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INFORMATION SECURITY AND THE CONTINUAL USAGE OF E-COMMERCE PLATFORMS: A CASE OF GHANA

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ABSTRACT

Objective: This study investigates the impact of information security and trust on continued e-commerce usage in Ghana, where online commerce has become essential despite growing cyber threats.

Theoretical Framework: Social exchange theory was used to explain how individuals form trust in social interactions. It helps to reveal how people weigh relationship rewards and costs, navigate power dynamics, and make choices.

Method: Out of 117 collected responses, 100 were valid for analysis. Partial Least Squares-SEM (PLS-SEM) was used for structural equation modeling, following the "10-times rule" for minimum sample size.

Results and Discussion: The research demonstrates that Information Security significantly enhances continual usage and directly impacts consumer trust. Also, we found that, trust serves as a mediator between information security and continual usage. Further, the study reveals that ICT skills play a key mediating role in the relationship between trust and continual usage. The findings highlight the importance of prioritizing information security, implementing user-friendly security measures, and offering training to improve users' ICT skills.

Research Implications: These insights have practical implications for e-commerce businesses, policymakers, and individuals. It emphasizes the necessity of robust information security measures to build trust and encourage continual usage among Ghanaians.

Originality/Value: The study adds to existing literature by underscoring the essential role of Information Security in cultivating Ghanaian consumers trust and loyalty in the e-commerce environment.

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SEGURANÇA DA INFORMAÇÃO E O USO CONTÍNUO DE PLATAFORMAS DE COMÉRCIO ELETRÔNICO: UM CASO DE GANA

RESUMO

Objetivo: Este estudo investiga o impacto da segurança da informação e da confiança no uso contínuo do comércio eletrônico em Gana, onde o comércio on-line se tornou essencial apesar das crescentes ameaças cibernéticas.

Estrutura Teórica: A teoria da troca social foi usada para explicar como os indivíduos formam confiança nas interações sociais. Ela ajuda a revelar como as pessoas avaliam as recompensas e os custos do relacionamento, navegam na dinâmica do poder e fazem escolhas.

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Método: Das 117 respostas coletadas, 100 foram válidas para análise. O Partial Least Squares-SEM (PLS-SEM) foi usado para modelagem de equações estruturais, seguindo a "regra das 10 vezes" para o tamanho mínimo da amostra.
Resultados e Discussão: A pesquisa demonstra que a segurança da informação aumenta significativamente o uso contínuo e afeta diretamente a confiança do consumidor. Além disso, descobrimos que a confiança serve como mediador entre a segurança da informação e o uso contínuo. Além disso, o estudo revela que as habilidades de TIC desempenham uma função mediadora importante na relação entre confiança e uso contínuo. Os resultados destacam a importância de priorizar a segurança das informações, implementar medidas de segurança fáceis de usar e oferecer treinamento para melhorar as habilidades de TIC dos usuários.
Implicações da Pesquisa: Essas percepções têm implicações práticas para empresas de comércio eletrônico, formuladores de políticas e indivíduos. Ele enfatiza a necessidade de medidas robustas de segurança da informação para criar confiança e incentivar o uso contínuo entre os ganenses.
Originalidade/Valor: O estudo contribui para a literatura existente ao destacar o papel essencial da Segurança da Informação no cultivo da confiança e da fidelidade dos consumidores ganenses no ambiente de comércio eletrônico.

Palavras-chave: Segurança da Informação, Confiança, Habilidades em TIC, Comércio Eletrônico.

SEGURIDAD DE LA INFORMACIÓN Y USO CONTINUADO DE PLATAFORMAS DE COMERCIO ELECTRÓNICO: EL CASO DE GHANA

RESUMEN
Objetivo: Este estudio investiga el impacto de la seguridad de la información y la confianza en el uso continuado del comercio electrónico en Ghana, donde el comercio en línea se ha convertido en algo esencial a pesar de las crecientes amenazas cibernéticas.
Marco Teórico: Se utilizó la teoría del intercambio social para explicar cómo los individuos generan confianza en las interacciones sociales. Ayuda a revelar cómo las personas sopesan las recompensas y los costes de las relaciones, navegan por las dinámicas de poder y toman decisiones.
Método: De las 117 respuestas recogidas, 100 fueron válidas para el análisis. Se utilizó el modelo de ecuaciones estructurales PLS-SEM (Partial Least Squares-SEM), siguiendo la «regla de las 10 veces» para el tamaño mínimo de la muestra.
Resultados y Discusión: La investigación demuestra que la seguridad de la información mejora significativamente el uso continuado e incide directamente en la confianza del consumidor. Además, la confianza actúa como mediador entre la seguridad de la información y el uso continuado. Además, el estudio revela que las competencias en TIC desempeñan un papel mediador clave en la relación entre la confianza y el uso continuado. Los resultados ponen de relieve la importancia de dar prioridad a la seguridad de la información, aplicar medidas de seguridad fáciles de usar y ofrecer formación para mejorar las competencias de los usuarios en TIC.
Implicaciones de la Investigación: Estas conclusiones tienen implicaciones prácticas para las empresas de comercio electrónico, los responsables políticos y los particulares. Pone de relieve la necesidad de adoptar medidas sólidas de seguridad de la información para generar confianza y fomentar el uso continuado entre los ghaneses.
Originalidad/Valor: El estudio se suma a la literatura existente al subrayar el papel esencial de la seguridad de la información para cultivar la confianza y la lealtad de los consumidores ghaneses en el entorno del comercio electrónico.

Palabras clave: Seguridad de la Información, Confianza, Competencias en TIC, Comercio Electrónico.

1 INTRODUCTION

The use of e-commerce platforms has surged in popularity recently. Online economic activities, telework, teleconferences, and social networking have become prevalent in the business arena over the past four years (Pomeroy, 2020; Naatu et al., 2024). It is a powerful tool that eliminates trade barriers, enables easy access to markets, creates employment, and facilitates revenue generation worldwide (Amofah & Chai, 2022). This trend accelerated due

to lockdown measures aimed at curbing the transmission of COVID-19 which limited physical interaction (Florea et al., 2022). The shift has brought about various changes, some beneficial and others detrimental. For instance, cybercrimes such as phishing and hacking have increased, posing significant risks to e-commerce services and defrauding consumers (Azizah, 2021). This is especially a big challenge for consumers who lack or have very limited knowledge and skills in Information and Communication Technology (ICT).

Most people in Sub-Saharan Africa have limited Information and Communication Technolgy (ICT) Skills. However, the COVID-19 pandemic has forced many to adopt e-commerce and online shopping, often without sufficient ICT knowledge. As a result, criminals with ICT skills have exploited this gap, scamming these less knowledgeable individuals. Consequently, many of the people feel insecure about e-commerce despite it now being an essential technology.

The exponential increase in cybercrime cases underscores the critical need for robust information security and trust (Sasse, 2005; Gangwer & Narang, 2021). Customers must feel secure during online transactions involving electronic fund transfers and the transfer of private and confidential information (Alzoubi et al., 2022). Online security involves rules, actions, and processes to ensure internet safety (Shakeri et al., 2022). According to Palmié et al., (2022), information security includes elements such as confidentiality, integrity, availability, authentication, and non-repudiation. The literature suggests that the rise in cybercrimes may be attributed to the lack of penalties for such acts and a greater emphasis on economic benefits over consumer protection (Azizah, 2021). Additionally, vulnerability alerts can enhance transaction security by allowing quick responses to unusual network activities (Wang, 2021).

