
Leveraging E-commerce Potential: Trust, Transparency, and Technological Innovations in Tanzania

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Abstract

This study examines the opportunities and challenges of e-commerce in Tanzania, drawing on a comprehensive mixed-methods approach that includes surveys, interviews, and focus groups involving key stakeholders in the national e-commerce ecosystem. The findings emphasize the critical role of transparent business practices and trust-building in fostering consumer confidence amidst rapid technological transformation. Results indicate that deliberate efforts to enhance transparency, strengthen consumer trust, and invest in technological infrastructure are essential for Tanzania to fully harness its e-commerce potential. Such efforts could promote sustainable economic growth, expand entrepreneurial activity, and increase access to goods and services across the country. The research further underscores the influence of local sociocultural contexts on consumer behavior and purchasing motivations, challenging traditional models of global e-commerce theory. It concludes that trust, cultivated through transparency, can mitigate perceived risks in online transactions, fostering greater customer engagement and satisfaction. Technological innovations—particularly mobile payment systems—are identified as key enablers of secure, efficient, and increasingly accepted e-commerce practices, shaping a foundation for continued digital economic development in Tanzania.

Keywords: E-commerce, trust, transparency, technological innovations.

1. Introduction

The existing potential of e-commerce is obstructed by various significant problems, particularly regarding trust, transparency, and technical advancements. Trust is a significant obstacle because customers frequently exhibit reluctance stemming from apprehensions over security and privacy, which are intensified by recurrent data breaches and cyberattacks. Implementing security measures, such as blockchain and enhanced encryption, has been suggested as a means of reestablishing confidence and protecting customer data (Rejeb et al., 2020). Transparency influences customer involvement because several firms obscure or alter market information in order to manipulate transactions. The implementation of blockchain technology for transparent supply chains and financial transactions has been proposed to address this issue. Moreover,

technical breakthroughs, such as augmented reality (AR) and virtual reality (VR), have enhanced user experience but remain underused, especially in underdeveloped nations where inadequate infrastructure hinders adoption. Overcoming these challenges requires a comprehensive strategy that incorporates trust-enhancing technology, transparent business methodologies, and innovative methods to enhance e-commerce platforms.

E-commerce, or electronic commerce, denotes the transaction of goods and services via the Internet, encompassing various activities and sectors, including online retail platforms such as Amazon and eBay, digital marketplaces such as Etsy and Alibaba, online banking, ticket reservations, and other forms of digital transactions (Sikder and Rolfe, 2023). Tanzanian E-commerce is a developing industry with great potential, fuelled by rising internet penetration and mobile phone usage. Recent estimates indicate that approximately 50% of Tanzanians, predominantly through mobile devices, have internet connections. The rising prevalence of affordable smartphones has facilitated enhanced internet connectivity by rendering digital involvement more accessible to a significant segment of the population (Ndimbo et al., 2024). Mobile money systems, such as M-Pesa, Tigo Pesa, and Airtel Money, have fundamentally revolutionized financial transactions (Webb, 2024). These services have rendered online payments secure and convenient, fostering an environment conducive to e-commerce growth. The retail industry in Tanzania is undergoing transformation due to technological advancements, offering new opportunities for consumers and businesses.

Although nascent, Tanzanian E-commerce is rapidly emerging as an essential component of a country's digital economy (Lemma et al., 2022). The younger demographic, with a median age of around 18 years, is particularly inclined to embrace digital technologies and engage in online purchases, presenting a significant business opportunity. Urbanization trends enhance this potential because urban residents often possess superior Internet access and familiarity with digital payment methods (Jebaraj et al., 2023). Despite its promising future, the business faces several challenges, including inadequate digital literacy, limited physical infrastructure, and a regulatory framework that requires reform. Realizing Tanzania's e-commerce potential, which offers prospects for economic growth, job creation, and enhanced market accessibility for businesses and consumers, necessitates the elimination of these barriers (Ofori-Sasu et al., 2024).

Scalability is a fundamental attribute of e-commerce enterprises that enables them to expand swiftly and effectively in response to rising demand (Ajiga et al., 2024). In contrast to conventional brick-and-mortar establishments, which require substantial expenditure on physical infrastructure, e-commerce enterprises can broaden their operations with minimal supplementary overhead expenses (Li et al., 2023). With appropriate infrastructure and technology, including solid e-commerce platforms, cloud-based services, and scalable web hosting solutions, businesses can efficiently manage an increasing volume of orders without necessitating significant physical growth (Ngcobo et al., 2024). Automation is essential for the scalability of e-commerce processes. Utilizing automated solutions for order processing, inventory management, and customer service enables firms to optimize their operations and manage a substantial number of orders with

minimal manual involvement. This enhances efficiency while also diminishing the probability of mistakes and delays associated with manual operations. With the ability to test new products, marketing strategies, and sales channels in a digital environment, e-commerce businesses can iterate and optimize their operations more rapidly than traditional businesses can.

E-commerce fosters economic growth by allowing small and medium-sized organizations (SMEs) to reach a broader market and compete with larger corporations (Fan et al., 2023). This may result in employment creation, enhanced productivity, and comprehensive regional economic growth. E-commerce may connect urban and rural communities by offering access to goods and services in remote locations, where conventional retail infrastructure is insufficient. E-commerce platforms enable entrepreneurs and craftspeople to present their items to a global audience without requiring a physical retail space. This can generate opportunities for women and young entrepreneurs, thereby promoting inclusiveness and diversity within the economy. E-commerce platforms may enhance transaction transparency by offering comprehensive product information, prices, and reviews, and empowering customers to make educated purchase decisions (Tang and Li, 2023). This transparency may cultivate confidence between buyers and sellers, thus promoting enduring connections between them. E-commerce is significantly dependent on technical advancements, including mobile payment systems, logistical optimization, and cybersecurity protocols. By adopting these technologies, Tanzania could improve its digital infrastructure and competitiveness in the global market. Hence, we aimed to answer the following questions:

RQ1: How does trust enhance purchasing incentives in e-Commerce?

