EFFECT OF AUGMENTED REALITY ON FASHION CONSUMERS' ONLINE PURCHASE BEHAVIOUR IN NIGERIA

Suleiman Akwu-Odo Salihu Aruwa[1], Ahmed Abdullahi Ibrahim[2] & Adedayo Alexander Folorunsho[3]
[1]Department of Accounting, Nasarawa State University, Keffi
[1&2]Department of Business Administration, Nasarawa State University, Keffi
Email:Aruwasas@Nsuk.Edu.Ng, ibrahimahmedabdullahi@nsuk.edu.ng, alexdfolorunsho@gmail.com

Abstract
This study investigated the effect of augmented reality on fashion consumers' online purchase behaviour in Nigeria. The study adopted a survey research design, and the population for the study was infinite as regards fashion online consumers in Nigeria. The Cochran's formula is used to determine the sample size of 408, and convenience sampling technique was used to select the respondents for the study. A structured five-point Likert scale questionnaire was used as an instrument for data collection; descriptive statistics and Smart PLS-SEM were used to analyse the data gathered for the study. The study found that both flow and perceived augmentation significantly influence purchase intention in augmented reality (AR) shopping, with perceived augmentation having a stronger impact. Approximately 51.7% of purchase intention variance is explained by these variables, emphasising AR's role in enhancing the online shopping experience. Recommendations include, enhancing AR's value-added features; optimizing user flow; integrating feedback mechanisms; educating users on AR benefits; and continuously innovating AR technology. These strategies are essential for increasing consumer engagement and improving purchase intention in AR-enabled e-commerce.
Keywords*: Augmented reality, perceived augmentation, Flow, purchase interest*

INTRODUCTION

Over the past two decades, the global fashion industry has experienced a major transformation, shifting from traditional physical stores to digital retailing. This evolution has been largely influenced by advancements in digital technology and the increasing reliance on e-commerce platforms. The COVID-19 pandemic further accelerated this transition, as online shopping became a safer and more convenient alternative to in-person retail experiences. A report by McKinsey & Company (2020) indicates that global online fashion sales surged during the pandemic, with e-commerce penetration doubling in key regions such as the United States and Europe. As a result, the online fashion landscape has evolved to prioritize seamless and personalized shopping experiences, aligning with changing consumer expectations.

The integration of emerging technologies, such as artificial intelligence (AI), machine learning, and augmented reality (AR), has significantly enhanced online retail experiences. These tools enable fashion retailers to engage customers more effectively, offer tailored shopping experiences, and improve conversion rates (Grewal et al., 2017). Among these innovations, AR has emerged as a game-changing technology in online fashion retail. By enabling virtual try-ons, 3D product visualizations, and interactive shopping experiences, AR bridges the gap between digital and physical retail. Consumers can now make more informed purchase decisions, as AR provides a realistic preview of products such as clothing, eyewear, and cosmetics. Additionally, AR enhances brick-and-mortar shopping by overlaying digital content onto physical products or store displays, enriching the overall retail experience (Hilken et al., 2021).

In developing economies, including Nigeria, AR has the potential to revolutionize various sectors such as education, healthcare, commerce, and fashion. By overlaying digital elements onto real-world environments, AR provides immersive and interactive solutions to traditional challenges. Despite infrastructural and technological constraints, AR adoption in Nigeria is gradually increasing. The Nigerian AR and Virtual Reality (VR) market is projected to generate approximately $83.7 million in revenue in 2024, with an annual growth rate of 9.67%, reaching an estimated $132.8 million by 2029. Notably, AR advertising is expected to dominate the market, contributing $35.5 million in 2024 (Statista, 2024). Although specific data on AR adoption across Africa is limited, the Middle East and Africa VR

market was valued at $3.78 billion in 2023 and is projected to reach $68.72 billion by 2031, growing at a compound annual growth rate (CAGR) of 43.7% (Data Bridge Market Research, 2024). The rapid expansion of VR technologies suggests growing interest and investment in AR within the region. On a global scale, the AR market is anticipated to reach $88.4 billion by 2026 and $165.3 billion by 2030 (MarketsandMarkets, 2025; Vynz Research, 2025).

Despite its vast potential, AR adoption in Nigeria encounters several challenges, including limited technological awareness, inadequate infrastructure, and insufficient investment (Oke & Arowoiya, 2021). Overcoming these barriers is crucial for expanding market opportunities and driving widespread adoption. However, there is increasing recognition of AR's significance in shaping future digital interactions. A 2021 survey revealed that 94% of respondents from Mexico believe AR will play a key role in the next five years, indicating a positive outlook for adoption in developing regions (Snap Inc. & Deloitte Digital, 2021). As digital awareness grows and AR infrastructure expands, Nigerian fashion retailers can leverage AR to create personalized and engaging shopping experiences, fostering brand loyalty and customer satisfaction.

One of the key challenges faced by online fashion consumers in Nigeria is uncertainty regarding product quality, fit, and potential misrepresentation. AR addresses these concerns by enabling virtual try-ons and immersive product interactions, which can enhance consumer confidence and satisfaction. Research by Park and Kim (2021) suggests that AR technologies positively influence purchase intention by enhancing cognitive engagement and aligning with consumer shopping objectives. Additionally, studies indicate that AR reduces purchase uncertainty, leading to improved consumer confidence and informed decision-making (Nagy et al., 2022). The relationship between AR and purchase intention is gaining increased academic attention, with researchers examining its impact on consumer perceptions and behaviours (Javornik, 2016; Pantano et al., 2021). Given Nigeria's vibrant fashion industry, where clothing serves as a major form of cultural expression, AR presents an opportunity to deliver interactive and tailored shopping experiences that could further drive online fashion sales.