Research has examined the relationship between information security and consumer trust (e.g., Pieters, 2011; Barnard & Wesson 2014), the interplay between usability and trust in information systems (Sasse, 2005), and the impact of trust on the continued use of e-commerce (Pinem et al., 2018). But no study has explicitly investigated the combined effect of information security and user trust in e-commerce platforms on the continued patronage of e-commerce. Furthermore, there is no comprehensive study on how ICT skills mediates the relationship between information security and ongoing transactions in e-commerce or how ICT skills influence the trust relationship with continual e-commerce transactions. As Sasse (2005) noted, numerous security mechanisms exist in cyberspace, yet many people find them challenging to use, particularly in contexts with high poverty and illiteracy rates, coupled with inadequate institutions, and poor infrastructure like Sub-Saharan Africa (Naatu et al., 2024). These suggest

a critical need for a study to unearth the impact of perceived system security, trust and ICT skills on and engagement in e-commerce.

Our study seeks to fill this gap by exploring the impact of information security and user trust on the continual usage of e-commerce platforms mediated by ICT skills. We assess how individuals leverage their ICT abilities for online shopping and selling, using the Social Exchange Theory. This theory explains the processes that build trust in social interactions, positing that trust leads to the continued use of particular social procedures. The study is crucial as it helps bridge the gap in the literature, offering insights into the dynamics influencing consumer behaviour in the cyberspace of Africa. It provides essential market intelligence to companies and guidance for future studies and policy development.

The remainder of the study is organized as follows: first, a review of the literature and theoretical framework, followed by the development of hypotheses. Next, the methodology is detailed, and the results are presented and discussed. Finally, the study concludes with the implications of the findings.

2 THEORETICAL FRAMEWORK

Electronic commerce, often referred to as e-commerce is crucial for industry and economic growth, offering an effective, convenient, and rapid business methods (Babu et al., 2020). It offers business models that enable companies and individuals to buy and sell goods and services over the Internet (Tofan & Bostan, 2022). E-commerce operates on various devices such as computers, tablets, smartphones, and other smart gadgets (Tofan & Bostan, 2022). E-commerce activities include online payments, selling, advertising, and window shopping (Kinal, 2022). Some e-commerce platforms are available as mobile applications, while others use traditional websites for transactions. Several e-commerce businesses are prominent today, including Jumia, Kikuu, and Amazon, (Alkhunaizan & Ali, 2022). The main driver of e-commerce is the digital economy, which is also known as the internet economy or web economy. It is an economy based on digital computing technologies, particularly internet (Pomeroy, 2020).

Due to advancement in the digital economy, the past decade has witnessed a substantial increase in the e-commerce user community in Sub-Saharan Africa. The trend marks a remarkable leap from the era in the late 1990s where internet accessibility in Africa was a luxury and only a few could afford (Interpol African Cyberthreat Assessment Report, 2024).

This development has been partly driven by the COVID-19 pandemic and the African Continental Free Trade Area (AfCFTA) agreement, which has significantly reduced trade barriers among African countries (Han et al., 2023). As a result, e-customer numbers have surged, and a variety of new e-products and product ideas have been introduced, enabling customers to shop conveniently from their homes (Alkhunaizan & Ali, 2022).

Along with the rapid rise of e-commerce engagement is an alarming rate of cyber crime. As the technology advances, cybercriminals advance their tactics with increasingly sophiscated methods of exploiting the vulnerable (Interpol African Cyberthreat Assessment Report, 2024; Shakeri et al., 2022). Victims are financially, psychologically and emotionally exploited. Individual consumers, governments and industries have all been affected by cybercrime. This explains the numerous security mechanisms that currently exist in cyberspace (Sasse, 2005). Online security, or cybersecurity encompasses rules, actions, and processes to detect, prevent and ensure safety on the internet (Rajaonah, 2017). Information security is associated with confidentiality, integrity, availability, authentication, and non-repudiation (Shakeri et al., 2022).

Research on information systems security has been undertaken on various perperctives. For instance, Rajaonah, (2017) explored the view of trust in information system security related to infrastructure protection. There is also a focus on information system acceptance and user satisfaction by Kassim et al., (2012). Pieters (2011) study explored the effect of justifying or explaining system security on users trust while Pinem et al., (2018) study examined trust's impact on conitinued use of government-to-business online services. According to the literature, trust is a firm belief in the reliability or ability of someone or something (Pieters 2011; Pinem et al., 2018). Trust involves confidence in a body or process to deliver reliable results (Liu et al., 2022). It is characterized by positive relationships, good judgment or expertise, and consistency. Hence information systems need to win the trust of users to make them continue using technologies (Pieters, 2011).

Although numerous information systems security solutions exist, they are often perceived as difficult to operate (Sasse, 2000). This highlights the crucial role of operation ability in the continued use of e-commerce technologies. However, our review of the literature reveals a significant research gap, as no previous studies have examined the interplay between information systems security, trust, and ICT skills in the context of e-commerce. The study aims to address this gap by investigating these critical aspects of e-commerce services. Information systems security breaches can have far-reaching consequences, impacting vital

services and their usage (Rajaonah, 2017), as such, research in this area is imperative. Our findings will contribute to the existing body of knowledge, providing valuable insights for stakeholders and practitioners in the e-commerce industry.

2.1 THEORETICAL REVIEW

Several theories of trust have been proposed by researchers in various fields such as psychology, sociology, economics, marketing and management information systems (Thurik et al., 2023). Here are some theories related to social exchange and trust:

The rational choice theory. This theory suggests that trust is based on a rational calculation of the costs and benefits involved in trusting others. According to this perspective, individuals trust others when they believe that the benefits of trust outweigh the potential risks or costs (Trabucchi et al., 2023) The theory of interpersonal trust focuses on the interpersonal aspects of trust, emphasizing the role of personal relationships and social bonds (Huo et al., 2023). It suggests that trust is based on perceptions of the other person's reliability, competence, and integrity. In this theory trust is seen as a key element in building and maintaining healthy interpersonal relationships: Diffusion of innovations theory explores trust in the context of adopting new ideas, products, or technologies. It also suggests that individuals are more likely to trust and adopt innovations when they perceive them to be compatible with their existing beliefs, values, and social norms (Ullah et al., 2021). It posits that, trust plays a crucial role in facilitating the spread and acceptance of innovations within a society: Institutional theory focuses on the role of institutions, such as organizations, governments, and legal systems, in shaping trust. It suggests that trust is influenced by the formal and informal rules, norms, and practices that govern social interactions (Shiroka-Pula et al., 2023). Institutions that are perceived as fair, reliable, and accountable, and they tend to foster trust among individuals. The Cognitive Theory of Trust explores the cognitive individual's processes involved in trust formation. It suggests that trust is influenced by factors such as the perceived competence, benevolence, and integrity of the trustee, as well as the own beliefs, expectations, and past experiences. Trust is seen as a mental state or a cognitive judgment (He et al., 2022).

