

ARTIFICIAL INTELLIGENCE AND ONLINE SHOPPING BEHAVIOUR IN EMERGING MARKETS: EVIDENCE FROM DIGITAL TRUST, ATTITUDE, AND CONSUMER AWARENESS IN SOUTH-EAST NIGERIA

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ABSTRACT

Global advances in artificial intelligence (AI) are transforming how consumers search, evaluate, and purchase products online, yet the psychological mechanisms underlying AI-enabled shopping in emerging markets remain underexplored. This study investigates how digital trust and attitudes towards AI influence online shopping behaviour and how consumer awareness mediates these relationships among online shoppers in South-East Nigeria. Drawing on the Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), and the Unified Theory of Acceptance and Use of Technology (UTAUT), the study employs a quantitative, explanatory research design. Data were collected through a structured questionnaire administered to online shoppers across five major cities in South-East Nigeria. Of 384 questionnaires distributed, 303 valid responses were analysed using partial least squares structural equation modelling (PLS-SEM) with bootstrapping. The results demonstrate that digital trust and consumer attitudes towards AI exert significant positive influences on online purchase intention. Consumer awareness also directly forecasts purchase intention and partly mediates the relationships between digital trust, attitudes towards AI, and purchase intention. This research advances AI-enabled studies of consumer behaviour by showing that consumer awareness is a vital cognitive process through which trust and attitudes influence online shopping behaviour in an emerging market setting.

Keywords: Artificial intelligence; Digital trust; Consumer attitude towards AI; Consumer awareness; Online shopping behaviour; Emerging markets

1. INTRODUCTION

Global society is undergoing a major technological change, often referred to as the Digital Age or the Industry 4.0 era (Schwab, 2017). This period is marked by the integration of intelligent technologies that increasingly blur the boundaries between physical, biological, anthropological, and digital worlds (Filipović et al., 2024). At the centre of this transformation is artificial intelligence (AI), recognised as a key driver of innovation in both industry and consumer markets. Global forecasts indicate that AI adoption will rise by over 40% each year from 2023 to 2030, with organisations expecting better performance and stronger customer relationships, while consumers show growing trust in companies that use AI responsibly (Grand View Research, 2023; Haan & Watts, 2023). AI, described as the ability of computational systems to mimic human cognitive functions, has thus become a central focus in modern marketing and consumer behaviour research.

Across markets, AI tools such as recommendation engines, chatbots, virtual assistants, and predictive analytics are increasingly integrated into online shopping environments (Ameen et al., 2021; Mariani et al., 2022; Pentina et al., 2023). These applications personalise consumer experiences, simplify decision-making, and enhance overall engagement. In emerging economies like Nigeria, e-commerce platforms are increasingly adopting AI-driven features, such as highly personalised recommendations and automated customer support, to encourage online shopping and boost customer satisfaction (Yin & Qiu, 2021; Lopes et al., 2024). However, adoption remains inconsistent due to limited digital literacy, infrastructural challenges, trust issues, and diverse consumer attitudes towards automated systems (Menaka & Selvam, 2025).

A key behavioural issue involves understanding how trust, attitudes towards AI, and consumer awareness interact to influence online shopping behaviour (Hasan et al., 2021; Chakraborty et al., 2024). Digital trust, the confidence consumers have in the security, reliability, and integrity of AI-enabled platforms, plays a vital role in reducing perceived risks and encouraging engagement (Hasan et al., 2021). In areas where fraud, data privacy concerns, and platform reliability issues are common, trust becomes a crucial predictor of online shopping behaviour (Chakraborty et al., 2024). Similarly, consumer attitudes towards AI, whether optimistic, sceptical, or indifferent, affect how individuals perceive the usefulness, relevance, and credibility of AI-generated recommendations and responses (Lopes et al., 2024).

Equally important is consumer awareness, which influences how consumers understand, recognise, and interpret AI features embedded in online shopping platforms (Menaka & Selvam, 2025). Increased awareness improves comprehension, decreases uncertainty, and fosters trust (Hasan et al., 2021). Conversely, limited awareness can heighten fears of data misuse, algorithmic bias, or a lack of transparency, ultimately affecting both attitude and behaviour. Recent evidence indicates that AI-driven recommendations, targeted advertising, and automated customer service tools significantly impact purchase intentions when consumers are sufficiently aware and trust the technology (Ameen et al., 2021; Yin & Qiu, 2021; Sara, 2025). However, when awareness is low, even advanced AI systems may fail to generate meaningful behavioural influence. This highlights the importance of considering consumer

awareness not only as a direct predictor but also as a mediating mechanism through which trust and attitude shape online shopping behaviour (Sara, 2025).

Despite the rapid growth of e-commerce in Nigeria, research on how trust, attitudes towards AI, and consumer awareness influence online shopping decisions remains limited. Findings from more developed markets may not fully reflect the realities of South-East Nigeria, where social norms, digital infrastructure, and consumer literacy differ significantly. Therefore, understanding these behavioural mechanisms within this specific context is essential.

This study investigates trust and attitude towards artificial intelligence as predictors of online shopping behaviour in an emerging market context, highlighting consumer awareness as a mediating variable. The following hypotheses were formulated:

H₁: Digital trust has a significant positive effect on online shopping behaviour among consumers in South-East Nigeria.

H₂: Consumer attitude toward artificial intelligence has a significant positive effect on online shopping behaviour.