This study aims to explore the impact of AR on consumer purchase behaviour, specifically examining how perceived augmentation and flow influence confidence and actual purchase decisions in the Nigerian context. Understanding these dynamics will provide insights into how AR can be leveraged to enhance consumer engagement, satisfaction, and long-term brand loyalty. Based on the forgoing, the study was guided by the following research objectives;

i. Examine the effect of perceived augmentation on fashion consumers' online purchase behaviour in Nigeria.
ii. Investigate the effect of flow in the use of the AR system on fashion consumers' online purchase behaviour in Nigeria.

These objectives were converted into hypotheses which were stated in a null form as follows:

Ho1: Perceived augmentation has no significant effect on fashion consumers' online purchase behaviour in Nigeria

Ho2: Flow has no significant effect on fashion consumers' online purchase behaviour in Nigeria

LITERATURE REVIEW

Augmented Reality

The retail industry is transitioning from a multi-channel to an omnichannel approach, integrating mobile, online, and offline channels to meet consumer demand for a seamless shopping experience (E-tailing Group, 2015; eMarketer, 2019). Digital channels now dominate retail, with mobile and online interactions influencing over half of retail transactions (eMarketer, 2020). Technologies like augmented reality (AR) are emerging as key tools in enhancing interactivity and consumer decision-making, offering immersive experiences such as virtual try-ons and 3D visualizations (Park & Yoo, 2020; Goldman Sachs, 2019).

AR technology has advanced rapidly, with marker-based and GPS-based systems enabling real-time interactions that blend physical and virtual elements (Bodhani, 2013). Initially developed for specific

applications, AR has expanded into sectors like retail and commerce, driven by the widespread adoption of mobile devices (Hwangbo et al., 2017). AR's ability to integrate real and virtual elements enhances consumer experiences and supports the creation of new retail environments where digital and physical worlds coexist (Azuma et al., 2001; Flavián et al., 2019).

In retail, AR applications have transformed how consumers interact with products, allowing virtual try-ons and immersive product demonstrations (Scholz & Duffy, 2021; Flavián et al., 2019). These tools improve customer satisfaction, reduce return rates, and provide valuable insights for retailers to refine their strategies (Jiang et al., 2021; Poushneh & Vasquez-Parraga, 2017). AR-driven innovations continue to reshape consumer purchasing behaviours, offering a personalized and immersive shopping experience (Grewal et al., 2017; Holdack et al., 2022).

Perceived Augmentation

Perceived augmentation pertains to how users experience and interpret the enhancements provided by Augmented Reality (AR) technologies. It focuses on the subjective perception of the augmentation's effectiveness, realism, and utility within the user's environment.

In the context of mobile shopping, perceived augmentation plays a crucial role in consumer decision-making. A study by Ivanov et al. (2023) examined the impact of perceived augmentation on decision comfort in mobile shopping. The findings indicated that higher levels of perceived augmentation, facilitated by AR features in virtual try-on applications, led to increased decision comfort among consumers. This effect was observed through both utilitarian (practical benefits) and hedonic (pleasure-related) pathways. Notably, the influence of perceived augmentation was less pronounced among younger users, suggesting that age moderates this relationship.

Furthermore, the distinction between AR as a technology and perceived augmentation as the user's subjective experience is essential. While AR provides the tools for overlaying digital information onto the real world, perceived augmentation reflects how convincingly and seamlessly these digital elements integrate into the user's perception, thereby affecting the overall effectiveness of the AR application (Schoellner, 2017).

Understanding perceived augmentation is vital for developers and designers aiming to create effective AR experiences. By focusing on factors that enhance perceived realism and utility, such as intuitive interfaces, high-quality graphics, and contextually relevant information, AR applications can achieve greater user acceptance and satisfaction (Ivanove et al., 2023)

Flow

Flow, a psychological state of deep involvement and immersion, is critical for understanding user experiences in augmented reality (AR). In AR contexts, flow describes the seamless engagement and interaction with augmented environments, leading to enhanced satisfaction, enjoyment, and engagement. Csikszentmihalyi (1990) originally defined flow as a state where individuals are fully absorbed in an activity, losing track of time and self-consciousness. In AR, achieving flow means users are entirely focused on the augmented content, balancing their skills with the challenges presented (Kim et al., 2021). Key factors contributing to flow in AR include interactivity, user-friendly interfaces, challenge-skill balance, and sensory appeal. Real-time responses, gesture controls, and immersive feedback are critical for maintaining engagement (Wang & Zhang, 2021). Aesthetic quality, personalization of content, and ease of use enhance flow by minimizing cognitive load and making the experience more relevant (Gao et al., 2022; Kim & Ko, 2021).

The outcomes of flow in AR include increased user engagement, prolonged interaction, and higher satisfaction, as users experience enjoyment and immersion (Nah et al., 2022). Flow also positively influences learning and skill acquisition in educational and training environments, where focus and motivation are essential (Gao et al., 2022). Additionally, flow enhances behavioural intentions, such as users recommending or continuing to use AR applications (Wang & Zhang, 2021).