RQ2: What are the roles of transparency and technological innovation in e-commerce purchasing incentives?

The study makes several critical contributions to the understanding of e-commerce dynamics in Tanzania, particularly by elucidating the intricate relationships between trust, transparency, and technological innovations. By conducting extensive quantitative research within the Tanzanian e-commerce ecosystem, this study highlights the transformative impact of cultural factors on consumer behavior and purchasing incentives. This study challenges existing frameworks by demonstrating the necessity of incorporating local sociocultural variables into theoretical models of consumer behavior, thereby enhancing the global discourse on e-commerce practices. Importantly, the findings reveal that fostering trust through transparent practices is essential for mitigating the perceived risks associated with online transactions, which in turn enhances customer engagement and satisfaction.

This study articulates the vital role of technological advancements such as mobile payment systems in promoting secure and convenient online exchanges, ultimately contributing to the wider acceptance and growth of e-commerce in the region. By identifying practical implications for businesses and policymakers, this study encourages the adoption of localized strategies that resonate with consumer preferences, thereby facilitating market penetration and sustainability. This study provides a robust foundation for future research, inviting further exploration of

cultural influences on e-commerce adoption and the adaptation of technological solutions to enhance operational efficacy. This study enriches the existing literature and offers actionable insights that can guide stakeholders in navigating the complexities of Tanzania's evolving e-commerce landscape.

The paper's organizational structure starts with an introductory section. The second section reviews the literature on the variables, their theoretical background, and their relationship with trust, along with the hypotheses proposed in this study. Section 3 addresses the approach to adopting methodological techniques. Section 4 presents the findings and analyses of this case study. In Section 5, we comprehensively examine the data and propose recommendations for the practical, managerial, and theoretical implications of the study. In the concluding section, we delineate the results, limitations, and avenues for further research.

2. Literature Review

2.1 Theory of Planned Behavior (TPB)

The theory of planned behaviour (TPB) provides a complex framework for comprehensively understanding the use of e-commerce in student enrolment. A recent study indicates that the theory of planned behaviour offers further insights into the adoption process and behavioral variables within the e-commerce sector. Recognizing overlapping dimensions, such as trust, attitudes, and perceived utility within theories, researchers may develop a cohesive model that encapsulates the dynamics of e-commerce, particularly regarding trust, transparency, and technical innovation. This comprehensive paradigm enables the analysis of mediating and moderating effects and elucidates the processes and boundary conditions that influence e-commerce connections. Prior findings may demonstrate the use of analogous ideas in several situations and elucidate their significance in the Tanzanian E-commerce sector.

2.2 Conceptual Framework

Based on the theoretical background described, we developed the model shown in Figure 1, which extends the theory of planned behavior (TPB) by including three additional factors: Trust, Transparency, Technological Innovation, and Purchase Incentives.

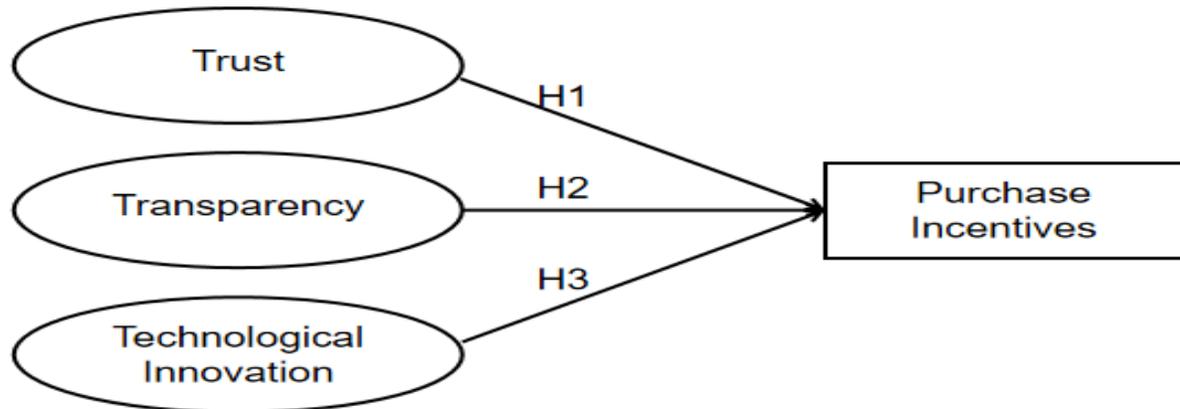


Figure 1: Conceptual Framework

2.3 Trust in E-Commerce

Trust is a critical component of e-commerce that influences consumers' willingness to engage in online transactions. In a virtual marketplace, where physical interaction is absent, building trust is essential to overcome consumer uncertainty and perceived risks. Recent studies emphasize that trust in e-commerce is rooted in several factors, including platform reliability, security measures, and transaction transparency. For example, trust in online vendors is often associated with the perceived quality of the website and trustworthiness of the intermediary handling the transaction (Lee et al., 2018). The implementation of technologies such as blockchain has been identified as a promising method for enhancing transparency and security, which are key to building trust in e-commerce environments (Gashema & Alain, 2023). Moreover, the perceived risks associated with privacy and data security can erode consumer trust if they are not adequately addressed by e-commerce platforms. As online commerce continues to grow, fostering consumer trust through secure, transparent, and reliable systems will remain pivotal to success.

2.4 Transparency in E-commerce

Transparency directly influences consumers' impressions of honesty and dependability, and is essential for establishing credibility and trust in e-commerce transactions. Transparency research generally focuses on several main areas: product information, pricing, and business processes. Transparent pricing reduces the sense of being misled and boosts customer trust (Hanna et al., 2019). It does this by clearly and upfront disclosing the costs, fees, and potential savings. Consumers can make more educated selections and lower the likelihood of return and dissatisfaction when they have access to thorough and accurate product information. Transparent corporate procedures add to a sense of security and reliability. Examples include explicit return policies and readily available customer-service contact information. Together, these components increase customer pleasure and loyalty, highlighting the vital role of openness in e-Commerce.

