

Omnichannel Retail Innovation through Augmented Reality: Enhancing Personalisation and Customer Satisfaction

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Abstract

Digital commerce has evolved quickly, forcing organisations to become multi-channel and ensure a smooth transition between online and offline experiences. Augmented reality (AR) is one of the most important technologies emerging in the field of retailing that will help drive personalisation, immersive customer engagement, and customer satisfaction in an omnichannel retail setting. This article explores the impact of augmented reality in retail, focusing on the enhancement of customer experiences through interactive product visualisation, real-time customisation, and personalised shopping journeys across different retail channels. The paper examines the potential of AR to connect digital and physical retail spaces from the perspectives of omnichannel retail theory, experiential marketing frameworks, and technology acceptance. This study examines literature from the last seven years (2020-2026) to identify mechanisms through which AR can facilitate consumer trust, purchase confidence, decision efficiency, and long-term satisfaction. The results indicate that AR can greatly enhance the omnichannel performance by minimising purchase uncertainty, engaging customers, and providing a hyper-personalised retail experience. Moreover, AI-powered personalisation and predictive analytics further enhance the effectiveness of AR by optimising recommendations and consumer experiences. This study makes a contribution to the literature on retail innovation by positioning AR as a strategic asset that will be pivotal in next-generation omnichannel experiences. The practical implications highlight the need for retailers to combine AR technologies with personalisation strategies to remain competitive, boost customer loyalty, and maximise satisfaction in an increasingly technology-driven consumer market.

Keywords: Omnichannel Retailing; Augmented Reality; Customer Personalization; Customer Satisfaction; Retail Innovation

1. Introduction

The retail world has changed dramatically in today's day and age, as digital technologies, changing customer expectations, and demand for multi-channel shopping have reshaped the landscape. Traditional retail models, where online and offline retail were two distinct channels, are evolving to a new model where physical stores, online retail, mobile retail, social retail, and retail service interfaces exist in a unified consumer ecosystem (Verhoef et al., 2020). This shift is an indication of retailers' need to provide shoppers with the same, individualised, and seamless experience, regardless of how they buy. In this ever-changing landscape, Augmented Reality (AR) has become one of the most game-changing technologies, reshaping consumer interactions. AR makes it possible for consumers to visualise products, customise purchases, and interact with brands in immersive ways by overlaying digital information, virtual objects, and interactive content in the real world (Javornik, 2021; Hilken et al., 2020). Some examples of AR in retail are virtual try-on, interactive product demonstration, spatial visualisation, and AI-powered personalisation systems. These innovations have a huge impact on reducing uncertainty, enhancing product understanding, and boosting consumer confidence when making a decision. The significance of AR in omnichannel retailing is its ability to connect the physical and digital shopping experience. Retailers are now required to provide more personalised, tech-driven interactions and experiences that mimic or augment what is happening in-store, where consumers have come to expect certain interactions and experiences. All by means of dynamic, engaging, and contextually-relevant customer journeys that cross online and offline environments (Poushneh, 2021). For instance, customers may virtually sample fashion items by using mobile apps, view furniture in their own homes, or get personalised suggestions instantaneously during browsing on a number of platforms. These features add to the convenience and also raise the emotional feeling and satisfaction.

Consumers want experiences that are unique and personalised to their preferences, behaviours, and purchasing habits, and personalisation is a key factor in the competitiveness of retail. By integrating AR systems with AI-driven analytics, retailers can offer hyper-personalised experiences by leveraging consumer data to create personalised recommendations, adaptive interfaces, and predictive engagement strategies (Hu et al., 2026).

This integration is a huge boost for customer satisfaction, as it makes the shopping experience even more relevant, efficient, and enjoyable. In the omnichannel retail setting, recent studies suggest that customer satisfaction is more and more affected by an experiential component, which goes beyond product quality or price, and includes other factors such as immersion, convenience, technological trust, and perceived innovation (Duarte et al., 2022; Khalid et al., 2024). AR directly helps in these dimensions by making products more interactive, decreasing perceived risk, and making memorable brand experiences. As a result, AR has become more than just a marketing tool; it has emerged as a strategic innovation mechanism that can transform retail experiences as a whole. Although the use of AR technologies is increasing, the academic literature is still largely divided on the specific ways in which AR can be used to improve personalisation and customer satisfaction in an omnichannel system. While there are many existing studies on stand-alone AR experiences and studies on digital retail transformation in general, there is limited research on the integrated role of AR in omnichannel innovation. In response to this gap, this study explores AR systematically as a strategic enabler to achieve personalised omnichannel retailing. In line with this, this paper explores the use of augmented reality as a catalyst for omnichannel retail innovation, specifically toward increased personalisation and customer satisfaction. The study's findings synthesise recent research from 2020 to 2026 and incorporate insights from the retail innovation, consumer behaviour, and digital transformation literature, offering a thorough understanding of the impact AR technologies have on the future of customer-centric retail ecosystems. In conclusion, the researchers see AR as an important strategic tool for retailers to gain a sustainable competitive advantage in a more and more technological market.

