INFLUENCE OF AUGMENTED REALITY (AR) IN ENHANCING THE CONSUMER BEHAVIOUR AND DECISION MAKING.
(A STUDY ON CONSUMER'S PERCEPTION IN CHENNAI CITY)

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ABSTRACT

Augmented reality is currently emerging as a disruptive technology that is highly influential with its captivating feature of enhancing the real-life environment by overlaying it with digital augmentations. It offers a more sophisticated user experience along with certain ingenious suggestions which ease the process of decision-making for the consumers. Retailers often tend to ignore the deployment of such emerging technologies due to the uncertainties concerned with mass consumer acceptance, their preferences, behaviours, etc. This study majorly focuses on analyzing the influence of augmented reality upon consumer behaviour and their decision making when exposed to such enriched purchase experience. For the purpose of this study, the primary data was collected by employing the questionnaire method. The survey questionnaire was segmented into two portions. The former portion dealt with the demographic profile of the respondents while the latter portion dealt with the respondent's perceptions, expectations, preferences, and behaviour towards the purchase of products marketed through augmented reality and its subsequent influence upon the decisions made by them. The questionnaire was circulated among 162 respondents residing in the city of Chennai. A simple percentage analysis was used to enumerate the demographic profile, perception, and preferences of the respondents. The Chi-square test was applied to observe the association between the family monthly income of the respondents and the amount willing to be spent by then upon purchase of sunglasses or eyeglasses. The collected data were then consolidated and analyzed for the purpose of obtaining and understanding the findings of the study.

KEYWORDS: *Digital augmentations, Consumer perception, Decision making, Purchase Experience, Reality.*

I. INTRODUCTION

The Oxford Dictionary defines Augmented Reality as, "a technology that combines computer-generated images on a screen with the real object or scene that you are looking at."AR can be defined as a system that incorporates three basic features: a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects. Certain retailers such as IKEA, Rolex, Adidas, BMW, etc. have also adopted the AR technology in marketing their products thereby providing an enhanced user experience to their consumers. AR technology has been embedded with their store catalogue apps which allow the consumers to visualise, by presenting on their screens, how the products would look like if they were physically present in the real-world environment. For instance, when purchasing a watch using Rolex's AR technology infused store catalogue app, once the consumer points the camera at his wrist, the AR would suggest and present on the screen, an image of the watch which suits his preference as if it were worn by him, thereby providing a try-before-you-buy experience. With regards to consumer behaviour, there shall be numerous reasons contributing towards the emerging importance given to and adaptation of digital marketing. The reliance upon broadcasts for marketing various products has now shifted towards marketing them through digital channels which provide a more personalised user experience. This game of digital marketing is levelled up by the introduction of Augmented Reality into the marketing field.

II. REVIEW OF LITERATURE

The wider scope, technological developments and mass adoption of Augmented Reality (AR) has contributed towards the rapid growth of academic researches taken up in this field. The field of AR remains scattered among different literature streams which exhibits it's potentiality in generating utilitarian and hedonic value to the consumers, thereby improving their decision making and enhancing the personalised experience. The researches upon such varied streams of AR have been reviewed.

Ana Javornik (2016)[2] presented a study on Augmented Reality's impact of its media characteristics in consumer behaviour. It showed the extent to which they are indicative of current AR commercial apps. The research agenda was to investigate the consumer behaviour related to the use of AR in marketing channels, building on previous knowledge about interactive technologies and their impact on consumer behaviour.

Pantano, E., Rese, A., & Baier, D. (2017)[3], researched on enhancement of online decision making process by using Augmented Reality (a two county comparison of youth markets). This study explored the effect of augmented

reality technologies on consumer behaviour within the online retail environments, by comparing two different cultural settings. Findings across these two markets reflect cross-market similarities and dissimilarities, related to consumer's motivation to employ augmented reality systems for supporting their online purchase decision. The research elicited that in recent years, advances in virtual reality and 3D graphics have attracted a wide range of consumer's interest. It was also seen that a development in the conceptual frame work linked the relationships between motivational factors with consumer's acceptance of augmented reality tools, online shopping and cross country youth marketing research.

Plotkina, D., Dinsmore, J., & Racat, M. (2021)[4] studied on improving the service brand personality with augmented reality marketing ,inspected on how attitudes towards AR apps contribute to customer perceptions of brand personality(i.e. excitement, sincerity, competence and sophistication) according to two different variables, namely, the location of the AR app (location-specific vs non-location-specific) and its orientation (augmenting the product, brand or store experience).The findings show that non-location-specific and product-oriented AR apps (i.e. virtual try-on apps) receive more positive evaluations and lead consumers to perceive the brand as more exciting, sincere, competent and sophisticated. Moreover, the playfulness and pleasure experienced with the AR app determine consumers' attitudes towards the app.

Qin, H., Osatuyi, B., & Xu, L. (2021)[5], investigated the extent to which mobile augmented reality apps can influence the user's attitudes and shopping behaviour. It empirically explored the user experience and examined its effects on consumer perceptions of hedonic and utilitarian gratification, informativeness, and ease of use. Broadly, this research explains how consumers evaluate the pertinent features and properties of emerging user technologies. It also adds empirical evidence to the growing AR domain by examining how interactivity and virtuality ultimately shape consumer behaviours.