Social exchange theory: is the theory adopted for this study. The theory builds on rational choice theory, positing that trust develops as a result of ongoing social interactions and exchanges between individuals (Park & Kim, 2023). It sees trust as a result of a reciprocal process in which individuals trust others based on their previous experiences and expectations

of future benefits. This theory is widely employed to study various aspects of social relationships and interactions, such as family dynamics, romantic relationships, friendships, and social networks (Chapman et al., 2022).

The study adopted social exchange theory to explain the processes that influence individual trust in social interaction. It helps analyze how individuals make choices in relationships, negotiate power dynamics, and assess the balance of rewards and costs. It also helps explain factors influencing attraction, satisfaction, commitment, and trust in relationships, as well as decision-making processes in social interactions (Lauren et al., 2021). Social exchange theory is often utilized in marketing research to understand consumer behavior, customer loyalty, and brand relationships (Hashim et al., 2020).

2.2 HYPOTHESES DEVELOPMENT

Information security: Several articles including Kassim and Abdullah, (2010) have the view that information security is a prerequisite for the use of any information technology services or plateform. As a result, it does seem that customer security plays a significant role in fostering internet users' confidence to engage and continue using e-commerce services and platforms. Also, Löbbers and Benlian, (2019) support the logic that information security positively affects individual confidence. Information security influences individuals' trust on the continual usage of these service platforms, therefore, this study hypothesized that:

H1: Information security positively influences e-commerce services/platforms continual usage.

Individual Trust: When we talk about "individual trust" in the context of e-commerce services, we are referring to the confidence and reliance that customers place in these platforms to fulfil their needs, provide satisfactory experiences, and safeguard their personal information. This trust is crucial for the sustained success and growth of e-commerce businesses. According to Valencia et al., (2019), trust has a direct effect on the intentions to use e-commerce and is a reflection of perceived security. This supports the hypothesis developed in this research. Oro and Alagidede, (2019) research findings have shown that information privacy can greatly contribute to the satisfaction and trust of e-commerce consumers, thus security has a significant effect on trust. This study shares the same view that information security positively influences e-commerce processes. It is, therefore, necessary to empirically examine the direction of this linkage. Hence, the hypothesis is:

H2: Information security positively influences trust in e-commerce service platforms.

Continuanl usage: Continual usage refers to the plan to use a technology indefinitely or in the future (Rahmayanti et al., 2022). It is a customer's decision to sign up for and use a specific system no and in the future (Menon, 2022). Continual usage in the study implies that, if an individual has the assurance that the technology they are to use is easy to use, free of any fraudsters and danger, it motivates users to trust the e-commerce processes and platforms, and this will enable them to continue to use these platforms in the future. Trust refers to the confidence an individual has in something or a process to work out successfully. Therefore, once e-commerce users develop or increase their confidence level in the processes of e-commerce services, this will translate into the continual usage of these service platforms. The hypothesis is in line with (Darmiasih & Setiawan, 2020). This study hypothesized that:

H3: Trust positively influences the continual usage of e-commerce service platforms.

H4: Trust positively mediates the relationship between information system security and continual usage of e-commerce platforms and services.

Information and communication technology skills (ICT skills): The study held that ICT skills would continue to be a requirement to be able manage information security and support e-commerce services. Because of the knowledge an individual has about information technology, a person who is familiar with all the security measures and can interpret any information security alerts, potentially fraudulent activities, technological gestures, or posters would be able to understand and be able to prevent themselves from being defrauded (Murdock et al., 2019). This person has a lower risk of being defrauded. On the other hand, someone who has no skills or knowledge about ICT is believed to be prone to fraud since they are unable to detect some cyber attacks, or information system threats, gestures. Statistics indicate they are highly likely to fall victims to fraud (Xu et al., 2022). Therefore, the study hypothesized that:

H5: ICT skills significantly mediate the relationship between information security and the continual usage of e-commerce services.

Again, ICT skills will once more be crucial in moderating the relationship between personal trust and the continued use of e-commerce service platforms (Amofah, 2022). When a person possesses ICT skills, it is simpler for them to increase their level of trust and continue using these service platforms. Understanding ICT will help them build their sense of trust. According to studies, having knowledge of something or a process will facilitate a sense of trust (Rezaei & Bresciani, 2020). ICT skills will play a significant function in the relationship between individual trust and ongoing e-commerce platform usage. Individuals who are skilled

in ICT will be able to spot false alerts or attempts to commit fraud by fraudsters. Thus, individuals' ability to detect or manuver the e-commerce platforms easily and avoid cyberattacks enhances their trust in the platforms and e-commerce service, hence boosting their moral to continue using the platforms. Therefore, we hypothesize that:

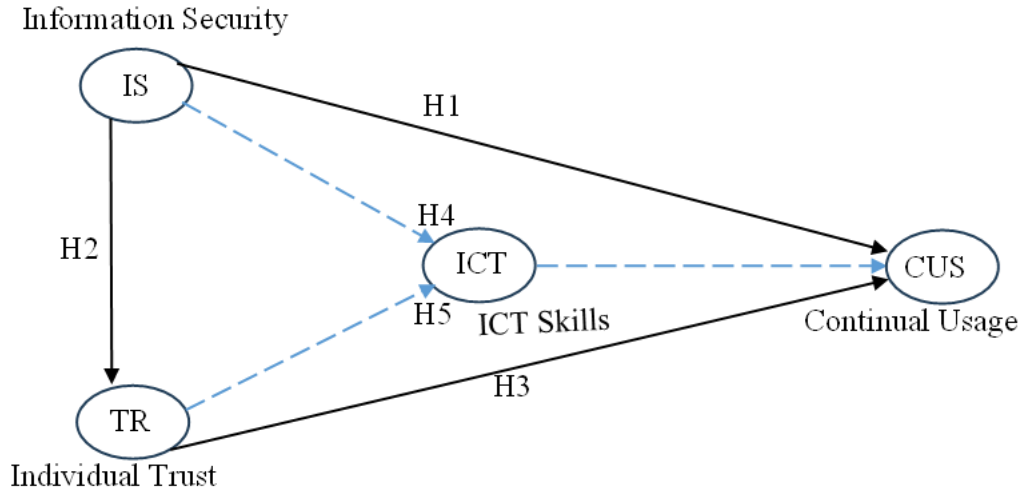
H6: ICT skills significantly mediate the relationship between individual trust and the continual usage of e-commerce services

H7: The relationship between Information system security and continual usage of e-commerce platforms and services is significantly mediated by trust and ICT skills.

Below is the conceptual model displaying the hypotheses from hypothesis 1 to 7.

Figure 1

Conceptual model.



Source: Authors' Construct, 2024.

3 METHODOLOGY

The study investigates the impact of information system security, ICT skills, and trust on the continual adoption and use of e-commerce among Ghanaians. Ghana, a Sub-Saharan African country presents a fascinating context for this research due to its progress in internet and digital technology adoption, despite facing economic, institutional, and infrastructural challenges. Notably, the majority of Ghanaians possess limited ICT skills, making this setting uniquely relevant and intriguing for exploring the causal relationship between these factors and e-commerce usage. A quantitative research design was adopted to enable a rigorous and objective analysis (Naatu et al., 2024). Next, a convenience sampling strategy was adopted, and

this sampling strategy was chosen because it is less time-consuming and inexpensive (Fricker & Schonlau, 2002). Additionally, it was impractical to administer surveys to everyone due to the dispersed distribution of respondents across the nation (Naatu et al., 2024).

