

A STUDY ON THE INFLUENCE OF AUGMENTED REALITY (AR) IN ENHANCING CONSUMER BEHAVIOUR AND DECISION-MAKING

Dr. Ranjith Somasundaran Chakkambath¹, Dr. Shamsi Sukumaran², Sidharth Kizhakilode³

^{1,2}Asst Professor, AMITY Global Business School Kochi, Ernakulam, Kerala, India.

³BBA Student, AMITY Global Business School Kochi, Ernakulam, Kerala, India.

ABSTRACT

AR allows customers to virtually interact with and experience products before buying, which boosts their confidence and trust in the brand. AR in retail improves the in-store experience by allowing customers to quickly access product details, try out varied colours and customizations, and make purchase decisions faster. This research paper focused on the influence of AR on consumer decision-making. A descriptive research design was used with a structured questionnaire and convenience sampling to get the response from 146 respondents. The analysis used includes proportionate analysis and exploratory factor analysis using principal component with varimax rotation. This generated two components as part of the EFA. Owing to the predominance of Artificial intelligence in different domains of life since the launch of AI platforms, augmented reality is also aimed to get more acceptance among the consumers in coming years. The insights from this research would pinpoint some of the major factors that are impact consumers decision-making.

Keywords: Augmented Reality, Consumer Behaviour, Decision Making, Exploratory Factor analysis, Technology

1. INTRODUCTION

Augmented Reality (AR) has emerged as a transformative technology that blends digital information seamlessly with the physical world, offering novel experiences and functionalities across various domains. Unlike Virtual Reality (VR), which immerses users in entirely digital environments, AR enriches real-world experiences by overlaying virtual elements onto the physical environment. This unique characteristic has led to the widespread adoption and exploration of AR applications in diverse fields, ranging from entertainment and gaming to healthcare, education, and commerce. The concept of AR has been evolving for decades, but recent advancements in hardware, software, and computer vision algorithms have propelled it into the mainstream. With the ubiquity of smartphones, tablets, and wearable devices equipped with AR capabilities, this technology has become more accessible to the masses, opening new opportunities for innovation and interaction.

AR allows consumers to virtually visualize products in real-world settings, reducing the uncertainty associated with online shopping and increasing satisfaction with the shopping experience (Barta et al, 2023). Additionally, AR factors such as hermeneutic, embodiment, and background have been linked to dimensions like quality, fun, and creativity, influencing buying decisions positively (Xu et al., 2022).

The allure of AR lies in its ability to enhance our perception of reality, offering immersive and interactive experiences that were once confined to science fiction. By overlaying digital information – such as images, videos, 3D models, or textual data – onto the physical world, AR enriches our understanding of the environment and provides new avenues for exploration, learning, and engagement. The study of AR is interdisciplinary in nature, drawing insights from fields such as computer science, human-computer interaction, psychology, marketing, and sociology. Researchers and practitioners are exploring the potential of AR across a wide range of applications, including entertainment, education, training, healthcare, navigation, advertising, and retail.

This study seeks to contribute to the growing body of knowledge on AR by focusing on its influence on consumer behaviour and decision-making processes. Specifically, we aim to investigate how AR experiences shape consumer perceptions, attitudes, and purchase intentions in the context of retail and e-commerce. By understanding the mechanisms through which AR affects consumer behaviour, businesses can harness the power of this technology to create immersive shopping experiences, drive engagement, and influence purchasing decisions.

1.1 Objective Of The Study

To identify the factors which influence the consumer's behaviour and decision-making.

1.2 Scope Of Study

Augmented Reality (AR) has emerged as a powerful tool in influencing consumer behavior across various domains. Studies have shown that AR enhances immersion, psychological ownership, and customer loyalty to retailers, while also empowering consumers through personalized experiences. In marketing, AR has proven effective in improving brand attitudes, reducing perceived risks, and boosting purchase intentions, particularly within the beauty industry. Moreover, AR addresses a significant limitation of e-commerce by allowing consumers to virtually preview products in real-world

settings, thereby reducing perceived risks associated with online purchases and increasing decision confidence and satisfaction. AR also enhances consumer learning, especially for search and experience products in mobile commerce, particularly in complex tasks. Additionally, AR influences consumer attitudes and shopping behavior by providing enjoyable and informative experiences, leading to positive affective responses and influencing decision making. The acceptance of AR interactive technology is further influenced by cognitive innovativeness, which moderates consumer adoption of this innovative technology. Overall, AR has emerged as a transformative force in reshaping consumer experiences and attitudes in retail and e-commerce contexts.

