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A Study On The Effectiveness Of Augmented Reality & Virtual Reality Technologies In Retail Sector

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Abstract: Implementation of Augmented Reality (AR) and Virtual Reality (VR) are recent trends in marketing, especially retail sector to enhance the shopping experience of customers. Augmented Reality (AR) and Virtual Reality (VR) are forms of immersive technologies that continue to evolve to surpass the traditional way of retailing.

This study explores the impact of the latest attraction - Augmented and Virtual Reality on customer engagement and purchase behavior in retail stores. The paper discusses on the conceptual framework in understanding the impact of AR and VR on the retail sector with real-time examples. To effectively assess the customer engagement facilitated by AR & VR in retail, various metrics were employed such as, perception about the AR/VR Apps, frequency of usage, entertainment and educative aspect using AR/VR application. Primary data was used to collect responses from 268 sample size to understand their viewpoint on effectiveness of AR + VR technologies in retail sector. The findings of the study indicate that people who enjoy AR/VR experiences are more likely to repeat purchases and it also boosts referrals.

Index Terms - Augmented Reality, Virtual Reality, Retail Sector, Immersed technologies

I. INTRODUCTION

AR & VR are revolutionary technologies that rapidly transforming the retail landscape. These digital technologies offer interactive shopping experiences to the consumers. AR technology on one hand, allows customers to visualize products in a real-world context, improving product evaluation and decision-making processes. VR, on the other hand, creates entirely virtual environments that simulate real-life store experiences. These technologies are redefining the way consumers perceive and interact with retail products and environments, offering unprecedented levels of engagement and personalization.

1.1 AUGMENTED REALITY

Augmenting means 'Adding'. Augmented Reality (AR) is adding digital images to live view. Thus, AR technology is one that combines real world and computer generated content. The digital images that are superimposed using AR technology are text, geo-location information, graphics, audios and videos onto a live view of the real world environment.

1.2 VIRTUAL REALITY

Virtual means "digitally replicated scenario". Virtual Reality (VR) technology aims at creating computer-generated environment that appears to be real. It enables the users to interact with 3-D visuals and sensory environment. Thus, Virtual Reality provides users with fully immersive environment, while Augmented Reality offers partially immersive environment.

AUGMENTED REALITY (AR) IN RETAIL SECTOR


VIRTUAL REALITY (AR) IN RETAIL SECTOR


1.3 AR + VR MARKETING

Augmented Reality/Virtual Reality marketing refers to usage of computer application in marketing to enhance consumers' experiences, increase their satisfaction, shape their behavior, and boost companies' profitability. It is an emerging cutting-edge technology in marketing that proves effective in bringing a closer relationship between users' physical space and virtual objects. The following are the key features/benefits of the AR + VR technology

- ✯ **INTERACTIVE:** AR system in retail enables consumers to easily interact and control with the digital content, that are augmented/added in the real-world environment. It is used to enhance the visual, auditory, tactile and olfactory perception of users.
  - Visual – Shape & Colour
  - Auditory – Sound
  - Tactile – Movements, positioning & Angles
  - Olfactory – Odour/Smell

- ✯ **DECISION MAKING:** This technology helps consumers to make purchase behavior decisions. The clear image of a product that creates a sensory experience enables consumers to understand the full information about the product for making better buying decisions

Research shows that nearly 75% of global population uses AR/VR Apps in four key areas suchas Media, Shopping, Gaming & Communication. AR + VR provides consumers with personalized experience and converts online session into powerful marketing channel. Thus, Augmented reality (AR) & Virtual Reality (VR) are potentially disruptive technology that enriches the consumer experience and transforms marketing in retail sector.

1.5 AR / VR IN RETAIL SECTOR – EXAMPLES

 ***IKEA*, a leading Swedish home furnishings retailer,** uses AR technology that creates 3D models of furniture. The Company uses AR technology that enables the users to scan their room and provides precise visual representation of new furniture. The users can design their living spaces by exploring how new furniture will look and fit in their home.

 Toyota Motor Corporation is a Japanese multinational automotive manufacturer. It uses Immersive Virtual Reality (VR) that allows 360 degree view of the car. The virtual experience includes highlighting the specific car features to customers in vivid way. It also allows users to sit in the driver seat and virtually drive the vehicle.