To ensure sample appropriateness, this study adhered to PLS-SEM guidelines. The "10-times rule" method, widely accepted for estimating minimum sample size in PLS-SEM (Hair et al., 2011), was employed. This approach dictates that the sample size should exceed 10 times the number of inner / outer model connections (Goodhue et al., 2012). In this study, the constructs of information security, trust, and continual usage each have five indicators, resulting in a minimum required sample size of 50 (i.e., 5 x 10). However, the actual sample size exceeded this threshold, with 117 responses received and 100 deemed valid and complete, providing a robust foundation for analysis as displayed in Table 1. The respondents consisted of people who were 18 years old and above who could read and write. Their education level ranged from senior secondary school to PhDs. They were used because of their ability to comprehend and respond appropriatedly to the questions (Naatu et al., 2024). Eighty-five percent of the respondents were single while 15 percent were married (See details in Table 1).

The methodology of an article outlines the procedures employed to conduct the research, including the type of study, sample selection, data collection and analysis methods, ethical considerations, and limitations of the study. Its detailed and transparent description is essential to guarantee the replicability and reliability of the results, in addition to providing a solid basis for the interpretation and generalization of the findings.

Table 1

Demographic Distribution of Respondents

Demographic	Characteristics	Number	Percentage
Gender	Male	67	67
	Female	33	33
	Total	100	100
Age	18 -25years	58	58
	36-45years	5	5
	46-55years	1	1
	Above 55years	0	0
	Total	100	100
Education	SHS	8	8
	Degree	75	75
	Masters	8	8
	PhD	1	1
	Total	100	100
Marital Status	Single	85	85
	Married	15	15

	Total	100	100
Monthly Income	GHC 0-GHC1000	69	69
	GHC 1001-	19	19
	GHC2000 above	12	12
	Total	100	100
Occupation	Student	62	62
	Entrepreneur	11	11
	public servant	17	17
	private/NGOs	10	10
	Total	100	100
Location	Southern belt	31	31
	Middle belt	7	7
	Northern belt	62	62
	Total	100	100

Source: Authors', 2024.

3.1 MEASUREMENT ITEMS

To examine the continual use of e-commerce services, the study followed four steps in line with Li et al., (2018) to ascertain the constructs reliability and validity. The steps were item generation, pilot testing (pre-preliminary study), preliminary study and then the comprehensive analysis of the hypothesized model. we obtained, the items from prior literature. Items measuring Information Security (IS) construct were adapted from Calder et al., (2009), ICT skills from Rezaei and Bresciani, (2020), while Individual Trust (TR) and Continued use intention (CUS) were adapted from Nambisan and Baron, (2007). The constructs were each measured using a 5-point Likert scale ranging from 1 as strongly disagree to 5 as strongly agree.

The indicator reliability which concerns the degree of variance an underlying factor accounts for was determined using the reflective factor loadings which range from 0 to 1, where loadings that are 0.7 and above are considered good whereas loadings below 0.7 are considered problematic. All items that were below the minimum threshold were dropped. For example, items (0.193), 3 (0.249), and 4 (0.401) of Information security (IS) were dropped leaving items 2 and 5 which demonstrates sufficient indicator reliability. Item 3 of ICT skills was also dropped (Details are in Table 2). The loadings of all other factors were within the recommended threshold.

Table 2

Indicator item Cross-loading/factor loadings

Variable	Continual Usage	Information Security	ICT Skills	Individual Trust
CS1	0.704			
CS2	0.757			
CS3	0.934			
CS4	0.858			
CS5	0.888			
IS1		*Dropped*		
IS2		0.838		
IS3		*Dropped*		
IS4		*Dropped*		
IS5		0.879		
IT1			0.920	
IT2			0.928	
IT3			*Dropped*	
IT4			0.852	
IT5			0.897	
TR1				0.890
TR2				0.890
TR3				0.919
TR4				0.925
TR5				0.879

Note: The threshold of Indicator loadings is ≥ 0.708.
Source: Authors', 2024.

The scores of the Cronbach alphas (α), Rho A, Composite reliability and Average variance extacted (AVE) were also used to assess internal consistency and reliability of the constructs. The Cronbach alphas (α), Rho A, and Composite reliability are recommended to have minimum thresholds of 0.7 indicating indicating internal consistency whereas AVE should have a minimum threshold of 0.50. As shown in Table 3., all are above the minimum recommended thresholds. Cronbach alphas (α) range from 0.700 to 0.942, Rho A from 0.700 to 0.943, and Composite Reliability from 0.849 to 0.956. The AVE ranges between 0.693 to 0.811.

Table 3

Construct Reliability

Variable	Cronbach Alpha (α)	Rho A	Composite Reliability	Average variance extracted (AVE)
Continual usage	0.887	0.908	0.918	0.693
ICT Skills	0.921	0.931	0.944	0.809
Individual trust	0.942	0.943	0.956	0.811
Information security	0.700	0.700	0.849	0.738

Note: The threshold of Cronbach's Alpha, Composite Reliability is ≥ 0.708, and (AVE) is ≥ 0.50.
Source: Authors'own construct, 2024.

Table 4

Discriminant Validity- Heterotrait-Monotrait Ratio (HTMT)

Variable	Continual usage	ICT skills	Individual trust	Information security
Contintual usage	0.832			
ICT skills	0.667	0.803		
Individual trust	0.766	0.563	0.850	
Information security	0.690	0.493	0.637	0.850

Note: None of the constructs should measure up to 90% or 0.90 against other constructs. Also, The √AVE (in bold) should be > than the factor correlations with each other.
Source: Author's own construct, 2024.

The construct validity was assessed using measures of discriminant validity, specifically the Heterotrait-Monotrait Ratio (HTMT). HTMT measures the differentiation between a variable and other variables in a study. Henseler et al., (2015) argue that, unlike other measures such as the Fornell and Larcker, (1981) criterion, HTMT performs well in situations where the item loadings of constructs differ slightly. For valid discriminant validity, HTMT values close to zero indicate good discriminant validity and values above 0.85 shows there is a problem with discriminant validity. As shown in Table 4, results are regarded as sufficient as they suggest that the items distinctively measure their assigned constructs (Henseler et al., 2015). HTMT values presented in Table 4 are below the threshold of 0.85. Also, the square root of the Average Variance Extracted (√AVE) should be greater than the factor correlations with each other (Naatu et al., 2024; Voorhees et al., 2016). The results confirm that there are no discriminant validity issues among the study variables. This is evident in Table 4, where the √AVE values (in bold) are higher than the factor correlation values.

4 RESULTS AND DISCUSSIONS

Table 5

SRMR

Variable	Original Sample (O)	Sample Mean (M)	95%	99%
Saturated Model	0.052	0.051	0.062	0.067
Estimated Model	0.073	0.066	0.074	0.070

Note: SRMR value of above 0.08 indicates the absence of fit.
Source: Authors' construct, 2024.