2. LITERATURE REVIEW

Augmented Reality (AR) technology significantly impacts consumer behavior and buying decisions. AR enhances consumer engagement, brand experiences, and purchase decisions by providing interactive and immersive experiences. It allows customers to virtually try products, reducing perceived risks and increasing decision confidence. Studies show positive correlations between AR factors and purchase experiences, indicating a significant influence on buying decisions. AR in e-commerce improves customer experiences, influencing purchase decisions and return rates positively. Research on AR-based e-commerce websites reveals that technology anxiety and virtuality significantly affect customers' attitudes and intentions towards AR platforms, emphasizing the importance of AR in shaping consumer behavior. Overall, AR plays a crucial role in enhancing consumer behavior and buying decisions through interactive experiences and reduced perceived risks.

Yumiko Kawashita (2023) presented a study on the role of imaginative involvement and episodic memory in fostering brand loyalty when users engage with Augmented reality brand experiences (ARBEs) and provided implications for designers and marketers alike to help them to create AR BEs that foster a positive return on investment. Bhardwaj Akash, Islam Tajamul (2022) did a research on the impact of AR marketing on better customer engagement, customer behaviour, customer loyalty, and buying decisions is analysed. But the study is limited to the use of mobile phones. Jing wen zhao, gwansun song (2023) wrote an article and described AR as a VR platform that allows users to interact with a virtual reality environment, where the user can interact with the virtual world and interact with virtual objects.

3. RESEARCH METHODOLOGY

The type of research was descriptive and based on a survey conducted using a structured questionnaire. The respondents were from different parts of Kerala. The Likert Scale was used for questionnaire framing. The data collected included the demographics of the respondents. The survey was focused the consumer purchase behaviour based on the factors related to augmented reality used in retailing.

Sampling method: The sampling method used was convenience sampling. Primary data was collected through an online questionnaire. Secondary data was collected from journals and websites/related reports.

Sample Size: The sample size was 146 respondents who were consumers from different parts of Kerala.

Data Collection method: A structured questionnaire designed using Google Forms was used for executing this survey. The first part of the questionnaire was used to collect data pertaining to the respondents' demographic characteristics. The second part of the questionnaire was used to factors that influenced purchases through augmented reality. Proportionate analysis was done along with EFA using IBM SPSS v23.

4. RESULTS AND DISCUSSION

4.1 Demographic characteristic

Table 1: Demographic Characteristics

Age Group	n	%
18-30	92	63
31-40	34	23
41-50	18	12
51 & above	3	2
Gender		
Male	100	68.4
Female	46	31.6
Education		
High School	18	12

Undergraduate	96	66
Postgraduate	25	17
Others	7	5
Occupation		
Student	34	23
Business	26	18
Salaried	64	44
Homemaker	16	11
Retired	6	4
Note: Sample size N=146		

A survey examining the influence of augmented reality (AR) on retail purchase decisions revealed a demographic skew towards young adults (18-30 years; 63%) and males (68.4%). Participants with higher education (undergraduate: 66%; postgraduate: 17%) and salaried occupations (44%) were more prevalent. This suggests a potential link between age, educational attainment, disposable income (as implied by occupation), and interest in AR-based shopping experiences. However, limitations exist.

4.2 Exploratory Factor Analysis (EFA): Factors that influence the use of AR(Augmented Reality) in consumer purchase decisions

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.889
Bartlett's Test of Sphericity	Approx. Chi-Square	405.11
	df	45
	Sig	0

The KMO value from the above table was 0.889 which suggests that the data collected is adequate for conducting factor analysis(Arsham et al,2011). Bartlett's test also generated a satisfactory result of 405.110 for the degree of freedom of 45(Arsham et al,2011).. This indicates that factor analysis is permissible with given data. 10 variables have been reduced to two factors which account for 77.49 % of the variance in the data.

Table 3: Rotated Component Matrix , Eigen Values and Total Variance Percentage for Components obtained by Principal Component Analysis with Varimax Rotation Method

Statement	Component	
	1	2
AR suggests and helps you to choose the products that keep up with the latest fashion trends.	0.877	
The different modes of AR, such as visual, verbal, audio, and video, give a better understanding of the product and enrich the purchase experience.	0.818	
Since AR gives you a try-before-you-buy experience, the expenditure and time wasted upon unfit or wrong choices are reduced.	0.797	
It is more beneficial to the consumers if AR technology is infused at the point of sales for hedonic products (e.g., luxury watches, perfumes, etc.).	0.765	
Introducing AR technology in retail makes the purchase process more interactive and exciting and thereby induces the consumer/customer to purchase more	0.691	0.541
AR eases the process of decision-making by choosing the best of alternatives that suits your tastes and preferences.	0.665	0.536
The quality of the products suggested and trailed via AR are trustable and deliver the same level as guaranteed upon.	0.628	0.512

The experience of AR technology changes when given on wearable/portable devices as compared to a smartphone (the device and size of the screen influence the experience).		0.904
AR technologies provide tailor-made results and are location-specific. Though it provides the right destination of purchase, some consumers may consider it as an invasion of privacy or unsafe.		0.866
The infusion of AR technology in marketing enforces the consumers to purchase certain products even beyond their needs and ability.	0.582	
Eigenvalues	6.68	1.07
Percentage of total variance	66.8	10.7

Note: Factor loadings <.044 have been omitted from the table.