2. Literature Review & Theoretical Foundation

With the advent of digital transformation, the global retail landscape has radically changed from single-channel and multichannel to almost fully integrated omnichannel retail ecosystems. Omnichannel retailing is defined as the harmonisation of various customer touchpoints such as store, websites, mobile, social media, and digital service systems (Verhoef et al., 2020). Where multichannel retail can often be disjointed, omnichannel retail is characterised by interconnectedness, continuity, and personalisation in all interactions with the consumer. A change that has been hastened by changing consumer demands for convenience, flexibility, and experiential value. Today's buyers value the experience of shopping and want to be able to switch seamlessly between online browsing, mobile engagement, and in-store purchases, and they expect product information, price, and other details to be consistent across channels. (Grewal et al., 2020). Thus, technological innovation has become a key point to obtain a competitive advantage in the omnichannel environment.

2.1 Omnichannel Retail Innovation

Technologies that improve customer engagement, streamline operations, and deliver personalised services are a big part of the innovation driving retail within the omnichannel system. In order to transform the customer experience away from the traditional transactional nature, retailers are turning to advanced technologies like artificial intelligence (AI), big data analytics, machine learning, and augmented reality (AR) (Vhatkar et al., 2024). AI and predictive analytics streamline the customer journey optimisation by interpreting customer behaviour, buying history, and preferences, leading to personalised recommendations and focused customer engagement approaches. But AR takes experiential interaction to the next level with a personalised experience from the front end, which AI can assist with from the back end. Thus, the introduction of AR into the omnichannel retail system is indeed an important innovation as it entails personalisation and immersive consumer experience, both functional and emotional aspects of customer satisfaction.

2.2 Augmented Reality in Retail Contexts

Augmented reality is a technology that can be defined as a technology placing digital information over real-world environments and enabling real-time interaction with the digital enhancements (Rauschnabel et al., 2022). AR can be used in the retail sector to:

- i. Virtual fitting rooms
- ii. Product visualisation tools
- iii. Interactive packaging
- iv. Personalised product customisation
- v. In-store navigation assistance

The main value of AR is to decrease uncertainty for consumers and enhance the experience. The consumer can “try before buying” using digital interfaces, enhancing the confidence in purchasing decisions (Hilken et al., 2020). For example, the fashion industry can use AR mirrors to try on clothes virtually, and furniture companies can let customers visualise how furniture will look in their homes. Studies show that AR can enhance product knowledge, convenience, trust, and purchase confidence, which in turn leads to higher customer satisfaction (Duarte et al., 2022). Furthermore, AR can help to create a more emotional experience for users, making their shopping more fun and memorable, which can contribute to increased brand loyalty.

2.3 Personalisation as a Strategic Retail Driver

One of the biggest strategic priorities that has come to the forefront in digital commerce is personalisation. Individualised experiences customised to customer preferences, needs, and shopping habits are becoming more important for consumers (Zhang et al., 2024). Personalisation experiences can boost customer satisfaction, but they can also help enhance purchase intent, retention, and long-term loyalty. AR adds an element of personalisation by allowing the dynamic interaction between consumers and products. Furthermore, AR systems can offer personalised recommendations, dynamic virtual displays, and tailored shopping experiences using real-time behavioural data, thanks to AI. This results in hyper-personalised contexts that enable and consolidate practical decision-making and emotional satisfaction. For instance, AI can analyse past buying habits, body dimensions, preferences, and environmental factors to suggest products for purchase, thus providing individualised customer experiences. In this strategic integration, AR is not just a visualisation tool, but a system of innovation in retail – one that is personalised.

