



ENHANCING CONSUMER ENGAGEMENT AND PRODUCT EXPERIENCE THROUGH AUGMENTED REALITY

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ABSTRACT

Background: Every business is a digital business. That is because every customer is now a digital customer. This is more evident in the retail arena than anywhere else, where shoppers have used social networking and mobility to alter their purchasing experiences. In response to the rise of the digital customers, retailers are looking to leverage digital technologies to drive new levels of consumer engagement and competitive advantage. One area that holds particular promise is augmented reality. This research was conducted to understand the feasibility of enhancing consumer engagement and product experience through implementation of Augmented Reality.

Methods/Statistical Analysis: The study was confined to Bengaluru Urban on 169 probabilistically sampled customers to analyse the impact of introducing Augmented Reality on Consumer Engagement. In this research to examine the impact, the dependent variable chosen is Consumer Engagement and the independent variables are Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership and Experiential Engagement Initiative. The collection of primary data was through structured questionnaire specific for company associates.

Findings: The research shows that factors Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership and Experiential Engagement Initiative has an impact on enhancement of consumer engagement through implementation of Augmented Reality.

Application: The conclusion of this paper emphasizes that the company should undertake several initiatives in areas of Augmented Reality to appraise its Consumer engagement process and be competitive in the market.

Key words: Augmented Reality, Virtual Reality, Consumer Engagement, Self-Transformation, Psychological Ownership, Experiential Engagement Initiative

1. INTRODUCTION

Augmented reality integrates the user's surrounding to digital environment in real time. Augmented reality uses the existing surroundings and overlaps new information on top of it while Virtual reality creates a completely artificial environment.

With today's propagation of social networking and mobile applications, customers have access to huge amount of information and more opinions than ever before. This information is giving rise to increase in their preferences for quality of products and services, as well as their expectations for customised retail experiences. The traditional path to purchase, which begins with awareness and ends with purchase, satisfaction leading to loyalty—has lost its significance for today's consumers. It is too slow, too static and too generic for buyers who now continuously find themselves in a non-stop, non-linear sales channel.

Some surveys define AR in a way that requires the use of head-mounted displays (HMDs). To avoid restricting AR to specific technologies, this survey defines AR as any system that has the following three characteristics:

- Combines real and virtual
- Is interactive in real time
- Is registered in three dimensions

It is not easy to meet the needs of new generation digital customer. In an “always-connected” world, customers have the power for continuously redefining the retail shopping experience they want to have. Their expectations are rising and constantly evolving. The consumers want to be enticed and engaged to feel important and build loyalty towards a product or service. They want digital content and digital options that are easily available, 24/7. They want a unified experience, across different channels that allow them to search, compare and purchase products and services at their convenience.

In search for innovative and original ways to hold user's attention, in recent days many brands have been using Augmented Reality (AR) in their promotion campaigns. Most of the campaigns, adopting this technology, depend on an empirical approach focusing not only on a brand's product or service, but also on an entire experience created especially for the consumer. With AR, a consumer can test the product interactively through a 3D representation in real time, possibly attaining greater brand engagement or even conversion to purchase.

In this paper, survey was conducted on consumers' preference and comfort in using Augmented Reality for shopping over E- commerce and other traditional ways of purchases. This survey was conducted to support the statement that the world is moving towards digitization and the marketers, in order to be able

to serve the changing world of consumers towards technology. Survey also gives an insight into enhancement of consumer engagement, which poses a potential in creating loyal consumers.

Comparison of Augmented reality and Virtual reality

Augmented reality (AR) is a variation of virtual environments (VE), or people generally call it virtual reality. VE technologies are completely immersed, the user cannot see the real world around him. In contrast, AR allows the user to see the real world, with virtual objects superimposed on or composited with the real world.

The two ways how tech world can change the way we see the world are **Augmented reality** and **Virtual reality**. The terms create confusions and seems the same to layman at many situations.

Augmented reality is defined as "an enhanced version of reality created by the use of technology to add digital information on an image of something" while **Virtual Reality** is defined as "the use of computer technology to create a simulated environment".

AR is used in smart phones and tablets. AR apps use your phone's camera to show you a view of the real world in front of you, then put a layer of information, including text and/or images, on top of that view. Augmented Reality and Virtual Reality are two ways through which a tech helps you to look at the World. Though there are a lot of similarities there is a very thin line of differentiation between the two.

