

THE INFLUENCE OF VR ON THE INDIAN E-COMMERCE MARKET

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Abstract -This study endeavors to understand the customer acceptance and their views towards usability and necessity of virtual reality in Indian E-commerce market. An investigation was done on the major reasons that motivate customers' decision-making processes and whether virtual reality will be able to replace online shopping. The ABC Model of Attitudes was chosen as the basis of framework of this study to explain customers' attitude towards the entry of Virtual reality in E-commerce market. The existing literature was reviewed to discover reasons that would influence customers positively or negatively towards virtual reality in online shopping. Surveys were conducted by distributing questionnaires in Bengaluru to people of the age group 18-40 years to gather data for this research. In-depth interviews of industry experts were conducted to gain a broader perspective on this issue. SPSS software package was used to present research data graphically and to test research hypothesis. From the findings, it was discovered that while the acceptability of this new technology is high but its usability and necessity are low. VR had been launched to provide convenience to the E-commerce customers which it failed to do so in terms of cybersickness and lack of real time technology. It was observed that the technology was a little ahead of its time due to the lack of an ecosystem to support it. Online shopping proved to be superior to VR in terms of convenience to customers. Keeping in mind the attitude of Indian customers, it was seen that people look for convenience and short cuts due to the increased pace of life where VR as a new technology failed to provide the same. Furthermore, the result of hypotheses established that even though VR is the next big step in the field of technology but it can never become a reality in Indian E-commerce market.

Key Words: Customer attitude, SPSS (Statistical Package for the Social Sciences), The ABC (Affect, Behaviour, and Cognition) model of Attitudes, Software, Virtual Reality

1. INTRODUCTION

1.1) Unfolding the oxymoron

The word 'Virtual Reality(VR)' came into existence as early as 1989 and was coined by Jaron Lanier, chief

executive of VPL Research. It is an immersive technology that creates a simulative environment through a computer-generated software. The main idea of this technology is to create a life-like environment and make people believe that they are being teleported in a real environment, which is primarily done by stimulating their vision and hearing.

Virtual reality has made a progressive beginning into the gaming and entertainment industry. With the reduction of its prices and widespread availability, it might soon enter into various sectors of industry depending upon its use and necessity. As a technology, VR has gained a large momentum in the past few years but still hasn't been able to define itself as a rhetoric development of technology into consumers mind.

1.2)V- Commerce

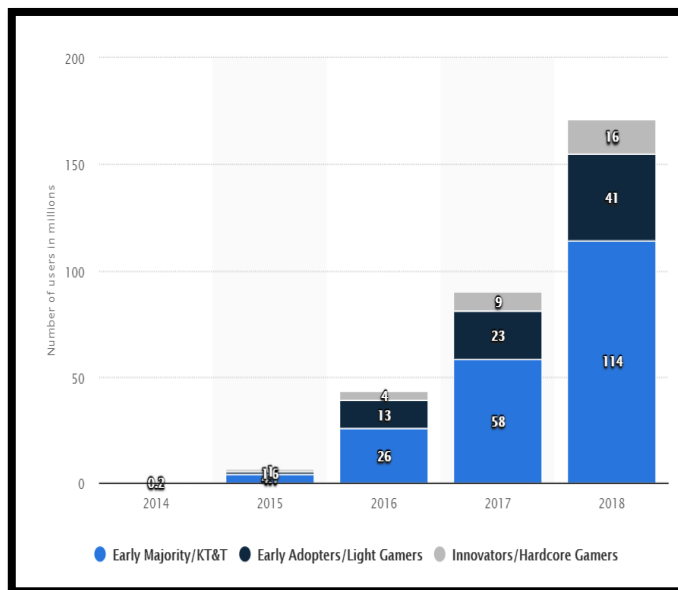
E-Commerce is a rapidly growing sector and a plethora of businesses are tapping into this sector to provide convenience to their consumers. Online shopping has become an easy tool for people to get things easily delivered at their door-step without making any physical effort. Consumer purchases are based only on images, videos and is limited to the mobile screen with no first-hand experience of the real environment. With the introduction of VR people will dwell into a more life-like environment of shopping online and to understand the consumer response towards this, a critical understanding of the issue is required.

