003).
- [38] R. R. Anisah and A. A. Suhendra, "Role of trust, customer satisfaction, and perceived effectiveness of e-commerce institutional mechanism to repurchase intention: Systematic literature review," *J. Phys. Conf. Ser.*, vol. 1060, Jul. 2018, Art. no. 012041, doi: [10.1088/1742-6596/1060/1/012041](https://doi.org/10.1088/1742-6596/1060/1/012041).
- [39] Z. Shao and H. Yin, "Building customers' trust in the ridesharing platform with institutional mechanisms," *Internet Res.*, vol. 29, no. 5, pp. 1040–1063, Oct. 2019, doi: [10.1108/intr-02-2018-0086](https://doi.org/10.1108/intr-02-2018-0086).
- [40] K. Özpölat and W. Jank, "Getting the most out of third party trust seals: An empirical analysis," *Decis. Support Syst.*, vol. 73, pp. 47–56, May 2015, doi: [10.1016/j.dss.2015.02.016](https://doi.org/10.1016/j.dss.2015.02.016).
- [41] S. Gritzalis and D. Gritzalis, "A digital seal solution for deploying trust on commercial transactions," *Inf. Manage. Comput. Secur.*, vol. 9, no. 2, pp. 71–79, May 2001, doi: [10.1108/09685220110388836](https://doi.org/10.1108/09685220110388836).
- [42] G. Hornung and S. Bauer, "Privacy through certification?: The new certification scheme of the general data protection regulation," in *Certification—Trust, Accountability, Liability*, P. Rott, Ed. Cham, Switzerland: Springer, 2019, pp. 109–131.
- [43] P. Jiang, D. B. Jones, and S. Javie, "How third-party certification programs relate to consumer trust in online transactions: An exploratory study," *Psychol. Marketing*, vol. 25, no. 9, pp. 839–858, Sep. 2008, doi: [10.1002/mar.20243](https://doi.org/10.1002/mar.20243).
- [44] S. Asian, J. K. Pool, A. Nazarpour, and R. A. Tabaeian, "On the importance of service performance and customer satisfaction in third-party logistics selection," *Benchmarking, Int. J.*, vol. 26, no. 5, pp. 1550–1564, Jul. 2019, doi: [10.1108/BIJ-05-2018-0121](https://doi.org/10.1108/BIJ-05-2018-0121).
- [45] G. Uys, A. Meyer, and W. Niemann, "Taxonomies of trust in supply chain risk management in the South African third party logistics industry," *Acta Commercii*, vol. 19, no. 1, pp. 1–14, Dec. 2019, doi: [10.4102/ac.v19i1.792](https://doi.org/10.4102/ac.v19i1.792).
- [46] T. Jelassi and F. J. Martínez-López, "Exploiting opportunities of new market spaces in e-business," in *Strategies for e-Business*. Cham, Switzerland: Springer, 2020, pp. 205–228.
- [47] Y. Lu, S. Yang, P. Y. K. Chau, and Y. Cao, "Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective," *Inf. Manage.*, vol. 48, no. 8, pp. 393–403, 2011, doi: [10.1016/j.im.2011.09.006](https://doi.org/10.1016/j.im.2011.09.006).
- [48] H. A. Widyanto, K. A. Kusumawardani, and H. Yohanes, "Safety first: Extending UTAUT to better predict mobile payment adoption by incorporating perceived security, perceived risk and trust," *J. Sci. Technol. Policy Manage.*, vol. 13, no. 4, pp. 952–973, Nov. 2022, doi: [10.1108/JSTPM-03-2020-0058](https://doi.org/10.1108/JSTPM-03-2020-0058).
- [49] Z. M. Aljazzaf, M. Perry, and M. A. M. Capretz, "Online trust: Definition and principles," in *Proc. 5th Int. Multi-Conf. Comput. Global Inf. Technol.*, Sep. 2010, pp. 163–168, doi: [10.1109/ICCGI.2010.17](https://doi.org/10.1109/ICCGI.2010.17).
- [50] D. Shin and Y. J. Park, "Role of fairness, accountability, and transparency in algorithmic affordance," *Comput. Hum. Behav.*, vol. 98, pp. 277–284, Sep. 2019, doi: [10.1016/j.chb.2019.04.019](https://doi.org/10.1016/j.chb.2019.04.019).