2.5 Technological Innovations in E-commerce

Bennet (2024) asserted that technology is a catalyst for innovation and expansion in e-commerce. It is important to analyze studies on technology advancements in E-commerce, encompassing mobile payment systems, logistical optimization, and AI-driven customization. The e-commerce landscape has undergone a profound transformation through technological innovations that have fundamentally reshaped how businesses operate and consumers interact with online platforms (Dastenov, 2023). Artificial Intelligence (AI) and Machine Learning (ML) stand at the forefront of this evolution, enabling sophisticated personalization, automated customer service, and predictive analytics that enhance shopping experiences. The integration of Augmented Reality (AR) and Virtual Reality (VR) technologies has bridged the gap between physical and digital retail environments, allowing customers to experience products virtually before purchase, thereby reducing uncertainty and return rates (Enyejo et al., 2024). As the e-commerce market continues to expand, with projections suggesting that 95% of purchases will occur online by 2040, these innovations are becoming increasingly critical for businesses seeking to remain competitive in the digital marketplace.

2.6 Overall Trends in E-commerce in Tanzania

Smartphones and the mobile Internet have popularized e-commerce, as customers enjoy shopping on their devices (Lucas et al., 2023). This advancement enabled Tanzanian companies to access a broader audience, particularly in rural regions with significant mobile phone usage. Social media platforms have evolved into formidable e-commerce venues with integrated shopping capabilities. Social commerce facilitates direct interaction between firms and customers by enhancing engagement, trust, and transparency.

Sustainable e-commerce refers to environmentally conscious customers pursuing sustainable products and eco-friendly practices (Sunita, 2023). Sustainability may enhance corporate brands and customer confidence while addressing environmental challenges in Tanzania, such as waste management and resource conservation. The e-commerce sector in Tanzania is undergoing rapid transformation, driven by technological advancements and consumer behavior (Hendricks and Mwapwele, 2024). Digital payments are revolutionizing e-commerce due to fintech systems and the interconnection between banks and mobile wallets, which facilitate secure and rapid transactions. Consumers are increasingly engaging in online buying, bolstered by their confidence in digital payment systems, which facilitates the expansion of e-commerce. Logistics and delivery services have been enhanced as organizations adopt supply chain solutions to guarantee product delivery. This transition is essential in competitive e-commerce for enhancing customer satisfaction and loyalty. Tanzanian e-commerce trends indicate a dynamic interplay among technology, consumer preferences, and logistical improvements, setting the stage for future expansion and innovation (Bawack, 2024).

Despite the increasing prevalence of digital technology, Internet access and digital literacy continue to be unequal, particularly in the rural and underprivileged areas of Tanzania

(Shekaoneka and Arthur, 2024). Eliminating the digital gap to provide equitable access to e-commerce platforms and optimize their socio-economic benefits is of paramount importance. Establishing customer confidence is challenging because of fraud and data breaches. Hence, robust payment security is crucial for establishing confidence in e-commerce (Ahmad et al., 2023). Tanzania's e-commerce sector faces challenges in logistics and last-mile delivery, particularly in remote regions with inadequate infrastructure. To overcome logistical constraints, it is vital to allocate resources to transportation, warehousing, and innovative delivery solutions. Previous research has indicated deficiencies in infrastructure, legal frameworks, and technological readiness. In rural regions, inadequate telecommunications infrastructure restricts Internet access, thereby constraining the e-commerce potential of SMEs (Eduardsen et al., 2023).

The technophobia of SMEs and their unawareness of the advantages of e-commerce platforms exacerbate barriers to e-commerce adoption (Mukora et al., 2022). The substantial expense of technology implementation and deficiency of qualified workers hinder several firms from accessing the digital marketplace. Cybersecurity constitutes another obstacle, as apprehensions over fraud deters businesses and consumers from engaging in online transactions (Alawida et al., 2022). E-commerce holds significant potential for Tanzania's economy; however, these issues must be resolved to optimize its advantages and facilitate the success of local enterprises in the digital marketplace. Nonetheless, E-commerce in Tanzania has significant potential for economic expansion, particularly in terms of market accessibility and consumer convenience. This framework illustrates the integration of contemporary technology into conventional business practices to enhance transaction security and consumer trust. Digitization enhances Tanzania's banking industry and promotes online shopping among firms and individuals (Mapunda, 2022). Research indicates that SMEs possess significant market potential when facing technological and managerial obstacles in e-commerce implementation. The expansion of e-commerce is facilitated by the market's magnitude, particularly in urban centers, such as Dar es Salaam, provided that SMEs can overcome challenges. The creation of a strong legal framework instils trust in customers and companies, improving government backing and the regulation of electronic money systems, which may subsequently promote e-commerce. Tanzania can enhance e-commerce engagement and attain economic objectives such as poverty alleviation and consumer satisfaction by tackling Internet connections and digital literacy challenges. These variables may transform Tanzania's economy through new e-Commerce technologies.

2.7 Hypothesis development

2.7.1 Trust and Purchase Incentives in E-commerce

Trust plays a pivotal role in shaping purchase incentives within the e-commerce landscape (Jalil et al., 2024). Trust in an online platform directly influences a consumer's willingness to engage in transactions by reducing the perceived risks associated with online shopping, such as data breaches and fraudulent activities. When consumers trust an e-commerce site, they are more likely to believe that their personal information will be protected and thus incentivized to complete their

purchase. Trust extends beyond individual transactions, shapes the overall perception of the retailer, encourages repeat purchases, and fosters customer loyalty (Denga and Ahmed 2023).