De Amorim, I. P., Guerreiro, J., Eloy, S., & Loureiro, S. (2022)[6] studied the effect of how augmented reality media richness influences consumer behaviour. The paper explores the impact that an augmented reality shopping assistant may have on consumer's emotional and cognitive responses, and how it would affect their buying behaviours. A prototype of an application had been used to assist the consumers inside a supermarket which was developed using HoloLens glasses. Using various scenarios the results which were interpreted showed that, the media richness (the level of information cues, variety and immediate feedback) impacts the consumer's decisions and heightens their cognitive and emotional responses. Thus the study had found out that a media-rich augmented reality experience influenced the brand engagement and willingness to buy through perceived information quality and brand attitudes.

III. NEED AND SIGNIFICANCE OF THE STUDY

AR or augmented reality is how the buyers can visualize a product in context to their surrounding environment. The paper puts forth a framework for obtaining the consumer's preferences, analysing their familiarity and in ultimately bringing to the light, their knowledge and awareness regarding their behaviour and purchase decisions being influenced by the captivating infusement of AR technology in marketing certain hedonic and utilitarian products and their willingness to purchase such products beyond their ability and needs, thereby adding on to the existing knowledge upon interactive and disruptive technologies and their influences in the field of marketing. The customer's readiness to customize and personalize their shopping experience using AR acts as a driving force and there by lies an emphasis upon the needs and significance of this study. Thus, this study proposes to analyse such influence of augmented reality (AR) in enhancing the marketing experience among customers and their decision making skills. Its significance lies in creating an awareness among the respondents, that whether knowingly or unknowingly their purchase behaviour and decision making skills are being influenced by the infusion of AR technology in marketing of various products. Though AR facilitates towards satiation of the needs and purchase experience of consumers, certain negative aspects have also been inferred upon which would contribute to adaptation of a sharpened approach by the retailers to establish AR.

IV. OBJECTIVES

The objectives of the present study are as follows:-

- To determine the level of awareness of AR among the respondents.
- To analyse how AR is captivating enough to attract the consumers and incline their decision towards purchase of such products.
- To ascertain the association between family monthly income of respondents and the amount willing to be spent by them for the purchase of products marketed through augmented reality.
- To identify the factors which influence the consumer's behaviour and decision making.

V. RESEARCH METHODOLOGY

The current study follows a descriptive and diagnostic research design, where the phenomenon regarding the level of influence of AR upon consumer behaviour and decision making has been analysed and the determination of association between family monthly income and amount willing to be spent on purchase of sunglasses or eyeglasses had

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been carried out. The sample included 162 respondents residing in the city of Chennai. The sampling technique deployed was Convenience and snowball sampling. The primary data had been collected with the help of a structured questionnaire comprising of two parts: (i) demographic profile of the respondents (ii) Consumer's perceptions, expectations, preferences and behaviour towards purchase of products marketed through AR. The collected data had been analysed using the tools, (i) Simple Percentage Analysis, (ii) Chi-square Test and (iii) Factor Analysis. Simple percentage analysis was employed and the results were tabulated to determine the demographic profile of the respondents and to measure the respondent's behaviour, perception and familiarity. The Chi-square test was applied to observe the association between the family monthly income of the respondents and the amount willing to be spent by them upon the purchase of sunglasses or eyeglasses. Factor analysis was applied to analyse the various factors which influence the respondent's behaviour and the level of incidence of such factors upon the respondent's decision making skills.

VI. DATA ANALYSIS AND INTERPRETATION

Simple percentage analysis

The demographic profile of the respondents is displayed in Table no.1

Demographic factor	Dominant Group	Percentage
Gender	Female	73.5
Age (in Years)	18-23	84
Educational Qualification	UG	67.9

Source: Survey data – Questionnaire

The total number of respondents were 162 , out of which 26.5 percentage were male and 73.5 percentage were female .The population division emerged as follows,84 percentage were from the age group of 18-23 who consisted of majority of respondents ,9 percentage belonged to the age group of 24-36 and 7 percentage were above 36.

The consumer's behaviour, perception and familiarity is displayed in Table No.2

Table no. 2 Respondent's behaviour, perception and familiarity

Behaviour , Perception and Familiarity	Dominant Group	Percentage
Preference for online platforms for purchase	Maybe	46.3
Awareness about AR	No	39.5
Influence by post covid lifestyle	No	38.3
Impact of evolvements in internet	Yes	49.4

Source: Survey data – Questionnaire

The analysis revealed that 38.3 percentage of the sample did not prefer to opt for AR due to the lack of awareness, which was evidently displayed by the dominant group of 39.5 percentage. Moreover, 46.3 percentage and 49.4 percentage of the samples have shown their increased interest towards online purchase and also anticipate the outcomes which occur from the evolvements in internet.

Chi-Square test

Chi-Square test was used to find out the association between the family monthly income and the amount willing to be spent on purchase of glasses.