This paper majorly deals with if the online shopping experience will be revolutionized with the introduction of VR and understanding the consumer perception and behaviour towards the same. It will give an understanding of whether or not, introduction of VR into the field of e-commerce, will be advantageous, considering the psychology and behaviour of Indian consumers.

2. PROBLEM STATEMENT

In the upcoming years, e-commerce is expected to boom in the Asian region. The number of digital buyers in Asia Pacific is projected to pass the one billion mark for the first time in 2018, which will account for 60 percent of all internet users in the region. In line with the regional growth, India, a fast-growing Asian market, shows optimistic projections for the e-commerce industry. Current active e-commerce penetration in India stands only 28 percent, with lots of room for improvement - India's retail e-commerce CAGR is projected to reach 23 percent from 2016 to 2021. Close to 329.1 million people are projected to buy goods and services online in India by 2020. This means that about 70.7 percent of internet users in India will have purchased products online by then. Close to 329.1 million people are projected to buy goods and services online in India by 2020. This means that about 70.7 percent of internet users in India will have purchased products online by then.

Hence, it can be observed that E-commerce is currently booming in India. However, the next step in the field of technology is VR which is still at an early stage of adoption. As it is still in the research phase, it is difficult to predict the ROI of the technology. Hence, the issue at hand is that whether VR will be able take over E-commerce. The acceptability and practicality of the technology is the major question here. As said by Monsuwé et al (2004), customers' attitudes can be changed by demographic, geographic or security reasons, thus in view of that it is needed to investigate whether the Indian E-commerce market is ready for the introduction of VR. There are some major barriers restricting the growth of VR in Indian E-commerce market such as lack of an ecosystem- new hardware platforms, 5G band width, high cost of specialized software et cetera. Hence, it is required to study how the personalized experience of VR affects the consumers' purchase behaviour.



(C., 2015) Number of active virtual reality users worldwide from 2014 to 2018 (in millions)

3. RESEARCH OBJECTIVES

The following are the major objectives the research:

- 1) To understand the reasons that depict the behaviour of the consumers towards the acceptance/non-acceptance of virtual reality in e-commerce
- 2) To explore reasons to understand whether or not VR will amplify the e-commerce purchase
- 3) Further provide recommendations and suggestions towards implementation of v-commerce based on the understanding.

4. LITERATURE REVIEW

(Brainbridge, 2007) studies the effectiveness of different VR formats and devices in a virtual store environment, namely V-commerce. This study proposes and tests a conceptual model that analyses the relations between sense of presence, brand recall and purchase intention, while also going deeper into their antecedents. Their findings suggest differences in purchase intention depending on VR format and device used.

(C., 2015) studies the growth of e-commerce in recent years. It has opened up new trade avenues for

enterprises. It is clear that internet websites in this context are playing an important role as the medium of information dissemination. Many studies have been shown that 2-D representations of products are no longer impressive on websites than before, since demands for custom-designed products are rapidly increasing. In the consideration of the industrial equipment, this situation becomes more important since such equipment are costly to buy. Due to advent of high-speed network and advance in computer graphics, the Virtual Reality (VR) technology emerged as alternative way to resolve problems inherent to the conventional methods by improving presentation ability and flexibility for customers.

(Barnes, 2010) talks about the consumer behaviour towards online shopping. In this study four dimensions of online shopping as perceived by consumers in India are identified and the different demographic factors are also studied which are the primary basis of market segmentation for retailers. The main objective of this research is to study the impact of Perceived Risk, Perceived enjoyment, Perceived usefulness and Perceived ease of use factors on online shopping behaviour of consumers in Delhi. The research findings revealed that perceived risk negatively impact consumers attitude towards online shopping while perceived usefulness, perceived ease of use and perceived enjoyment has no impact on consumers' attitude towards online shopping.