Table 6

Variance Inflation Factor (VIF)

	Cont. usage	ICT Skills	Ind. Trust
Continued usage			
ICT Skills	1.496		
Individual trust	1.921	1.681	
Information security	1.761	1.681	1.000

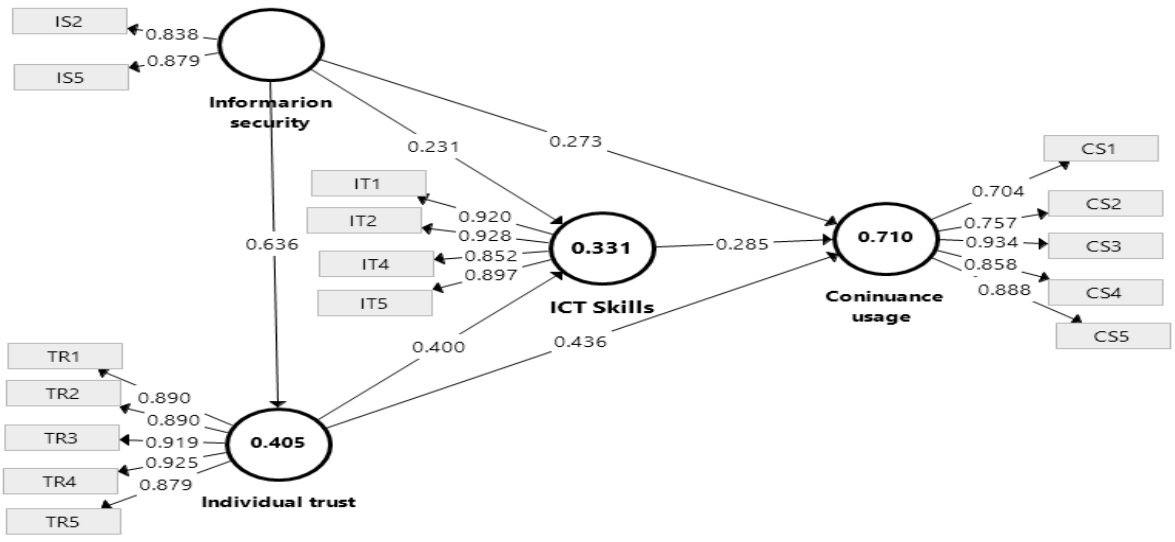
Note: 1 ≤ VIF < 5: are acceptable.
Source: Authors' construct, 2024.

4.1 SEM ESTIMATION OF CONCEPTUAL MODEL

The estimation of Structual Equation Models in PLS-SEM requires determination of the model fitness using SRMR estimations (Hu & Bentler, 1999). Table 5 shows that the predicted SRMR value is 0.075, which is below the 0.08 criterion. The lack of measurement or structural model misspecifications suggests that the model is well-fit. The study also tried to determine whether there are collinearity problems by examining the variance inflation factors (VIFs) (in Table 6). The VIF values ranged from 1.738 to 2.825, indicating the absence of collinearity.

Figure 2

Estimated model.



Source: Authors' Construct, 2024.

Table 7

Direct Regression Results

No.	PATH	Coefficient	Sample Mean	Standard Deviation	T Statistics	P Values	Support
H1	IS -> CUS	0.273	0.262	0.103	2.653	0.008	Confirmed
H2	IS -> TR	0.636	0.638	0.076	8.387	0.000	Confirmed
H3	TR -> CUS	0.436	0.442	0.094	4.640	0.000	Confirmed
	ICT -> CUS	0.285	0.29	0.066	4.301	0.000	Significant
	TR -> ICT	0.400	0.399	0.107	3.749	0.000	Significant
	IS -> ICT	0.231	0.235	0.107	2.154	0.031	Significant

The threshold of, t- values ≥ 1.65, P-values < 0.05 at 95% confidence interval, Std beta > 0., IS = Information Security; CUS = Continual usage; TR = Individual Trust; ICT = Information and communication technology skills.
Source: Authors' construct, 2024.

Table 8

Indirect Effect.

No.	Path	Coefficient	Sample Mean	Standard Deviation	T Statistics	P Values	Support
H4	IS -> TR -> CUS	0.278	0.285	0.080	3.467	0.001	Confirmed
H5	IS -> ICT -> CUS	0.066	0.069	0.037	1.783	0.075	Insignificant
H6	TR -> ICT -> CUS	0.114	0.116	0.042	2.707	0.007	Confirmed
	IS -> TR -> ICT	0.255	0.255	0.077	3.320	0.001	Significant
H7	IS -> TR -> ICT-> CUS	0.073	0.073	0.027	2.687	0.007	Confirmed

Note: The threshold of, t-values ≥ 1.65, P-values < 0.10 at 90% confidence interval, Std beta > 0.
Source: JPB, 2024.

The study tested a total of seven hypotheses. First, we hypothesized that, Information Security has a significant positive impact on the continual usage of e-commerce services and platforms. The second hypothesis propose that Information Security positively influences Trust in e-commerce service platforms, while the third suggests a significantly positive effect of Trust on the continual usage of e-commerce services and platforms. All these hypotheses (H1: $t = 2.653$, $p < 0.01$; H2: $t = 8.387$, $p < 0.001$; H3: $t = 4.640$, $p < 0.001$) were confirmed including the fourth hypothesis which states that Trust mediates the relationship between Information Security and the continual usage of e-commerce platforms and services (H4: $t = 3.467$, $p < 0.001$) at a 95% confidence level, supporting our expectations.

These findings indicate that Information Security is a crucial factor in user decision-making regarding the continual patronage of e-commerce services and platforms. Moreover, Information Security not only directly impact continual usage but also influences consumer Trust, which in turn affects their continual usage decisions. The results are consistent with existing literature, which emphasizes the importance of Information Security in building consumer trust and fostering loyalty in e-commerce contexts (Wang & Zhang 2024). According to Blender and Felderer, (2023), cybercrime is escalating at an alarming rate, and nearly

everyone has experienced some form of cyber attack (Stzelecki & Rizun, 2022). Consequently, users are feeling increasingly insecure and are now seeking clear signs of information security before proceeding with online transactions (Ashraf et al., 2019). Users need convincing cues to trust or believe that the environment in which they are engaging in the e-commerce has appropriate safeguards or protection (Vance et al., 2008) and this trust has to be continually confirmed to ensure continual use of the platform (Ashraf et al., 2019).

Hypothesis H6 was also confirmed at a 95% confidence level (i.e., $t = 2.707$, $p < 0.01$), indicating that ICT skills significantly mediates the relationship between Trust and continual usage. However, the effect of ICT skills (i.e., H5) as a mediator of the relationship between Information Security and the continual usage of e-commerce platforms and services was found to be marginal ($t = 1.783$, $p < 0.075$). In contrast, H7 confirms that Trust and ICT skills together significantly mediate the relationship between Information Security and continual usage. The findings suggest that although consumers are seeking information systems security, they are skeptical of readily accepting any technology claiming to offer security. They require trustworthy and convincing cues before embracing such technologies. The cues include ease of use, user friendly interface, and systems quality (Vance et al., 2008). Accordingly, the tech industry has created numerous security systems to mitigate risks or make attacks significantly more challenging. However, many people find these security measures difficult to use (Sasse, 2005). Their inability to easily navigate and use the technology irritates them and impacts on their trust in the technology (Johnson et al., 2008). This finding aligns with previous research that highlight the role of user competence in enhancing the effectiveness of security measures and trust in digital environments (Venkatesh et al., 2012; Vance et al., 2008).