Augmented Reality is an enhanced version of reality created by technology to add digital information on it whereas, Virtual Reality through technology creates a simulated environment.

You could see the usage of Augmented Reality in Smart Phones and Tablets. Any game that you play on your smart phone is done with the help of Augmented Reality. For e.g. Pokemon GO. You could use this technology to visit a site, a place thus enhancing your creativity.

Virtual Reality on the other hand is used to create animations. Virtual reality gives you a 3D experience as you can see all sides – up, down, right and left making you feel as if you are in that place for real. Apps can use AR for fun, such as the game Pokémon GO, or for information, such as the app Layer. The Layer app can show you interesting information about places you visit, using augmented reality. Open the app when you are visiting a site and read information that appears in a layer over your view. You can also find money machines, see real estate for sale, find restaurants, and more using the AR feature of the app. You may even discover new sites you didn't know existed.

When you view VR, you are viewing a completely different reality than the one in front of you. Virtual reality may be artificial, such as an animated scene, or an actual place that has been photographed and included in a virtual reality app.

2. LITERATURE REVIEW

Paul Milgram, et.al (1995) discusses in his paper that Augmented Reality displays in a general sense for understanding, within the context of real virtuality, encompassing a huge class of different displays, which includes augmented reality. MR displays are defined by using seven examples of real time displays concepts in which real objects and virtual objects are similar. Essential factors which explains the difference between MR displays are presented, first by means of a table in which the nature of underlying scene, how the objects is viewed and the user interface are compared, then by means of 3D taxonomic framework comprising of extent of world knowledge, reproduction fidelity and extent of metaphor.

Donggang Yu, et.al (2009) concludes in their research paper that AR is the research field in which the computer-generated data are overlaid on the real world. Typically the graphics made by computer are overlaid on into the users field-of-view to provide extra information about their surroundings, or to provide visual guidance for the completion of a task. AR is being used in robotic navigation, mobile, computer assisted surgery, manufacturing, education, gaming, advertisement, market shopping, entertainment, tourism, military device, product assembly and repair, architecture etc. It is clear that AR is connected with researches in the field of computer graphics, computer vision, image processing, multiple view geometry and hardware and software development (user interface, display).

D.W.F. van Krevelen and R. Poelman, (2010) state in their paper that the survey acts as a starting point for anyone interested in researching or using Augmented Reality. The highlights of this paper are that it covers the feature of 3D environment and 3D objects in its real time. The characteristics of augmented reality systems are have been considered and detailed discussion of on the tradeoffs between optical and video blending approaches have been put forth. The paper summarizes on the problems faced while building Augmented reality, namely, registration and sensing errors.

Julie Carmigniani, et.al (2011) paper surveys the current state-of-the-art of technology, systems and applications in Augmented Reality. It describes work performed by many different research groups, the purpose behind each new Augmented Reality system, and the difficulties and problems encountered when building some Augmented Reality applications. It surveys mobile augmented reality systems challenges and requirements for successful mobile systems. This paper summarizes the current applications of Augmented Reality and speculates on future applications and where current research will lead Augmented Reality's development. Challenges augmented reality is facing in each of these applications to go from the laboratories to the industry, as well as the future challenges we can forecast are also discussed in this paper.

Thomas Olsson and Markus Salo, (2012) conclude in their research that, Augmented reality has been emerging technology in mobile computing systems and is available for the end users. AR started to emerge in various commercial application of a mobile consumer domain at an increasing pace for example

Layer, Junajo, Google goggles, and Wikitude etc. The problem is that is clearly noticeable is the acceptance of such timely applications. During the spring of 2011 an online survey was conducted to study the overall acceptance using AR. This paper reports the first analyses of the qualitative and quantitative survey data of 90 respondents. We highlight an extensive set of user-oriented issues to be considered in developing the applications further, as well as in directing future user research in AR. This paper reports on the first analyses analysis that was done having 90 respondents qualitative and quantitative survey. The survey highlighted mainly on an extensive set of user-oriented issues considered in developing the applications further, as well as in directing future user research in AR. The results proved that experiences have been inconsistent generally positive, evaluations have been overshadowed by applicants mentioning pragmatic uselessness in everyday life and technical unreliability, as well as excessive or limited and irrelevant content.

