

Transforming Customer Engagement and buying decisions: Impact of Augmented Reality's in West Bengal and Beyond

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ABSTRACT

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In an era where technology and marketing converge, the symbiotic relationship between progress and strategy becomes evident. Augmented reality marketing (ARM) emerges as a digitally crafted landscape, seamlessly integrating immersive experiences and advertisements. This innovative approach utilizes sensory connections to captivate audiences, exploiting the ubiquity of mobile devices.

This study investigates the profound influence of Augmented Reality Marketing on customer engagement, behaviour, loyalty, and purchasing decisions. The study demonstrates ARM's potential to place products directly into consumers' hands, bridging the gap between experience and action. Beyond its promotional utility, ARM fosters deeper customer-brand relationships, substantiating its role in elevating consumer experiences.

Meanwhile, across the globe, the rise of augmented reality technology reshapes consumer interactions. Through quantitative research targeting educated university students, this paper illuminates the technology's impact on Indian consumer engagement. Findings show a positive correlation between augmented reality and consumer engagement, catalysing a shift in the mind-set of the youth towards novel technologies. The recommendation to harness augmented reality in Indian shopping industry emerges as a means to bolster engagement, subsequently fostering increased consumption and purchases.

Keywords: Augmented Reality, Customer Engagement, Consumer Behavior, Buying decision

1.INTRODUCTION:

Presently, one of the pivotal breakthroughs in technology revolves around the emergence of augmented reality, accompanied by its multifaceted impacts on consumer engagement. Through the amalgamation of Real and Virtual Technologies, the concept of Augmented Reality has been forged (Martins & Corea, 2015). This innovation has profoundly facilitated consumers in attaining their desired objectives and genuine necessities within a seamless natural setting (Martins, Guimaraes & Kirner, 2015).

In the contemporary landscape, technological advancements have propelled the evolution of intelligence to unprecedented heights, fostering dynamic interactions with consumers. This evolution stems from a departure from conventional approaches to technological immersion, paving the way for distinctive, tailored, and novel experiential methodologies (Tussyadia, Jung & Dieck, 2018). Trailblazing corporations such as Amazon, Microsoft, and Samsung have led the charge by introducing an array of pioneering technologies: encompassing reality-infused smart glasses, virtual mirrors, and immersive augmented reality applications (Rauschnabel, 2018).

Fundamentally, customers harbor a desire for fresh encounters, originality, and the presentation of products/services through visually compelling real-life instances, achieved through a tech-savvy disposition. This inclination is facilitated by the synergy of e-commerce and digital media (Stoyanova, 2014; Khan and Brouwer, 2016). Nevertheless, the majority of companies still tend to adhere to conventional strategies (Braun, Hadwich & Bruhn, 2017). Augmented reality primarily hinges on engendering a harmonious fusion of realities between the tangible world and the realm of imagination, encompassing the fictional spectrum (Yim, Chu & Sauer, 2017).

1.1 Augmented reality and its application in marketing

Augmented Reality (AR) represents an innovative paradigm that seamlessly integrates computer-generated virtual depictions into the physical environment. This entails the synchronization of virtual data with tangible objects, enabling real-time interpretation and interaction. The contemporary utilization of Augmented Reality spans diverse technological domains, including education, entertainment, and engineering. Nonetheless, for AR to gain widespread user adoption, challenges related to accessibility and customer interaction must be meticulously addressed.

Consumers can effortlessly peer through their smartphones, employ cameras or smart devices as viewfinders, and then perceive their surroundings embellished with supplementary features. These additions encompass 2-D images or 3-D entities superimposed onto real-world images and objects. This transformation will propel mainstream media into a hypermedia network that links to digital content, thereby enabling consumers to explore novel avenues for product, service, and brand discovery facilitated by Augmented Reality Media (ARM). ARM empowers customers to virtually "try on" products, enhancing engagement and facilitating informed purchasing decisions. Given the diversity of Augmented Reality Technologies (ART) currently under development, customers can access AR through various modalities, each offering distinct showcasing features.

Augmented reality hypermedia advertisements represent a nascent form of ART poised to revolutionize advertising trends in the foreseeable future. AR engenders a digital encounter that complements the physical realm, augmenting brand recognition and captivating consumers. Augmented Reality Experiential Marketing (AREM) proves highly effective for enterprises and products aiming to foster consumer loyalty and satisfaction. Several iterations of experiential marketing have demonstrated their potential to elevate customer retention, recurrent purchases, positive word-of-mouth, and expanded market share. This approach facilitates deeper brand-customer interactions, intensifying emotional engagement and nurturing a profound sense of connection. Often hailed as a strategy to create value for end consumers, experiential marketing aligns seamlessly with AR's evolution from virtual reality. Through AR, users interact with reality using advanced software and graphical overlays, extending the scope of engagement. AR is conceived to empower consumers with enhanced freedom in navigating, exploring, selecting, and ultimately purchasing desired products.