In retail, flow is leveraged through AR experiences like virtual try-ons, enhancing the shopping experience for companies like Sephora and IKEA (Kim & Ko, 2021). AR also promotes better knowledge retention in education and improves patient engagement in medical training (Li & Chen, 2021). AR games such as Pokémon GO foster high user engagement by creating flow experiences (Wang & Zhang, 2021). As AR evolves, addressing usability, privacy, and accessibility challenges will be key to maximizing the potential of flow in AR experiences.

Consumers' Online Purchase Behaviour

Consumer purchase behaviour is a central element of consumer behaviour research, focusing on the decision-making processes and actions that lead individuals to acquire goods and services. This behaviour is shaped by several theoretical frameworks, such as the Consumer Decision-Making Process Model, behavioural economics, and the Theory of Planned Behaviour (TPB). These frameworks provide invaluable insights into the motivations, attitudes, and cognitive processes that influence consumer decisions (Solomon et al., 2020).

According to Thaler and Sunstein (2021), psychological factors like motivation, perception, learning, beliefs, and attitudes play a pivotal role in determining how consumers make purchase decisions. In addition to these internal drivers, external social influences—including family, friends, and cultural norms—also exert significant influence. With the rise of social media, the power of peer reviews, influencer marketing, and online communities has only intensified, further shaping consumers' purchase decisions.

Rahman and Islam (2021) argue that individual characteristics, such as age, gender, income, occupation, lifestyle, and personality, significantly influence consumer preferences and buying habits. As a result, personalization in marketing has become increasingly important, as businesses strive to tailor their offerings to match these individual traits. Moreover, situational factors, such as the COVID-19 pandemic, have led to profound changes in consumer behaviour. For example, the pandemic spurred an unprecedented increase in online shopping, with consumers shifting their focus towards essential products (Sheth, 2020). The consumer purchase decision-making process typically involves five distinct stages: problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behaviour. As the retail industry undergoes rapid digital transformation, consumer behaviour has shifted, with individuals now expecting seamless experiences across multiple channels—including online platforms and physical retail locations (Grewal et al., 2020).

In the context of the experience economy, there is a growing trend where consumers value experiences over material goods, and this significantly influences their purchasing behaviour. This shift is particularly prominent in sectors like travel, entertainment, and luxury goods, where individuals seek unique and memorable experiences (Pine & Gilmore, 2021). At the same time, advances in data analytics and artificial intelligence (AI) have enabled companies to offer personalized product recommendations, tailored marketing messages, and customized customer experiences (Li et al., 2021). This technological evolution, combined with the convenience of online shopping, has greatly influenced how consumers behave in the online retail space (Adibfar et al., 2022).

The growing digital transformation has reshaped the entire retail landscape. Consumers now expect omnichannel shopping experiences, where they can effortlessly move between online stores and physical locations (Grewal et al., 2020). The rise of e-commerce platforms, mobile shopping apps, and social commerce has redefined how people discover, evaluate, and purchase products. Concurrently, there is increasing consumer awareness about the environmental and social impact of their purchases. Research by White et al. (2020) found that consumers are more inclined to purchase from brands that demonstrate a genuine commitment to sustainability and social responsibility.

The science of online consumer shopping behaviour delves into understanding the mental processes and behavioural patterns that consumers exhibit when acquiring, using, and consuming products and services online (Qian et al., 2018). As e-commerce continues to evolve, continuous improvement of online

shopping platforms is vital for maintaining customer interest and engagement. New technologies like augmented reality (AR) and AI are increasingly being integrated into online shopping experiences, offering customers personalized recommendations and interactive features that simulate the experience of in-store shopping. Positive consumer attitudes toward a product or service can greatly enhance the likelihood of favourable behavioural outcomes, such as repeat purchases and positive word-of-mouth referrals (Holdack et al., 2022). Recent studies have highlighted the role of social influence and digital marketing strategies in shaping online consumer behaviour. For example, a well-designed, intuitive user interface can enhance the ease of use and improve the overall shopping experience, leading to increased customer satisfaction and loyalty. Additionally, understanding the complexities of online consumer behaviour is essential for addressing key concerns related to security and trust (Pantano et al., 2017).

Augmentation and Online Consumers' Purchasing Behaviour

Hilal (2023) investigated the impact of the use of augmented reality on online purchasing behaviour sustainability in Saudi Arabia. The study aimed to examine the attitudes, opinions, and behaviours of Saudi online consumers toward the use of augmented reality (AR) in the online purchasing process. A quantitative research approach was used, employing various statistical techniques such as descriptive statistics, correlation coefficients, regression analysis, and t-tests to analyse the data through SPSS version 25. Data was collected from 812 respondents using a snowball sampling method, with the validity and reliability of the questionnaire thoroughly evaluated. The study's theoretical foundation combined the Technology Acceptance Model (TAM) and AR, focusing on key consumer behaviour constructs such as trust, perceived usefulness, ease of use, enjoyment, satisfaction, and loyalty.