- [51] D. Shin, "The effects of explainability and causability on perception, trust, and acceptance: Implications for explainable AI," *Int. J. Hum. Comput.*, vol. 146, Feb. 2021, Art. no. 102551, doi: [10.1016/j.ijhcs.2020.102551](https://doi.org/10.1016/j.ijhcs.2020.102551).
- [52] R. L. Wakefield and D. Whitten, "Examining user perceptions of third-party organizations credibility and trust in an e-retailer," *J. Organizational End User Comput.*, vol. 18, no. 2, pp. 1–19, Apr. 2006, doi: [10.4018/joeuc.2006040101](https://doi.org/10.4018/joeuc.2006040101).
- [53] P. A. Pavlou, "Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model," *Int. J. Electron. Commerce*, vol. 7, no. 3, pp. 101–134, 2003, doi: [10.1080/10864415.2003.11044275](https://doi.org/10.1080/10864415.2003.11044275).
- [54] L. N. Leonard and K. Jones, "Trust in C2C electronic commerce: Ten years later," *J. Comput. Inf. Syst.*, vol. 61, no. 3, pp. 240–246, May 2021, doi: [10.1080/08874417.2019.1598829](https://doi.org/10.1080/08874417.2019.1598829).
- [55] R. Walczuch and H. Lundgren, "Psychological antecedents of institution-based consumer trust in e-retailing," *Inf. Manage.*, vol. 42, no. 1, pp. 159–177, Dec. 2004, doi: [10.1016/j.im.2003.12.009](https://doi.org/10.1016/j.im.2003.12.009).
- [56] D. Mulia, H. Usman, and N. B. Parwanto, "The role of customer intimacy in increasing Islamic bank customer loyalty in using e-banking and m-banking," *J. Islamic Marketing*, vol. 12, no. 6, pp. 1097–1123, Jul. 2021, doi: [10.1108/JIMA-09-2019-0190](https://doi.org/10.1108/JIMA-09-2019-0190).
- [57] N. S. Paravastu and S. S. Ramanujan, "Interpersonal trust and technology trust in information systems research: A comprehensive review and a conceptual model," *Int. J. Inf. Syst. Social Change*, vol. 12, no. 4, pp. 44–61, Oct. 2021, doi: [10.4018/IJISSC.287832](https://doi.org/10.4018/IJISSC.287832).
- [58] L. T. Ha and T. T. Thanh, "Effects of digital public services on trades in green goods: Does institutional quality matter?" *J. Innov. Knowl.*, vol. 7, no. 1, p. 11, Jan. 2022, doi: [10.1016/j.jik.2022.100168](https://doi.org/10.1016/j.jik.2022.100168).
- [59] A. B. Rosario, F. Sotgiu, K. De Valck, and T. H. A. Bijmolt, "The effect of electronic word of mouth on sales: A meta-analytic review of platform, product, and metric factors," *J. Marketing Res.*, vol. 53, no. 3, pp. 297–318, Jun. 2016, doi: [10.1509/jmr.14.0380](https://doi.org/10.1509/jmr.14.0380).
- [60] T. Hennig-Thurau, K. P. Gwinner, G. Walsh, and D. D. Gremler, "Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the internet?" *J. Interact. Marketing*, vol. 18, no. 1, pp. 38–52, 2004, doi: [10.1002/dir.10073](https://doi.org/10.1002/dir.10073).
- [61] J. S. He, M. Han, S. Ji, T. Du, and Z. Li, "Spreading social influence with both positive and negative opinions in online networks," *Big Data Mining Anal.*, vol. 2, no. 2, pp. 100–117, Jun. 2019, doi: [10.26599/bdma.2018.9020034](https://doi.org/10.26599/bdma.2018.9020034).
- [62] A. Lohan, A. Ganguly, C. Kumar, and A. Talukdar, "Foreign product preference among Indian consumers: The role of product reviews, word of mouth and quality of shared information," *J. Inf. Knowl. Manage.*, vol. 20, no. 4, Dec. 2021, Art. no. 2150048, doi: [10.1142/s0219649221500489](https://doi.org/10.1142/s0219649221500489).
- [63] S. W. Sussman and W. S. Siegal, "Informational influence in organizations: An integrated approach to knowledge adoption," *Inf. Syst. Res.*, vol. 14, no. 1, pp. 47–65, Mar. 2003, doi: [10.1287/isre.14.1.47.14767](https://doi.org/10.1287/isre.14.1.47.14767).