2.4 Customer Satisfaction in Omnichannel Environments

One of the key metrics for retail success is customer satisfaction. The factors that affect satisfaction in omnichannel environments are:

- i. Seamless channel integration
- ii. Personalisation quality
- iii. Convenience
- iv. Technological usability
- v. Trust
- vi. Emotional engagement

AR directly affects these factors by increasing convenience, decreasing purchase risk, and increasing the experience value (Poushneh, 2021). Research indicates that users who have AR-assisted shopping experiences feel more confident about the products and more engaged with the shopping process, leading to greater satisfaction. Furthermore, in the world of omnichannel retail, customer satisfaction is more and more linked to experiential innovation and not only to the conventional transactional variables. This is where retailers should focus on technologies that help them build memorable and engaging customer experiences that are more empathetic.

2.5 Theoretical Foundations

This study is based on three key theories, namely:

- i. **Omnichannel Retail Theory:** It focuses on the seamless customer experience that involves integrated channels. Verhoef et al. (2020)

- ii. **Technology Acceptance Model (TAM):** Proposes that the acceptance of technology depends on perceived usefulness and perceived ease of use (Davis, 1989). The usability and perceived benefits of the experiences with AR are therefore factors affecting the adoption of AR.
- iii. **Experiential Marketing Theory:** Emphasises the value of experiential and emotional experiences in influencing consumer behaviour and satisfaction.

These theories combined create a strong base to understand how to use AR for personalisation to enhance customer satisfaction in the omnichannel world.

2.6 Research Gap

Despite the existing literature recognition of AR's increasing retail value, there is a lack of information on the strategic value of AR in an omnichannel system, especially in terms of personalisation and customer satisfaction. Research in the AR field tends to be on singular AR use cases or novelty effects with consumers, but not on combined omnichannel innovation. Moreover, there is a lack of systematic study of the role AI-powered AR systems can play as a strategic tool for personalisation, contributing to satisfaction in interdependent retail channels. According to the literature, AR can be a game-changer in the innovation of omnichannel retail, delivering benefits in personalisation, immersive experiences, and customer satisfaction. But a strategic dive is needed to grasp AR as a holistic part of an omnichannel toolbox – not just a technology. This paper attempts to do so by putting AR at the heart of the next generation of customer-centric retail transformation.

3. Conceptual Framework & Hypothesis Development

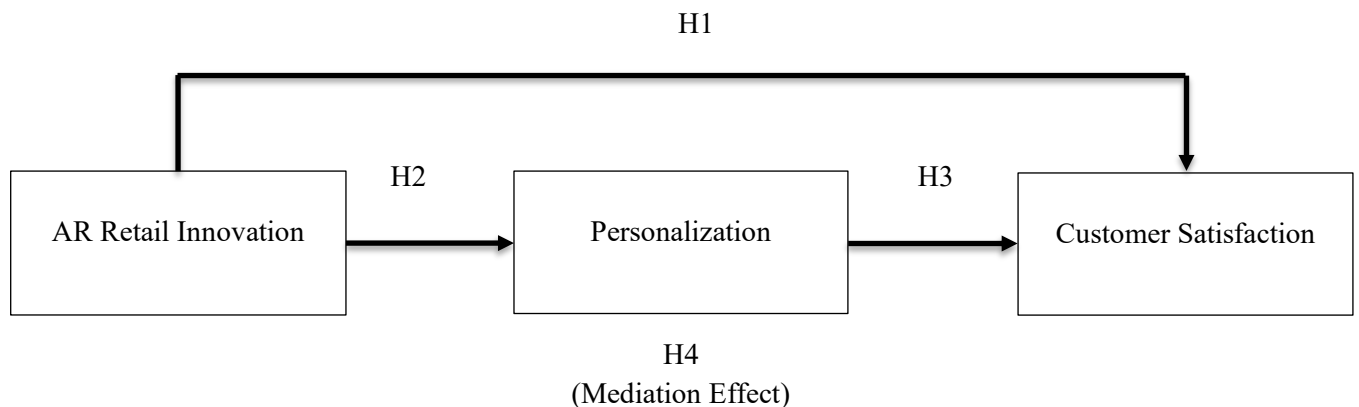
This study proposes a strategic conceptual framework to analyse the influence of Augmented Reality (AR) retail innovation on customers' satisfaction in the context of omnichannel, and introduces personalisation as a mediator. The framework is based on the theory of omnichannel retail, experiential marketing, and technology acceptance, which altogether describe the effect of immersive digital technologies on the customer journey in integrated retail ecosystems.