The results showed that AR positively influences Saudi consumers' online shopping behaviour, with factors like perceived usefulness, ease of use, enjoyment, and emotional state playing a major role in shaping their attitudes and intentions. Additionally, the study found significant links between demographic factors—such as age, education, income, and family size—and consumers' behaviours toward AR in online shopping. AR technology was concluded to enhance the online shopping experience by offering an immersive product experience, thereby increasing the likelihood of successful transactions. Despite its contributions, the study acknowledged several limitations. It used a non-probability snowball sampling method, limiting the generalizability of the findings. The study also focused exclusively on Saudi Arabia, suggesting the need for cross-cultural research. Furthermore, self-reported data posed potential biases, and technical factors like device compatibility and internet speed were not addressed. The study's findings apply specifically to online shopping and do not consider offline purchasing behaviour or the potential impact of AR device costs on adoption. The study provides valuable insights for online retailers and lays a foundation for further research on AR's impact on consumer behaviour.

Stoyanova et al. (2015) conducted a study comparing the effectiveness of different digital shopping platforms—Plain Interactive, Marker-based AR, and Markerless AR—on consumer impressions and purchase intentions. The study was carried out in Madrid, Spain, during the IEEE INISTA conference. Participants interacted with each of the three shopping platforms, and their responses were collected through computerized questionnaires. Statistical analyses were then conducted to evaluate the impact of each platform on consumer attitudes and purchase intentions. The study was theoretically grounded in interactivity and user experience theories, which assess how different levels of technological integration in shopping platforms influence consumer behaviour. The findings showed that the marker less AR system performed best in eliciting positive consumer attitudes and strong purchase intentions, outperforming both Marker-based AR and Plain Interactive systems. Marker-based AR also demonstrated better results than the Plain Interactive system, though it was not as effective as marker less AR. Despite these findings, the study had certain limitations, such as the lack of details regarding the sample size and demographic characteristics, which could affect the generalizability of the results. Additionally, since the study was conducted in an experimental setting, it may not fully reflect real-world shopping behaviours. The study recommended that retailers adopt marker less AR technologies to enhance consumer engagement and purchase intentions. It also suggested that future research should explore the application of these findings in diverse retail settings and among different consumer demographics.

Abrar (2018) investigated the effect of AR on consumer purchase intention, with customer brand engagement as a mediating factor and interactivity as a moderating factor. The study focused on online shopping environments rather than a specific geographic location. A quantitative approach was employed, collecting data from online shoppers who had experience with AR applications. Structural equation modelling (SEM) was used to analyse the relationships between AR, brand engagement, interactivity, and purchase intention. The study was grounded in the Technology Acceptance Model (TAM) and Engagement Theory, which examine how the perceived ease of use and usefulness of AR applications influence customer engagement and, subsequently, purchase intention. The findings indicated that AR has a positive impact on purchase intention, with customer brand engagement playing a significant mediating role. Additionally, the study found that interactivity enhances the effectiveness of AR applications, increasing consumer engagement and purchase intentions. However, the study had limitations, including reliance on self-reported data, which may be subject to biases, and a cross-sectional design that does not account for behavioural changes over time. The study recommended that online retailers incorporate interactive AR features to boost customer engagement and purchase intentions. It also suggested that future research employ longitudinal designs to assess the long-term impact of AR on consumer behaviour.

Watson et al. (2020) conducted a study to examine the impact of augmented reality (AR) applications on consumer affective and behavioural responses within the fashion industry. The study did not specify a geographic location but focused on consumer interactions with AR in a controlled experimental setting. The methodology involved an experiment with 162 participants between the ages of 18 and 35, where participants engaged with an AR application related to fashion products. Their responses were collected through structured questionnaires and analysed to assess the influence of AR on purchase intentions. The study was theoretically underpinned by the Stimulus-Organism-Response (S-O-R) model, which posits that external stimuli, such as AR applications, influence an individual's internal state, leading to behavioural responses like purchase intention. The findings revealed that AR significantly enhances consumer emotional engagement, resulting in greater purchase intention. The immersive experience created by AR contributes to enjoyment and strengthens consumer connection to brands. However, the study had certain limitations, including a narrow focus on a specific age group, which may not represent the broader consumer population, and an experimental setting that might not fully capture real-world shopping behaviours. The study recommended that fashion brands integrate AR into their marketing strategies to enhance engagement and drive purchase intentions. Additionally, it suggested future research should explore the long-term effects of AR on brand loyalty and examine its impact on different demographic groups.

Flow and Online Consumers' Purchasing Behaviour

Chen et al. (2018) examined the impact of flow on mobile shopping intentions in Taiwan, integrating flow theory with the Technology Acceptance Model (TAM). The study used an online survey to collect data from 310 consumers who had experience with mobile shopping services. Key variables included perceived usefulness (PU), perceived ease of use (PEOU), attitude, purchase intention, and flow, assessed using a 5-point Likert scale.

Findings indicated that flow plays a crucial role in shaping consumer attitudes and purchase intentions. Flow fully mediated the relationship between PU and attitude, meaning that users who found mobile shopping useful were more likely to experience flow, leading to a positive attitude and increased purchase intention. PU directly influenced purchase intention, while PEOU was significantly related to flow and indirectly affected PU.

However, the study had some limitations. It measured flow using only two dimensions; enjoyment and concentration, excluding aspects like control, curiosity, and telepresence. Additionally, only PU and PEOU were considered from TAM, omitting other potential factors like security concerns. Lastly, the study focused solely on mobile shopping, limiting generalizability to other technology environments.