Kangdon Lee, (2013) For any kind of training and education there are several methodologies used to convey specific information and skill required. The methods like classroom lectures with textbook, computers, hand held devices, and other electronic appliances are used. The required method of teaching would depend on the individual who has access to different technologies and infrastructure environment. In a rapidly changing society where there is a great deal of available information and knowledge, adopting and applying information at the right time and right place is needed to main efficiency in both school and business settings.

Jasmina Stoyanova, (2014) states in research that Augmented reality helps not only in experiential approach towards brand product or service but also enhances consumer experience. With AR a consumer can interact easily through a 3D representation in real time, possibly achieving deeper brand engagement or even undertaking an action to purchase. The traditional form of mass media advertisements in our daily life has led to gradual loss of interest in the minds of the customers towards the publicity of products. To get the consumers attention many companies have started to adopt augmented reality in their advertising campaigns. The thesis put forth here provides a systematic investigation of the effectiveness of three separate digital shopping platforms, namely a Purely Interactive, an AR Marker based and an AR Marker less systems. The cognitive responses of the consumers were evaluated through the construct of innovativeness, adoption, emotion, information seeking, and arousal, responsiveness, perceived interface aesthetics, usability, fun, boring, and brand personality. The intent of elevated purchase was registered and compared in all the three platforms. The results indicated the differences among the effects of three tested systems that exist mainly between the interactive and augmented reality solutions. Thus, through this paper a conclusion was done that AR systems may serve as an acceptable alternative of consumer “direct experience” with a product in order to make an impact on the user.

Adrain Shatte, et.al (2014) also stated that, Mobile augmented reality has gained popularity in recent years due to the technological advances of smartphones and other mobile devices. However, current mobile augmented reality solutions in this domain are lacking in context-awareness. The paper also suggested in the literature that agent programming may be suitable at overcoming this problem, but little research has

been conducted using modern mobile augmented reality applications with agents. The paper aimed at bridging the gap through the development of an agent-based, mobile augmented reality prototype, titled Libagent. Libagent was subjected to five experiments to determine its suitability, efficiency, and accuracy for library management. The results of the experiments indicate that agent-based mobile augmented reality is a promising tool for context-aware library management.

Phil Diegmann, et.al (2015) Augmented Reality provides new possibilities for education by augmenting the real world with virtual information. Although AR is frequently applied in educational environments, the value of AR applications in these environments has not yet been investigated in its entirety. To help overcome such challenges, a systematic literature was conducted synthesizing a set of 25 publications. Fourteen different benefits which were clustered in six groups were identified. The Five Directions of AR were used in the educational environments by Yuen et al. The findings indicate that specific directions of AR applications are more likely to lead to certain benefits such as increased motivation.

Joachim Scholz, Andrew Smith, (2016) also argued that AR is the practice of displaying digital information over people's real-time view of objects, people, or spaces in the physical world. It helps the consumers to experience the product and spaces in a very efficient way. The paper discusses on the framework that describes active and passive ingredients of augmented reality. It describes the basic design decisions that marketers would need to make augmented reality campaign. It also explains how to address and understand the dynamics between various active and passive AR ingredients helping marketers to optimize their AR campaigns and enhance various types of consumer engagement: user-brand engagement, user-user engagement, and user-bystander engagement. They recommended marketers to follow the ENTANGLE to design immersive AR experiences that maximize consumer engagement.

Philipp Rauschnabel, et.al, (2017) stated in their research that Augmented Reality games as knowledge about AR games is limited. Pokémon Go was the first mobile Augmented Reality (AR) game that made it to the top of the download charts of mobile applications. However existing media usage and technology acceptance theories had provide limited applicability to the understanding of its users. Against this background, the research provided a comprehensive framework that incorporates findings from uses & gratification theory (U>), technology acceptance and risk research as well as flow theory. The proposed framework aimed at explaining the drivers of attitudinal and intentional reactions, such as continuance in gaming or willingness to conduct in-app purchases. A survey was conducted among 642 Pokémon Go players and results showed hedonic, emotional and social benefits, social norms drive, vice versa physical risks (but not privacy risks) hinder consumer reactions.

2.1 Background of Proposed Model

The below Proposed Model has been adopted from the research- Toward a theory of customer engagement marketing, Colleen M. Harmeling, et.al 2016.