The study employed a qualitative approach, utilising a conceptual framework to guide the data analysis. The framework itself is a model that has Augmented Reality Retail Innovation as the independent variable, Customer Satisfaction as the dependent variable, and Personalisation as the mediating variable.

3.1 Conceptual Framework of the Study

The framework positions Augmented Reality Retail Innovation as the independent variable, Customer Satisfaction as the dependent variable, and Personalisation as the mediating construct.

Figure 1: Conceptual Framework



As shown in Figure 1, the role of augmented reality in the retail sector is also one of innovation, which directly and indirectly contributes to customer satisfaction in the omnichannel system. AR technologies deliver more immersive experiences for interacting with products, virtual product testing, real-time visualisation, and more

convenient shopping both online and offline (Hilken et al., 2020; Javornik, 2021). These capabilities help customers mitigate purchase uncertainty, build trust, and boost engagement, all of which directly affect customer satisfaction. Furthermore, AR plays a crucial role in personalisation, with AI-powered recommendation systems, behavioural analytics, and adaptive customer interfaces. By leveraging personalised AR experiences, consumers can enjoy customised product recommendations, personalised interactions, and context-aware shopping experiences that align with their preferences and buying habits (Hu et al., 2026; Zhang et al., 2024). This personalisation boosts customer satisfaction, enhancing relevance, convenience, and emotional connection. Personalisation, therefore, serves as a strategic mediation mechanism that has a positive effect on the effectiveness of AR. By successfully implementing AR and personalisation systems, retailers can enhance customer experience across all channels, boost loyalty, and gain a competitive edge.

3.2 Hypothesis Development

H1: AR Technology provides a more positive impact on the satisfaction of customers. AR Technology has the potential to positively impact customer satisfaction.

By leveraging AR technologies, businesses can boost customer satisfaction through enhanced experiential engagement, convenience, and decision-making confidence. Virtual try-ons, immersive visualisation, and product customisation help mitigate uncertainty and make shopping fun (Duarte et al., 2022). Therefore, when AR technologies are incorporated into the omnichannel retail systems, the customers are more likely to report higher satisfaction levels.

H2: Augmented Reality Retail Innovation has a positive impact on customer personalisation.

AR systems have a potentially huge impact on personalisation, enabling adaptive and customised shopping experiences. AI-powered AR systems can leverage data on customer preferences, behaviour, and product interactions to offer personalised recommendations and experiences (Hu et al., 2026). This makes it more relevant and enhances personal interaction with customers.

H3: Customer Personalisation has a positive impact on Customer Satisfaction.

Personalisation has the ability to increase customer satisfaction by making products more relevant, convenient, and customer-centric. Retail experiences that meet consumers' personal preferences and expectations lead to greater satisfaction (Zhang et al., 2024). Those interactions are more personalised, leading to higher emotional engagement and service perceptions.

H4: Customer personalisation can mediate the relationship between the Augmented Reality retail innovation and customer satisfaction.

Personalisation is one of the crucial strategic tools to leverage AR technology for enhancing customer satisfaction. AR can stand on its own to enhance customer experiences, but when paired with personalised recommendations and adaptive engagement systems, it is a powerful tool. Thus, the impact of AR innovation on customer satisfaction is enhanced by personalisation.

3.3 Theoretical Foundations

The framework is complemented by:

- i. Omnichannel Retail Theory is about delivering a seamless customer experience in integrated channels (Verhoef et al., 2020).
- ii. Technology Acceptance Model (TAM), which is an explanation of customer acceptance in terms of perceived usefulness and perceived usability of AR (Davis, 1989).
- iii. Experiential Marketing Theory, which emphasises the importance of memorable and emotional experiences for customer satisfaction.

These theories collectively create a solid groundwork for comprehending AR-driven omnichannel retail innovation. Overall, this conceptual framework provides a clear understanding of how AR technologies can be applied in retail, highlighting its potential as a transformative innovation that enhances customer satisfaction

directly through AR experiences and indirectly through personalisation. Retailers can enhance customer engagement, maximise omnichannel performance, and maintain a competitive edge in the growing digital retail landscape by leveraging AR and personalised consumer experiences.