This study endeavors to explore the malleability of technology in shaping consumer experiences, with a specific focus on the influence of AR marketing on online shopping dynamics and decision-making processes. Additionally, we aim to scrutinize how ARM reshapes purchasing behavior, centering on aspects such as consumer engagement and loyalty.

2. LITERATURE REVIEW

2.1 Evaluation of Consumer engagement matrix

As a consequence of customers' active involvement with a specific product or service, the concept of customer engagement (CE) emerges. It is intricately linked to the exploration of psychological and behavioral factors that impact consumers within the market context (Dessart, Veloutsou & Thomas, 2016; Hollebeek, 2011). In the present era, investigations and analyses related to customer engagement have attained paramount significance among marketers. This significance resonates through various methodologies they employ, encompassing not solely word-of-mouth marketing (WOM), which entails the transmission of information through verbal communication between consumers, but also extends to the manner in which customers interact by expressing their perspectives through digital channels—termed electronic word-of-mouth (E-WOM) (Sharma & Sarmah, 2019; Cetină, Dumitrescu, & Vinerean, 2014).

In light of this facet, contemporary consumers are now acknowledged as potent marketers in their own right. This has given rise to a viral marketing approach wherein companies rely on select consumers to propagate their advertising campaigns across social media platforms (Beckers, Doorn & Verhoef, 2018).

Historically, enterprises primarily prioritized the correlation between customer contentment and the caliber of their products or services. In contemporary times, a novel focus has emerged on customer engagement as an innovative concept (Hollebeek, 2011). Traditional marketing approaches have lost their potency and ingenuity,

failing to resonate with the modern consumer psyche. To attain success in the present landscape, companies must not only comprehend their customer base but also extend their recognition to encompass all stakeholder groups capable of influencing the organization—comprising "followers, shareholders, and external communities" (Maslow et al., 2016; Maslowska, Edward &Collinger, 2016).

Integral to the notion of customer engagement is brand engagement, crucial for securing a substantial market share for a specific brand (Terason, Pattanayanon& Lin, 2019). Presently, brand engagement embodies a form of "global consumer culture" (Vredeveld & Coulter, 2019). Amid the prevailing unstable and shifting economic conditions worldwide, many financial institutions find themselves at the precipice of failure. In such a scenario, customer engagement has proven to be an indispensable and supportive survival strategy for diverse firms. Customer engagement can be categorized into two forms—direct and indirect (Kumar et al., 2019). Notably, debates revolve around whether engagement components exclusively focus on non-purchase decisions or encompass a comprehensive array of consumer actions (Maslow et al., 2016).

Beckers, Doorn & Verhoef (2018) augment this understanding by affirming that the concept of customer engagement is intrinsically linked to both marketing and financial departments within an organization, leading to heightened effectiveness and efficiency. A robust level of customer engagement yields a plethora of positive outcomes for companies, including augmented sales volume, a competitive edge, and amplified profits. Heightened engagement between a firm and its customers invariably nurtures loyalty—a phenomenon termed "Brand loyalty" (Hollebeek, Srivastava & Chen, 2019). The advent of technology platforms, encompassing social media and online avenues, has facilitated the measurement of shifts in customer engagement for firms (Gandhi & Tandon, 2015).

Cetina & Vinerean (2014) underscore that an enterprise's levels of customer engagement predominantly hinge on negative word-of-mouth (WOM), where expressions of dissatisfaction can exert substantial influence over a company's customer base.

2.2 Characteristics of Consumers in the Marketing Journey

In the contemporary era, a substantial number of leading global corporations leverage customer traits and actions as pivotal tools in their day-to-day decision-making processes. These companies develop a profound understanding of specific customer profiles through meticulous analysis of their psychographic, demographic, and behavioral attributes. Teubner (2017) highlights instances of enterprises that specialize in harnessing customer information, capitalizing on this knowledge to inform their strategic choices. Noteworthy pioneers in this realm, such as "Airbnb," "BlaBlaCar," and "Drivy," have integrated customer insights into their operations in recent years.

Turning the focus toward psychographic attributes, certain firms channel significant efforts into dissecting consumer motivations across six distinct dimensions: financial gain, desire for individuality, pursuit of social experiences, concerns about privacy and risk, and affinity for prestige (Lee & Lim, 2017). Strategies are then tailored for each factor to ensure competitiveness and optimal consumer attraction.