According to this research, the model was used to study Customer engagement marketing defined as a firm's deliberate effort to motivate, empower, and measure customer contributions to marketing functions—marks a shift in marketing research and business practice. After defining and differentiating engagement marketing, the authors present a typology of its two primary forms and offer tenets that link specific strategic elements to customer outcomes and thereby firm performance, theorizing that the effectiveness of engagement marketing arises from the establishment of psychological ownership and self-transformation

2.2 Proposed Model

The model used in this survey with the adoption of Augmented Reality being the prima facie aspect. The independent variables of this model are the marketing activities with implementation of Augmented Reality in each of the activities.

Conceptual model of the effects of customer engagement marketing on customer engagement:

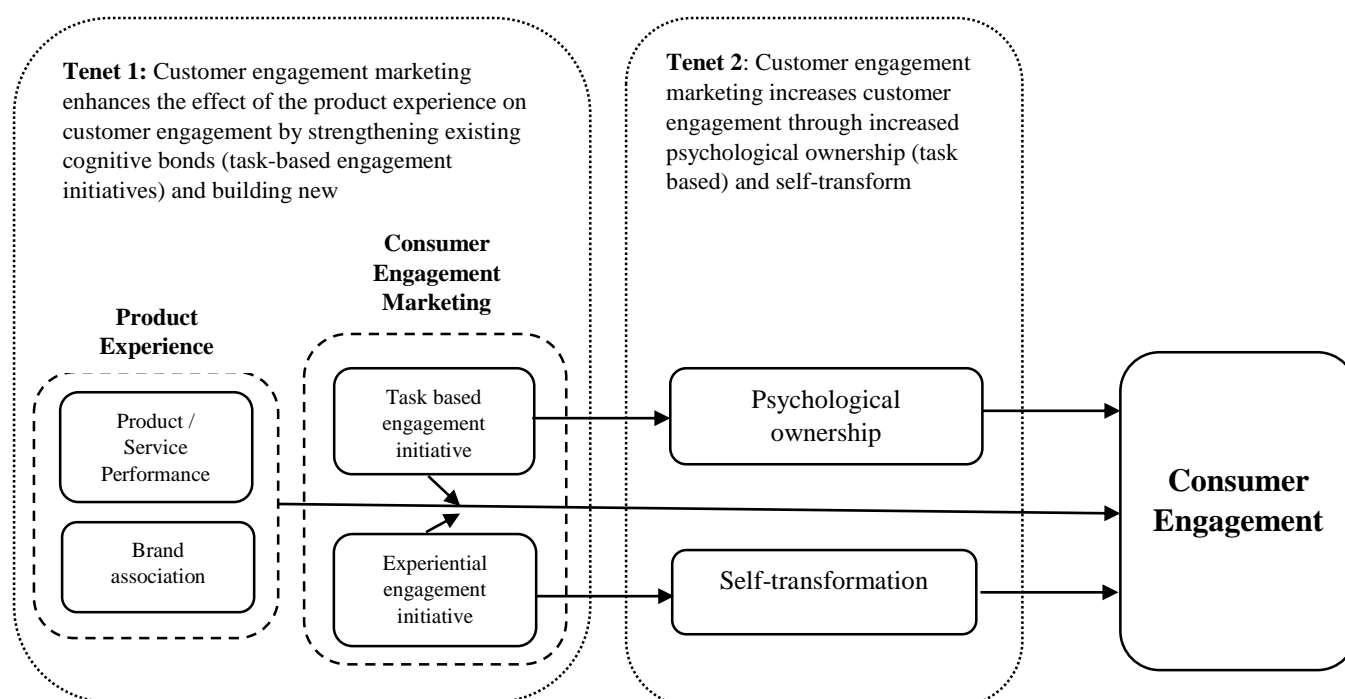


Fig. 1 Source: Toward a theory of customer engagement marketing, Colleen M. Harmeling¹ & Jordan W. Moffett² & Mark J. Arnold³ & Brad D. Carlson³, *Published online: 15 December 2016 # Academy of Marketing Science 2016*

3. RESEARCH METHODOLOGY

3.1 Statement of Problem

Today's consumers look for convenience as the world is busy. Most of the population get time only on the weekends and they would want to spend some quality time with family and friends and not waste it shopping. This problem is being solved by E-commerce websites and mobile applications but has failed to win the trust of many potential customers, as they want to touch and feel the product they buy. They feel what is seen on the website is not the same as what is delivered. This could have happened due to bad experience or customers not being ready to accept the technology like E-commerce.