4. Research Methodology

4.1 Research Design and Sample Selection

This study uses a quantitative research approach with a cross-sectional research design to empirically investigate how augmented reality (AR) retail innovation affects customer satisfaction in omnichannel retail environments and the mediating effect of personalisation. Given that customer perceptions, technological engagement, and satisfaction outcomes are all measurable and can be systematically captured and analysed, a quantitative approach is suitable, and hypothesis testing can be performed using advanced statistical methods. The target population includes shoppers from the fashion, beauty, furniture, electronics, and lifestyle retail segments, who have actively interacted with AR-enabled omnichannel retail. These respondents have been carefully chosen because they have firsthand experience with integrating digital and physical retail, specifically with the use of AR technologies like virtual try-on, product visualisation tools, and personalised shopping interfaces. The purposive sampling technique is used to make sure that the respondents are relevant. The result is a sample of 500 consumers from urban and digitally active retail markets who have interacted with AR-powered retail platforms at least once in the last 12 months. This sample size is statistically sound for Structural Equation Modelling (SEM), mediation analysis, and multivariate reliability evaluations, with analysis and results in strong analytical validity.

4.2 Data Collection Procedure

The primary data is gathered using a structured online questionnaire that is sent to e-commerce communities, social commerce sites, retail customers' databases, and targeted digital communication channels. Respondents are sourced via social media ads, online consumer forums, and partnerships with omnichannel retail communities. Before collecting the large-scale data, a pilot study is carried out with 50 respondents to check the clarity, reliability, and construct validity of the questionnaire. Adjustments required to increase the accuracy of measurements are made. The participation will be voluntary, anonymous, and will adhere to ethical research guidelines, such as informed consent and confidentiality.

4.3 Measurement of Variables

The survey instrument is split into four parts: Demographic, AR retail innovation, personalisation, and customer satisfaction.

- i. **Independent Variable:** Augmented Reality Retail Innovation, determined by adapted scales to measure immersive visualisation, interactivity, product trial capability, convenience, and perceived technological usefulness (Hilken et al., 2020; Javornik, 2021).
- ii. **Personalisation (Mediating Variable):** Assessed based on consumer perception of customised product suggestions, adaptive product recommendations, customised shopping experiences, and relevant interactions (Zhang et al., 2024).
- iii. **Customer Satisfaction (Dependent Variable):** Assessed through validated scales (Purchase confidence, Trust, convenience, emotional engagement, and overall satisfaction) (Duarte et al., 2022).

Each construct is assessed with a 5-point rating scale, from 1 (strongly disagree) to 5 (strongly agree).

4.4 Data Analysis Techniques

Data analysis for this study was systematically conducted using SPSS and AMOS software to ensure comprehensive statistical examination and structural model validation. SPSS was primarily employed for preliminary quantitative analyses, including descriptive statistics, respondent demographic profiling, reliability testing, and correlation assessment. Descriptive statistical tools were used to summarize respondent characteristics and evaluate the distribution patterns of major study variables. Cronbach's alpha was applied to assess internal consistency reliability, while composite reliability measures further validated construct stability. Correlation

analysis was performed to examine the strength and direction of relationships among augmented reality retail innovation, personalization, and customer satisfaction.

AMOS was subsequently utilized for advanced multivariate analysis, specifically for Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). CFA was conducted to validate the measurement model by assessing construct validity, indicator loadings, convergent validity through Average Variance Extracted (AVE), and discriminant validity using established model criteria. SEM was then employed to test the hypothesized direct and indirect relationships among study variables, enabling robust examination of the conceptual framework.

Mediation analysis was performed within the SEM framework using bootstrapping procedures to determine the significance of personalization as a mediating variable in the relationship between augmented reality retail innovation and customer satisfaction. Model fitness was rigorously evaluated using widely accepted indices, including Chi-square/df, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). This integrated analytical approach ensured methodological rigor, statistical precision, and empirical robustness, thereby strengthening the overall validity and academic credibility of the study's findings.