(Barnes, 2011) studies application of virtual reality in e-commerce has enormous potential for transforming online shopping into a real-world equivalent. However, the growing research interest focuses on virtual reality technology adoption for the development of e-commerce environments without addressing social and behavioral facets of online shopping such as trust. At the same time, trust is a critical success factor for e-commerce and remains an open issue as to how it can be accomplished within an online store. This paper shows that the use of virtual reality for online shopping environments offers an advanced customer experience compared to conventional web stores and enables the formation of customer trust. The paper presents a prototype virtual shopping mall environment, designed on principles derived by an empirically tested model for building trust in e-commerce. The environment is evaluated with an empirical study providing evidence and explaining that a virtual reality shopping environment would be preferred by customers over a conventional web store and would facilitate the assessment of the e-vendor's trustworthiness.

(Barnes, 2011a) talks about an online merchandising and promotion system is disclosed that closely simulates an interior space of an actual place of business in a virtual reality world. As consumers use avatars to explore the simulated space, they become simultaneously familiar with both the simulated and actual places of business, and thereafter can shop at both locations with equal ease. Previous familiarity with the actual place of business can motivate a consumer to visit the corresponding simulated location. In preferred embodiments, users can purchase virtual and/or real goods at the simulated place of business. Some simulated spaces enable avatars to socialize with each other, thereby prolonging their shopping and/or their exposure to advertising. In various embodiments, avatars can work to earn money, and/or avatars can earn virtual money by making real money purchases. Avatars can also gain status, and can compete with each other based on wealth, virtual possessions, and/or status.

(Barnes, 2011b) studies about how to understand customer satisfaction in online shopping while investigating the major reasons that motivated customers' decision-making processes as well as inhibitions of online shopping. The Kotler and Killers (2009) Five Stage Buying Process Model was chosen as the basis of framework of this study to explain customer satisfaction through their motivations to buy products online. The existing literature was reviewed to discover reasons that would influence customers positively or negatively towards shopping online. Surveys were conducted by distributing questionnaires in the Wexham area (North Wales) to gather data for this research. SPSS software package was used to present research data graphically and to test research hypothesis. From the findings, it was discovered that respondents use internet to purchase products through online because they believe it is convenience to them and the term convenient includes elements such as time saving, information availability, opening time, ease of use, websites navigation, less shopping stress, less expensive and shopping fun. In contrast, along with respondents' mind-sets, online payment security, personal privacy and trust, unclear warranties and returns policies and lack of personal customer service are the foremost barriers of online shopping. Furthermore, the result of hypotheses established that even though online shopping is convenient to all consumers, online payment system and privacy or security anxieties have significant impact on online shopping. Finally, some recommendations have been offered for online retailers to take initiatives

for making online shopping more admired and trustworthy.

While all the above-mentioned papers have explored the area of technology and its impact on consumer behaviour, nobody has worked on the readiness of the Indian market to accept and use VR in their everyday life. Nobody has tried to understand the reason behind the acceptance and yet lack of usage of this technology in Indian e-commerce market. Our research has brought into light the reasons which have restricted the complete acceptance of VR in e-commerce despite its acceptance in other industries.

4. RESEARCH METHODOLOGY

- **Quantitative method-**

- i) Survey based research questionnaire
- ii) Research based in Bengaluru
- iii) Total sample size- 50

- **Qualitative method-**

- i) In-depth interviews- 2 industry experts

- **Model framework:**

- i) The ABC Model of Attitudes was chosen as the basis of framework of this study to explain customers' attitude towards adoption of Virtual Reality in E-commerce. When this survey was done then the respondents were very enthusiastic about this proposition. It was also pretty clear in their behaviour. They all were very happy with this new experience.
- ii) The diffusion of innovation model is also a part of the framework as it helps to understand the behaviour of people from metro cities towards the adoption of this new technology in E-commerce.