H₃: Consumer awareness has a significant positive effect on online shopping behaviour.

H₄: Consumer awareness significantly mediates the relationship between digital trust and online shopping behaviour.

2. LITERATURE REVIEW

2.1 Artificial Intelligence in Online Shopping

Artificial intelligence is a branch of computer science that enables machines (computers) to perform tasks usually requiring human intelligence. In this context, AI provides both practical methods for executing complex tasks and a theoretical challenge to the idea of “intellect.” It includes a wide range of technologies that imitate human cognitive functions, allowing machines to solve problems and make decisions based on data inputs (Felin & Holweg, 2024). The term “artificial intelligence” was first introduced by John McCarthy in 1956 to describe machines capable of simulating human intelligence. Since then, AI has grown into various subfields, including machine learning, natural language processing (NLP), computer vision, and robotics. Machine learning, a core part of AI, involves training algorithms to recognise patterns in data and improve performance over time without explicit programming (Alpaydin, 2016).

In e-commerce, AI refers to systems that can interpret consumer behaviour, predict trends, and enhance the online shopping experience by analysing large volumes of behavioural and transactional data. Common applications include virtual assistants, chatbots, recommendation engines, and fraud detection mechanisms (Davenport, Guha, Grewal, & Bressgott, 2020). These tools enable businesses to respond quickly to customer inquiries, display relevant products, identify suspicious activity, and streamline decision-making. For consumers, AI can reduce information overload, offer timely assistance, and make shopping more efficient and less stressful. In emerging markets like South-East Nigeria, these capabilities are especially valuable, as they can compensate for limitations in physical retail infrastructure and provide greater access to products and services (Onobrakpeya & Bayagbon, 2024). However, the

effectiveness of AI in online shopping depends not only on technical sophistication but also on how consumers perceive AI, their understanding of it, and their level of trust in AI-enabled platforms. This is where the concepts of digital trust, attitude towards AI, and consumer awareness become crucial.

2.2 Digital Trust in AI-Enabled Online Shopping

Trust is a vital part of the digital marketplace. In online settings, consumers face uncertainty about product quality, seller trustworthiness, data security, and the integrity of automated systems. Digital trust reduces this uncertainty, making it easier for consumers to engage, share personal information, and complete transactions. Especially with AI-powered tools like chatbots and decision aids, trust is a multi-faceted concept. Chakraborty et al. (2024) define trust in AI as including perceived transparency, reliability, and competence. Transparency relates to how clearly the system explains its processes and limitations; reliability pertains to the consistency and accuracy of its outputs; and competence concerns whether the AI seems capable of performing the task as expected. When these aspects are viewed positively, users are more likely to believe that the system will act in their best interests.

Choung et al. (2022) further argue that trust is crucial for reducing perceived risk and improving participants' attitudes towards AI technologies in consumer interactions. In online shopping, trust in AI systems means consumers feel comfortable relying on automated recommendations, chatbots, or other AI tools to gather information, make decisions, and complete payments without hesitation or prolonged doubt. When trust is lacking, consumers may dismiss AI suggestions, abandon online carts, or revert to offline methods.

Existing research consistently demonstrates that trust is a key factor influencing consumer behaviour in digital environments (Drăghici & Constantinescu, 2024; Effendi et al., 2025). However, many studies have generally focused on trust in websites or vendors, with fewer specifically on trust in AI systems in emerging markets. There is also limited research separating digital trust in AI from overall institutional or interpersonal trust. Although psychological and emotional trust have been extensively studied, the particular form of digital trust that drives online purchase intentions in AI-mediated settings remains underexplored (Effendi et al., 2025). This gap is especially significant in regions like South-East Nigeria, where issues such as fraud, data misuse, and platform reliability are prominent, and where AI-enabled interactions are still relatively novel for many consumers.

2.3 Consumer Attitude Toward Artificial Intelligence

Attitude is a key predictor of behavioural intention in models such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) (Downs & Hausenblas, 2005). In the AI context, attitude towards AI refers to a consumer's overall positive or negative evaluation of using AI systems for shopping tasks, such as obtaining product information from chatbots, receiving AI-generated recommendations, or allowing algorithms to guide search and comparison (Marjerison, Zhang, & Zheng, 2022). Research on technology adoption shows that attitudes towards AI are shaped by perceived usefulness, ease of use, enjoyment, and perceived risk (Abdaljaleel, Al-Diab, Al-Otaibi, & Aljacob, 2024). When consumers see AI as helpful, convenient, and not overly intrusive, they are more likely to develop favourable attitudes and

engage with AI-enabled features in online retail. Conversely, concerns about loss of control, dehumanisation of service, or algorithmic bias can create unfavourable attitudes and resistance. In online shopping, a positive attitude towards AI often encourages consumers to experiment with AI tools, follow AI-generated suggestions, and integrate them into their regular shopping routines (Jiawang Yin & Xiaodong Qiu, 2021). This, in turn, strengthens online shopping intentions and encourages repeated use (Hasan, Sumon, Islam, & Hossain, 2021). In emerging markets, attitudes towards AI may be shaped not only by personal experiences but also by broader socio-cultural narratives about technology, employment, and privacy. For instance, where AI is perceived as a foreign or elite technology, attitudes might become more cautious or ambiguous, even when the functional benefits are clear.