Gao and Bai (2014) examined the relationship between website atmospheric flow and online consumer behaviour in the context of Chinese online travel agencies. Using a self-administered online survey, the

study collected 354 valid responses to assess how consumers perceive website atmospheric cues. The research was grounded in the Stimulus-Organism-Response (S-O-R) framework, which explains how external stimuli (S) influence internal states (O) and shape behavioural responses (R).

The study identified informativeness, effectiveness, and entertainment as key website atmospheric cues that enhance the flow experience, which in turn fully mediates their impact on purchase intention and satisfaction. Findings indicate that a well-designed website that fosters flow can improve consumer engagement, leading to higher purchase intention and satisfaction. This supports the validity of the S-O-R framework in the online tourism sector.

However, the study had limitations. It was conducted solely in China, making it less generalizable to other cultural settings. Additionally, participants simulated purchases, which may not fully reflect real-world experiences. The study's cross-sectional design also limits its ability to capture changes over time. Finally, individual consumer characteristics such as risk-taking behaviour or innovativeness—were not considered, suggesting an avenue for future research.

Esteban-Millat et al. (2014) explored the concept of flow in online consumer behaviour through a qualitative research approach. The study conducted a comprehensive review of existing literature to examine the states of flow in virtual environments, assess its relevance to online consumer behaviour, and evaluate previous studies on flow-related variables and methodologies. The research also identified ambiguities and inconsistencies in the conceptualization and operationalization of flow on commercial websites, aiming to enhance the understanding of online consumer interactions.

The study was grounded in flow theory, a concept from positive psychology that describes a state of complete immersion and enjoyment in an activity. Flow fosters intrinsic motivation and positive emotions, influencing consumer interactions with virtual environments, shaping attitudes toward brands and websites, and increasing the likelihood of prolonged and repeated visits. The study highlighted the role of both intrinsic and extrinsic motivation in shaping online flow experiences and consumer purchasing behaviour. Additionally, it addressed an ongoing debate about whether flow should be viewed as a unidimensional or multidimensional concept, which affects how it is measured and understood in online contexts.

Key findings revealed that flow in online shopping is characterized by a seamless sequence of responses facilitated by machine interactivity, intrinsic enjoyment, and a loss of self-consciousness. Flow experiences positively influence online consumer behaviour by fostering favourable attitudes toward brands and increasing visit duration and frequency. Both intrinsic and extrinsic motivations play a significant role in shaping and sustaining flow in virtual environments.

However, the study also acknowledged several limitations. Methodological inconsistencies in defining and measuring flow in online commerce remain, with a lack of consensus on key variables contributing to discrepancies in the literature.

Theory of Interactive Media Effects (TIME)

The Theory of Interactive Media Effects (TIME), proposed by Sundar et al. (2015), suggests that human responses to media are shaped by the technological attributes of the medium, influencing users' immersive experiences. These attributes, known as affordances, are perceived properties that present action possibilities, such as perceived control and sense of agency (Sundar et al., 2012, 2015). For example, virtual fitting rooms (VFRs) in augmented reality (AR) offer users control over content and personalization, creating a stronger sense of agency (Merle et al., 2012; Javornik, 2016). Media characteristics, such as perceived interactivity and augmentation, drive these psychological correlates and immersive experiences like telepresence, a key immersive experience in AR-based VFRs (Javornik, 2016; Lee & Xu, 2019). Interactivity allows users to engage in two-way, responsive interactions, enhancing immersion (Wu, 2006; Mollen & Willson, 2009). Augmentation, distinct from interactivity, enables interaction between the medium and the surrounding environment, providing realistic experiences that

foster immersion (Javornik, 2016; Yim et al., 2017). Ultimately, these features of AR-based VFRs contribute to immersive consumer experiences, enhancing their engagement with digital media.

Flow Theory

The Flow Theory, introduced by Mihaly Csikszentmihalyi in the 1970s, describes a state of complete immersion, focus, and enjoyment when individuals are deeply engaged in an activity (Csikszentmihalyi, 1997). Flow is characterized by a sense of effortless action, loss of time, and an exceptional experience compared to daily life activities (Moneta & Csikszentmihalyi, 1996). This theory has gained importance in consumer research, particularly in online and interactive environments, as creating flow can increase user engagement, exploration, and satisfaction (Hoffman & Novak, 1996). Flow occurs in situations where the task is challenging but manageable, leading to focused attention and intrinsic enjoyment (Ghani & Deshpande, 1994).

In the context of online shopping and augmented reality (AR), flow theory plays a significant role in enhancing user experience. AR systems, by offering immersive and interactive features, help consumers achieve a state of flow, increasing the likelihood of purchasing products (Sengupter et al., 2022; Hoffmann et al., 2022). The engaging nature of AR, combined with its visual appeal and ease of use, can reduce perceived risks, foster positive feelings, and improve decision-making, leading to higher satisfaction and purchase intentions (Oyelami, 2023; Hilal, 2023). Flow, therefore, acts as a critical factor in creating enjoyable online shopping experiences and increasing consumer engagement.