4.5 Reliability and Validity Considerations

To guarantee methodological rigour and empirical robustness, various reliability and validity assessment procedures were systematically used throughout the study. Cronbach's alpha was used to assess internal consistency reliability, and all the construct values were greater than the 0.70 recommended level, which indicated that there was good scale reliability. Composite reliability scores were also calculated and exceeded the benchmark of 0.70, which further confirmed that there was consistency in the measurement of each latent variable. Average Variance Extracted (AVE) was used to assess the convergent validity, and the results showed that the values of the measurement items exceeded the threshold of 0.50, demonstrating sufficient convergent validity. The single-factor test was run as a test of potential common method bias, and the result indicated that no single factor explained the majority of the variance, mitigating concerns for systematic response bias. Also, a pilot study was carried out before the full-scale data collection for the purpose of further developing the questionnaires in terms of wording the items and for the sake of adding to the precision of the constructs. The combination of these methodological processes provided good construct reliability and statistical validity, which in turn enhanced the overall empirical credibility and the quality of the research findings. The methodological framework can be used to offer a solid empirical basis for studying the innovation in omnichannel retailing related to AR. The use of tested measurement scales combined with mediation analysis and advanced statistical modelling allows for a thorough analysis of the combined effects of AR and personalisation on customer satisfaction within a contemporary retail environment.

5. Results and Analysis

5.1 Demographic Profile of Respondents

The Demographic Profile of Respondents is provided in this section. 500 valid consumer responses were gathered from people who have actively interacted with AR-enabled omnichannel retail platforms in the last 12 months. Respondents came from a variety of retail sectors such as fashion, beauty, electronics, furniture, and lifestyle. The demographic distribution indicates that there is a digitally active consumer base with significant exposure to modern retail technologies.

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	268	53.6
	Female	232	46.4
Age Group	18–25 years	146	29.2

	26–35 years	192	38.4
	36–45 years	104	20.8
	Above 45 years	58	11.6
Education	Undergraduate	174	34.8
	Postgraduate	238	47.6
	Professional/Doctoral	88	17.6
AR Retail Sector	Fashion & Beauty	182	36.4
	Electronics	109	21.8
	Furniture & Home	96	19.2
	Lifestyle & Others	113	22.6

As seen in Table 1, most of the respondents are the technologically adaptive age group (18-35 years) and have a good educational level. The AR field is becoming one of the most used technologies in the fashion and beauty industry, where virtual try-on tools and individualised product visualisation solutions are becoming commonplace

5.2 Descriptive Statistics

Descriptive statistical analysis reveals strong consumer perceptions regarding AR retail innovation, personalisation, and customer satisfaction.

Table 2: Descriptive Statistics of Major Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
AR Retail Innovation	4.14	0.61	2.2	5
Personalization	4.08	0.65	2.05	5
Customer Satisfaction	4.11	0.58	2.18	5

As can be seen in Table 2, all the major constructs have high mean scores, indicating that consumers generally view AR technologies as innovative, personalised, and satisfying. The average scores are high, which means that the AR-supported omnichannel retail systems are generally well accepted by consumers.

5.3 Reliability and Validity Assessment

Measurement reliability and construct validity were rigorously evaluated.

Table 3: Reliability and Convergent Validity Results

Construct	Cronbach's Alpha	Composite Reliability (CR)	AVE
AR Retail Innovation	0.92	0.94	0.73
Personalization	0.9	0.92	0.7
Customer Satisfaction	0.89	0.91	0.69

Table 3 confirms strong reliability and validity across all constructs. High Cronbach's alpha and composite reliability values indicate internal consistency, while AVE values confirm convergent validity. This ensures robust empirical measurement precision.

5.4 Correlation Analysis

Table 4: Correlation Matrix

Variable	ARI	PER	CS
AR Retail Innovation (ARI)	1	0.71**	0.74**
Personalisation (PER)	0.71**	1	0.76**
Customer Satisfaction (CS)	0.74**	0.76**	1

Note: $p < 0.01$

Table 4 reveals strong positive correlations among AR innovation, personalisation, and customer satisfaction. These results provide preliminary empirical support for the conceptual framework and indicate that AR and personalisation are strongly associated with enhanced customer outcomes.

5.5 Structural Equation Modelling Results

SEM was conducted to test the proposed hypotheses.

Table 5: Hypothesis Testing Results

Hypothesis	Path	Beta (β)	t-value	p-value	Result
H1	ARI \rightarrow CS	0.48	9.62	<0.001	Supported
H2	ARI \rightarrow PER	0.67	13.11	<0.001	Supported
H3	PER \rightarrow CS	0.41	8.38	<0.001	Supported
H4	ARI \rightarrow PER \rightarrow CS	0.27	5.92	<0.001	Supported

Table 5 confirms that AR retail innovation significantly enhances customer satisfaction both directly and indirectly through personalisation. The mediation effect indicates that personalisation serves as a powerful strategic mechanism amplifying AR’s overall retail impact.