Trust is also a critical factor in the effectiveness of electronic word-of-mouth (e-WOM) (Le et al., 2024). Positive reviews and ratings can enhance the perceived trustworthiness of an online store, thereby augmenting the purchase incentives for prospective buyers (Moreno et al., 2021). Consumers are more likely to rely on feedback from other customers rather than the platform's assurances, aligning trust with the perceived product quality. Moreover, trust compels e-commerce businesses to maintain transparency and consistency in their interactions and services (Tang and Li, 2023). For instance, clear communication regarding return policies, payment security, and consistent fulfilment of promises, such as delivery timelines, significantly builds consumer confidence (Al-Adwan et al., 2022). These factors not only incentivize purchasing decisions but also differentiate a retailer in a competitive market, as trust-based loyalty can outweigh factors such as price.

H1: Trust will positively affect purchase incentives

2.7.2 Transparency and Purchase Incentives in E-Commerce

According to behavioral economics theory, transparency helps reduce information imbalance, which frequently breeds mistrust when one party has more or better information than the other (Bello et al., 2024). Open communication between firms creates a level-playing field and increases mutual trust. According to consumer psychology theories, consistency and dependability foster trust because customers are more at ease when they know what to expect (Maroufkhani et al., 2022). In addition to encouraging first-time purchases, this feeling of honesty and dependability also drives repeat businesses. These theoretical ideas demonstrate that transparency in e-commerce is a strategic approach to building consumer trust and promoting long-term economic success, in addition to being ethical.

H2: Transparency will positively affect purchase incentives

2.7.3 Technological Innovations and Purchase Incentives in E-commerce

Technological innovations have significantly transformed purchase incentives in e-commerce, fundamentally altering how businesses engage with consumers (Pavlova et al., 2021). One primary way in which technology influences purchase incentives is through personalization of the shopping experience (Sun et al., 2022). Technologies such as artificial intelligence (AI) and machine learning (ML) allow e-commerce platforms to analyze consumer behavior and preferences, enabling retailers to offer tailored product recommendations and targeted promotions (Alkudah and Almomani, 2024). Personalization increases the likelihood of consumer engagement and purchases by making the shopping experience more relevant and engaging. Moreover, innovations such as augmented reality (AR) and virtual reality (VR) enhance purchase incentives by offering interactive and immersive shopping experiences. AR allows consumers to visualize products in their real environment before purchasing, thereby reducing uncertainty and

likelihood of returns. For instance, furniture retailers, such as IKEA, use AR to allow customers to see how items would fit in their homes. This type of innovation boosts consumer confidence and satisfaction, incentivizing purchases.

Moreover, the rise of mobile technology has facilitated on-the-go shopping, increasing convenience and accessibility (Chan¹ et al., 2023). Consumers can shop anywhere and anytime, which not only encourages frequent purchases but also allows businesses to capitalize on impulse buying through timely notifications and alerts. The seamless integration of mobile technology into e-commerce platforms is a potent incentive mechanism that encourages immediate consumer action. Finally, the implementation of dynamic pricing enabled by technological innovations can adjust prices in real time based on demand, stock levels, and competitor pricing (Nunan and Di Domenico, 2022). This strategy encourages consumers to purchase by providing competitive pricing and creating a sense of urgency. Through these technological advancements, e-commerce platforms are better positioned to influence consumer buying behavior and enhance their purchase incentives.

H3: Technological Innovations will positively affect purchase incentives

3. Research Methodology

This section discusses population sampling, data collection, and measurement instruments. It is vital that for a participant to properly interpret and respond to the survey, they would need to have some prior knowledge of e-commerce; therefore, this research requires participants to have at least heard of e-commerce before they started. In addition, e-commerce requires participants to have a clear understanding of what it is.

3.1 Sample and Measurement Instrument

The researcher used convenience, judgment, and personal experience to select the survey respondents. Non-probability sampling is characterized by uncertainty regarding the likelihood of participant inclusion. A total of 20 Tanzanian graduate students in China participated in the initial pilot survey, which was used to evaluate the comprehensive questionnaire design. Hence, 30 full-time students and 30 private-sector employees were a cohort of Tanzanian students studying in China. Subsequently, to augment inquiries regarding governmental policies on information technology, we administered a second pilot survey to 50 Tanzanian government officials.

3.2 Data Collection Methods

The study participants were employees of the Tanzanian government, private institutions, and students engaged in higher education. We utilized a web connection to conduct an online survey to collect data. The surveyor contacted the participants via telephone calls, emails, and Google links. Participants who verified their involvement received questionnaires and information regarding the study objectives through email and Google links. Consequently, all participants were regular internet users. The absence of non-Internet users in the sample may be a limitation

of our study. Nevertheless, we believe that the conclusions of our study are relevant. To adequately respond to the questionnaire, individuals must be familiar with the Internet and e-commerce. Approximately 94% of the participants were familiar with e-commerce before the poll, and 91% had engaged in at least one e-commerce purchase. Of the 225 questionnaires distributed, only 200 completed all questions, as shown in Table 1.

3.3 Questionnaire Development

This section was designed to gather demographic data from participants, including age, gender, and educational attainment. Additionally, data on e-commerce usage and proficiency were collected. Participants were queried regarding their familiarity with e-commerce and asked specific questions about the e-commerce transactions in which they had participated. Participants were instructed to select only one response per question from the options provided for each multiple-choice item in the questionnaire.

3.3.1 Constructs development

This section employed a 7-point Likert scale. Participants were presented with statements about the four constructs of trust, transparency, technical advancements, and purchasing incentives, and were requested to evaluate their level of satisfaction or dissatisfaction. The survey design is presented in Table 1.