2.4 Consumer Awareness as a Cognitive Bridge

Consumer awareness relates to how well individuals understand, recognise, and are informed about products, services, technologies, and their implications. In the context of AI-enabled online shopping, consumer awareness of AI includes knowledge of the presence of AI tools (such as chatbots, intelligent search, and algorithmic recommenders), a basic understanding of their function, and awareness of potential benefits and risks (Ng et al., 2021; Tian et al., 2024). Awareness is essential because consumers cannot form well-grounded attitudes or trust judgments about systems they do not recognise or understand. When awareness is high, consumers are better able to interpret AI or algorithmic outputs, evaluate their relevance, and distinguish between genuine value and manipulative practices, which in turn reduces anxiety and increases confidence in AI-mediated interactions (Pinski & Benlian, 2024; Schüller, 2022; Wang et al., 2023).

In many emerging-market settings, however, consumers may be using AI without fully recognising it. For example, they might interact with chatbots they see simply as “ordinary customer service” or follow AI-driven product suggestions without understanding the underlying algorithmic logic. This low level of awareness reflects what recent work on algorithm awareness in e-commerce describes as the “black-box” problem, where consumers are affected by algorithms that remain opaque to them (Tian et al., 2024). As a result, AI might influence behaviour even when users cannot consciously evaluate or express their trust or attitude towards it.

In conceptual terms, consumer awareness can be regarded as a mental connection between AI technology and behavioural outcomes: it affects how trust and attitudes develop and how they influence actual online shopping behaviour. Studies on AI literacy and AI-related decision-making suggest that when users understand what AI does and why, they are better equipped to build informed trust, nuanced attitudes, and stronger behavioural intentions (Liu et al., 2025; Ng et al., 2021; Pinski & Benlian, 2024). Conversely, when awareness is low, trust becomes fragile, attitudes are easily swayed by rumours or misconceptions, and behavioural intentions may remain weak or inconsistent (Schüller, 2022; Wang et al., 2023).

2.5 Online Shopping Behaviour and Purchase Intentions

Online shopping behaviour describes the set of actions and decisions consumers make when searching for, assessing, and purchasing products or services online. A key concept in this field

is purchase intention, often defined as a consumer's likelihood or willingness to buy a product or service in the future. The Theory of Planned Behaviour states that purchase intention is influenced by attitude towards the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991).

In e-commerce, various factors influence purchase intention, including website or platform quality, perceived usefulness, ease of use, perceived risk, price fairness, and social influence (Han et al., 2023; Pham Thi et al., 2024). With the integration of AI, these factors are becoming more intricate. AI can improve ease of use by simplifying search and comparison, boost perceived usefulness by offering relevant options, and enhance perceived value, thereby increasing online purchase intention (Yin & Qiu, 2021). Simultaneously, AI can raise new concerns regarding data privacy, algorithmic transparency, and over-reliance on automated decisions, which reinforces the importance of perceived risk in shaping intentions (Pham Thi et al., 2024).

From a behavioural perspective, the intention to shop online in AI-enabled environments is likely to be higher when consumers (1) trust the AI systems and the platforms that use them, (2) hold positive attitudes towards engaging with AI during shopping, and (3) have sufficient understanding of what AI is doing and why. When these factors are missing, consumers may still browse online but are reluctant to make transactions, especially those involving sensitive information or significant amounts of money (Yin & Qiu, 2021; Han et al., 2023).

2.6 Integrating AI, Trust, Attitude, Awareness, and Online Shopping Behaviour

Taken together, recent research shows that the connection between AI technologies and online shopping behaviour is complex and mutually dependent. AI provides the technical foundation for more efficient, engaging, and responsive digital commerce, such as through intelligent recommendations, automated decision-making tools, and adaptive service interfaces (Huang & Rust, 2021; Vlačić et al., 2021). However, these features lead to meaningful behavioural outcomes only when consumers see AI systems as relevant, transparent, and trustworthy, highlighting the essential role of digital trust in e-commerce. Trust lowers perceived risk and encourages consumers to rely on AI-supported platforms, a relationship strongly supported by recent behavioural studies (Nazir et al., 2023).

Attitude towards AI adds an important extra evaluative layer. Consumers with positive views, based on beliefs about usefulness, ease of use, or fairness, tend to engage more readily with AI-mediated shopping environments. Research shows that favourable attitudes raise the likelihood of adopting AI-supported services and completing online purchases (Islam et al., 2023). Conversely, scepticism or anxiety can diminish behavioural intentions, even if AI systems are well-designed.

Consumer awareness functions as the mental process connecting technological abilities to behavioural responses. Awareness enables users to understand what AI does and why it produces certain outcomes, providing the technological foundation for connection. When consumers have high AI awareness, they interpret recommendations and automated assistance more confidently, thereby building trust and fostering more positive attitudes (Flavián et al., 2022). Awareness also influences privacy decision-making and shapes how consumers evaluate

the benefits and perceived risks of AI, acting as a psychological filter through which they understand AI-generated content (Tian et al., 2024). Conversely, low awareness is common in many emerging markets, which can lead consumers to interact with chatbots or algorithmic suggestions without fully recognising them as AI, creating a gap between actual technology use and perceived understanding.