The journey of customers' product awareness is propelled by the information they amass, culminating in heightened brand recognition. This approach finds practical application in the realm of the omnichannel, a multi-faceted approach that enables companies to discern whether their targeted audience primarily engages online through computers, mobile devices, or physical brick-and-mortar establishments (Beckers, Doorn & Verhoef, 2018).

Advancements in technology have enabled the tracking of consumer attributes and behaviors through internet-mediated means (Calder, Issac & Malthouse, 2016).

2.3 The Influence of Augmented Reality Marketing on Consumer Engagement

The realm of augmented reality (AR) technology holds significant potential to exert a profound influence on consumers across a multitude of dimensions. Its capacity to captivate individuals in their purchase deliberations is particularly noteworthy, as this technology resonates within the cognitive, emotional, behavioral, and sensorial realms of customers' perceptions (Flavian, Sanchez & Orus, 2019; Cox et al., 2017). A prime example is exemplified by IKEA's longstanding implementation of AR technology, which provides customers with an innovative and

tailored perspective on their unique furniture products. This approach has markedly enhanced their sales figures and consequent profits (Johnson, 2018).

The introduction of interactive systems has reshaped consumer perceptions, profoundly impacting their behaviors, attitudes, emotions, and the overall ease of use—thereby establishing a significant nexus between AR, customer satisfaction, endorsement, and branding. This phenomenon is vividly demonstrated through instances such as automotive companies showcasing new motor designs in unprecedented and engaging ways (Yeun et al., 2011). Another illustrative case is that of makeup companies integrating AR technology into their marketing campaigns. For instance, L'Oreal Paris employed an AR application on computer platforms, allowing women to experiment with new appearances facilitated by their products (Kaenchan, 2018).

2.4 The Influence of Hybrid Reality Technologies on Consumer Involvement across Various Sectors

2.4.1 Health care

Augmented Reality (AR) technology has demonstrated a remarkable and indispensable influence on a multitude of industries, with the healthcare sector being a particularly critical beneficiary. The realm of medicine has experienced a paradigm shift catalyzed by AR advancements, significantly enhancing patient experiences and treatment quality. Elizondo, Lazaro, and Garcia (2017) conducted the Pharma 3D study, emphasizing the importance of inspiring and comforting patients throughout their medical journeys. AR has emerged as a transformative tool, enhancing the efficacy and caliber of medical interventions while elevating patient safety. Noteworthy applications include "Babylon," an AR platform offering precise health information and targeted monitoring, preemptively addressing health issues before they escalate into critical conditions. This is accomplished through the holographic representation of organs and various bodily systems.

Wiederhold, Miller, and Wiederhold (2018) underscored the global revolution catalyzed by AR in the healthcare landscape. AR has played an instrumental role in treating critical diseases and facilitating the diagnosis of intricate health conditions. A striking example lies in the domains of chemotherapy and burn wound treatments, where AR has proven particularly effective. As diseases continually evolve, posing substantial threats to human lives, Gupte (2019) postulates that AR stands as the ultimate solution to confront these challenges head-on. The proliferation of AR health applications attests to this trend, offering heightened accuracy and real-time precise information pertaining to medical processes.

Moreover, AR's integration into medical operations is exemplified by tools such as "AR Smart Glasses," notably the "Microsoft HoloLens." These glasses offer an auxiliary assistance mechanism for doctors during surgical procedures, effectively introducing a "third hand" to augment their performance. The glasses are equipped with audio cues (voice commands) or physical stimuli (eye blinking), streamlining procedures and sparing valuable time in situations where each moment can signify a life (Klinker, Wiesche, and Krcmar, 2019).

Notably, AR has found application in psychological treatments, exemplified by the "Pisious AR App" designed to aid in mitigating the impact of "Parkinson's disease"—a progressive nervous system disorder characterized by muscular rigidity and impaired movements. AR technology also proves invaluable in emergency scenarios, providing instantaneous access to essential medical equipment within a medical room.

In summation, the convergence of technological advancements and the integration of AR into healthcare services have culminated in an efficacious and affirmative form of technology (Wiederhold, Miller, and Wiederhold, 2018).

2.4.2 Retail Industry

Warner (2012) underscored that augmented reality (AR) extends beyond food grocery stores, finding pervasive application in diverse retail environments, particularly those centered around technological devices. Various types of stores harness the power of augmented reality, and its integration can significantly enhance the overall performance of retailers across the spectrum. Certain AR devices stand out due to their capacity to offer customers a virtual prototype of products or services, enabling them to test and experience these offerings before making final purchase decisions (Wiebach & Send, 2019).