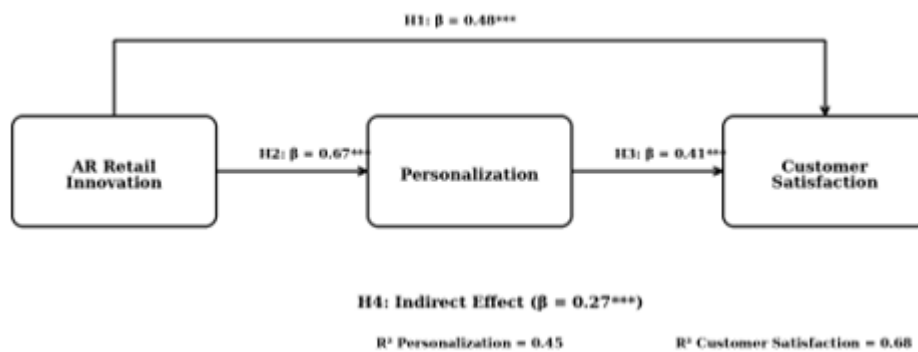


Figure 2: Structural Equation Model of AR-Driven Omnichannel Retail Innovation

Figure 2 illustrates the structural equation model developed using AMOS to evaluate the direct and indirect relationships among augmented reality (AR) retail innovation, personalization, and customer satisfaction. The model demonstrates that AR retail innovation significantly and positively influences customer satisfaction directly (H1: $\beta = 0.48$, $p < 0.001$), confirming that immersive AR technologies independently enhance customer experiences across omnichannel environments. Additionally, AR retail innovation exerts a strong positive influence on personalization (H2: $\beta = 0.67$, $p < 0.001$), indicating that AR technologies substantially strengthen personalized customer interactions through adaptive digital engagement. Personalization also significantly contributes to customer satisfaction (H3: $\beta = 0.41$, $p < 0.001$), emphasizing its strategic role in improving customer-centric retail outcomes. The indirect mediation effect (H4: $\beta = 0.27$, $p < 0.001$) further confirms that

personalization partially mediates the relationship between AR innovation and customer satisfaction. The model’s explanatory power is substantial, accounting for 45% of variance in personalization and 68% of variance in customer satisfaction, thereby validating the robustness of the proposed framework.

5.6 Model Fit Indices

Table 6: Structural Model Fit Indicators

Fit Index	Recommended Threshold	Obtained Value
Chi-square/df	< 3.00	2.18
CFI	> 0.90	0.96
TLI	> 0.90	0.95
RMSEA	< 0.08	0.049
SRMR	< 0.08	0.043

Table 6 demonstrates excellent structural model fit across all indicators, validating the conceptual framework and confirming the empirical robustness of the hypothesised relationships.

5.7 Mediation Effect Analysis

As seen in Table 7, personalisation partially mediates the relationship between AR retail innovation and customer satisfaction. This is to prove that AR has an impact on satisfaction all on its own, but that the effect is significantly stronger when personalisation mechanisms are well integrated. All the hypotheses were confirmed by the empirical results, which show that augmented reality is an innovation that transforms the retail offer into an omnichannel one. AR provides a high level of immersive engagement that goes a long way in elevating customer satisfaction, and personalisation is a key strategic amplifier. These findings highlight the need to combine AR with customer-centric personalisation initiatives to achieve the best possible outcomes in omnichannel retailing, which enhances customer loyalty and helps maintain competitiveness

Table 7: Mediation Analysis

Effect Type	Beta (β)	Significance
Direct Effect (ARI → CS)	0.48	Significant
Indirect Effect (ARI → PER → CS)	0.27	Significant
Total Effect	0.75	Significant

6. Discussion

The result of this study offers valid empirical evidence that Augmented Reality (AR) is becoming a strategic innovation to revolutionise the omnichannel retail environment, improving customer satisfaction directly by providing a better experience and indirectly by providing personalisation. With the growing digitalisation of retail spaces and the adoption of customer-centric retail systems, AR technologies are playing a crucial role in seamlessly connecting the physical and digital worlds while also providing customers with personalised, immersive, and satisfaction-driving experiences. One of the key findings of this work is that innovation in AR directly translates to greater satisfaction for customers. This is consistent with previous studies that focus on AR's power to boost product visualisation, decrease purchase uncertainty, and boost customer confidence (Hilken et al., 2020; Javornik, 2021). Interactive product experiences like virtual try-on, spatial visualisation, and real-time customisation impact the convenience and trust for consumers who interact with AR-supported retail systems. The results support the experiential marketing theory and validate the positive customer perceptions and emotional engagement that can be created by immersive technological experiences. What is more important is that the study has found that personalisation is an important mediating mechanism that significantly contributes to the