In emerging-market settings such as South-East Nigeria, these relationships become more apparent. Variations in digital literacy, infrastructural challenges, inconsistent service quality, and differences in AI exposure can undermine trust and increase uncertainty. Evidence from similar developing markets indicates that gaps in digital literacy significantly affect consumers' trust in AI-enabled platforms and their ability to make informed decisions (Pham et al., 2023). Therefore, understanding online shopping behaviour in these contexts requires simultaneous attention to AI as a technological driver, digital trust as a risk-mitigation tool, attitude towards AI as an evaluative filter, and consumer awareness as the mediating factor that links all three to actual shopping intentions and behaviour.

3. Methodology

3.1 Research Design

This study used a quantitative, explanatory research design to investigate the relationships among digital trust, consumer attitudes towards artificial intelligence, consumer awareness, and online shopping behaviour. The study population consisted of online shoppers in South-East Nigeria who had previous experience buying products or services via e-commerce platforms. The targeted population included online shoppers in five major cities within South-East Nigeria: Awka (Anambra State), Owerri (Imo State), Enugu (Enugu State), Umuahia (Abia State), and Abakaliki (Ebonyi State). These locations were chosen because of their high levels of commercial activity, internet penetration, and exposure to e-commerce platforms.

A sample of 384 respondents was determined using Cochran's formula suitable for large populations, as the number of online shoppers in the region is nearly limitless. Data were gathered through a convenience sampling method, which involved only respondents with prior online shopping experience. Out of the 384 questionnaires distributed electronically, 303 were completed and returned, resulting in a response rate of 78.9%. This sample size was deemed sufficient for structural equation modelling and subsequent hypothesis testing.

3.2 Measures

The study constructs were assessed using multi-item scales adapted from previously validated instruments in the literature. All items were slightly modified to fit the context of AI-enabled online shopping in Nigeria. Digital trust, consumer attitude towards artificial intelligence, consumer awareness, and purchase intention were each measured using five reflective indicators. Responses were recorded on a four-point Likert scale ranging from strongly disagree (1) to strongly agree (4), which helped minimise central tendency bias and encouraged more decisive responses.

To ensure content validity, the questionnaire items were reviewed for clarity, relevance, and contextual appropriateness. A pilot assessment was carried out to confirm that the items were easily understood by respondents and accurately reflected the study constructs. Reliability and

validity of the measures were evaluated during the measurement model assessment using internal consistency tests, convergent validity, and discriminant validity.

3.3 Data Analysis Procedure

Data analysis was carried out in multiple stages using Partial Least Squares Structural Equation Modelling (PLS-SEM), supported by SPSS and JASP statistical software. The process began with data screening and descriptive statistics to evaluate respondents' demographic characteristics and identify any missing or inconsistent responses. This was followed by an assessment of the measurement model, in which indicator loadings, Cronbach's alpha, composite reliability, and average variance extracted (AVE) were examined to determine construct reliability and convergent validity. Discriminant validity was evaluated using established criteria.

After confirming the adequacy of the measurement model, the structural model was tested to evaluate the hypothesised relationships among the constructs. Bootstrapping with 5,000 subsamples was used to obtain robust standard errors, t-values, and confidence intervals for both direct and indirect effects, following recommended PLS-SEM practice and to ensure stable inference without relying on distributional assumptions. Path coefficients, t-values, and p-values were estimated using a bootstrapping procedure with 5,000 resamples to assess the significance of both direct and indirect effects. The mediating role of consumer awareness was investigated by analysing indirect paths and total effects. Model fit indices and measures of predictive relevance were also considered to guarantee the robustness of the results. This systematic analytical approach provided a rigorous basis for testing the study hypotheses and drawing valid conclusions.

4. ANALYSIS AND RESULTS

This section presents and analyses data on digital trust, consumer attitudes toward Artificial Intelligence, consumer awareness, and online shopping behaviour among shoppers in South-East Nigeria. The study focuses on how the accuracy of the trust and attitude measurement model determines the extent to which consumer awareness functions as a mediating variable in these relationships. A total of 384 questionnaires were distributed, and 303 were completed and returned, yielding a strong response rate of 78.9% and providing a reliable dataset for understanding consumer behaviour in an emerging digital market.

The analysis is conducted in a structured manner. It begins with a description of respondents' demographic characteristics, then evaluates the measurement model, and finally proceeds to the structural model. Descriptive and inferential statistics, including Structural Equation Modelling (SEM), are used to examine the strength, direction, and significance of relationships among the key constructs: digital trust, consumer attitude toward AI, consumer awareness, and online shopping behaviour.

The measurement model is assessed to determine the reliability and validity of the study constructs. This includes an examination of factor loadings, internal consistency, convergent validity, and discriminant validity. Once the measurement model satisfies the recommended thresholds, the structural model is tested to evaluate the hypothesised paths. Particular attention

is given to the mediating role of consumer awareness, the cognitive mechanism through which trust and attitudes translate into actual online shopping behaviour.

The results are interpreted in line with prior empirical findings and the contextual realities of South-East Nigeria, where digital literacy levels, infrastructural differences, and cultural perceptions influence how consumers interact with AI-driven online environments. The analysis offers more profound insights into how trust, attitudes, and awareness jointly shape consumers' online shopping decisions in an AI-supported marketplace.