- [64] C. I. Hovland and A. A. Lumsdaine, *Experiments on Mass Communication*. Princeton, NJ, USA: Princeton Univ. Press, 2017.
- [65] A. G. Wertgen and T. Richter, "Source credibility modulates the validation of implausible information," *Memory Cognition*, vol. 48, no. 8, pp. 1359–1375, Nov. 2020, doi: [10.3758/s13421-020-01067-9](https://doi.org/10.3758/s13421-020-01067-9).
- [66] H. S. Bansal and P. A. Voyer, "Word-of-mouth processes within a services purchase decision context," *J. Service Res.*, vol. 3, no. 2, pp. 166–177, 2000, doi: [10.1177/109467050032005](https://doi.org/10.1177/109467050032005).
- [67] T. Hennig-Thurau, G. Walsh, and G. Walsh, "Electronic word-of-mouth: Motives for and consequences of reading customer articulations on the internet," *Int. J. Electron. Commerce*, vol. 8, no. 2, pp. 51–74, Dec. 2003, doi: [10.1080/10864415.2003.11044293](https://doi.org/10.1080/10864415.2003.11044293).
- [68] L. L. Price, L. F. Feick, and A. Guskey, "Everyday market helping behavior," *J. Public Policy Marketing*, vol. 14, no. 2, pp. 255–266, Sep. 1995, doi: [10.1177/074391569501400207](https://doi.org/10.1177/074391569501400207).
- [69] A. Bhayani, "Do consumers consider Word of mouth for crucial life decisions?" *Int. J. Nonprofit Voluntary Sector Marketing*, vol. 22, no. 2, p. e1575, May 2017, doi: [10.1002/nvsm.1575](https://doi.org/10.1002/nvsm.1575).
- [70] S. Elhajjar and F. Ouaida, "An analysis of factors affecting mobile banking adoption," *Int. J. Bank Marketing*, vol. 38, no. 2, pp. 352–367, Jul. 2019, doi: [10.1108/ijbm-02-2019-0055](https://doi.org/10.1108/ijbm-02-2019-0055).
- [71] Z. Yousaf, N. Sahar, A. Majid, and A. Rafiq, "The effects of e-marketing orientation on strategic business performance," *World J. Entrepreneurship, Manage. Sustain. Develop.*, vol. 14, no. 3, pp. 309–320, Aug. 2018, doi: [10.1108/WJEMSD-12-2017-0109](https://doi.org/10.1108/WJEMSD-12-2017-0109).
- [72] F. D. Davis, "A technology acceptance model for empirically testing new end-user information systems: Theory and results," Ph.D. thesis, Massachusetts Inst. Technol., Cambridge, MA, USA, 1985.
- [73] V. Venkatesh and F. D. Davis, "A model of the antecedents of perceived ease of use: Development and test," *Decis. Sci.*, vol. 27, no. 3, pp. 451–481, Sep. 1996, doi: [10.1111/j.1540-5915.1996.tb00860.x](https://doi.org/10.1111/j.1540-5915.1996.tb00860.x).
- [74] F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, "User acceptance of computer technology: A comparison of two theoretical models," *Manage. Sci.*, vol. 35, pp. 982–1003, Aug. 1989, doi: [10.1287/mnsc.35.8.982](https://doi.org/10.1287/mnsc.35.8.982).
- [75] V. Venkatesh, J. Y. L. Thong, and X. Xu, "Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology," *MIS Quart.*, vol. 36, no. 1, pp. 157–178, Feb. 2012, doi: [10.2307/41410412](https://doi.org/10.2307/41410412).
- [76] H. Usman, P. Tjptoherijanto, T. E. Balqiah, and I. G. N. Agung, "The role of religious norms, trust, importance of attributes and information sources in the relationship between religiosity and selection of the Islamic bank," *J. Islamic Marketing*, vol. 8, no. 2, pp. 158–186, Jun. 2017, doi: [10.1108/JIMA-01-2015-0004](https://doi.org/10.1108/JIMA-01-2015-0004).

- [77] J. Zhao, S. P. Fang, and P. Q. Jin, "Modeling and quantifying user acceptance of personalized business modes based on TAM, trust and attitude," *Sustainability*, vol. 10, no. 2, p. 26, Feb. 2018, doi: [10.3390/su10020356](https://doi.org/10.3390/su10020356).