Table 1. Questionnaire of constructs

Variables	Narrations
Trust	<input type="checkbox"/> Personally, I believe it wouldn't be hard for me to trust someone (or something) in e-commerce. <input type="checkbox"/> I believe I have confidence in Internet transactions involving buying, selling, & payment. <input type="checkbox"/> I would feel comfortable sharing my personal information for online purchases.
Transparency	<input type="checkbox"/> I can easily find information about product specifications and features. <input type="checkbox"/> I am aware of all additional costs (shipping, taxes) before completing my purchase. <input type="checkbox"/> The e-commerce platform offers clear and detailed information about payment methods.
Technological innovations	<input type="checkbox"/> The e-commerce platform uses Artificial Intelligence to suggest relevant products based on my browsing history. <input type="checkbox"/> I prefer using mobile apps for online shopping <input type="checkbox"/> Delivery services provide a reliable option for receiving my purchases. <input type="checkbox"/> Internet of Things-enabled devices make it easier to track my orders in real-time.
Purchase incentives	<input type="checkbox"/> I am more likely to purchase items when they are part of a promotional sale. <input type="checkbox"/> The e-commerce platform's first-time purchase offers encouraged me to try it out. <input type="checkbox"/> I am more likely to buy products if free shipping is available. <input type="checkbox"/> The availability of cashback influences my decision to buy products.

3.4 Data Analysis and Results

3.4.1 Reliability and Construct Validity

Validity and reliability analyses were performed to validate the measurement methodology. Table 2 demonstrates that for every variable, Cronbach's alpha exceeded the minimum reliability coefficient of 10 (approximately 0.96), as recommended by Peterson (1994). We employ Cornbrash's alpha to assess a group of scale items' one-dimensionality. It is a gauge of how favorably each variable correlates with every other variable on a scale. Essentially, it is a modification of the mean correlation coefficient between each variable and all others.

The formula for alpha is as follows: $\alpha_{\text{standardized}} = \frac{K \cdot \bar{r}}{1 + (K-1) \cdot \bar{r}}$

K = number of variables; \bar{r} = average correlation among all pairs of variables.

Table 2. Factor loadings and Cronbach’s alpha of Variables

Variables	Indicator	Factor Loading	Cronbach’s Alpha
Trust	TS1	0.797	0.757
	TS2	0.833	
	TS3	0.075	
Transparency	TR1	0.935	0.961
	TR2	0.956	
	TR3	0.952	
	TR4	0.944	
Technological innovations	TI1	0.787	0.698
	TI2	0.957	
	TI3	0.209	
	TI4	0.989	
Purchase incentives	PI1	0.978	0.937
	PI2	0.863	
	PI3	0.943	
	PI4	0.881	

In general, the closer the alpha coefficient value is to 1, the higher the reliability of the questionnaire. If the value of the Alpha coefficient is greater than 0.9, the reliability of the questionnaire is excellent; if the value of Alpha coefficient is between 0.8-0.9, the reliability of the questionnaire is better; if the value of the alpha coefficient is between 0.7-0.8, the reliability of the questionnaire is acceptable; and when the value of Alpha coefficient is lower than 0.7, the questionnaire is not well designed, and the questionnaire needs to be corrected and measured again. Measurement. The results show that the internal consistency of the items is good and the instrument has a certain degree of reliability in assessing purchase incentives.

3.4.2 Measurement Model Assessment

Figure 2 illustrates the connections between trust and other components quantified with correlation coefficients, suggesting strong relationships. Trust exhibits a high correlation with Purchase Incentives (0.85) and transparency (0.80), indicating that organizations that cultivate trust are likely to enhance both consumer incentives and transparency. The correlation with Technological Innovations (0.83) further emphasizes that trust facilitates the adoption of new technologies, as stakeholders are more willing to embrace innovations when they feel secure in their organizational environment.

Following this, the diagram reinforces these relationships by illustrating a similar structure but with a different emphasis on transparency. Transparency is directly linked to trust, suggesting that transparent practices are essential for building trust within organizations. The presence of Purchase Incentives and Technological Innovations as peripheral elements indicates that both are

influenced by the central theme of trust, thereby highlighting the interconnectedness of these components. Overall, the diagrams collectively underscore the importance of trust and transparency in driving technological adoption and enhancing organizational performance.

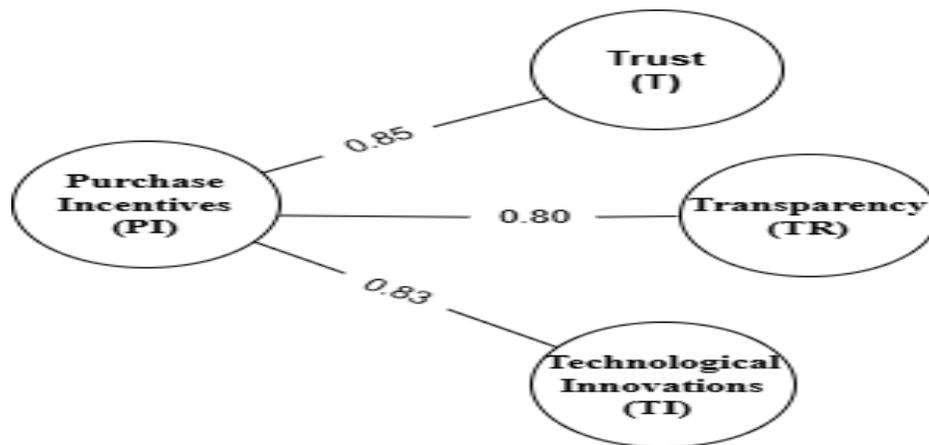


Figure 2: Measurement Model

3.4.3 Internal Consistency and Convergent Validity

Table 3 presents the reliability metrics for four constructs: PI (Performance Indicator), TI (Trust Indicator), TR (Trustworthiness), and TS (Trust Score). Cronbach's alpha values indicate the internal consistency of each construct, with PI and TR demonstrating high reliabilities of 0.937 and 0.961, respectively. These values suggest that both constructs were highly reliable and suitable for further analysis. In contrast, TI showed a lower Cronbach's alpha of 0.698, indicating moderate reliability, while TS had a value of 0.757, which may warrant further investigation.