In order to fill the gap i.e. "lack of trust on E-commerce websites" This survey suggests the introduction of AR into shopping experience. This technology improvises the efficiency of marketing the activities, enhances customer engagement, in turn build the trust increasing sales to business. This technology facilitates consumer conveniences of shopping from his place and the experience of entering the store, touch and feel of the product, actual colour of the product being visible unlike what is seen in pictures and how the product actually looks just as in the traditional buying method.

3.2 Scope of study

- This study focuses on the enhancement of Consumer Engagement through use of Augmented Reality in marketing activities.
- The geographical area focused on, to collection of data for the discussed topic was Bengaluru urban as they pose to be the potential consumers of the technology.
- This survey considers dimensions like Product performance, Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership and Experiential Engagement Initiative to study their impact on Consumer Engagement through Augmented reality.

3.3 Objective of study

- To analyse the impact of study variables in Consumer Engagement using Augmented Reality as the main variable of the study.
- To understand the factors of AR and its role in enhancing Consumer Engagement.
- To provide a framework for further developments according to consumer preferences thus excelling in the market.

3.4 Hypothesis

H0: There is no significant impact of study variables on Consumer Engagement.

H1: There is a significant impact of study variables on Consumer Engagement.

3.5 Sampling

Here the sampling population is specific to consumer group who aren't satisfied with E-commerce and traditional way of purchasing, the significant variables which has an impact on Consumer Engagement is selected. It is proposed to approach 169 respondents belonging to the above categories, which would be representative of the population.

3.6 Data Collection

Primary data has been collected using a structured and focused questionnaire, which covered various dimensions of the research questions. Convenient sampling technique was used to collect data for the research. While, secondary data has been collected from internet, literature and other relevant documents. Web resources, online libraries and websites are other sources.

3.7 Data Analysis & Software used

Hypothesis are made using the data and data analysis is being done using the statistical methods such as KMO measure of sampling adequacy has been conducted to identify the Communalities of the items used in the variable. ANOVA analysis, which is performed to study the relationship of the independent variables with dependent variables. Pearson Correlation analysis was conducted between to assess the relationship between the study variables.

4. STATISTICAL TECHNIQUES

4.1 Reliability Tests:

Dimensions	Cronbach's Alpha	N of Items
Product and service performance on consumer engagement	.786	3
Brand association on consumer engagement	.785	5
Task based engagement initiative on consumer engagement	.820	4
Experiential engagement initiative on consumer engagement	.817	4
Psychological ownership on consumer engagement	.833	4
Self-transformation on consumer engagement	.831	4

The above tables show that Cronbach's alpha are more than 0.50, which indicates a high level of internal consistency for our scale with this specific sample.

4.2 KMO Measure of Sampling Adequacy and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.935
Bartlett's Test of Sphericity	Approx. Chi-Square	2595.549
	Df	276
	Sig.	.000

KMO value is 0.935, which is above 0.5 making the data sample suitable for further analysis. In addition, significance level (p) is 0.000, which is less than 0.05, valid statistical analysis. As $p < 0.05$, null hypothesis (H0) is rejected and the alternate hypothesis (H1) is accepted which concludes that there may be statistically significant interrelationship between variables.

4.3 ANOVA

H0: There is no significant difference between various dimensions of consumer engagement across Gender.

H1: There is significant difference between various dimensions of consumer engagement across Gender.

ANOVA to analyse impact of Gender over study variable

	df	Mean Square	F- value	P- value	Inference
Task Based Engagement Initiative	1	14.924	3.425	.066	Null hypothesis is rejected
	167	4.358			
	168				
Experiential Engagement Initiative	1	46.555	5.999	.015	Null hypothesis is rejected
	167	7.760			
	168				
Psychological Ownership	1	95.397	10.815	.001	Null hypothesis is rejected
	167	8.821			
	168				
Self-Transformation	1	103.665	11.413	.001	Null hypothesis is rejected
	167	9.083			
	168				
Brand Association	1	73.535	8.349	.004	Null hypothesis is rejected
	167	8.808			
	168				
Consumer Engagement	1	87.528	7.262	.008	Null hypothesis is rejected
	167	12.054			
	168				

Inference:

The ONE WAY ANOVA results shows that Experiential Engagement Initiative and Psychological Ownership, Self-Transformation and Brand Association across gender has a significance difference at p-Value of 0.05 whereas Task based engagement initiative is significant at p-Value 0.10.