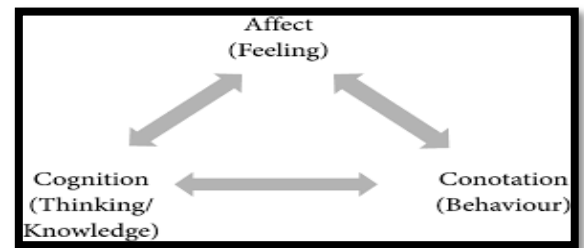


Figure 4.1 ABC Model

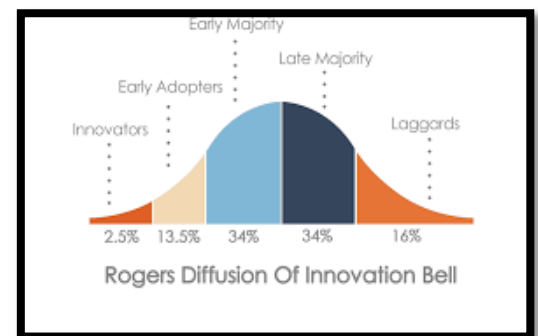


Figure 4.2 Rogers Diffusion of Innovation Bell

The youth of metro cities of India are pretty experimental. They like to adopt new technologies and experience new products or services. They fall into the category of Innovators, Early adopters and Early majority.

- **Sampling:**

- i) Sample size- 60
- ii) Sampling type- Simple random sampling (non-probability sampling) but the geography was restricted to colleges and IT Tech parks of Bengaluru to target the required the target group.

- **Research Design:**

- i) Factor Analysis was done by distributing questionnaires to the age group ranging from 18 years to 40 years in chosen metro cities and was further analysed.
- ii) Narrative Analysis was done by gathering insights from various industry experts.

- **Hypothesis Development:**

SPSS automatically calculates the significance (or p-value), which is the probability of the null hypothesis (H_0), being accepted. Hence the level of probability of 5% or less is commonly taken

as an appropriate level for most general research including this study. As a result, H_0 is accepted if the significance level is less than 0.05 ($p < 0.05$) and H_0 rejected if the significance level is greater than 0.05 ($p > 0.05$). The hypothesis in

Inference:

- As people become more aware, they would tend

#ID	VARIABLE NAME	RAW COEFFICIENT	STANDARD ERROR	T STATISTICS	SIGNIFICANCE	STANDARD COEFFICIENT β
Q 14	COMFORT LEVEL	-0.523	0.091	-5.726	0.000	-0.720
Q 3	AWARENESS LEVEL	0.481	0.139	3.454	0.002	0.504
Q 23	PRICE	-0.555	0.210	-2.647	0.014	-0.311
Q 10.2	AUTHENTICITY	1.047	0.357	2.934	0.007	0.404

this case is as mentioned below-

POSITIVE DRIVERS	NEGATIVE DRIVERS	MAGNITUDE
AWARENESS	COMFORT	AWARENESS 0.504
AUTHENTICITY	PRICE	AUTHENTICITY 0.404
		PRICE -0.720
		COMFORT -0.311