Composite reliability (ρ_a and ρ_c) further supports these findings. PI and TR again showed strong composite reliability scores (0.943 and 0.964, respectively), reinforcing their robustness. However, TI's ρ_a of 0.929 and ρ_c of 0.815 indicate that while it is acceptable, it does not reach the same level of reliability as PI and TR. Notably, TS presents a negative ρ_a value of -0.105, which is alarming and suggests that the items may not correlate positively, indicating potential issues with the construct's validity. The Average Variance Extracted (AVE) values provide additional insights into the constructs' convergent validity. The PI and TR have AVE values of 0.842 and 0.896, respectively, which are above the acceptable threshold of 0.5, indicating good convergent validity (Daud et al., 2022). Conversely, TI and TS fall short, with AVE values of 0.639 and 0.445, respectively, suggesting that these constructs may require refinement to enhance their measurement quality.

Table 3. Reliability analysis and convergent validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
PI	0.937	0.943	0.955	0.842
TI	0.698	0.929	0.815	0.639
TR	0.961	0.964	0.972	0.896
TS	0.757	-0.105	0.636	0.445

3.4.4 Discriminant Validity

By Heterotrait-monotrait ratio (HTMT)

The heterotrait–monotrait ratio (HTMT) is the latest criterion for evaluating and measuring discriminant validity. The Heterotrait-Monotrait Ratio (HTMT) values for various pairs of constructs, which are essential for assessing discriminant validity in structural equation modelling. HTMT values indicate the degree of correlation between different constructs, with values closer to 1 suggesting a higher correlation (Henseler et al., 2015).

The pairs TI <-> PI (1.001) and TR <-> TI (1.004) exhibited HTMT values just above 1, indicating a strong correlation. This suggests that these constructs may not be sufficiently distinct from one another, potentially raising concerns regarding discriminant validity. The TR <-> PI (0.954) value was slightly below 1, indicating a moderate correlation. While this suggests some overlap, it may still be acceptable, depending on the context of the study. The pairs TS <-> PI (0.327), TS <-> TI (0.723), and TS <-> TR (0.505) showed significantly lower HTMT values. These values suggest that the TS construct is relatively distinct from the others and is a positive indicator of discriminant validity.

By Fornell and Larcker’s criteria

The present values are from a Fornell-Larcker criterion analysis, which is used to assess discriminant validity among constructs in a structural equation modelling context (Henseler et al., 2015). Discriminant validity is established when the square root of the Average Variance Extracted (AVE) for each construct is greater than the correlations between that construct and other constructs.

The diagonal values represent the square roots of AVE for each construct (PI, TI, TR, and TS). The off-diagonal values indicate correlations between the constructs. For instance, the square root of the AVE for PI is 0.917, which is greater than its correlations with TI (0.954), TR (0.917), and TS (0.401). This suggests that PI has strong discriminant validity relative to TS, but the correlation between TI and TR may indicate some overlap. Similarly, TI has a square root of AVE of 0.954, which is greater than its correlation with TR (0.967), but not with PI (0.954). This indicates that while TI is distinct, it shares a significant relationship with TR. The construct TS shows a lower square root of AVE at 0.401, which is less than its correlation with TR (0.616)

and TS (0.667). This suggests that TS may not demonstrate adequate discriminant validity compared to the other constructs. Overall, the analysis indicates that while some constructs exhibit strong discriminant validity, others, particularly TS, may require further investigation to ensure distinctiveness from the related constructs.

Cross-loading for Correlation

The table 4 threshold value (for interpretation purposes) typically used to determine significant factor loadings was 0.5. This means that loadings above 0.5 (either positive or negative) indicate a substantial contribution of that variable to the factor. The cross-loading table provides insight into the relationships between various items and their respective constructs. Each item is expected to load highly on its designated construct, while showing lower loadings on others.

Items such as PI1, TI2, and TR2 exhibited strong loadings (above 0.9) on their respective constructs (PI, TI, and TR). This indicates that these items were well aligned with their intended constructs, suggesting good construct validity. Notably, some items, such as PI2 and TI4, showed significant cross-loadings on multiple constructs (e.g., PI2 had a loading of 0.863 on PI and 0.932 on TI). Items with cross-loadings above 0.3 warrant further investigation to determine if they should be retained or modified.

Table 4. Loadings Cross loadings

	PI	TI	TR	TS
PI1	0.978	0.939	0.933	0.440
PI2	0.863	0.932	0.936	0.441
PI3	0.943	0.858	0.782	0.287
PI4	0.881	0.746	0.680	0.279
TI1	0.636	0.787	0.858	0.536
TI2	0.989	0.957	0.923	0.444
TI3	-0.263	-0.209	0.035	0.493
TI4	0.923	0.989	0.960	0.458
TR1	0.882	0.891	0.935	0.711
TR2	0.822	0.928	0.956	0.559
TR3	0.931	0.963	0.952	0.419
TR4	0.830	0.877	0.944	0.655
TS1	0.207	0.373	0.528	0.797
TS2	0.270	0.244	0.462	0.833
TS3	-0.187	-0.128	0.015	0.075

3.5 Structural model

This study generated a structural model based on bootstrapping of 5,000 subsets. The structural model was analyzed by examining the standardized paths to obtain the results. Each path

corresponded to the hypothesis tested in this study. The diagram illustrates a conceptual framework that emphasizes the interrelationships among the key components influencing organizational dynamics. At the center of the framework is "Trust" (TS), which serves as a foundational element for fostering positive interactions and relationships within an organization. Trust is depicted as a pivotal node, connecting to two significant factors: "Transparency" (TR) and "Technological Innovations" (TI).