	Value	df	Asymp.sig. (2-sided)
Pearson Chi-square	6.597 (a)	9	0.679

The computed value 0.679 is greater than the table value 0.05. Hence, null hypothesis is accepted. Hence it was found that there was no significant association between family monthly income and amount willing to be spent on purchase of glasses.

Factors influencing consumer behaviour and decision making

To study the factors which influence consumer behaviour and decision-making towards AR, factor analysis was adapted and the following results were elicited:

- Cronbach's Alpha value was 0.909
- KMO measure of sampling adequacy was 0.880
- And Bartlett's test showed a significance level of 0.000

Hence, factor analysis was conducted for 13 variables which contributed to the influence of consumer's attitude towards AR.

It was observed that all measures of sampling adequacy (MSA) being more than 0.880, all the 13 variables could be subjected to Factor Analysis. The total variance explained was 64.961%.

Table No.4 Factors influencing consumer behaviour and decision making towards AR.

S.No	Factor	Variable	Loadings
1		Introducing AR technology in retail makes the purchase process more interactive and exciting and there by induces the consumer/customer to purchase more.	. 865
		It is more beneficial to the consumers if AR technology is infused at the point of sales for hedonic products (eg: luxury watches, perfumes, etc.).	.741
		Since AR gives you a try before you buy experience, the expenditure and time wasted upon unfit or wrong choices are reduced.	.676
	User experience	The different mode of AR such as visual, verbal, audio and video give a better understanding of the product and enriches the purchase experience.	.635
		The quality of the products suggested and trailed via AR are trustable and deliver the same level as guaranteed upon.	.580
		AR technology contributes to brand loyalty since the customers not only feel satisfied with the product, but are also satisfied with an enriched purchase experience and feel inclusive, as a part of the company.	.537

2	Facilitative	AR suggests and helps you to choose the products that keep up with the latest fashion trends.	.748
		AR eases the process of decision making by choosing the best of alternatives that suits your tastes and preferences	.742
		It is more beneficial to the consumers if AR technology is infused in the after sales processes (instead of reading manuals for instructions, tech support, etc.) For utilitarian products (eg: Microwaves, refrigerators, etc.).	.508
3	Application spectrum	The infusion of AR technology in marketing enforces the consumers to purchase certain products even beyond their needs and ability.	.781
		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.	.772
		The experience of AR technology changes when given on a wearable/portable devices as compared to a smart phone (the device and size of the screen influences the experience)	.695
		AR apps being embedded at higher level with other social media platforms will significantly impact the consumer's purchasing behaviour.	.683

The factor analysis study was sectored into three parts, resulting in user experience, facilitative and application spectrum. The interpretations were as follows:

● User experience encompassed 6 variables with a cumulative variance of 26.142%.
● Facilitative comprised of 4 variables with a cumulative variance of 22.771%.
● And application spectrum contained 3 variables with a cumulative variance of 16.048%.

VII. LIMITATIONS

This study has certain limitations and the most significant one among them is the level of awareness of the consumers in being influenced by marketing through AR. AR technology often has the salient feature of being captivating and thus induces the consumers and inclines their decisions which ultimately leads to excessive purchase of goods. Though AR is brought down to utilitarian goods, the goods marketed via AR technology shall still be considered

as Veblen, since the cost incurred in installation of AR has an implied effect resulting in an increase in the price of such goods which makes them affordable only to the elite class of consumers. It has also been analysed that there was no correlation between the family's income and the amount willing to be spent on buying such goods. Thus it brings out the pecuniary emulation aspect of a consumer aiming to derive the pleasure from the sophisticated user experience and purchasing goods which are beyond their needs and capabilities thereby emphasizing upon the lack of awareness of being influenced. It also suffers from other limitations such as lack of representativeness of sample since the sampling was done by using convenience and snowball sampling methods, use of controlled conditions for short duration of study, lack of control on extraneous variables like respondent's likes and dislikes, usage of products, intelligence, etc.

VIII. SUGGESTIONS

The scope of the above research could be extended to include a larger sample in order to provide more representativeness, and it could also be conducted over a longer period so that the constraint upon certain conditions could be relaxed. Various other factors could also be taken into consideration and the broad and diversified coverage of study could be narrowed down to a particular stream. A comparative study between certain specified products or a narrowed population spectrum inclusive of a particular age group of respondents alone, would ease out the process of measuring the influence of AR upon consumer behaviour, preference and decision making.

IX. CONCLUSION

The current study initially integrates the consumer's awareness and their desires for a sophisticated and convenient user experience in order to analyse the influence of AR on their purchasing behaviour and in shaping their decision making attitude/skills. It further explores and discusses the salient factors which contribute towards such influence and brings to the light, certain significant results which can be interpreted for the benefit of both the consumers, in order to be well aware of their decisions being inclined towards excessive desires caused by the captivating influence of AR and as well as for the retailers, to up their marketing game and strategies. The facilitative feature of AR technology evidently maximizes the captivation and fascination of consumer's approach towards AR. The scope of the field of AR in marketing is seen as incessant and thus, conducting several literature reviews upon such unexplored aspects and by combining them with the current knowledge about AR, numerous directions for future research may emerge.

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