- [78] H. Usman, D. Mulia, C. Chairy, and N. Widawati, "Integrating trust, religiosity and image into technology acceptance model: The case of the Islamic philanthropy in Indonesia," *J. Islamic Marketing*, vol. 13, no. 2, pp. 381–409, Jan. 2022, doi: [10.1108/JIMA-01-2020-0020](https://doi.org/10.1108/JIMA-01-2020-0020).
- [79] B. Suh and I. Han, "Effect of trust on customer acceptance of internet banking," *Electron. Commerce Res. Appl.*, vol. 1, nos. 3–4, pp. 247–263, 2002, doi: [10.1016/S1567-4223\(02\)00017-0](https://doi.org/10.1016/S1567-4223(02)00017-0).
- [80] M. Koufaris and W. Hampton-Sosa, "The development of initial trust in an online company by new customers," *Inf. Manage.*, vol. 41, no. 3, pp. 377–397, 2004, doi: [10.1016/j.im.2003.08.004](https://doi.org/10.1016/j.im.2003.08.004).
- [81] W.-Y. Wu, P. T. P. Quyen, and A. A. A. Rivas, "How e-servicescapes affect customer online shopping intention: The moderating effects of gender and online purchasing experience," *Inf. Syst. E-Bus. Manage.*, vol. 15, no. 3, pp. 689–715, Aug. 2017, doi: [10.1007/s10257-016-0323-x](https://doi.org/10.1007/s10257-016-0323-x).
- [82] F. D. Schoorman, R. C. Mayer, and J. H. Davis, "An integrative model of organizational trust: Past, present, and future," *Acad. Manage. Rev.*, vol. 32, no. 2, pp. 344–354, Apr. 2007, doi: [10.5465/amr.2007.24348410](https://doi.org/10.5465/amr.2007.24348410).
- [83] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quart.*, vol. 13, pp. 319–340, Sep. 1989, doi: [10.2307/249008](https://doi.org/10.2307/249008).
- [84] P. D. Y. Xuan and X. Fei, "A study on the effects of TAM/TPB-based perceived risk cognition on user's trust and behavior taking Yu'eobao, a value-added payment product, as an example," *Manag. Rev.*, vol. 28, no. 6, pp. 229–240, 2016-06-28 2016. [Online]. Available: http://journal05.magtech.org.cn/jweb_glpl/CN/abstract/article_520.shtml
- [85] Q. Yang, C. Pang, L. Liu, D. C. Yen, and J. Michael Tam, "Exploring consumer perceived risk and trust for online payments: An empirical study in China's younger generation," *Comput. Hum. Behav.*, vol. 50, pp. 9–24, Sep. 2015, doi: [10.1016/j.chb.2015.03.058](https://doi.org/10.1016/j.chb.2015.03.058).
- [86] S. Ba and P. A. Pavlou, "Evidence of the effect of trust building technology in electronic markets: Price premiums and buyer behavior," *MIS Quart.*, vol. 26, no. 3, pp. 243–268, Sep. 2002, doi: [10.2307/4132332](https://doi.org/10.2307/4132332).
- [87] M. Warkentin, D. Gefen, P. A. Pavlou, and G. M. Rose, "Encouraging citizen adoption of e-Government by building trust," *Electron. Markets*, vol. 12, no. 3, pp. 157–162, Sep. 2002, doi: [10.1080/101967802320245929](https://doi.org/10.1080/101967802320245929).
- [88] V. A. Zeithaml, L. L. Berry, and A. Parasuraman, "The behavioral consequences of service quality," *J. Marketing*, vol. 60, no. 2, pp. 31–46, Apr. 1996, doi: [10.1177/002224299606000203](https://doi.org/10.1177/002224299606000203).
- [89] B. Xiao and I. Benbasat, "E-commerce product recommendation agents: Use, characteristics, and impact," *MIS Quart.*, vol. 31, no. 1, pp. 137–209, Mar. 2007.
- [90] D. Gefen, E. Karahanna, and D. W. Straub, "Trust and TAM in Online shopping: An integrated model," *MIS Quart.*, vol. 27, no. 1, pp. 51–90, Mar. 2003, doi: [10.2307/30036519](https://doi.org/10.2307/30036519).