METHODOLOGY

This study adopted the survey research design, a structured five-point Likert scale questionnaire was used to obtain data from people who can use AR technology to purchase retail fashion products on their smartphones or laptops equipped with a camera. Such purchases could be made using apps or web links associated with the desired retail store. The Nigerian fashion industry's target population includes online shoppers. Cochran's formula is used to determine sample size of 384, while a provision of 10% attrition was added bringing it to a total of 422, because of the infinite nature of the population. A total of four hundred and twenty-two (422) copies of questionnaire were distributed to the respondents electronically, and 408 usable surveys were filled and used for analysis. The study data was collected using random sampling technique.

Sample size for the study is calculated thus;

$S = z^2 \times p \times (1 - p) / m^2$

S = sample size for infinite population

Z = Z-score (Value based on confidence level, e.g., 1.96 for 95% confidence level)

Z is determined based on confidence level, while the confidence level is defined as the probability that the value of a parameter falls within a specific range of value.

P = Population proportion (assumed to be 50% = 0.5)

M = margin of error (0.05 assumed)

$S = (Z \text{ score})^2 \times p \times (1 - p)/\text{margin of error})^2$

Substituting the above values into the formula

$S = (1.96)^2 \times 0.5 \times (1 - 0.5) / (0.05)^2$

$S = 384.16 \times 0.25 / 0.0025$

$S = 384.16$

The responses were coded and analysed using the partial least structural equation modelling (PLS-SEM) using the measurement and the structural model. The model of study is specified below: -

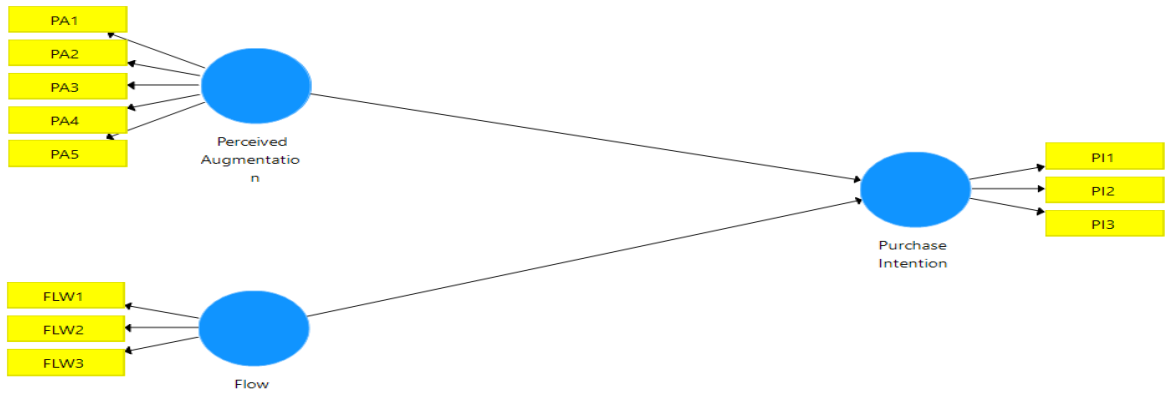

Figure 1: Theoretical model on the effect of augmented reality on fashion consumers' online purchase behaviour in Nigeria.

RESULTS AND DISCUSSION

The Measurement Model:

In assessing the measurement model, the outer loadings are assessed first, and as a rule loading above 0.70 are accepted as they indicate the construct explains more than 50% of the indicator's variance, thus providing acceptable item reliability (Hair et al 2019).

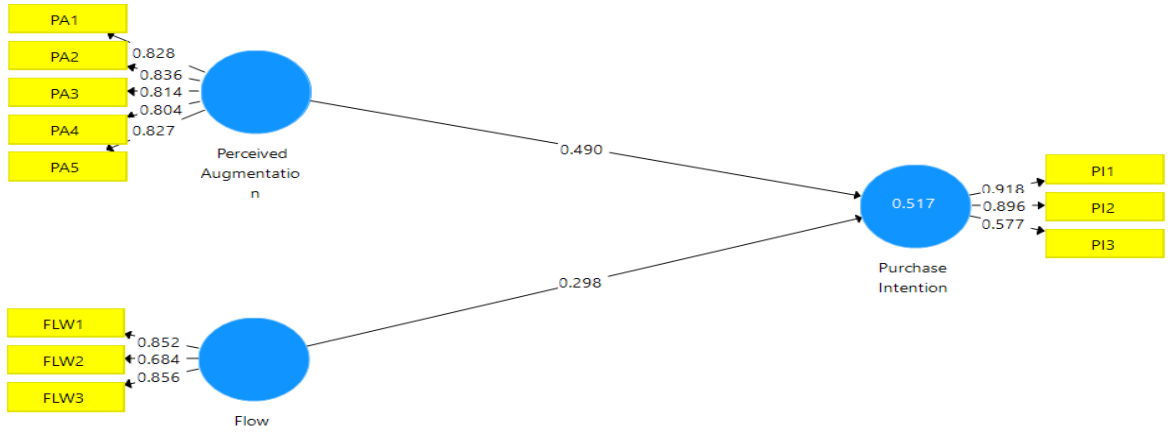

Figure 2: Indicator Outer Loadings

Table 4.1: Reliability of Study Scale

Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Flow	**0.718**	**0.742**	**0.842**	**0.642**
Perceived Augmentation	**0.880**	**0.884**	**0.912**	**0.675**
Purchase Intention	**0.720**	**0.768**	**0.848**	**0.659**

Source: PLS-SEM Output, 2024

This table provides key metrics used to assess the reliability and validity of constructs of the study, specifically looking at flow, perceived augmentation, and purchase intention. Here's an interpretation of each column and the values in the table:

The Cronbach's alpha metric tests internal consistency, or how closely related items within each construct are. Generally, a value of 0.7 or higher is acceptable.