The influence of augmented reality also extends to the realm of fashion, a prominent facet of modern life. Fashion retailers strategically leverage AR to showcase the distinctive designs of their products, ensuring that consumers grasp the company's unique selling propositions that set them apart from competitors. Furthermore, AR technology finds utility in revolutionizing the shopping experience—substituting traditional fitting rooms with creative, time-saving virtual alternatives (Miell, 2018; Baek, Yoo & Yoon, 2018). Mclean & Wilson (2019) emphasized that consumers tend to feel more content and engaged when presented with three-dimensional interactive processes compared to conventional two-dimensional methods.

Moreover, augmented reality technology plays a pivotal role in various training contexts. Trainees benefit from this cutting-edge technology in multiple domains. For instance, pilot training incorporates augmented reality flight simulators to educate pilots about aircraft functionality and components. In law enforcement, "hand-eye coordination AR" aids in enhancing the reflex actions and response speed of police officers in their daily duties. The military and national defense sectors also harness AR within virtual environments to test and train soldiers for optimal readiness (El-Ford, 2013).

2.4.3 Education Sector

In the contemporary landscape, education has emerged as a paramount global concern, prompting individuals to embrace diverse and innovative learning methods. Traditional approaches are yielding to more flexible technological alternatives, with Virtual Reality (VR) and Augmented Reality (AR) standing as prominent exemplars of these modern techniques. Augmented reality has proven to be an engaging and effective tool for teaching languages, introducing a captivating dimension to language acquisition. Salmon and Nyhan (2013) highlighted the emergence of "SSAT.AR Quizzes," a novel AR language application designed for educational settings. This application serves as an academic language resource, enabling teachers and students to scan words and access instant translations into their preferred language. Moreover, it fosters interaction and active participation among users.

Undoubtedly, the field where AR has attained exceptional clarity and utility is education. Augmented reality has revolutionized academic lectures, transforming them from static, monotonous presentations into dynamic, interactive learning experiences (Kaenchan, 2018). The potential of AR technology extends further, as elucidated by El Ford (2013), who discussed the innovative "Bug-in-Ear Coaching AR technology." This application provides real-time feedback to teachers before and during the teaching process, leveraging voice sensors to automatically detect and rectify errors in words, definitions, and information.

A study conducted by Zarraonandia et al. (2014) demonstrated that AR technology enhances students' cognitive learning processes, facilitating their active participation and effective interaction within the classroom. Beyond traditional learning methods, AR has also permeated the book publishing industry, exemplified by applications such as "ZooBurst." This platform empowers students to customize their favorite books in three-dimensional formats, fostering creativity and enabling them to express their ideas in a more immersive and imaginative manner (Salmon & Nyhan, 2013).

Furthermore, Kaenchan (2018) introduced an entertaining educational avenue powered by AR technology—educational games. These games create a unique learning environment that encourages interaction and engagement among students, enhancing the overall learning experience.

2.5 Marketing Implication of Augmented Reality

A multitude of companies have embraced Augmented Reality (AR) to drive operations, connectivity, and engagement across diverse objectives. The following is an enumeration of the entities that have harnessed AR: National Geographic (Michael), Ray-Ban (O'Brien), Land Rover (Ghosh), Nivea (Wasserman), and Pepsi Cola (Lepitak).

Prominent players in the online marketplace, such as Amazon and ASOS, have seamlessly integrated a "search by picture" feature within their mobile apps. This innovative functionality empowers users to capture screenshots of desired products using their mobile devices and subsequently employ these images to identify corresponding items within the app.

Illustrative examples of effective AR implementation include Pokémon Go and IKEA. Pokémon Go adeptly employs actual geographic locations, enabling players to explore their physical surroundings to capture virtual Pokémon creatures. The app's initial rollout amassed a staggering fifty million users, with early-stage daily active players generating sales exceeding \$35 million.

In the realm of gaming, The Witcher franchise is stepping into the augmented reality arena with the upcoming release of "The Witcher: Monster Slayer," scheduled to debut in early 2021. This strategic move underscores the burgeoning popularity of augmented reality experiences in the gaming landscape.

IKEA has also harnessed augmented reality to great effect. Through the utilization of their free software application, consumers leverage their mobile devices to focus their cameras on specific merchandise pages from the IKEA catalog. By aligning the virtual furniture piece with the desired physical location, customers can visualize the furniture's placement seamlessly (Ikea, 2023).

In essence, the integration of augmented reality has empowered various companies across industries to redefine engagement, customer experiences, and product interaction in innovative ways (Ikea, 2023).