5 CONCLUSION

In conclusion, the study successfully tested and confirmed seven hypotheses, demonstrating the critical role of Information Security in fostering continual usage of e-commerce services and platforms. The findings underline that Information Security not only directly influences the ongoing use of e-commerce platforms but also plays a fundamental role in building and sustaining consumer Trust, which further enhances continual usage. This is consistent with prior literature, which highlights the importance of security in nurturing trust and loyalty in e-commerce contexts. Additionally, the study shows that ICT skills significantly mediate the relationship between Trust and continual usage, reinforcing the idea that while

users seek secure systems, they also require ease of use and user-friendly interfaces to maintain their trust and engagement with these platforms. However, the marginal impact of ICT skills as a mediator between Information Security and continual usage suggests that while technical competence is important, it may not be the sole factor in enhancing user trust and platform loyalty. Overall, the study underscores the necessity for e-commerce platforms to prioritize robust Information Security, provide trustworthy cues including user-friendly interfaces easy to use security measures to ensure sustained consumer trust and continual usage.

The theoretical implication of the study extends across multiple domains, particularly in the fields of information systems, e-commerce, and consumer behaviour. By confirming that Information Security significantly impacts both Trust and continual usage of e-commerce platforms, the study reinforces existing theories that emphasize the foundational role of security in digital environments. The study contributes to the broader understanding of how security measures are not just protective mechanisms but are integral to the user's decision-making process. This finding aligns with and expands upon the Social Exchange theory and Technology Acceptance Model (TAM) where Social Exchange theory sees trust as a result of a reciprocal process in which individuals trust others or institutions based on their previous experiences and expectations of future benefits (Park & Kim, 2023), and the TAM suggests that perceived ease of use and usefulness are key factors influencing technology adoption. Here, Information Security emerges as a critical component of perceived usefulness, directly affecting user trust and continued engagement with e-commerce platforms.

Moreover, the study's exploration of ICT skills as a mediating factor between Trust and continual usage introduces a nuanced layer to our understanding of the role of user competence in digital trust formation. While prior research has acknowledged the importance of user competence (e.g. Vance et al., 2008; Blender & Felderer, 2023), this study highlights that ICT skills can significantly bolster the relationship between Trust and the ongoing use of e-commerce services. This suggests that models of technology acceptance and usage must increasingly consider user competence as a variable that can enhance or diminish the effectiveness of security measures in fostering trust.

The marginal effect of ICT skills as a mediator between Information Security and continual usage also invites further theoretical exploration. This finding could lead to a refinement of existing models, to provide more nuanced understanding of how user skills interact with security perceptions to influence trust and usage behaviors.

The study has practical implications for e-commerce businesses, policymakers, and individuals. In line with Parmer, (2024) and Maqableh et al., (2021) we recommend that e-commerce businesses must prioritize Information Security to protect user data and ensure trust, investing in robust measures to safeguard against cyber threats. Moreover, Informationa Security Systems should be user-friendly to avoid frustrating users and eroding trust (Sasse, 2005; Chang & Chen, 2009). Providing clear and convincing cues of Information Security, such as trust badges and secure payment gateways, can also enhance user trust. Additionally, e-commerce businesses can offer training or support to enhance users' ICT skills, which play a crucial role in mediating the relationship between Trust and continual usage (Johnson et al., 2008). Regular security audits can help identify vulnerabilities and ensure the effectiveness of Information Security measures. Policymakers can develop guidelines and regulations to ensure e-commerce businesses prioritize Information Security and protect user data. Educating consumers about the importance of Information Security and how to identify trustworthy cues can also help them make informed decisions when using e-commerce platforms. Ultimately, e-commerce businesses must continuously monitor user behavior and adjust their Information Security measures accordingly to ensure optimal trust and continual usage, maintaining a competitive edge in the market.

This study has some limitations. First, the survey was carried out in Ghana, future studies should be conducted in different countries to provide a comprehensive picture of the security attained and its impact on usage attitudes. Secondly, to ascertain whether information security derived from e-commerce use varies between countries, future studies may perform comparative studies of two or more nations. Additionally, future research may use qualitative techniques to delve deeper into individuals' perceptions of the security regarding e-commerce.

REFERENCES

Alkhunaizan, A. S., & Ali, A. (2022). An analysis of increased usage of e-commerce during COVID-19. *Indonesian Journal of Electrical Engineering and Computer Science*, *25*(2), 1123–1130.

Altinay, L., & Taheri, B. (2019). Emerging themes and theories in the sharing economy: a critical note for hospitality and tourism. *International Journal of Contemporary Hospitality Management*, *31*(1), 180–193.

Alzoubi, H. M., Alshurideh, M. T., Kurdi, B. Al, Alhyasat, K. M. K., & Ghazal, T. M. (2022). The effect of e-payment and online shopping on sales growth: Evidence from banking industry. *International Journal of Data and Network Science*, *6*(4), 1369–1380.

Amofah, D. O. (2022). *Sustaining Consumer E-Commerce Adoption in Sub-Saharan Africa : Do Trust and Payment Method Matter ?* 1–20.

Ashraf, M., Ahmad, J., Sharif, W., Raza, A. A., Salman Shabbir, M., Abbas, M., & Thurasamy, R. (2020). The role of continuous trust in usage of online product recommendations. *Online Information Review*, *44*(4), 745–766.

Azizah, S. N. (2021). Cyber-Crime and Fraud Victimization of Online Halal Meat Shops: A Negative Image Propagation. *International Journal of Cyber Criminology*, *15*(1), 158–173.

Bazyl, L., Radkevych, O., Radkevych, V., & Orlov, V. (2020). Interdisciplinary approach to the economic-legal socialization of specialists in modern labor market. *Utopia y Praxis Latinoamericana*, *25*(6), 208–218.

Barnard, L., & Wesson, J. (2004, October). A trust model for e-commerce in South Africa. In *ACM International Conference Proceeding Series*, *75*, 23–32.

Bendler, D., & Felderer, M. (2023). Competency models for information security and cybersecurity professionals: analysis of existing work and a new model. *ACM Transactions on Computing Education*, *23*(2), 1–33.

Calder, B. J., Malthouse, E. C., & Schaedel, U. (2009). An Experimental Study of the Relationship between Online Engagement and Advertising Effectiveness. *Journal of Interactive Marketing*, *23*(4), 321–331.

Chang, H. H., & Chen, S. W. (2009). Consumer perception of interface quality, security, and loyalty in electronic commerce. *Information & management*, *46*(7), 411–417.

Chapman, A., Verdery, A. M., & Moody, J. (2022). Analytic Advances in Social Networks and Health in the Twenty-First Century. *Journal of Health and Social Behavior*, *63*(2), 191–209.

Darmiasih, M., & Setiawan, P. Y. (2020). Continual usage intention and its antecedents on using OVO e-wallet application in Denpasar. *International Research Journal of Management, IT and Social Sciences*, *8*(1), 35–46.