H0: There is no difference between various dimensions of consumer engagement across Age Groups.

H1: There is difference between various dimensions of consumer engagement across Gender.

ANOVA to analyse impact of Age over study variable

	Df	Mean Square	F- values	P- values.	Inference
Task Based Engagement Initiative	3	10.731	2.492	.062	Null hypothesis is rejected
	165	4.306			
	168				
Experiential Engagement Initiative	3	14.058	1.784	.152	Null hypothesis is accepted
	165	7.881			
	168				
psychological Ownership	3	13.931	1.506	.215	Null hypothesis is accepted
	165	9.253			
	168				
Self-Transformation	3	31.110	3.361	.020	Null hypothesis is rejected
	165	9.256			
	168				
Brand Association	3	12.673	1.388	.248	Null hypothesis is accepted
	165	9.130			
	168				
Consumer Engagement	3	13.680	1.096	.352	Null hypothesis is accepted
	165	12.481			
	168				

The ONE WAY ANOVA results shows that Task based engagement initiative is significance at p-Value 0.10 of whereas Self-Transformation is significant at p-value of 0.05

Other dimension such as experiential engagement initiative, Psychological ownership, Brand association and Consumer engagement has no significant relationship across age.

4.4 Correlations between the dependent and independent variables

	Task based engagement initiative	Experiential engagement initiative	Psychological ownership	Self-transformation	Brand association	Consumer engagement
Task based engagement initiative	1	.776**	.735**	.716**	.729**	.657**
Experiential engagement initiative	.776**	1	.799**	.755**	.779**	.733**
Psychological ownership	.735**	.799**	1	.768**	.738**	.604**
Self-transformation	.716**	.755**	.768**	1	.751**	.638**
Brand association	.729**	.779**	.738**	.751**	1	.726**
Consumer engagement	.657**	.733**	.604**	.638**	.726**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Pearson's correlation is run to determine the relationship between Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership, Experiential Engagement Initiative and Consumer Engagement. There exists a moderately positive correlation between these with the values 0.726, 0.657, 0.638, 0.604 and 0.733 respectively and is statistically significant at 0.01 percent level of significance (2- tailed).

4.5 REGRESSION ANALYSIS

Hypothesis:

H0: There is no influence of various dimensions (Task based engagement initiative, experiential engagement initiative, Psychological ownership, Self-transformation, Brand association) across Consumer engagement

H1: There is influence of various dimensions (Task based engagement initiative, experiential engagement initiative, Psychological ownership, Self-transformation, Brand association) across Consumer engagement

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780 ^a	.609	.597	2.24594

Predictors: (Constant), Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership, Experiential Engagement Initiative

ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1278.273	5	255.655	50.682	.000 ^b
Residual	822.212	163	5.044		
Total	2100.485	168			

a. Dependent Variable: Consumer Engagement

b. Predictors: (Constant), Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership, Experiential Engagement Initiative

Regression analysis for all co – efficient

Model	Unstandardized Coefficients		Standardized Coefficients	F	Sig.
	B	Std. Error	Beta		
(Constant)	3.824	1.078		3.548	0.001
Task Based Engagement Initiative	0.211	0.143	0.125	1.475	0.142
Experiential Engagement Initiative	0.510	0.124	0.408	4.122	0.000
Psychological Ownership	-0.160	0.107	-0.138	-1.498	0.136
Self-Transformation	0.081	0.100	0.071	0.815	0.416
Brand Association	0.426	0.103	0.365	4.147	0.000

a. Dependent Variable: Consumer Engagement

The adjusted R^2 value is .597 This means that the regression analysis can explain 59.7% of the data, the P-value 0.000 is lesser than significance value and thus, we decline the null hypothesis and accept alternate hypothesis. Which means in this case, factors like Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership and Experiential Engagement Initiative have an impact Consumer Engagement through use of Augmented Reality in marketing.

Considering Regression, analysis of co-efficient experiential engagement initiative and brand association has significant influence on Consumer Engagement compared to that of the other independent variables.