The table shows the summary of the EFA done using principal component analysis by the varimax method of rotation for the ten variables which were reduced to two components with a total variance of 66.8 and 10.7 respectively. Loading with less than 0.44 were omitted from the matrix with some items having cross loadings.

The EFA generated the first component as “Fashionable and Trustworthy Product Selection”. This component appears to encompass factors related to how AR assists consumers in making trendy and reliable product choices. The highest factor loading was .877 for “The different modes of AR, such as visual, verbal, audio, and video, give a better understanding of the product and enrich the purchase experience”. The component included the following statements: [The different modes of AR, such as visual, verbal, audio, and video, give a better understanding of the product and enrich the purchase experience.], [Since AR gives you a try-before-you-buy experience, the expenditure and time wasted upon unfit or wrong choices are reduced.], [It is more beneficial to the consumers if AR technology is infused at the point of sales for hedonic products (e.g., luxury watches, perfumes, etc.).], [Introducing AR technology in retail makes the purchase process more interactive and exciting and thereby induces the consumer/customer to purchase more], [AR eases the process of decision-making by choosing the best of alternatives that suits your tastes and preferences.] and [The quality of the products suggested and trailed via AR are trustable and deliver the same level as guaranteed upon.].

Studies in Indonesia and Saudi Arabia have shown that factors like interactivity, novelty, hedonic value, and satisfaction in AR experiences positively impact consumers' intention to continue using AR and ultimately their purchase decisions(Gabriel et al., 2023; Hilal, 2023) . Additionally, the quality of products, trust, and country of origin have been identified as crucial factors affecting purchasing decisions in the cosmetic sector, emphasizing the importance of product trustworthiness in consumer choices (Hudoyo et al., 2022). Moreover, the emotional and cognitive responses of consumers in AR shopping experiences are influenced by media richness, which in turn affects brand engagement and willingness to buy, highlighting the significance of a rich and engaging AR experience in driving consumer behavior and purchase decisions (De Amorim et al., 2022).

The second component of the EFA was “ Interactive and Tailored Purchase Experience” This component encompasses factors related to the interactive and personalized aspects of AR in the purchasing process. The highest factor loading was .904 for “The experience of AR technology changes when given on wearable/portable devices as compared to a smartphone (the device and size of the screen influence the experience.”.

The component included the following statements: [The experience of AR technology changes when given on wearable/portable devices as compared to a smartphone (the device and size of the screen influence the experience).], [AR technologies provide tailor-made results and are location-specific. Though it provides the right destination of purchase, some consumers may consider it as an invasion of privacy or unsafe.

and [The infusion of AR technology in marketing enforces the consumers to purchase certain products even beyond their needs and ability.].

According to previous literature, AR enhances consumer engagement, brand experiences, and purchase decisions by providing interactive channels for consumers to visualize products in real-world settings (Thakkar et al., 2023; Aribowo & Avianto, 2023).

Studies show that AR factors like hermeneutic, embodiment, and background positively correlate with dimensions such as quality, fun, and creativity, impacting the purchase experience significantly (Hilal, 2023). Additionally, the effects of AR interactive technology on customers' behavior toward AR-based e-commerce websites reveal that technology anxiety and virtuality significantly influence customers' attitudes and behavioral intentions, emphasizing the importance of tailored and interactive AR experiences in shaping consumer perceptions and decisions (Dogra et al., 2023).

5. CONCLUSION

This research paper focused on the impact of AR on consumer decision-making and related factors that influence this decision-making process. The summary of the survey highlights a predominantly young and male demographic, with significant concerns about the introduction of AR technology in retail. Despite some recognition of AR's potential benefits in enhancing product selection and creating personalized shopping experiences, privacy and safety issues remain a major barrier. The findings suggest that while AR technology can influence consumer behaviour, it also poses risks of encouraging unnecessary purchases and infringing on personal privacy. A balanced approach, to addressing these concerns, is essential for the successful integration of AR in retail. Future research should further explore these dynamics to optimize AR's role in consumer markets.

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