Florea, N. V., Ionescu, C. A., Duică, M. C., Căpușneanu, S., Paschia, L., Stanescu, S. G., & Coman, M. D. (2022). Trends and Perspectives of Romanian E-Commerce Sector Based on Mathematical Simulation. *Electronics (Switzerland)*, *11*(15), 1–21.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. In *Source: Journal of Marketing Research*, *18*(1), 39–50.

Fricker, R. D., & Schonlau, M. (2002). Advantages and disadvantages of Internet research surveys: Evidence from the literature. *Field methods*, *14*(4), 347–367.

Fuhse, J. A., & Gondal, N. (2022). Networks from culture: Mechanisms of tie-formation follow institutionalized rules in social fields. *Social Networks*, *77*, 43–54.

Gangwar, S., & Narang, V. (2022). A survey on emerging cyber crimes and their impact worldwide. In Research Anthology on Combating Cyber-Aggression and Online Negativity. *IGI Global*, 1583–1595.

Goodhue, D. L., Lewis, W., & Thompson, R. (2012). Does PLS have advantages for small sample size or non-normal data?. *MIS quarterly*, 981–1001.

Han, L., Ma, Y., Addo, P. C., Liao, M., & Fang, J. (2023). The role of platform quality on consumer purchase intention in the context of cross-border e-commerce: The evidence from Africa. *Behavioral Sciences*, *13*(5), 1–17.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). Special Issue on the Use of Partial Least Squares (PLS) to Address Marketing Management Topics. *Source: Journal of Marketing Theory and Practice*, *19*(2), 139–151.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24.

Hajibabaee, F., Salisu, W. J., Akhlaghi, E., Farahani, M. A., Dehi, M. M. N., & Haghani, S. (2022). The relationship between moral sensitivity and caring behavior among nurses in iran during COVID-19 pandemic. *BMC Nursing*, *21*(1), 1–8.

Hashim, S., Mohd Yasin, N., & Ya'kob, S. A. (2020). What constitutes student–university brand relationship? Malaysian students' perspective. *Journal of Marketing for Higher Education*, *30*(2), 180–202.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135.

He, Q., Li, Y., Wu, Z., & Su, J. (2022). Explicating the Cognitive Process of a Physician's Trust in Patients: A Moderated Mediation Model. *International Journal of Environmental Research and Public Health*, *19*(21), 1–13.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), 1–55.

Huo, T., Yuan, F., Huo, M., Shao, Y., Li, S., & Li, Z. (2023). Residents' participation in rural tourism and interpersonal trust in tourists: The mediating role of residents' perceptions of tourism impacts. *Journal of Hospitality and Tourism Management*, *54*, 457–471.

Interpol African Cyberthreat Assessment Report (2024) Outlook By the African Cybercrime Operations Desk - 3rd edition. https://www.interpol.int/content/download/21048/file/24COM005030-AJFOC_Africa%20Cyberthreat%20Assessment%20Report_2024_complet_EN%20v4.pdf

Johnson, D. S., Bardhi, F., & Dunn, D. T. (2008). Understanding how technology paradoxes affect customer satisfaction with self-service technology: The role of performance ambiguity and trust in technology. *Psychology & Marketing*, *25*(5), 416–443.

Kassim, E. S., Jailani, S. F. A. K., Hairuddin, H., & Zamzuri, N. H. (2012). Information system acceptance and user satisfaction: The mediating role of trust. *Procedia-Social and Behavioral Sciences*, *57*, 412–418.

Kim, C., Tao, W., Shin, N., & Kim, K. S. (2010). An empirical study of customers' perceptions of security and trust in e-payment systems. *Electronic commerce research and applications*, *9*(1), 84–95.

Kinal, J. (2022). Peculiarities of e-commerce development: a case of Poland. *Entrepreneurship and Sustainability Issues*, *9*(3), 50–63.

Krishna, B., Krishnan, S., & Sebastian, M. P. (2023). Understanding the process of building institutional trust among digital payment users through national cybersecurity commitment trustworthiness cues: a critical realist perspective. *Information Technology & People*.

Lauren R. Locklear, Shannon G. Taylor, and, & Maureen L. Ambrose. (2021). Supplemental Material for How a Gratitude Intervention Influences Workplace Mistreatment: A Multiple Mediation Model. *Journal of Applied Psychology*.

Li, Y., Xu, Z., & Xu, F. (2018). Perceived control and purchase intention in online shopping: The mediating role of self-efficacy. *Social Behavior and Personality: an international journal*, *46*(1), 99–105.

Liu, Z., Delaloye, M., Glassey Balet, N., Hersant, S., Gris, F., & Sciboz, L. (2022). Trust in the News: A Digital Labelling Solution for Journalistic Contents. *Online Journal of Communication and Media Technologies*, *12*(2), 1–13.

Löbbers, J., & Benlian, A. (2019). The effectiveness of IS certification in E-commerce: does personality matter?. *Journal of Decision Systems*, *28*(3), 233–259.

Ly, H. T. N., Khuong, N. V., & Son, T. H. (2022). Determinants Affect Mobile Wallet Continuous Usage in Covid 19 Pandemic: Evidence From Vietnam. *Cogent Business and Management*, *9*(1), 1–20.

Maqableh, M., Hmoud, H. Y., & Jaradat, M. (2021). Integrating an information systems success model with perceived privacy, perceived security, and trust: the moderating role of Facebook addiction. *Heliyon*, *7*(9), 1–15.

Masuda, H., Han, S. H., & Lee, J. (2022). Impacts of influencer attributes on purchase intentions in social media influencer marketing: Mediating roles of characterizations. *Technological Forecasting and Social Change*, *174*, 1–31.

Menon, D. (2022). Purchase and continuation intentions of over -the -top (OTT) video streaming platform subscriptions: a uses and gratification theory perspective. *Telematics and Informatics Reports*, *5*, 1–15.

Miao, M., Jalees, T., Zaman, S. I., Khan, S., Hanif, N., & Javed, M. K. (2021). The influence of e-customer satisfaction, e-trust and perceived value on consumer ' s repurchase intention. *B2C e-commerce segment*. 1355–5855.

Murdock, A., Weedman, B., & Prater, A. (2019). Students ask for more active shooter training, the university responds Body Love inspires more than acceptance.*The Observer*, *112*(7), 1–22.

Mweshi, G. K., & Sakyi, K. (2020). Application of sampling methods for the research design. *Archives of Business Research*, *8*(11), 180–193.

Naatu, F., Selormey, F. S., & Naatu, S. (2024). Determinants of digital technology adoption in sub-Sahara Africa: Ghana. *International Journal of Emerging Markets,* 1–23.

Nambisan, S., & Baron, R. A. (2007). Interactions in virtual customer environments: Implications for product support and customer relationship management. *Journal of Interactive Marketing*, *21*(2), 42–62.

Oro, O. U., & Alagidede, I. P. (2019). The non-linear relationship between financial development, economic growth and growth volatility: Evidence from Nigeria. *African Review of Economics and Finance*, *11*(2), 67–97.

Palmié, M., Miehé, L., Oghazi, P., Parida, V., & Wincent, J. (2022). The evolution of the digital service ecosystem and digital business model innovation in retail: The emergence of meta-ecosystems and the value of physical interactions. *Technological Forecasting and Social Change*, *177*, 1–2.