H_0 - Virtual Reality can never be a reality in Indian E-commerce market

H_A - Indian E-commerce market is ready for the introduction of Virtual Reality

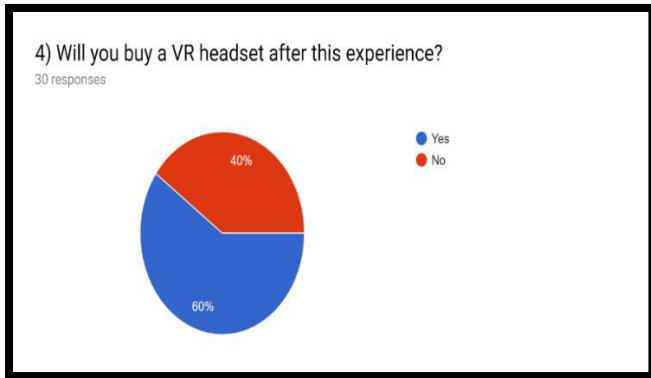
5. OBSERVATION AND INFERENCE

- Quantitative Analysis-**

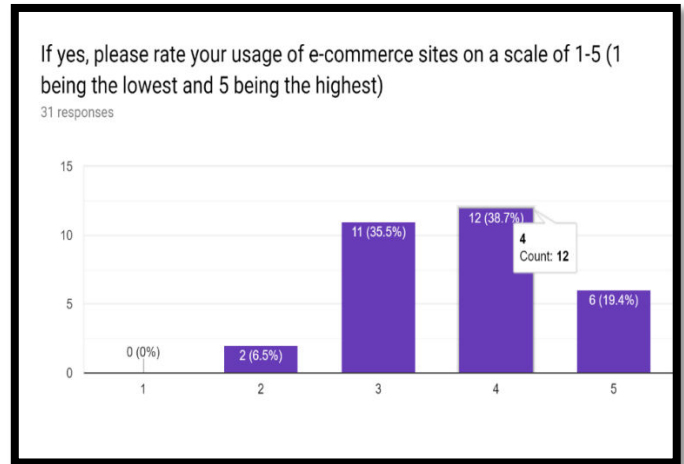
Dependent Variable- Purchase intention

TABLE 4.1 e VR headsets. ty of V-commerce products will impact the purchase positively.

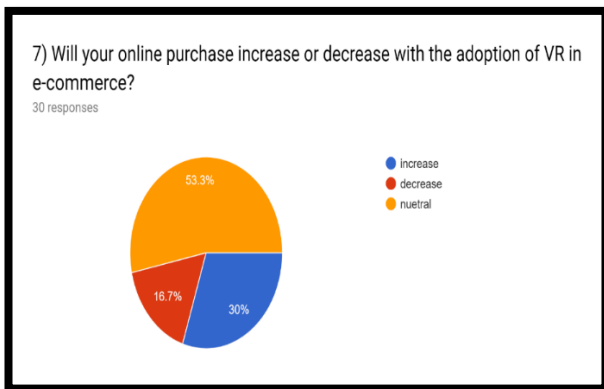
- With an increase in price of VR headsets, a
- decrease in its demand is observed.
- Comfort impacts the purchase of VR headsets negatively, that is, more the discomfort less will be the purchase intention.



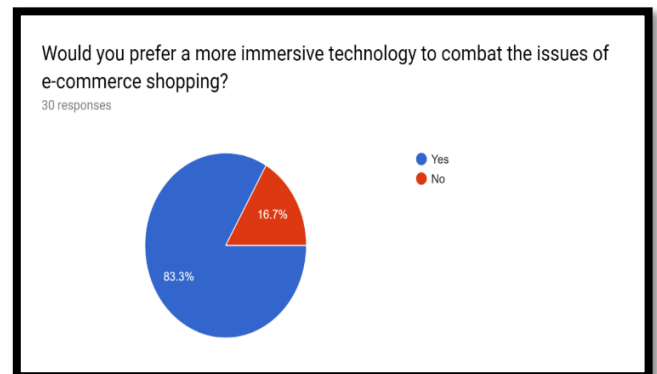
- The product placement test created a ‘wow factor’ among the youth (18-30 years).
- Hence, larger percentage has answered the question as ‘Yes’.



- Usage of E-commerce rate in India is high



- Earlier we could see that people were willing to buy the product because the experience was new to them and youth is drawn towards the technology.

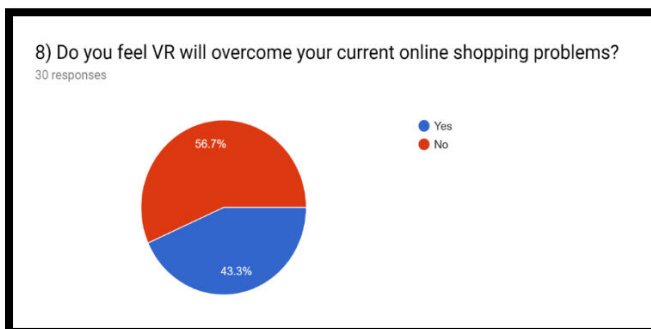


- Acceptability of VR by Indian youth is high

Hypothesis Testing- As seen above, the significance level is below 0.05, therefore, H_0 is accepted, that is, “Virtual Reality can never be a reality in Indian E-commerce market.”