5. SUMMARY OF FINDINGS

- The present study employed a sample size of 169 respondents. The findings reveal that amongst the consumers surveyed there are a greater number of male respondents (69.8 percent) than female (30.2 percent).
- The age group for survey is chosen between 18 to 45, The survey tells that majority of the sample is between the age group of 18 to 26 years (76.3 percent).
- From the sample we can say that there are about 50.3 percent are aware of the term augmented reality, about 14.2 percent of respondents have got to expose to the augmented reality application, about 35.5 percent do not know the term augmented reality. AR is still in emerging state so only a minimal number of respondents are exposed to it
- When asked about most influential factor in usage of VR technology our survey reveals that 42 percent of respondents wants to try something new over influence of advertisements, being curious about the technology and the need for using the technology.
- This survey finds that AR technology is comparatively reliable than the existing technologies in shopping experience. Approximately 47 percent of our respondents have considered that AR technology improves shopping experience. They also consider this technology to have more feature and contents
- About 31 percent of respondents strongly believe that the technology with AR function enriches the real world by combining virtual information to existing environment. 38 percent of respondents strongly agreed that AR technology is more interactive and fun to use.
- Majority of the respondents agreed that the augmented reality would enhance consumer experience. The companies should make use of these technologies to enhance its brand image and to increase its sales as it provides in store experience to the consumers at the convenience of their home.
- In search for innovative and original ways to hold users attention in recent days many brands can use augmented reality in their promotional campaigns. The survey shows that about 41 percent of respondents agree to above statement.
- 42 percent of people also believe that this technology can add an edge in differentiating from the competition through customized service.
- There is also a segment of people with less time to choose between traditional shopping and less trust to go with e commerce. This segment can consider AR technology as best channel for shopping because it is solving the problems arising from previous channels of distribution. The survey also reveals that 40 percent of sample are ready to invest in this technology over spending time in shopping at stores.
- 35 percent of sample strongly agreed that AR technology could facilitate easier brand interaction. The marketers can creatively communicate the promotion that attracts more customers.

- From Regression, analysis of co-efficient experiential engagement initiative and brand association has significant impact on Consumer Engagement compared to that of the other independent variables.

6. SUGGESTIONS

- From the study findings it is revealed that respondents belonging to the age groups of 18-26 years are in majority. This helps in understanding the concerns and develops technology focussing on the marketing activities catering to this segment.
- Upon analysing the sample, about 50 percent of the respondents are aware about the concept of AR and approximately 15 percent are exposed to AR an application, which poses to be a right time to grab this opportunity and expand the marketing activities in this field to be at an early movers advantage over competitors.
- From the survey, it is understood that most of the people are interested in installing in this technology are doing so as they wanted to try something new. This opportunity can be utilised to introduce innovative marketing activities to grab attention of more number of potential customers.
- AR is considered to provide best in store experience to the customers at their convenient place so this technology can prove to be a better option over traditional selling and e- commerce. About 31 percent of the sample believe this technology to enrich the real-world experience which poses to be an emerging market.
- From Regression, analysis of co-efficient experiential engagement initiative and brand association has significant impact on Consumer Engagement compared to that of the other independent variables. It is suggested that experiential engagement initiatives and brand are to be given more importance to in marketing activities. Care must be taken to incorporate the AR technologies in the consumer engagement process.

7. CONCLUSION

This paper presents the concept of shopping assistant that utilizes augmented reality technology to provide personalised experience in advertisement and in store shopping. The goal of this technology is to provide pleasant and inviting shopping experience that is developed by augmented reality based system which also enhances consumer engagement. Unlike the conventional advertising applications which simply introduce and explain products by triggering user interests, this system is expected to be used in a wide range of areas including advertising, education, tourism by making interaction between users and augmented reality system. Important issues that has to be considering while designing the system is that the user privacy has to be protected. The privacy issue arises when the retailers collect the consumption activities and attempt to predict the consumer's interest based on her previous shopping behavior. It is necessary to balance the tradeoff between automation and privacy to meet the needs of both retailers and consumers. Consumers may be willing to sacrifice certain degree of their privacy in return for certain perceived value, and retailers definitely should respect the privacy of their customers.

In this system dilemma is the tradeoff between user flexibility and automation. Maximizing the automation requires little user effort but limits the user's flexibility at the same time. Although the design has been deliberated in tailoring the information flow to fit individual needs, some advanced user would like to have more control over the augmentations. This dilemma can be solved by analyzing a survey of usability questionnaire to samples of consumers with various education backgrounds. To analyze this we have used the model that comprises of aspects like Brand Association, Task Based Engagement Initiative, Self-Transformation, Psychological Ownership and Experiential Engagement Initiative having an impact on enhancement of consumer engagement through implementation of Augmented Reality.

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