2.6 Research Gap

While numerous research endeavors have explored the utilization of Augmented Reality (AR) in marketing and its impact on diverse aspects like customer engagement, behavior, loyalty, and purchase decisions, there remains a dearth of studies that comprehensively investigate the interplay of these intertwined concepts. This paper aims to bridge this gap by delving into the realm of Augmented Reality as experienced by consumers and assessing its collective efficacy.

3. OBJECTIVES

The objectives of this analysis are as follows:

- To evaluate the impact of AR Marketing on customer involvement, customer conduct, customer allegiance, and purchasing choices.
- To scrutinize whether Augmented Reality Marketing has garnered acceptance as an innovative marketing medium among consumers and if it lives up to their anticipations.

4. HYPOTHESIS

Drawing on prior research elucidating the advantages of Augmented Reality in enhancing overall customer engagement and conversion, the following hypotheses were formulated:

H₀ - Augmented Reality marketing lacks influence on customer engagement, customer behavior, customer loyalty, and buying decisions.

H₁ - Augmented Reality marketing substantially affects customer engagement.

H₂ - Augmented Reality marketing considerably influences customer behavior.

H₃ - Augmented Reality marketing significantly impacts customer loyalty.

H₄ - Augmented Reality marketing notably influences consumer buying decisions.

5. METHODOLOGY

The research paper adopts SPSS for data analysis and performs a reliability test. Employing a quantitative approach, the study collected data through an online questionnaire format to ensure a broad spectrum of respondents. While the literature review guided the identification of pertinent topics, no pretested questionnaire was available for use.

Consequently, a self-designed questionnaire was meticulously crafted and subjected to both face validity and content validity tests. For face validation, the questionnaire was dispatched to a random cohort of tech-savvy English-speaking individuals familiar with or having utilized Augmented Reality (AR). Incorporating the feedback

received, minor refinements were executed. To further bolster its validation, the questionnaire was disseminated among a chosen segment of working professionals who frequently engage with AR.

The questionnaire effectively encompassed all data variables critical to the study. Subsequently, the validated questionnaire was administered to a randomly selected pool of participants, distributed through various social media platforms. The survey commenced on March 24th and concluded on August 12th, 2023, garnering a total of 230 respondents.

A correlation analysis was conducted to examine the relationship between the dependent variable, "Acceptance of Augmented Reality Marketing (ARM)," and four independent variables: Customer Engagement, Customer Loyalty, Customer Behavior, and Buying Decision. This analysis aimed to test the hypotheses put forth.

The measurement questions for the variables were redefined, drawing inspiration from previous research. These variables were assessed using a five-point Likert scale, spanning from (1) "Strongly Disagree" to (5) "Strongly Agree." A comprehensive dataset consisting of three hundred and forty responses was meticulously collected and utilized for precise analysis.

Study Setting: Data were acquired from a selected group of college students and working professionals aged 18 years and above.

Study Design: The research followed a cross-sectional design.

Sample Size, Sample Type, and Sampling Procedure:

Sampling: Purposive sampling was employed.

Sample Size: The minimum required sample size was determined as 162.

Formula used:

$$N = \frac{(X_{\alpha/2})^2 pq}{I^2}$$

Where:

$Z_{\alpha/2}$ at $\alpha = 0.05$ is 1.96

I (allowable error) = 5%

p (prevalence) = 88%

$q = 100 - p = 12$

$n = 162.2$

Hence, the minimum required sample size for statistically significant results was calculated to be 162. However, recognizing the benefits of larger sample sizes, all 230 respondents were included in the final statistical analysis.

Rationale for Sample Size Determination:

Based on a published study, where the reported prevalence of involvement with ARM stood at 88% with a significance level (α) set at 0.05, the calculated minimum sample size necessary was found to be 162.

Participant Recruitment Criteria:

Inclusion Guidelines: The study will encompass college students and working professionals who communicate in English.

Exclusion Guidelines: Individuals not proficient in English and respondents under the age of 18 will be omitted from the study.

Materials:

- Evaluated Variables: Examination of the effects of ARM in relation to Customer Involvement, Customer Dedication, Customer Conduct, and Purchase Choice.
- Principal Result Measure: Investigation of the influence of ARM across diverse factors such as Customer Involvement, Customer Dedication, Customer Conduct, and Purchase Choice.
- Subsidiary Result Measure: Evaluation of individuals' perspectives concerning the suitability of ARM as an innovative marketing channel.

6. RESULTS

Data Analysis and Interpretation

6.1 Pilot Study

The preliminary inquiry conducted on a cohort of 40 participants revealed a Cronbach Alpha of 0.963, denoting a considerably high coefficient of reliability. Consequently, the study demonstrates a substantial level of consistency among the assessed variables.