• **Qualitative Analysis-**

In-depth interviews with Mr. Vijay Ladha, Fourell Appliances Pvt. Ltd., Visiting faculty at SSMC-B, and Mr. Don Bosco, Visiting faculty at SSMC-B; various insights were drawn as mentioned below-



- However, there is no significant change in their purchase intention and neither do they think that introduction of VR would help combat their online shopping issues such as authenticity, refund, technology failure, size etc.

- Acceptability and Usability stem from necessity. In this case, acceptability is high but the usability and necessity is low.
- People (mostly youth) are mostly attracted towards the new technology and hence, could be enticed into buying the product.

- c) However, in Indian market, convenience is the key factor which has also driven E-commerce to its success.
- d) But in this case, there is no convenience factor that would encourage the buyers to use this product. The most important issue that has impacted VR negatively is cybersickness.
- e) There is no significant advantage that VR provides over E-commerce other than the personalized experience.
- f) However, shopping experience in India is considered to be a group activity. Hence, the current generation who has experienced the joy of shopping would not prefer this personalized experience.
- g) The major issue with VR is that it cannot provide '**Real time experience**' which is extremely important for V-commerce. To inculcate VR in E-commerce, any brand would have to pre-record its products and the store visualization (optional). There is also a **lack of ecosystem** to support the technology. Hence, VR can never become a reality in E-commerce as it cannot concur with the reality in the store which changes with each customer.
- h) Hence, it is concluded that VR can never be implemented in E-commerce.

6. CONCLUSION

VR provides a great potential in various fields such as medicine, gaming & entertainment, tourism, marketing etc., to name a few. It is expected to be the next big move in the field of technology which would change our day-to-day experiences significantly. It would make life easy and interesting for us. Imagine being able to walk in the hotel rooms before making any booking! But still there are some questions over whether VR adoption will be successful in the future, particularly given potential issues of cybersickness and availability to all the social classes in India.

Undoubtedly, the earliest adopters of VR may be mobile and console gaming fans. However, video content is also likely to be a key driver of adoption, and recent trends appear to suggest a fertile environment for VR adoption. YouTube has made all of its videos VR compatible. The cost of VR is declining and it is becoming more accessible. VR headsets are a low cost product, which will boost adoption, although they typically require another computing device such as a computer or a smartphone. Further, there is a possibility that headsets may even be given away with mobile phone contracts (Barnes 2016). Cheaper versions such as the Oculus gear

and Google Cardboard are helping to create a mass market. The latter is particularly useful for quickly creating an active VR consumer base. Not surprisingly, VR technology is developing very quickly and there are a mixture of technological platforms and standards.

However, this paper concerns with the entry of VR in the Indian E-commerce market. India is a country where there is a dominance of social class mentality. The condition of the economy adds fuel to it. The 65% of entire population of India still resides in rural areas. Many of them are still stuck on the 2G/3G sims. There is still prevalence of button phones in those areas. Hence, it can be inferred that people are still quite backward in terms of technology. There may be various reasons for the same such as low income, education crisis, extreme poverty, stubborn mindsets etc., but the point remains that there is no ecosystem to support this technology. A technology can never be truly accepted in a country till it is accepted by all its social classes.

However, E-commerce has proved to be quite a success in India (at least in T1, T2 and T3 cities) specially because of the youth segment. E-commerce is something which changes every moment and virtual reality is a technology which works on simulating a virtual environment which requires pre-recording of the premises. Hence, if change is constant in this kind of shopping then VR cannot be expected to last even a day in this market.

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BIOGRAPHIES



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