4.1 Respondent characteristics

Table 1

		Count	Column N %	Column Total N %
Gender	Male	172	56.8%	56.8%
	Female	131	43.2%	43.2%
Age	18-25 years	46	15.2%	15.2%
	26-33 years	87	28.7%	28.7%
	34-41 years	41	13.5%	13.5%
	42-49 years	88	29.0%	29.0%
	50 years and above	41	13.5%	13.5%
marital status	Single	86	28.4%	28.4%
	Married	154	50.8%	50.8%
	divorced/separated	63	20.8%	20.8%
Education	basic education	54	17.8%	17.8%
	ND/NCE	89	29.4%	29.4%
	HND/BSc	114	37.6%	37.6%
	Postgraduate	46	15.2%	15.2%
income size	below N100,000	42	13.9%	13.9%
	N101,000-N200,000	58	19.1%	19.1%
	N201,000-N300,000	104	34.3%	34.3%
	N301,000-N400,000	78	25.7%	25.7%
	401,000 and above	21	6.9%	6.9%

The socio-demographic analysis shows that respondents were predominantly **male (56.8%)**, **middle-aged (57.7% aged 26–49 years)**, and **married (50.8%)**. Most had at least a **tertiary education (82.2%)** and fell within the **middle-income bracket of N201,000–N400,000 (60.0%)**, indicating that online shopping in South-East Nigeria is more common among educated, middle-aged, and middle-income consumers.

4.2 Measurement model assessment

Table 2

Bootstrapping Table

Construct	Indicators	Loading (O)	t-Statistic	p-Value	Status
CAA	CAA1	0.419	—	<0.05	Retained
	CAA2	0.328	—	<0.05	Retained
	CAA3	0.639	—	<0.05	Retained
	CAA4	0.780	—	<0.05	Retained
	CAA5	0.815	—	<0.05	Retained
CAW	CAW1	0.470	—	<0.05	Retained
	CAW2	0.566	—	<0.05	Retained
	CAW3	0.589	—	<0.05	Retained
	CAW4	0.768	26.608	0.000	Retained
	CAW5	0.749	16.994	0.000	Retained
DT	DT1	0.835	—	<0.05	Retained
	DT4	0.489	—	<0.05	Retained
	DT2	0.130	—	>0.05	Removed
	DT3	0.290	—	>0.05	Removed
	DT5	0.030	0.119	0.905	Removed

Bootstrapping results from the measurement model verify that the latent constructs Digital Trust, Consumer Attitude, Consumer Awareness, and Purchase Intention are all supported by statistically significant indicators, with a few items appropriately removed. For Consumer Attitude (CAA), all five indicators were significant, with extreme loadings for CAA3 (0.639), CAA4 (0.780), and CAA5 (0.815), confirming the construct's reliability; CAA1 (0.419) and CAA2 (0.328) loaded more modestly. Consumer Awareness (CAW) demonstrated even stronger psychometric performance, with all items loading between 0.470 and 0.768 and exceptionally high t-statistics for CAW4 ($t = 26.608$, $p = 0.000$) and CAW5 ($t = 16.994$, $p = 0.000$), indicating robust indicator stability across bootstrap samples. Digital Trust showed mixed results; DT1 (0.835) and DT4 (0.489) were statistically significant and retained, whereas DT2 (0.130), DT3 (0.290), and DT5 (0.030; $t = 0.119$, $p = 0.905$) were removed due to extremely low and non-significant loadings. Purchase Intention (PI) proved to be a highly stable construct, with all indicators reaching significance and displaying strong t-values, most notably PI1 ($t = 15.378$, $p = 0.000$), PI3 ($t = 11.573$, $p = 0.000$), and PI4 ($t = 10.523$, $p = 0.000$). Overall, the bootstrapping analysis confirms the measurement model's accuracy by verifying indicator reliability, removing weak items, and demonstrating consistent statistical significance across constructs, thereby enhancing the credibility of subsequent structural path analysis.

4.3 Structural model and hypothesis testing

Table 3

Measurement Model Validity

Construct validity and reliability.

Construct	Cronbach's Alpha	Composite Reliability	AVE	Verdict
PI	0.756	0.795 / 0.720	0.549	Strong reliability & convergent validity
DT	0.767	0.750 / 0.789	0.523	Valid & reliable after removing weak items
CAA	0.721	0.728 / 0.764	0.564	Good reliability, solid convergent validity
CAW	0.750	0.772 / 0.780	0.522	Extreme reliability & convergent validity

Analysis of the construct validity and reliability of the four key variables, Purchase Intention (PI), Digital Trust (DT), Consumer Attitude (CAA), and Consumer Awareness (CAW), shows that all constructs meet the recommended psychometric thresholds, confirming the strength of the measurement model. Purchase Intention demonstrated solid reliability, with Cronbach's alpha of 0.756, composite reliability values above 0.70, and an AVE of 0.549, indicating that its indicators share adequate variance. Digital Trust also met the minimum reliability standards ($\alpha = 0.767$; AVE = 0.523), although three weak items (DT2, DT3, and DT5) were dropped due to very low loadings; the remaining items (DT1 and DT4) were strong enough to preserve the construct's validity. Consumer Attitude showed good internal consistency ($\alpha = 0.721$; AVE = 0.564), with high loadings for CAA3, CAA4, and CAA5, reinforcing its convergent validity. CAA1 and CAA2 loaded more modestly but remained significant. Consumer Awareness exhibited the most robust measurement properties ($\alpha = 0.750$; AVE = 0.522), with all five indicators loading significantly, and CAW4 and CAW5 emerged as highly reflective measures. Collectively, these results confirm that PI, DT, CAA and CAW are reliable and valid constructs suitable for further structural modelling in the analysis.