- [91] R. C. Mayer, J. H. Davis, and F. D. Schoorman, "An integrative model of organizational trust," *Acad. Manage. Rev.*, vol. 20, no. 3, pp. 709–734, 1995, doi: [10.5465/amr.1995.9508080335](https://doi.org/10.5465/amr.1995.9508080335).
- [92] P. M. Doney and J. P. Cannon, "An examination of the nature of trust in buyer-seller relationships," *J. Marketing*, vol. 61, no. 2, pp. 35–51, Apr. 1997, doi: [10.1177/002224299706100203](https://doi.org/10.1177/002224299706100203).
- [93] D. Corsten and N. Kumar, "Do suppliers benefit from collaborative relationships with large retailers? An empirical investigation of efficient consumer response adoption," *J. Marketing*, vol. 69, no. 3, pp. 80–94, Jul. 2005, doi: [10.1509/jmkg.69.3.80.66360](https://doi.org/10.1509/jmkg.69.3.80.66360).
- [94] V. Venkatesh and F. D. Davis, "A theoretical extension of the technology acceptance model: Four longitudinal field studies," *Manage. Sci.*, vol. 46, no. 2, pp. 186–204, 2000, doi: [10.1287/mnsc.46.2.186.11926](https://doi.org/10.1287/mnsc.46.2.186.11926).
- [95] M. Y. Cheung, C. Luo, C. L. Sia, and H. Chen, "Credibility of electronic word-of-mouth: Informational and normative determinants of on-line consumer recommendations," *Int. J. Electron. Commerce*, vol. 13, no. 4, pp. 9–38, 2009, doi: [10.2753/jec1086-4415130402](https://doi.org/10.2753/jec1086-4415130402).
- [96] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2nd ed. Newbury Park, CA, USA: Sage, 2017.
- [97] D. J. Ketchen, "A primer on partial least squares structural equation modeling," *Long Range Planning*, vol. 46, nos. 1–2, pp. 184–185, Feb. 2013, doi: [10.1016/j.lrp.2013.01.002](https://doi.org/10.1016/j.lrp.2013.01.002).
- [98] M. S. Farooq, M. Salam, S. U. Rehman, A. Fayolle, N. Jaafar, and K. Ayupp, "Impact of support from social network on entrepreneurial intention of fresh business graduates," *Educ. Training*, vol. 60, no. 4, pp. 335–353, Apr. 2018, doi: [10.1108/ET-06-2017-0092](https://doi.org/10.1108/ET-06-2017-0092).
- [99] F. Schuberth, M. E. Rademaker, and J. Henseler, "Assessing the overall fit of composite models estimated by partial least squares path modeling," *Eur. J. Marketing*, vol. 2022, pp. 1–25, Apr. 2022, doi: [10.1108/ejm-08-2020-0586](https://doi.org/10.1108/ejm-08-2020-0586).
- [100] G. Dash and J. Paul, "CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting," *Technol. Forecasting Social Change*, vol. 173, p. 11, Dec. 2021, doi: [10.1016/j.techfore.2021.121092](https://doi.org/10.1016/j.techfore.2021.121092).
- [101] M.-T. Méndez-Picazo, M.-A. Galindo-Martín, and M.-S. Castaño-Martínez, "Effects of sociocultural and economic factors on social entrepreneurship and sustainable development," *J. Innov. Knowl.*, vol. 6, no. 2, pp. 69–77, Apr. 2021, doi: [10.1016/j.jik.2020.06.001](https://doi.org/10.1016/j.jik.2020.06.001).
- [102] D. McNeish, "Thanks coefficient alpha, we'll take it from here," *Psychol. Methods*, vol. 23, no. 3, pp. 412–433, Sep. 2018, doi: [10.1037/met0000144](https://doi.org/10.1037/met0000144).
- [103] C. Fornell and D. F. Larcker, "Evaluating structural equation models with unobservable variables and measurement error," *J. Marketing Res.*, vol. 18, no. 1, pp. 39–50, 1998, doi: [10.1177/002224378101800104](https://doi.org/10.1177/002224378101800104).
- [104] M. R. A. Hamid, W. Sami, and M. H. M. Sidek, "Discriminant validity assessment: Use of Fornell & Larcker criterion versus HTMT criterion," in *Proc. 1st Int. Conf. Appl. Ind. Math. Statist. (ICoAIMS)*, vol. 890. Kuantan, Malaysia, Aug. 2017, pp. 1–15, doi: [10.1088/1742-6596/890/1/012163](https://doi.org/10.1088/1742-6596/890/1/012163).