6.2 Reliability and Validity Test

Reliability and descriptive statistics are presented in Table 1. Every variable possesses a Cronbach Alpha value above 0.7, indicating a notably highly reliable coefficient. Notably, among all the variables, the approval of ARM holds the highest mean score (M= 4.2231, SD=0.672).

Table 1 Descriptive Statistics

Variable	Cronbach Alpha	Mean	SD
Customer Engagement	0.870	4.1256	0.705
Customer Loyalty	0.795	4.1421	0.612
Customer Behaviour	0.874	4.1243	0.652
Buying Decision	0.891	4.2113	0.623
Acceptance of ARM	0.765	4.2231	0.672

6.3 KMO Measure of Sampling Adequacy and Bartlett's Test

Table 2

<i>KMO and Bartlett's Test</i>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.966
Bartlett's Test of Sphericity	Approx. Chi-Square	138.355

	Df	266
	Sig.	0.000

The dataset exhibits a KMO (Kaiser-Meyer-Olkin) value of 0.966, which is higher than 0.5. This suggests that the data sample is appropriate for continuing analysis. Furthermore, the significance level (p) has been calculated at 0.000, which is below the 0.05. This result validates the statistical analysis conducted.

Given that the p-value (0.000) is less than 0.05, we have sufficient grounds to reject the null hypothesis (H_0) and embrace the alternative hypothesis (H_1). This outcome signifies the presence of a statistically significant interrelationship between the variables under examination.

6.4 Pearson Correlation

The correlation coefficient ranges from -1 to 1, with values of -1 or 1 indicating a perfect relationship, as displayed in Table 3.

A positive correlation suggests a direct connection between variables; an elevation in one variable results in a rise in the other.

On the contrary, a negative correlation signifies an inverse association between variables; as one variable experience an increase, the other undergoes a decrease.

Table 3 Correlation

		Coustomer Engagement	Customer Loyayality	Customer Behaviour	Buying Decision	Acceptance of ARM
Coustomer Engagement	Pearson Correlation	1	.728**	0.778	.684**	.758**
	Sig.		0.000	0.000	0.000	0.000
Customer Loyalty	Pearson Correlation	.728**	1	.781**	.726**	0.771
	Sig.	0.000		0.000	0.000	0.000
Customer Behaviour	Pearson Correlation	.778**	.781**	1	.877*	.847**
	Sig.	0.000	0.000		0.000	0.000
Buying Decision	Pearson Correlation	.684**	0.726**	.877**	1	.835**
	Sig.	0.000	0.000	0.000		0.000
Acceptance of ARM	Pearson Correlation	.758**	.771**	.847**	.835**	1
	Sig.	0.000	0.000	0.000	0.000	

The predictor variable, namely the acceptance of ARM, exhibits a positive correlation.

6.4 Significance (2-Tailed)

Exploring the connection between the variables of interest, all variables exhibit a meaningful association.

Regarding the acceptance of ARM and the subsequent hypothesis testing, a correlation analysis was executed to scrutinize the impact of the four factors.

The analysis indicates that both the dependent and independent variables hold predictive value with statistical significance.

6.5 REGRESSION Analysis

Table 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780 ^a	0.609	0.597	2.24594

^a Predictor: (Constant),

Regression Analysis for all co-efficient

Table 5

Model		Unstandardized Coefficients		Standardized Coefficients	F	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.425	0.006		547.295	0
	Coustomer Engagement	0.167	0.006	0.544	26.299	0
	Customer Loyalty	-0.132	0.006	-0.432	-20.717	0
	Customer Behaviour	0.111	0.006	0.362	17.576	0
	Buying Decision	0.093	0.006	0.302	14.612	0
	Acceptance of ARM	-0.106	0.006	-0.346	-16.563	0

The obtained adjusted R-squared value is 0.597. This indicates that the regression analysis is capable of elucidating 59.7% of the variance within the data. Additionally, the p-value of 0.000 is smaller than the chosen significance level, leading us to reject the null hypothesis in favor of the alternative hypothesis.

In the context of regression analysis, the coefficients hold notable importance. Among the independent variables, the analysis reveals that the coefficient associated with Consumer Engagement possesses a significant impact compared to the coefficients of the remaining variables.

6.6 Factor Analysis

Employing IBM SPSS, we isolated and streamlined the prominent factors by condensing the quantity of items. Table-6 illustrates the presence of five discernible factors. Notably, all five factors displayed factor scores of 0.5 or higher.