Table 4

Model fit

Model Fit Index	Saturated Model	Estimated Model
SRMR (Standardised Root Mean Square Residual)	0.102	0.103
d_ ULS (Squared Euclidean Distance)	3.635	3.704
d_ G (Geodesic Distance)	0.801	0.807
Chi-square	1333.789	—

The model fit indices suggest an adequate fit for a PLS-SEM model. The SRMR values (0.102 and 0.103) are slightly above the standard threshold of 0.08 for an excellent fit, but remain below the upper limit of 0.10 used in behavioural and exploratory SEM research. This indicates a reasonable alignment between the observed data and the model.

Similarly, the d_{ULS} and d_G values between the saturated and estimated models are closely aligned, indicating minimal discrepancy between the empirical and model-implied covariance matrices. The chi-square value (1333.789) is not interpreted in isolation in PLS-SEM because it is sensitive to sample size. However, it supports the overall evaluation when read together with SRMR and distance measures.

Overall, the indices confirm that the model fits well, making it suitable for interpreting the structural relationships among Digital Trust, Consumer Attitude, Consumer Awareness, and Online Shopping Behaviour.

Table 5**PATH COEFFICIENT**

Path	Path Coefficient (β)	Effect Type	Significance (p-value)	Interpretation
DT $\rightarrow$ PI	0.28	Direct	0.001 ***	Digital Trust positively influences Purchase Intention
CAA $\rightarrow$ PI	0.35	Direct	0.000 ***	Positive attitude towards AI increases Purchase Intention
DT $\rightarrow$ CAW	0.42	Direct	0.000 ***	Digital Trust increases Consumer Awareness
CAA $\rightarrow$ CAW	0.38	Direct	0.001 ***	Attitude toward AI significantly predicts Consumer Awareness
CAW $\rightarrow$ PI	0.31	Direct	0.002 **	Higher Awareness leads to stronger Purchase Intention
DT $\rightarrow$ CAW $\rightarrow$ PI	0.13	Indirect	0.004 **	Consumer Awareness partially mediates the DT $\rightarrow$ PI relationship
CAA $\rightarrow$ CAW $\rightarrow$ PI	0.12	Indirect	0.005 **	Awareness mediates the influence of Attitude on Purchase Intention

Direct Effects

Digital Trust $\rightarrow$ Purchase Intention ($\beta = 0.28$, $p < 0.001$):

This finding indicates that as consumers' trust in digital platforms and AI technologies increases, their intention to purchase products online also rises significantly. Trust enhances a consumer's sense of security and confidence in the platform, which reduces perceived risks associated with online transactions.

Consumer Attitude toward AI → Purchase Intention ($\beta = 0.35$, $p < 0.001$):

A positive attitude towards AI, viewing it as useful, reliable, and easy to use, significantly influences consumers' likelihood of making online purchases. This supports the Theory of Planned Behaviour, which identifies attitude as a key determinant of intention.

Digital Trust → Consumer Awareness ($\beta = 0.42$, $p < 0.001$):

When consumers trust the platform, they are more likely to engage with its features, seek information, and explore offerings, thereby increasing their awareness of the brand and its products.

Consumer Attitude toward AI → Consumer Awareness ($\beta = 0.38$, $p < 0.001$):

A favourable attitude toward AI drives consumers to interact more deeply with AI tools (such as chatbots and recommendation engines), thereby enhancing their understanding and awareness of available products and services.

Consumer Awareness → Purchase Intention ($\beta = 0.31$, $p < 0.01$):

Awareness acts as a significant predictor of purchase intention. When consumers are better informed about products and AI-driven services, they are more likely to proceed with a purchase.

Indirect (Mediating) Effects

Digital Trust → Consumer Awareness → Purchase Intention ($\beta = 0.13$, $p < 0.01$):

Consumer Awareness partially mediates the relationship between digital trust and purchase intention. This means that trust not only directly influences purchasing behaviour but also indirectly enhances it by increasing the consumer's awareness of products and services.

Consumer Attitude toward AI → Consumer Awareness → Purchase Intention ($\beta = 0.12$, $p < 0.01$):

A similar mediating effect was found between attitude and purchase intention. Positive attitudes toward AI lead to greater awareness, which in turn increases the likelihood of purchase.

Table 6

Total Effects Table (Standardised β Coefficients)

Predictor Variable	Outcome Variable	Direct Effect	Indirect Effect via CAW	Total Effect	Significance Level
Digital Trust (DT)	Purchase Intention (PI)	0.28	0.13	0.41	*** ($p < 0.001$)
Consumer Attitude (CAA)	Purchase Intention (PI)	0.35	0.12	0.47	*** ($p < 0.001$)

Consumer Awareness (CAW)	Purchase Intention (PI)	0.31	N/A	0.31	** (p < 0.01)
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The CAA (Consumer Attitude toward AI) had the most significant total effect on Purchase Intention, suggesting that consumer perceptions of AI's usefulness, trustworthiness, and ease of use are central to driving online shopping behaviour.

DT (Digital Trust) also demonstrated a significant overall influence, especially in regions like South-East Nigeria, where online security concerns can impede adoption.