The study shows that flow has a Cronbach's alpha of 0.718, which suggests adequate internal consistency; perceived augmentation scores 0.880, indicating high internal consistency; and purchase intention has 0.720, which is also acceptable, showing good internal consistency.

rho_A is another reliability coefficient similar to Cronbach's alpha but often considered a more accurate measure, especially when sample sizes are small. It also shows flow has a rho_A of 0.742, showing reliability, perceived augmentation scores 0.884, reinforcing its strong reliability, and purchase intention has 0.768, which is also acceptable.

Composite reliability evaluates the reliability of each construct by considering the loadings of each indicator within the construct. A value of 0.7 or higher indicates excellent reliability. Flow scores 0.842, which suggests good reliability; perceived augmentation has a high composite reliability of 0.912; and purchase intention is also strong with 0.848.

Average Variance Extracted (AVE) measures the amount of variance captured by the construct relative to the variance due to measurement error. An AVE of 0.5 or above is generally considered acceptable, as it indicates convergent validity. Flow has an AVE of 0.642, indicating good convergence validity, while perceived augmentation has an AVE of 0.675, also showing strong convergence validity, and purchase intention has an AVE of 0.659, similarly showing good convergence validity.

The above thus show that all the constructs in this study demonstrate strong reliability and validity, as indicated by Cronbach's alpha, rho_A, composite reliability, and AVE values. This suggests that the constructs are reliable and measure what they are intended to effectively, supporting the credibility of these constructs in the research context.

4.2 Heterotrait-Monotrait Ratio (HTMT)

	Flow	**Perceived Augmentation**	**Purchase Intention**
Flow			
Perceived Augmentation	**0.785**		
Purchase Intention	0.853	**0.844**	

Source: PLS-SEM Output, 2024

The heterotrait-monotrait ratio (HTMT) assesses discriminant validity, which checks if each construct is distinct from others. Values below 0.85 (or in some sources, 0.90) are generally considered acceptable, indicating that constructs are measuring different concepts.

The HTMT value shows flow and perceived pigmentation have a value ratio of 0.785, which is below the threshold of 0.85, indicating good discriminant validity between these two constructs. This suggests that flow and perceived augmentation are distinct from each other in this study. Flow and purchase intention have an HTMT ratio of 0.853, which is very close to the threshold but still suggests adequate discriminant validity between these two constructs. This shows that while flow and purchase intention are related, they are also sufficiently distinct. Perceived Augmentation and Purchase Intention have an HTMT ratio of 0.844, which also falls just below the threshold. This value suggests acceptable discriminant validity between perceived augmentation and purchase intention, indicating they measure different aspects as intended.

The result showed that all constructs meet the threshold for discriminant validity, as their HTMT values are below or very close to the common cut-off of 0.85. This indicates that flow, perceived augmentation, and purchase intention are sufficiently distinct from each other, supporting the validity of the constructs in the model.

The Structural Model

In assessing the structural model, the standard assessment criteria were considered which include the path coefficient, t-values, p-values and coefficient of determination(R2), the bootstrapping procedure was conducted using a resample of 5000

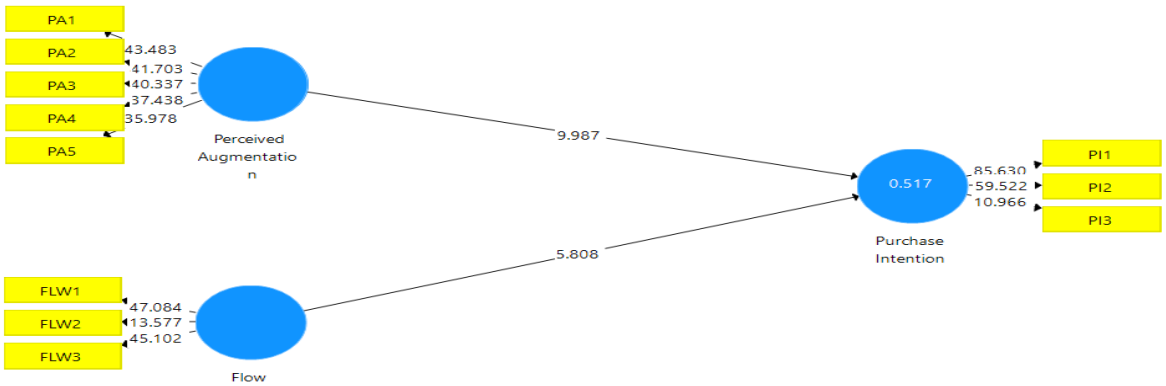

Figure 3: Path coefficient of the regression model

Table 4.3 R2 Summary

	R Square	R Square Adjusted
Purchase Intention	0.517	0.514

Source: PLS-SEM Output, 2024

This table provides the R Square and Adjusted R Square values for the construct Purchase Intention. The R Square (0.517) indicates that 51.7% of the variance in Purchase Intention is explained by the perceived augmentation and flow. An R Square of 0.517 suggests that the model has a moderate explanatory power. Adjusted R Square is a modified version of R Square that accounts for the number of predictors in the model, preventing overestimation of the explanatory power. Here, the Adjusted R Square is 0.514, which is slightly lower than the R Square value, indicating that the model maintains its explanatory power even when adjusted for the number of predictors.