Transparency is crucial for building trust as it involves open communication and sharing of information, which can enhance stakeholder confidence and engagement. The relationship between trust and transparency suggests that organizations that prioritize transparency are likely to cultivate a more trusting environment, thereby facilitating collaboration and reducing uncertainty among stakeholders. On the other hand, trust also influences technological innovation. When trust is established, organizations are more inclined to adopt and implement new technologies as stakeholders feel secure in the changes being made. This relationship underscores the importance of trust in mitigating resistance to change and fostering innovative culture. Additionally, the diagram includes "Purchase Incentives" (PI) as a peripheral element, indicating that trust and transparency may also impact consumer behavior and decision-making processes. Overall, the framework highlights the interconnectedness of these elements, suggesting that enhancing trust and transparency can lead to greater technological adoption and improved organizational performance.

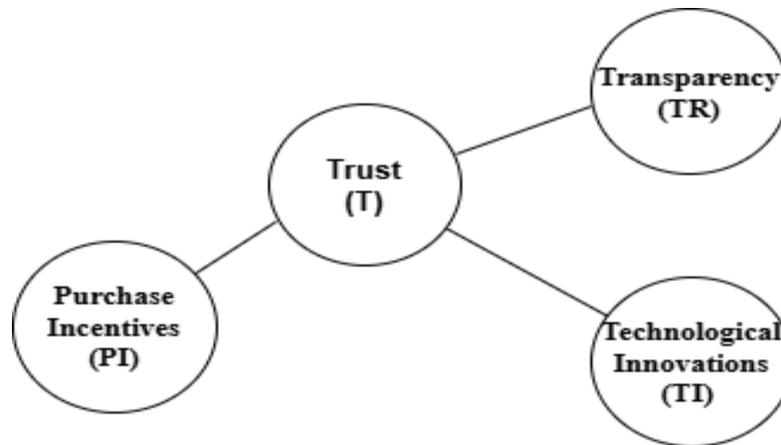


Figure 3: Structural Model

3.6 Common Biased Method

A VIF value equal to 1 corresponds to a totally unrelated variable, and a VIF with an infinite value corresponds to fully correlated variables. Low VIF values indicate little or no collinearity (Folli et al., 2020). Following (Podsakoff and Organ, 1986), Harman's 1-factor test was conducted with the multiple constructs in the current research model, including Trust, Purchase Incentives, and Technological Innovations, which concludes that this study has no significant

concern regarding common method bias (Saeed and Shafique, 2020). The following tables detail the VIF values.

The VIF values are associated with various indicators, specifically focusing on the potential for common method bias in the research. Common method bias refers to the systematic error that can occur when data are collected from a single source, potentially leading to inflated relationships among the variables. VIF is a statistical measure used to detect multicollinearity in regression analysis, with higher values indicating greater levels of multicollinearity and, consequently, a higher risk of common method bias.

The five indicators are listed in the table: TI1, TI3, TS1, TS2, and TS3, each accompanied by their respective VIF values. Notably, TI3 exhibited the highest VIF of 9.845, suggesting a significant level of multicollinearity, which may warrant further investigation to mitigate potential bias in the findings. Conversely, TS1 had the lowest VIF at 4.157, indicating a relatively low risk of common method bias. The VIF values for TS2 and TS3 are also substantial at 8.901 and 6.055, respectively, highlighting the need for careful consideration when interpreting the results derived from these indicators.

The data underscores the importance of assessing common method bias in research methodologies, as elevated VIF values can compromise the validity of conclusions drawn from the analysis. Researchers should consider employing strategies to address these biases, such as using multiple data sources or statistical techniques to control for multicollinearity.

3.7 Predictability of the model

The predictive performance of a statistical model specifically focusing on the R-squared and adjusted R-squared values for the variable labeled "PI." An R-squared value of 0.911 indicates that approximately 91.1% of the variance in the dependent variable can be explained by the independent variable(s) included in the model. This high value suggests a strong fit, implying that the model effectively captures the underlying relationships between variables. By contrast, the adjusted R-squared value of 0.821 accounts for the number of predictors in the model, providing a more conservative estimate of the model's explanatory power. The adjusted R-squared value is lower than the R-squared value, which is expected, as it penalizes the inclusion of unnecessary predictors. A value of 0.821 still indicates a substantial proportion of variance explained, reinforcing the model's validity while suggesting that some predictors may not contribute significantly to the explanatory power (Sokolova and Kefi, 2020).

3.8 Hypothesis Results

The results of hypothesis testing for two paths, TS to TI and TI to TS, detailing the path coefficients, t-statistics, and p-values associated with each relationship. The path coefficient for the relationship between TS and TI was 0.657, indicating a moderate positive effect. However, the corresponding t-statistic of 0.163 suggests that this effect is not statistically significant, as it

is considerably lower than the conventional threshold of 1.96 at a significance level of 0.05. The p-value of 0.877 further corroborates this finding as it exceeds the threshold of 0.05, indicating a lack of evidence to reject the null hypothesis for this path. Conversely, the path coefficient from TI to TS was 0.841, which also reflects a strong positive relationship. Both paths exhibit positive coefficients, suggesting a potential relationship.

4. Discussion And Implications

The findings from this research yield important implications for the relationship between trust, transparency, and technology to inform e-commerce in Tanzania. Specifically, the data show trust is a key determinant of consumer decisions regarding purchasing goods from an online marketplace. Namely, consumers with perceptions of ease of trust on an e-commerce platform were more likely to complete an online purchase and minimize their perceived risks of fraud or data compromise. The data showed that when firms provide transparent conduct through their business practices - like clearly delineating the rationale for policies, using secure payments, and honestly presenting products - consumer confidence increased. Moreover, the data find that trust is reinforced through technology innovations like mobile payments and blockchain technology, which enable secure transactions and enhance the user experience by providing streamlined and efficient shopping interfaces. Interview data rightfully identified some sociocultural catalysts that can influence purchasing behavior in Tanzania, which suggests the socially pragmatic approach can improve business engagement and consumer satisfaction.