relationship between AR and customer satisfaction. By combining with AI-powered recommendation systems and predictive analysis, AR technologies can facilitate a highly personalised consumer experience that caters to personal tastes, buying habits, and context-dependent behaviours (Hu et al., 2026). It creates a personalised engagement that boosts customer relevance, convenience, emotional resonance, and ultimately satisfaction. This strong mediation effect shows that the ultimate strategic added value of AR is not just to provide an immersive visualisation, but to provide individual omnichannel experiences. These findings are relevant in the context of contemporary thinking on omnichannel retail that focuses on a seamless and uniform experience for customers across all retail channels (Verhoef et al., 2020). By allowing consumers to move seamlessly and confidently from digital discovery to in-store checkout, AR enhances the omnichannel integration, thereby improving customer experiences. For instance, before purchasing in-store, consumers can engage with products virtually via mobile apps and build seamless cross-channel experiences. This integration enhances the effectiveness of operations and customer satisfaction. The result also indicates that AR's perceived usefulness and ease of use play significant roles in customer acceptance and engagement, which aligns with the Technology Acceptance Model (TAM) (Davis, 1989) from a technological adoption point of view. A high satisfaction level is an indicator that consumers are increasingly seeing AR as a retail tool, not only a novelty, and pointing towards general mainstream acceptance of immersive retail technologies. In terms of practice, the research provides retailers with important strategic implications. Firstly, AR should be seen not just as a standalone digital solution but as an integral innovation of the omnichannel. To leverage AR to deliver maximum experiential consistency, retailers will need to be connected throughout the customer journey (mobile, web, brick-and-mortar). Second, AI and customer data analysis should be used to support and increase the impact of AR by enabling personalisation. Third, investing in AR technology can offer a year-round advantage in a crowded digital marketplace by creating unique customer experiences. The results also demonstrate the increasing significance of hyper-personalisation in the next-generation retail environment. In today's era, where personalised experiences are paramount, retailers leveraging AR alongside AI-driven personalisation will have a competitive edge, providing enhanced customer satisfaction and loyalty. This makes AR a technological & strategic tool for the next generation of retail transformation. The drawbacks of this study are that it is cross-sectional and is based on consumers' self-perceived perceptions. Future studies might include longitudinal studies, behavioural analytics, and case studies on AR in specific industries to delve deeper into the long-term effects on loyalty, buying habits, and performance. In conclusion, this conversation highlights the transformative impact of AR in the context of omnichannel retail, showing how it enriches customer experiences, cuts down on friction, and boosts satisfaction overall. With the advent of immersive technologies and the ability to engage customers in a personalised manner, retailers can look towards building more adaptive, innovative, and customer-centric digital ecosystems that can drive long-term growth in the ever-changing digital commerce landscape.

7. Conclusion

This study aims to explore how augmented reality (AR) can be strategically leveraged in the retail industry to foster innovation, focusing specifically on its potential to enhance customer satisfaction and personalisation in the retail context. The results prove that AR is a tool that boosts customer satisfaction by providing immersive, interactive, and self-confidence to shoppers throughout the integrated retail channels. However, the main takeaway was the importance of personalisation as a key mediating factor, as AI-driven AR systems can boost satisfaction through personalised recommendations, customised product experiences, and streamlined customer journeys. The study adds to the literature in omnichannel retail and digital innovation by viewing AR not just as a technological novelty, but as a strategic asset to enrich customer-centric retail ecosystems. The research combines concepts from experiential marketing, omnichannel retail theory, and the technology acceptance model and offers a holistic perspective on how immersive technologies can impact consumer behaviour. In practical terms, AR needs to be paired with sophisticated personalisation platforms for retailers to stay the course in ever-more-digital sales environments. Investing in AR-powered omnichannel experiences can help boost customer loyalty, enhance satisfaction, and enhance long-term brand performance. Finally, for retailers to be competitive in the digital age, they will need to mix immersive innovation with a hyper-personalised customer experience in their strategic recipe.

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