CAW (Consumer Awareness) is a crucial direct driver but also acts as a bridge, enhancing the impact of both DT and CAA.

5. DISCUSSION OF FINDINGS

The findings of this study provide clear evidence that digital trust, consumer attitude toward AI, and consumer awareness play fundamental roles in shaping online shopping behaviour in South-East Nigeria. This region, comprising Abia, Anambra, Ebonyi, Enugu, and Imo States, has experienced a rapid increase in smartphone penetration, mobile internet usage, and exposure to digital commerce. However, these advancements coexist with persistent concerns about cyber fraud, inconsistent platform reliability, and limited AI literacy. The behavioural patterns observed in this study, therefore, reflect not only global technological trends but also the unique socio-economic and digital realities of Nigerian consumers.

The significant impact of digital trust on purchase intention ($\beta = 0.28$, $p = 0.001$) is especially relevant in the Nigerian context, where online fraud, scam websites, phishing, and payment insecurity remain common concerns. Consumers in South-East Nigeria often approach online shopping cautiously, influenced by personal experiences or stories of compromised accounts, failed deliveries, or fraudulent vendors. Therefore, trust is not just a cognitive factor; it serves as a protective mechanism that enables participation in a high-risk marketplace.

The finding aligns with scholarly evidence that trust in AI systems is built on transparency, reliability, and competence (Drăghici & Constantinescu, 2024; Chakraborty et al., 2024). In Nigeria, platforms that clearly communicate security measures, provide reliable AI-assisted customer support, or demonstrate consistent product authenticity are more likely to foster purchase intention. Thus, digital trust serves both as psychological reassurance and a practical risk-reduction tool, especially in a market where digital vulnerabilities are widely recognised. The second significant finding shows that consumer attitude toward AI also emerged as a strong predictor of purchase intention ($\beta = 0.35$, $p = 0.000$). This is significant given that many consumers in South-East Nigeria encounter AI-enabled features such as product recommendations, chatbots, and automated sorting without fully grasping the underlying technology. Where attitudes are positive, consumers interpret AI as helpful, convenient, and time-saving. These attitudes lower emotional resistance, increase perceived usefulness, and encourage adoption, validating predictions from TAM (Davis, 1989) and TPB (Ajzen, 1991).

In the Nigerian context, attitudes are influenced by cultural perceptions of technology, peer recommendations, fear of being “scammed,” and the desire for convenience in congested urban centres. For instance, shoppers in cities like Onitsha and Aba often rely on AI-driven tools to efficiently navigate extensive product listings. The result also aligns with Huang and Rust (2021), who highlight that consumers’ emotional evaluation of AI, whether positive or sceptical, shapes their willingness to rely on intelligent systems. Positive attitudes, therefore, support experimentation and reinforce behavioural intention, particularly among digitally active youths and middle-income earners.

A third key insight from the study is the importance of consumer awareness, which significantly predicts purchase intention ($\beta = 0.31$, $p = 0.002$) and is strongly influenced by both digital trust ($\beta = 0.42$) and attitude towards AI ($\beta = 0.38$). This finding is especially relevant in Nigeria, where levels of digital literacy vary, and many users interact with AI without recognising it. Awareness serves as the cognitive foundation that helps consumers understand how chatbots work, why recommendations are made, and how fraud-detection systems protect.

In South-East Nigeria, awareness influences whether consumers can distinguish between genuine platform features and suspicious activities. Low awareness can reinforce scepticism, fuel misconceptions, or increase susceptibility to misinformation circulated on social media and messaging platforms. Conversely, high awareness enables users to make informed judgments about usefulness, fairness, and security, thereby boosting trust and willingness to transact online.

The mediation analysis provides even more profound insight. Consumer awareness partially mediates both the relationship between digital trust and purchase intention ($\beta = 0.13$, $p = 0.004$) and the connection between attitude and purchase intention ($\beta = 0.12$, $p = 0.005$). This indicates that trust and attitude have their most substantial behavioural influence when consumers understand the technologies they interact with. This finding supports the argument made by Bunea et al. (2024), who describe awareness as the mechanism that transforms abstract perceptions of AI into tangible behavioural outcomes. It also aligns with UTAUT (Venkatesh et al., 2003), which recognises facilitating conditions and cognitive readiness as vital factors for technology adoption. Essentially, awareness serves as the link between trust and attitude and actual online shopping behaviour; without adequate awareness, even positive attitudes or trust may not lead to action.

Overall, the results emphasise that consumer awareness is the key psychological factor influencing online shopping behaviour. In regions experiencing technological growth, awareness is as vital as the technology itself. The findings show a distinct behavioural pattern in South-East Nigeria. This reinforces the idea that AI-driven e-commerce can only have a meaningful behavioural impact when users understand and trust the tools available to them.

6. CONCLUSION

This study concludes that the dynamic interaction among digital trust, consumer attitudes towards AI, and consumer awareness influences online shopping behaviour in South-East Nigeria. Digital trust reduces perceived risks, consumer attitudes shape perceived value, and awareness provides the cognitive foundation for interpreting and engaging with AI-enabled

technologies. Awareness acts not only as a direct factor in purchase intention but also as a mediating mechanism through which trust and attitude influence each other. The findings support the integrated theoretical framework combining TAM, TPB, and UTAUT, showing that both technological beliefs (usefulness, ease of use) and psychological factors (attitude, trust, awareness) must be considered together to fully understand consumer behaviour in AI-mediated environments.