Table 6

	Initial	Extraction
Coustomer Engagement	1.00	1.00
Customer Loyalty	1.00	1.00
Customer Behaviour	1.00	1.00
Buying Decision	1.00	1.00
Acceptance of ARM	1.00	1.00

Extraction Method: Principal Component Analysis

6.7 Multi Collinearity Analysis

Table 7

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Customer Engagement	.755	1.325
	Customer Loyalty	.720	1.389
	Customer Behaviour	.827	1.209
	Buying Decision	.738	1.355

a. Dependent Variable: Acceptance of ARM.

The most apparent difference is that the VIFs are all down to satisfactory values; they're all less than 5. Tolerance above 0.25 indicates that multicollinearity might not exist.

Table 8

Collinearity Diagnostics ^a							
Dimension	Eigenvalue	Condition Index	Variance Proportions				
			(Constant)	Q2.	Q3.	Q4.	Q5.
Acceptance of ARM	4.794	1.000	.00	.00	.00	.00	.00
Customer Engagement	.082	7.669	.00	.02	.09	.60	.19
Customer Loyalty	.053	9.504	.02	.52	.02	.28	.39
Customer Behaviour	.040	10.925	.22	.45	.29	.02	.40
Buying Decision	.032	12.287	.76	.01	.59	.09	.02

a. Dependent Variable: Acceptance of ARM.

The Condition Index values below 15 can indicate no multicollinearity problems found.

The Variance Proportions below 0.90 in one line you can assume that there is no collinearity problem between those predictors. If only one predictor in a line has a value above .90, this is not a sign for multicollinearity.

6.8 Testing of Hypotheses

H1- The hypothesis is supported, as a statistically significant relationship between Customer Engagement and the Acceptance of Augmented Reality is observed. Brands are actively promoting the adoption of AR Marketing to enhance consumer engagement during shopping experiences. Users find Augmented Reality more captivating and absorbing.

H2- According to the findings, there exists statistical significance in terms of Customer Loyalty. Previous research also indicates a positive impact of Augmented Reality on Customer Loyalty. This alignment is reflected in the survey where users concur with this notion. Certain studies even suggest that Augmented Reality Marketing benefits both short-term performance and long-term objectives. Thus, this study affirms a connection between Customer Loyalty and the Acceptance of Augmented Reality Marketing, leading to the acceptance of H2.

H3- The hypothesis is confirmed as Customer Behavior demonstrates significance in relation to the Acceptance of Augmented Reality Marketing. Consumers believe that Augmented Reality aids in comprehending products more effectively and influences their attitudes positively.

H4 - The hypothesis finds support due to the presence of statistical significance between Buying Decision and the Acceptance of Augmented Reality. Customers who engage with augmented reality marketing tend to exhibit satisfaction with the product. They not only display a likelihood of repurchasing the product but are also inclined to provide positive word-of-mouth recommendations to others. Additionally, they show a preference for the promoted product over competitors' offerings and are less likely to be influenced by the advertisements of rival products. Consequently, the study establishes a relationship between Buying Decision and the Acceptance of Augmented Reality Marketing, confirming H4.

The study's primary objective was to discern the prowess of AR technology in marketing and advertising, while also exploring its impact on distinct customer experience attributes such as engagement, behavior, loyalty, and purchasing choices.

Furthermore, this research sheds light on how this emerging technology can contribute to fostering a favorable brand image and underscores the importance of creating products that fulfill customer and viewer satisfaction.

7. DISCUSSIONS

Through the survey and data collection, this study underscores the pivotal role of Augmented Reality (AR) as a valuable asset for businesses seeking to establish engaging and disruptive brands in advertising campaigns and promotional endeavors. The integration of AR technology has led to enhanced brand awareness and improved customer retention, subsequently expanding the potential market scope. Given its implications for the e-retail industry, the advancement of virtual reality and 3D visuals has ignited diverse research interests in recent times.

Nevertheless, prior researchers have not extensively delved into the impact of augmented reality in e-commerce contexts on customer engagement. While previous studies have touched upon fundamental variables influencing customers' adoption of new technologies for purchasing decisions, empirical investigations into the effects of augmented reality technology on online customer behavior remain scarce. The present study appears to be pioneering in embedding the attributes of this innovation within user acceptance, emphasizing the effects of augmented reality tools on customer perception and their utilization for digital channel purchases.

The fundamental function of the marketing mix revolves around expanding product visibility and facilitating customer recognition of the brand. However, it's equally essential not to overlook the potential for creating a profound impact, a unique identity that stands out amidst the competition. AR serves as a crucial element in establishing distinctiveness when positioning an organization uniquely. AR introduces an additional layer that acts as a primary marketing instrument, fostering business success through constructive feedback and drawing new customers via positive word-of-mouth endorsements.