Findings re-emphasize the imperative for businesses and policy-makers to embrace a holistic view that encompasses trust-building actions (including making cybersecurity improvements and improving transparency) along with policies that promote investment and innovation. More importantly, the collective body of research towards this goal could yield not only a north-south academic contribution, but could concurrently foster e-commerce in Tanzania and ultimately encourage sustainable economic development. The evidence illustrated here is pertinent - if we can influence the barriers that SMEs face in using technology (and management), we can realize the immediate wide-ranging and dynamic e-commerce ecosystem to benefit consumers and businesses alike, by supporting trust and transparency. This research shows that e-commerce stakeholders must not only engage local-level market dynamics in making strategies that can resonate with consumers, but they must take a more socially pragmatic approach over the same. On the whole, the research and its findings will continue to help characterize the evolving trends of e-commerce in Tanzania by palpating some key socio-emotional rapid changes happening now and into the future. It would be worth suggesting - particularly with the internet of things - conducting a local, cross-cultural or longitudinal comparison study to measure more in-depth how the trends continue to show changes to characteristics of e-commerce, which may be unknown at this point in time. It is critical that we collectively contribute towards theoretical understanding of e-commerce in emerging markets like Tanzania, in challenging preconceived notions of theory, or how we develop organizational knowledge from consumer behaviors in digital marketplaces. Therefore, this research has offered more than theoretical and conceptual knowledge over commercial and public policy development, but more action-oriented knowledge to help

stakeholders engage. If we can act on improving e-commerce practices, attitudes, beliefs and behaviors we can encourage an inclusive means of financial sustainability in the retail or digital marketplace for stakeholders in Tanzania

4.1 Theoretical Implications

The findings presented in this research have important theoretical implications for the e-commerce discipline and consumer behavior. The findings improve our current theoretical understanding by clarifying how culture influences online purchasing decisions in Tanzania. The results show that the interactions between local customs and modern e-commerce behaviors challenge presumptions developed on customers from the West. The findings suggest current consumer behavior model's need to be updated to consider and include a multitude of sociocultural contexts, which would better inform our understanding of e-commerce on a global scale. Furthermore, this study allows for new theoretical frameworks that are better suited to dealing with the challenges of emerging markets. The volume of data makes us challenge prevailing assumptions and consider how insights from local contexts can better inform our global understanding of e-commerce.

4.2 Practical Implications

The findings have vast practical implications for businesses within Tanzania's e-commerce sector. Businesses can take the data from the study and adapt their marketing to more effectively reach local customers. By including a local cultural perspective to branding or promotions, they can increase customer engagement and increase sales. The findings suggest the necessity for e-commerce platforms to adopt local payment methods or customer support strategies including consumer preferences, as they can improve their user experience, and create loyalty. Policymakers can use the findings of this study to create a better environment for e-commerce to flourish by addressing regulatory and infrastructure barriers. This practical guidance requires us to understand local landscapes in developing effective e-commerce strategies in emerging markets.

5. Conclusion, Limitations and Future Research

5.1 Conclusion

Ultimately, this study provides robust evidence of the connections between cultural factors and e-commerce behaviors in Tanzania, therefore adding to the wider debate on global consumer behavior. The findings indicate that businesses working in the various sociocultural contexts must operate by understanding local strategies while still contributing to theoretical development in e-commerce. Practically, businesses must embrace local customs and preferences to drive engagement and satisfaction with consumers. Furthermore, the study provides a basis for further research with expectations that scholars can explore the same themes in emerging markets as well as refine theoretical perspectives related to the aspects of the complexities of global consumer behavior. The relationship between theory and practice, that our research has demonstrated, may

provide greater insight into more effective strategies and policy in the changing environment of e-commerce.

5.2 Limitations

This study is limited by a number of factors, which may limit the generalizability and applicability of the findings. First, the sample may not be large enough to be acceptable to properly represent a larger population and limit the extent to which the findings are generalizable. Secondly, any biases related to data collection (for example, participant selection or self-reports) may have inflated or deflated the accuracy of the results. In addition, the study may have limitations related to the chosen methodology. For example, with a cross-sectional design, it may not be possible to draw causal inferences about the relationships between the variables. Limitations due to the time frame of the research period may limit our understanding of long-term trends or changes.

5.3 Future Research Directions

Another possible explanation of how perceptions of trust and transparency emerged, relates to the cultural aspects of society that shape consumer behavior as well as consumer decision-making in Tanzania. Future research may take a more direct look into the cultural expectations, values, and beliefs that guide and shape consumer trust-building mechanisms, as well as transparency expectations in e-commerce-related transactions. The comparative cultural aspect of trust and transparency in e-commerce, in relation to cultural contexts in Tanzania, may also allow for insights into what cultural dimensions impact the e-commerce context, and develop culture specific strategies and solutions for building trust and transparency. The use and uptake of e-commerce will rely on region-based disparities in market maturity and digital readiness across the Tanzanian regions. Future research can address the region-based disparities in e-commerce development within the context of market maturity influencing consumer behavior, business behavior, and technological advances. Longitudinal studies can help track changes in e-commerce trends in Tanzania over time that may help identify trajectories of development and innovation of the Tanzanian E-commerce market.

Alternate explanations of trust-building frameworks and strategies in Tanzania e-commerce could include relying on social networks, offline channels, or the role of intermediaries to build trust or mitigate risk. Future research can help explore the effectiveness of certain trust-building strategies, trust signals, and strategies for risk mitigation, such as: third-party certification, customer reviews, offline payment, etc. Experimental studies or randomized control trials can also be used to test the efficacy of trust building strategies and signals on trust perception and e-commerce adoption in Tanzanian consumers.

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