- [105] M. S. Farooq, M. Salam, N. Jaafar, A. Fayolle, K. Ayupp, M. Radovic-Markovic, and A. Sajid, "Acceptance and use of lecture capture system (LCS) in executive business studies: Extending UTAUT2," *Interact. Technol. Smart Educ.*, vol. 14, no. 4, pp. 329–348, Nov. 2017, doi: [10.1108/itse-06-2016-0015](https://doi.org/10.1108/itse-06-2016-0015).
- [106] W. W. Chin, "STATISTICA 5.0 [software review]," *Struct. Equ. Model.*, vol. 3, no. 2, pp. 196–201, 1996.
- [107] A. Monecke and F. Leisch, "SemPLS: Structural equation modeling using partial least squares," *J. Stat. Softw.*, vol. 48, no. 3, pp. 1–32, 2012, doi: [10.18637/jss.v048.i03](https://doi.org/10.18637/jss.v048.i03).
- [108] J. Henseler, G. Hubona, and P. A. Ray, "Using PLS path modeling in new technology research: Updated guidelines," *Ind. Manag. Data Syst.*, vol. 116, no. 1, pp. 2–20, 2016, doi: [10.1108/imds-09-2015-0382](https://doi.org/10.1108/imds-09-2015-0382).
- [109] M. Tenenhaus, "PLS path modeling," *Comput. Statist. Data Anal.*, vol. 48, no. 1, pp. 159–205, Jan. 2005, doi: [10.1016/j.csda.2004.03.005](https://doi.org/10.1016/j.csda.2004.03.005).
- [110] M. Wetzels, G. Odekerken-Schröder, and C. van Oppen, "Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration," *MIS Quart.*, vol. 33, no. 1, pp. 177–195, 2009, doi: [10.2307/20650284](https://doi.org/10.2307/20650284).
- [111] K.-H. Lai, Y. Bao, and X. Li, "Channel relationship and business uncertainty: Evidence from the Hong Kong market," *Ind. Marketing Manage.*, vol. 37, no. 6, pp. 713–724, Aug. 2008, doi: [10.1016/j.indmarman.2007.05.017](https://doi.org/10.1016/j.indmarman.2007.05.017).
- [112] R. Kaynak and S. B. Avci, "Logistics service accountabilities and their effects on service buyer's trust," in *Proc. 16th Meeting Euro-Work-Group-Transp.*, vol. 111. Porto, Portugal, Sep. 2013, pp. 731–740, doi: [10.1016/j.sbspro.2014.01.107](https://doi.org/10.1016/j.sbspro.2014.01.107).
- [113] R. Wu and J. Lee, "The comparative study on third party mobile payment between UTAUT2 and TTF," *J. Distrib. Sci.*, vol. 15, no. 11, pp. 5–19, Nov. 2017, doi: [10.15722/JDS.15.11.201711.5](https://doi.org/10.15722/JDS.15.11.201711.5).
- [114] X. Pu, F. T. S. Chan, A. Y.-L. Chong, and B. Niu, "The adoption of NFC-based mobile payment services: An empirical analysis of Apple Pay in China," *Int. J. Mob. Commun.*, vol. 18, no. 3, pp. 343–371, 2020, doi: [10.1504/ijmc.2020.107145](https://doi.org/10.1504/ijmc.2020.107145).
- [115] R.-Z. Wu, J.-H. Lee, and X.-F. Tian, "Determinants of the intention to use cross-border mobile payments in Korea among Chinese tourists: An integrated perspective of UTAUT2 with TTF and ITM," *J. Theor. Appl. Electron. Commerce Res.*, vol. 16, no. 5, pp. 1537–1556, May 2021. [Online]. Available: <https://www.mdpi.com/0718-1876/16/5/86>
- [116] L. T. W. Cheng, P. Sharma, J. Shen, and A. C. Ng, "Exploring the dark side of third-party certification effect in B2B relationships: A professional financial services perspective," *J. Bus. Res.*, vol. 127, pp. 123–136, Apr. 2021, doi: [10.1016/j.jbusres.2021.01.031](https://doi.org/10.1016/j.jbusres.2021.01.031).