Examining the aspect of brand attitude sheds light on the consumer's positive experience and trust in the brand, which aids in capturing the interest of previously unaware audiences. Augmented Reality could particularly revolutionize the strategies of small businesses and startups, enabling them to swiftly place their products in

consumers' hands with minimal promotional expenditure. This transformation could reshape customer experiences with products and offer novel dimensions to their interactions.

In essence, this study highlights the transformative potential of AR, its role in branding, and its ability to create distinctive and engaging customer experiences that resonate with modern audiences.

8. CONCLUSIONS

This thesis's comprehensive study and analysis underscore the technological potential to enhance and expand customer interactions, thereby fortifying customer-brand relationships. Throughout the research process, a noteworthy revelation emerged: a considerable portion of consumers possess limited awareness of mobile Augmented Reality (AR). Many individuals have interacted with AR without recognizing its presence or its influence on their shopping experiences. By engaging users who frequently employ diverse applications, insights into the implementation and creation of AR tools were gleaned, ultimately enhancing end-user usability.

In the current landscape, where customer-centricity is a prevailing ethos, numerous brands aspire to grant individuals a tangible experience of their offerings. AR seamlessly facilitates this objective at minimal additional cost. The profound impact of AR extends to organizations gaining a competitive edge over their rivals.

The overarching aim of this research was to unravel the facets influencing augmented reality in marketing. To achieve this objective, an exhaustive literature review provided a foundational understanding, which was then connected to empirical observations, culminating in qualitative research. The combined insights from secondary and primary data pointed to the transformative potential of AR in marketing, unlocking novel advantages and opportunities.

The study notably revealed that AR empowers companies to forge deeper connections with their target audience through customization and virality. Brands that position themselves as innovative and cutting-edge can leverage AR to enhance engagement and satisfaction, thereby expanding their customer base, fostering positive word-of-mouth, and perpetuating a cycle of customer delight.

Moreover, the research indicated that AR significantly impacts user buying behavior, potentially nurturing loyalty. The interplay of functional and hedonic benefits derived from AR interactions distinctly influences buying decisions. Notably, the visualization of products in a 3D representation profoundly influences brand awareness and subsequently, purchase choices.

The findings further underscore that AR serves as a catalyst for brand discovery and word-of-mouth recommendations. In essence, AR is seamlessly interwoven into everyday shopping experiences, enhancing consumer autonomy while subtly enriching their decision-making process.

Augmented Reality transcends the role of a mere information conduit; it serves as a potent customer engagement tool, profoundly shaping purchasing choices. In sum, the conclusions affirm that Augmented Reality Marketing, when thoughtfully implemented, presents a mutually beneficial dynamic for both brands and users, fueled by its inherent novelty and unique experiential freshness.

9. RECOMMENDATION

In light of the research outcomes, a significant portion of participants from West Bengal and other regions exhibited favorable inclinations toward adopting augmented reality (AR) technology. Given this, contemporary marketers possess the opportunity to amplify the incorporation of AR technologies across select sectors, particularly in the retail industry. This could be achieved through the seamless fusion of AR tech with promotional endeavors encompassing product samplings, purchase displays, point-of-purchase setups, and content dissemination. By seamlessly integrating these promotional tactics with AR glasses, marketers can heighten the efficacy of consumer experiences, leading to potential sales upsurges through the introduction of a novel, distinctively innovative approach.

10. LIMITATIONS

This article introduces a fresh perspective on the impact of Augmented Reality Marketing (ARM) on customer engagement and attitudes (Table 2). It offers novel insights into a previously unexplored area, but it does come with certain limitations.

In the initial stages of data collection, it was evident that some consumers might lack familiarity or readiness for this technology. This suggests that individuals might not fully grasp how the service operates and could opt for more familiar alternatives due to their discomfort or unfamiliarity with modern technologies like augmented reality. Given that AR is still in its nascent phase, its widespread adoption across the global marketplace and as a common medium for both online and offline shopping will require time.

The utilization of a similar sample group as in other studies of this nature may raise questions about the suitability of the respondents for the present study. However, the study adopted an approximate sample size based on established guidelines.

There exists ample potential for other researchers to investigate respondents from different generations and industries, offering a business-centric perspective on the application and implications of Augmented Reality.

This study delves into the relationship between ARM and various facets of customer experience—namely, customer engagement, behavior, loyalty, and buying decisions—through correlation analysis. In the future, alternative research methodologies could potentially yield similar conclusions, potentially refining the outcomes.

The need for further exploration in this research area is significant to ensure ongoing advancements and enhancements in this field.

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