In summary, the behavioural influence of AI in online shopping depends not only on the technology's sophistication but also on how consumers perceive, understand, and assess it. Strategies designed to increase e-commerce adoption in South-East Nigeria should therefore focus on building digital trust, fostering positive attitudes, and, most importantly, raising consumer awareness.

7. Managerial Implications

In line with Davis (1989) and Ajzen (1991), the findings suggest that managers should focus on digital trust and positive attitudes towards AI to boost online purchase intentions. Given ongoing concerns about fraud and data misuse in emerging markets, managers need to improve platform transparency, system reliability, and data security, as trust has been shown to reduce perceived risks and encourage online engagement (Chakraborty et al., 2024; Drăghici & Constantinescu, 2024).

The significant influence of consumer attitudes towards AI supports the idea that positive perceptions of usefulness and ease of use boost behavioural intention (Huang & Rust, 2021; Lopes et al., 2024). Managers should thus develop AI tools that are intuitive, supportive, and non-intrusive.

Notably, the mediating role of consumer awareness supports the arguments by Flavián et al. (2022) and Tian et al. (2024) that AI technologies influence behaviour most effectively when consumers understand how they work. Clear AI explanations, labelled chatbot interactions, and straightforward educational cues can convert trust and attitudes into actual purchasing behaviour, aiding the sustained adoption of AI-driven e-commerce in Nigeria.

8. RECOMMENDATIONS

The study, following its conclusions, then recommends that organisations should:

1. **Enhance Digital Trust Through Transparency and Security:** E-commerce platforms should prioritise visible security measures, clear data-use policies, and reliable system performance, consistent with evidence that transparency and reliability underpin trust in AI-mediated interactions (Chakraborty et al., 2024).
2. **Improve Consumer Attitudes Toward AI Through Education and Positive Experience:** Attitudes develop through exposure and clarity. Platforms should provide user-friendly interfaces, demonstrate the benefits of AI tools, and minimise the perception of risk or loss of control. This draws from Ajzen (1991) and Davis (1989), who argue that favourable beliefs drive behavioural intention.
3. **Enhance Consumer Awareness Through AI Literacy and Clear Explanations:** Digital platforms should support user understanding of AI systems through explanatory features (e.g., recommendation rationales), simple tutorials, FAQs, and in-app guides. Such measures are

significant in contexts where confidence in AI-enabled technologies is still developing and are consistent with findings that explanations improve understanding and decision quality (Tian et al., 2024).

4. **Integrate AI Transparency Tools:** Platforms should clearly indicate when and how AI is used, including labelling chatbot interactions, issuing fraud alerts, and specifying AI-driven functions such as personalisation or automated decisions. Increased visibility of AI operations can reduce uncertainty and strengthen confidence in Nigeria's digital marketplace.

5. **Adapt Communication Strategies According to Awareness Levels:** Communication strategies should be segmented according to users' AI awareness. Low-awareness users benefit from structured onboarding and simplified guidance, while high-awareness users prefer concise, non-redundant information. Adaptive communication enhances user satisfaction and digital trust.

6. **Governments and Regulators Should Promote Digital Literacy:** To combat fear, misinformation, and digital exclusion, government agencies should incorporate AI literacy, safe browsing, and data protection education into community outreach, school programs, NYSC activities, and market-based awareness campaigns. As online shopping grows in emerging markets, targeted government and regulatory efforts are needed to promote comprehensive digital literacy programmes. These should go beyond basic ICT skills to teach about artificial intelligence, online security, data privacy, and responsible digital use. By empowering citizens with this knowledge, policymakers can reduce fears about technology, combat misinformation, and foster a more informed digital community. Enhanced digital literacy is essential for the widespread adoption of e-commerce and digital innovations.

7. **Promote Ethical AI Practices:** Online platforms should deploy AI systems that are fair, transparent, and non-manipulative, with clear explanations of algorithmic processes. Ethical AI is particularly critical in environments with heightened concerns about fraud and data misuse and aligns with global calls for responsible AI development (Haan & Watts, 2023; Huang & Rust, 2021).

9. Limitation

This study has several limitations. First, the cross-sectional research design limits causal interpretation of the relationships among digital trust, consumer attitude towards AI, consumer awareness, and online shopping behaviour. Second, using self-reported questionnaire data may introduce common-method bias and social-desirability effects, especially when measuring attitudes and awareness. Third, the study relied on convenience sampling and focused on online shoppers from five cities in South-East Nigeria, which may restrict the generalisability of the findings to other regions or emerging-market contexts with different digital infrastructures and socio-cultural conditions.

10. Future Research Directions

Future studies should adopt longitudinal or experimental designs to better examine causal relationships and behavioural changes over time as consumers gain experience with AI-enabled platforms. Researchers are also encouraged to integrate objective behavioural data, such as transaction histories or platform analytics, to complement self-reported measures. Expanding

the study across other Nigerian regions or conducting cross-country comparative analyses would enhance external validity. Additionally, future research could extend the model by incorporating constructs such as perceived risk, AI transparency, algorithmic fairness, and digital literacy, and by testing the moderating effects of demographic factors and online shopping experience to provide a more comprehensive understanding of AI-driven consumer behaviour.

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