- [117] J. Löffbers and A. Benlian, "The effectiveness of IS certification in e-commerce: Does personality matter?" *J. Decis. Syst.*, vol. 28, no. 3, pp. 233–259, Jul. 2019, doi: [10.1080/12460125.2019.1684867](https://doi.org/10.1080/12460125.2019.1684867).

- [118] S. Chatterjee, N. Sreen, J. Rana, A. Dhir, and P. H. Sadarangani, "Impact of ethical certifications and product involvement on consumers decision to purchase ethical products at price premiums in an emerging market context," *Int. Rev. Public Nonprofit Marketing*, vol. 19, no. 4, pp. 737–762, Dec. 2022, doi: [10.1007/s12208-021-00288-1](https://doi.org/10.1007/s12208-021-00288-1).
- [119] I. Kwiecien, E. Poprawska, and A. Jedrzychowska, "Third party liability claims on the Polish insurance market—A study of market trends and social attitudes," *Bus. Econ. Horizons*, vol. 10, no. 1, pp. 18–42, 2014, doi: [10.15208/beh.2014.03](https://doi.org/10.15208/beh.2014.03).
- [120] Y.-S. Lu, W.-Y. Shih, H.-Y. Gau, K.-C. Chung, and J.-L. Huang, "On successive point-of-interest recommendation," *World Wide Web*, vol. 22, no. 3, pp. 1151–1173, May 2019, doi: [10.1007/s11280-018-0599-5](https://doi.org/10.1007/s11280-018-0599-5).
- [121] I. K. Mensah, "E-government services adoption: The important elements of trust and transparency," *Int. J. Electron. Government Res.*, vol. 14, no. 3, pp. 12–31, Jul. 2018, doi: [10.4018/ijegr.2018070102](https://doi.org/10.4018/ijegr.2018070102).
- [122] M. M. Jeon and M. Jeong, "Customers' perceived website service quality and its effects on e-loyalty," *Int. J. Contemp. Hospitality Manage.*, vol. 29, no. 1, pp. 438–457, Jan. 2017, doi: [10.1108/IJCHM-02-2015-0054](https://doi.org/10.1108/IJCHM-02-2015-0054).
- [123] D.-H. Huang and H.-E. Chueh, "Chatbot usage intention analysis: Veterinary consultation," *J. Innov. Knowl.*, vol. 6, no. 3, pp. 135–144, Jul. 2021, doi: [10.1016/j.jik.2020.09.002](https://doi.org/10.1016/j.jik.2020.09.002).
- [124] Y. W. Sullivan and D. J. Kim, "Assessing the effects of consumers' product evaluations and trust on repurchase intention in e-commerce environments," *Int. J. Inf. Manage.*, vol. 39, pp. 199–219, Apr. 2018, doi: [10.1016/j.ijinfomgt.2017.12.008](https://doi.org/10.1016/j.ijinfomgt.2017.12.008).
- [125] A. Benlian, R. Titah, and T. Hess, "Differential effects of provider recommendations and consumer reviews in e-commerce transactions: An experimental study," *J. Manage. Inf. Syst.*, vol. 29, no. 1, pp. 237–272, Jul. 2012, doi: [10.2753/MIS0742-1222290107](https://doi.org/10.2753/MIS0742-1222290107).
- [126] A. Shankar, C. Jebarajakirthy, and M. Ashduzzaman, "How do electronic word of mouth practices contribute to mobile banking adoption?" *J. Retailing Consum. Services*, vol. 52, p. 14, Jan. 2020, doi: [10.1016/j.jretconser.2019.101920](https://doi.org/10.1016/j.jretconser.2019.101920).
- [127] A. S. Ananda, Á. Hernández-García, and L. Lamberti, "N-REL: A comprehensive framework of social media marketing strategic actions for marketing organizations," *J. Innov. Knowl.*, vol. 1, no. 3, pp. 170–180, Sep. 2016, doi: [10.1016/j.jik.2016.01.003](https://doi.org/10.1016/j.jik.2016.01.003).
- [128] V. G. L. R. Pono, P. W. Handayani, P. I. Sandhyaduhita, and F. Azzahro, "Trust in merchants and e-commerce platforms as antecedents of Users' purchase intention in C2C e-commerce," in *Proc. 5th Int. Conf. Comput. Eng. Design (ICCED)*, Apr. 2019, pp. 1–6, doi: [10.1109/ICCED46541.2019.9161137](https://doi.org/10.1109/ICCED46541.2019.9161137).