Park, J. Y., & Kim, C. (2023). The role of organizational justice and social interaction in mitigating the negative effects of high-performance member retailers on strategic integration. *Journal of Retailing and Consumer Services*, *72*, 1–9.

Peng, D. X., & Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of operations management*, *30*(6), 467–480.

Pieters, W. (2011). Explanation and trust: what to tell the user in security and AI?. *Ethics and information technology*, *13*, 53–64.

Pinem, A. A., Immanuella, I. M., Hidayanto, A. N., & Phusavat, K. (2018). Trust and its impact towards continuance of use in government-to-business online service. *Transforming Government: People, Process and Policy*, *12*(3/4), 265–285.

Pomeroy, J. (2020). The booming digital economy. *HSBC Global Research,* 1–41.

Rahmayanti, P. L. D., Dharmanegara, I. B. A., Yasa, N. N. K., Sukaatmadja, I. P. G., Pramudana, K. A. S., Rahanata, G. B., Giantari, I. G. A. K., & Martaleni. (2022). What drives millennials and zillennials continuously using instant messaging? Perspective from indonesia. *International Journal of Data and Network Science*, *6*(1), 17–26.

Rajaonah, B. (2017). A view of trust and information system security under the perspective of critical infrastructure protection. *Revue des Sciences et Technologies de l'Information-Série ISI: Ingénierie des Systèmes d'Information*, *22*(1), 109.

Rezaei, M., & Bresciani, S. (2020). *What drives the process of knowledge management in a cross-cultural setting*. *32*(3), 485–511.

Sasse, M. A. (2005). *Usability and trust in information systems*. Edward Elgar.

Saputra, R. A., Amrullah, R., Triono, A., & Refsi, B. (2022). Management of Improvement of Cyber Crime at the Time of the COVID-19 Pandemic Happening Restorative Justice. *Scholars International Journal of Law, Crime and Justice*, *5*(7), 286–293.

Shakeri, S., Veen, L., & Grosso, P. (2022). Multi-domain network infrastructure based on P4 programmable devices for Digital Data Marketplaces. *Cluster Computing*, *25*(4), 2953–2966.

Shin, D. (2021). *International Journal of Human - Computer Studies The effects of explainability and causability on perception, trust, and acceptance : Implications for explainable AI*. *146*, 1–10.

Shiroka-Pula, J., Bartlett, W., & Krasniqi, B. A. (2023). Can the Government Make Us Happier? Institutional Quality and Subjective Well-Being Across Europe: A Multilevel Analysis Using Eurobarometer Survey 2019. *Applied Research in Quality of Life*, *18*(2), 677–696.

Soleimani, M. (2022). Buyers' trust and mistrust in e-commerce platforms: a synthesizing literature review. *Information Systems and E-Business Management*, *20*(1), 57–78.

Strzelecki, A., & Rizun, M. (2022). Consumers' change in trust and security after a personal data breach in online shopping. *Sustainability*, *14*(10), 1–17.

Thomas, A., & Gupta, V. (2021). Social Capital Theory, Social Exchange Theory, Social Cognitive Theory, Financial Literacy, and the Role of Knowledge Sharing as a Moderator in Enhancing Financial Well-Being: From Bibliometric Analysis to a Conceptual Framework Model. *Frontiers in Psychology*, *12*, 1–16.

Thurik, A. R., Audretsch, D. B., Block, J. H., Burke, A., Carree, M. A., Dejardin, M., Rietveld, C. A., Sanders, M., Stephan, U., & Wiklund, J. (2023). The impact of entrepreneurship research on other academic fields. *Small Business Economics*, *62*, 727–751.

Tofan, M., & Bostan, I. (2022). Some Implications of the Development of E-Commerce on EU Tax Regulations. *In Laws*, *11*(13), 1–22.

Trabucchi, D., Patrucco, A. S., Buganza, T., & Marzi, G. (2023). Is transparency the new green? How business model transparency influences digital service adoption. *Technovation*, *126* (1), 1–14.

Ullah, N., Al-Rahmi, W. M., Alzahrani, A. I., Alfarraj, O., & Alblehai, F. M. (2021). Blockchain technology adoption in smart learning environments. *Sustainability*, *13*(4), 1–18.

Valencia-Martinez, C. A., Gaona-García, P. A., & Montenegro-Marin, C. E. (2023). Design of a trust system for e-commerce platforms based on quality dimensions for linked open datasets. *Journal of Information Systems Engineering and Management*, *8*(1), 1–8.

Vance, A., Elie-Dit-Cosaque, C., & Straub, D. W. (2008). Examining trust in information technology artifacts: the effects of system quality and culture. *Journal of management information systems*, *24*(4), 73-100.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157–178.

Voorhees, C. M., Brady, M. K., Calantone, R., & Ramirez, E. (2016). Discriminant validity testing in marketing: an analysis, causes for concern, and proposed remedies. *Journal of the Academy of Marketing Science*, *44*(1), 119–134.

Wang, F., Gai, Y., & Zhang, H. (2024). Blockchain user digital identity big data and information security process protection based on network trust. *Journal of King Saud University-Computer and Information Sciences*, *36*(4), 1–17.

Wang, C., Zhou, R., & Lee, M. K. (2021). Can loyalty be pursued and achieved? An extended RFD model to understand and predict user loyalty to mobile apps. *Journal of the Association for Information Science and Technology*, *72*(7), 824–838.

Wu, C., Huang, S., & Yuan, Q. (2022). Seven important theories in information system empirical research: A systematic review and future directions. *Data and Information Management* *6*(1), 1–17.

Xu, L., Wang, J., & Xu, D. (2022). Integrating Individual Factors to Construct Recognition Models of Consumer Fraud Victimization. *Int. J. Environ*, *19*(461), 1–12.

APPENDIX 1

Table 9

Factor Measurement Items and Source

Variables	Measurement Items	Source
Information Security	1. I have ever been a victim of e-commerce service fraud. 2. E-commerce service platforms manage my personal information well 3. Third parties can easily access my basic credentials on the e-commerce platforms I use. 4. I receive messages from unauthorised sources because of my usage of e-commerce platforms? 5. E-commerce service platforms give me updates on security issues when necessary?	Adapted from Calder et al., (2009)
Individual Trust	1. I feel confident when using e-commerce service platforms 2. Ecommerce service platforms are consistent in service delivery that is why I rely on them a lot? 3. Ecommerce service providers have a positive relationship with customers that is why use their platforms 4. Ecommerce service providers are experts in their services and so it is easy to trust them 5. My privacy is assured when using e-commerce service platforms	Adapted from Nambisan and Baron, (2007)
ICT Skills	1. I have knowledge in the use of ICTs for e-commerce 2. I can use computers for online activities 3. I don't own a smartphone, laptop, or computer, but I still use e-commerce service platforms] 4. I am skilful in web navigation] 5. I can use computers to conduct transactions electronically	Adapted from Nambisan and Baron, (2007)
Continual Usage	1. I use e-commerce services regularly 2. I will continue using e-commerce services than I use any alternative means (e.g., physical shops)] 3. I will continue using e-commerce services rather than discontinue their use 4. It is worth using e-commerce service platforms when they are available 5. Ecommerce service platforms are fast, convenient and easy to use that is why I use them	Rezaei and Bresciani, 2020

Source: Authors' construct, 2024.