 Amazon is an American MNC involved in E-commerce. The retail company uses AR technology called "Virtual Try-on" to enable users to know how the products look on themselves from multiple angles using mobile phone camera.

 Marks & Spencers Inc is a major British multinational retailer that sells clothing, beauty products, home products and food products. The company used VR app called "Way-finding" app that allows users to locate the shelf location of the list of products that they wanted to buy.

 Lenskart is Indian eye-wear company that designs, manufactures and sells eye-wear. Lenskart utilizes augmented reality technology to allow customers to virtually try on glasses, facilitating their buying decisions. It also introduced an app to enable customers to locate nearby optometrists and schedule eye tests at the comfort of their homes in various cities.

2.1 OBJECTIVES OF THE STUDY

- To understand the theoretical framework on the concept and implementation of AR/VR in retail sector
- To get an insight on the perception of customers on the impact of AR/VR technologies in shopping experience
- To find the relationship between factors of AR/VR personalized experience on the repeated purchasing behavior and increased referrals

3.1 RESEARCH METHODOLOGY

This study used exploratory research design. Structured questionnaire method used to collect primary data from 268 respondents of all age groups in Chennai city. Questionnaire was drafted via Google forms and was circulated. Convenient and Purposive Random sampling technique was employed to choose the respondents.

The study also used secondary data. Online sources such as company reports, blogs of experts, websites, Research papers and magazines have been used.

- ✓ ˜ Majority of the respondents participated in the study below to the age category 36 to 50 years of age
- ✓ ˜ Most of them are Male respondents, who participated in the study
- ✓ ˜ Majority of the respondents are working folks earning family annual income less than Rs 500,000

DEMOGRAPHIC FACTORS		**N = 268**	**%**
AGE	BELOW 18 YEARS	21	8%
	19 - 35 YEARS	96	36%
	36 - 50 YEARS	115	43%
	ABOVE 51 YEARS	36	13%
	TOTAL	**268**	**100%**
GENDER	MALE	145	54%
	FEMALE	123	46%
	TOTAL	**268**	**100%**
EDUCATION	HIGHER SECONDARY	21	8%
	UG	113	42%
	PG	120	45%
	PROFESSIONALS	14	5%
	TOTAL	**268**	**100%**
OCCUPATION	STUDENT	30	11%
	WORKING	156	58%
	SELF EMPLOYED	75	28%

	HOUSE WIFE	7	3%
	TOTAL	**268**	**100%**
FAMILY ANNUAL INCOME	LESS THAN Rs 5,00,000	126	47%
	5,00,000 - 10,00,000	108	40%
	MORE THAN Rs 10,00,000	34	13%
	TOTAL	**268**	**100%**

DESCRIPTIVE STATISTICS		
VARIABLES	**MEAN**	**SD**
AR + VR APPS IN RETAIL		
AR/VR Apps - Very quick to learn	4.56	3.15
AR/VR Apps - User friendly	4.23	2.44
Personalized Experience	4.76	1.89
ENTERTAIN CUSTOMERS		
Engage customers	3.88	4.23
Build brand interest	3.56	2.06
Appealing Experience	4.11	1.48
EDUCATE CUSTOMERS		
Deliver Content	3.68	2.89
Provide Information	4.09	1.13
Highlights product features	3.97	3.66
FREQUENTLY USE VR/AR APPS FOR PRURCHASING PRODUCTS	4.14	1.96
REFER TO FRIENDS/RELATIVES POST-PURCHASE	3.97	2.34

CHI-SQUARE ANALYSIS: A chi-square test was employed to study the association of Occupation on impact of AR/VR technologies in retail. Chi-square value was 29.67 and its corresponding p-value was 0.123 (greater than 0.05) and hence, there is no association between occupation and their perception of AR/VR technologies in retail stores.

CORRELATION: Correlation co-efficient value of 0.636 was computed between the variables. Hence, it shall be concluded that there is a positive linear relationship between the factors of AR/VR experiences and purchase behavior of consumers

4.1 CONCLUSION

A Significant innovation in retail sector that drives sales and customer engagement is AR & VR technology. It enhances cognitive engagement of the consumers and thereby, influences customer decision making in product evaluation and purchase intent. However, it poses few challenges to retailers such as huge investment, technological difficulties and seamless customer experience across different devices. This study is an attempt to highlight the emerging innovative way – AR/VR technology to improve the retail experience.

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