- [129] A. Nissen and C. Krampe, "Why he buys it and she doesn't—Exploring self-reported and neural gender differences in the perception of e-commerce websites," *Comput. Hum. Behav.*, vol. 121, Aug. 2021, Art. no. 106809, doi: [10.1016/j.chb.2021.106809](https://doi.org/10.1016/j.chb.2021.106809).
- [130] M. A. Patton and A. Jøsang, "Technologies for trust in electronic commerce," *Electron. Commerce Res.*, vol. 4, no. 1/2, pp. 9–21, Jan. 2004, doi: [10.1023/B:ELEC.0000009279.89570.27](https://doi.org/10.1023/B:ELEC.0000009279.89570.27).
- [131] P. Oghazi, S. Karlsson, D. Hellström, R. Mostaghel, and S. Sattari, "From Mars to Venus: Alteration of trust and reputation in online shopping," *J. Innov. Knowl.*, vol. 6, no. 4, pp. 197–202, Oct. 2021, doi: [10.1016/j.jik.2020.06.002](https://doi.org/10.1016/j.jik.2020.06.002).
- [132] S. Zhao, Y. Fang, W. Zhang, and H. Jiang, "Trust, perceived benefit, and purchase intention in C2C e-commerce: An empirical examination in China," *J. Global Inf. Manage.*, vol. 28, no. 1, pp. 121–141, Jan. 2020, doi: [10.4018/jgim.2020010107](https://doi.org/10.4018/jgim.2020010107).
- [133] J. Mou, Y. Cui, and K. Kurcz, "Trust, risk and alternative website quality in B-buyer acceptance of cross-border e-commerce," *J. Global Inf. Manage.*, vol. 28, no. 1, pp. 167–188, Jan. 2020, doi: [10.4018/JGIM.2020010109](https://doi.org/10.4018/JGIM.2020010109).
- [134] T. Y. Kim, R. Dekker, and C. Heij, "Cross-border electronic commerce: Distance effects and express delivery in European union markets," *Int. J. Electron. Commerce*, vol. 21, no. 2, pp. 184–218, Apr. 2017.
- [135] P. A. Pavlou and D. Gefen, "Building effective online marketplaces with institution-based trust," *Inf. Syst. Res.*, vol. 15, no. 1, pp. 37–59, Mar. 2004, doi: [10.1287/isre.1040.0015](https://doi.org/10.1287/isre.1040.0015).
- [136] S. Senecal and J. Nantel, "The influence of online product recommendations on consumers' online choices," *J. Retailing*, vol. 80, no. 2, pp. 159–169, Jan. 2004, doi: [10.1016/j.jretai.2004.04.001](https://doi.org/10.1016/j.jretai.2004.04.001).



CONG CAO (Member, IEEE) received the bachelor's degree in computer science from the University of Wollongong, Australia, in 2010, the first master's degree in networking from the University of Western Sydney, in 2011, the second master's degree in business information systems from the University of Sydney, in 2013, and the Ph.D. degree from the University of Wollongong, in 2018. He is currently engaged in the research of e-commerce information systems, operation management, trust evaluation and management, and user behavior analysis, as an Associate Professor at the School of Management, Zhejiang University of Technology, China. Since July 2015, he has also been teaching several subjects to bachelor's and master's students as the Head Tutor/Teaching Assistant at the University of Wollongong. In the past four years, as the lead author, he has published 18 articles, including eight A*/A publications. He is leading an international research project on trust evaluation and the service cloud platform based on big data and blockchain technology. In July 2013, he carried out research work in the field of information systems and information management as the Ph.D. student under the joint support of the China Scholarship Council and the University of Wollongong.



SHANSHAN HUANG received the bachelor's degree in engineering management from the Jiaxing College, China. In 2021, she worked as a Course Assistant with the Department of Information Management, School of Management, Zhejiang University of Technology, China. She is currently majoring in management science and engineering with the School of Management, Zhejiang University of Technology, China. Her research interest includes user behavior research in the area of information systems and data security governance for e-commerce. Her awards and honors include the First Prize in the 2021 Global Business Student Competition, the Gold Medal in the 13th Challenge Cup National Extracurricular Academic Science and Technology Competition for University Students, and the First Prize in the Postgraduate Academic Scholarship.

...