Table 4.4 Path Coefficient

	Original Sample (O)	T Statistics (|O/STDE)	P Values	Decision
Flow -> Purchase Intention	0.298	5.808	**0.000**	**Rejected**
Perceived Augmentation -> Purchase Intention	0.490	9.987	**0.000**	**Rejected**

Source: PLS-SEM Output, 2024

Test of Hypotheses

Hypothesis One

Perceived Augmentation has a significant effect on Purchase Intention. The coefficient here is 0.490, suggesting a moderately strong positive effect of perceived augmentation on purchase intention. The T-statistic is 9.987, with a P-value of 0.000, confirming statistical significance. This finding implies that when consumers perceive high levels of augmentation (such as augmented reality features), their intent to purchase increases significantly, thus, rejecting the null hypothesis since there is a significant relationship between perceived augmentation and purchase intension. These results align with previous research, such as Hilal (2023), which found that AR enhances online shopping experiences, leading to

higher engagement and purchase intentions. Additionally, studies by Gao and Bai (2014) and Chen et al. (2018) support the idea that interactive and immersive online environments positively affect consumer behaviour. By rejecting the null hypothesis, this study reinforces the importance of perceived augmentation in driving online purchase decisions, particularly in the Nigerian fashion industry.

Hypothesis Two

Flow has a positive effect on Purchase Intention. The effect of flow on purchase intention has an original sample coefficient of 0.298, indicating a positive relationship. The T-statistic is 5.808, with a P-value of 0.000, showing that this relationship is statistically significant. This suggests that an increase in flow experience positively influences consumers' intention to purchase. Again, this finding nullifies the null hypothesis suggesting there is no significant relationship. The findings align with previous research emphasizing the role of flow experience in shaping consumer behaviour. Studies by Hoffman and Novak (1996) and Hausman and Siekpe (2009) highlight that immersive and engaging online experiences enhance consumer engagement and drive purchase intention. Similarly, Zhou et al. (2012) found that flow positively influences online shopping by fostering trust and satisfaction.

With an original sample coefficient of 0.298 and a T-statistic of 5.808 ($p < 0.001$), the study provides strong empirical evidence supporting these claims. This aligns with Novak, Hoffman, and Yung (2000), who emphasized that a high level of flow strengthens consumer attitudes and purchase decisions.

CONCLUSION AND RECOMMENDATIONS

The analysis reveals that both Flow and Perceived Augmentation significantly influence Purchase Intention among users, with perceived augmentation having a stronger impact than flow. The significant path coefficients indicate that these variables play crucial roles in shaping online consumers' intentions to purchase, especially in the context of technologies such as augmented reality (AR). Specifically, Flow (coefficient = 0.298, $p < 0.05$) suggests that when users experience a seamless, engaging, and immersive interaction with AR, they are more likely to intend to purchase. Meanwhile, perceived augmentation (coefficient = 0.490, $p < 0.05$) has an even greater influence, indicating that users are especially motivated to purchase when they perceive AR as genuinely enhancing their shopping experience, whether by offering greater interactivity, added value, or improved visualisation of products.

The R square value for purchase intention (0.517) further reinforces these findings, showing that approximately 51.7% of the variance in purchase intention can be explained by flow and perceived augmentation combined. This moderately high level of explanatory power suggests that these factors are central to understanding consumer behaviour in AR-enhanced online shopping environments. However, the model also leaves room for other variables that might influence purchase intention, such as perceived ease of use, brand trust, or social influence, which could be investigated in future studies.

1. Since perceived augmentation has the most substantial impact on purchase intention, fashion retailers should prioritize making AR features genuinely useful and value-added. For example, AR should offer detailed product visualizations, customization options, and interactive features that go beyond basic viewing. Companies could incorporate features like virtual try-outs, 360-degree product views, and real-time customization to improve the perceived effectiveness and usefulness of the technology. AR technology is evolving rapidly, and consumer expectations grow with these advancements. Businesses should stay informed on the latest AR trends and continuously improve their AR applications by adopting new, cutting-edge features. This will not only keep the technology relevant but also enhance perceived augmentation, potentially increasing purchase intention even further.
2. Improving the flow within AR interfaces can make users' interactions smoother and more engaging, which is shown to positively influence purchase intention. This can be achieved by streamlining the user interface (UI) design to reduce friction, such as minimising loading times, simplifying navigation, and ensuring intuitive controls. Regular testing and user feedback sessions can help identify points of friction and continuously refine the AR experience, creating a more immersive and engaging flow for the users. Implementing user feedback tools within the AR interface can provide valuable insights into what users find most engaging or cumbersome. Real-

time feedback options, post-interaction surveys, and analytics can help companies understand which features contribute to a better flow and a greater perception of augmentation. Fashion retailers can then use these insights to fine-tune features, enhancing both the perceived ease of use and usefulness of the AR experience.

By implementing these recommendations, fashion retailers can effectively leverage AR technology to boost consumer engagement and ultimately increase online purchase intentions. These strategies not only improve the shopping experience but also position companies at the forefront of digital innovation in e-commerce.

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