

Sentiment Analysis of India's Digital Natives in First Person Shooter Games to Map Their Experience and Financial Preferences for Metaverse

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Abstract—Metaverse is on the horizon for the future of modern digital environment, the companies have already started to make the move towards augmented reality and virtual reality as tools for launching their new products. Gucci and Louis Vuitton are the flagbearers of this transformation by launching exclusive line of clothing in augmented reality. This makes it imperative for business managers to understand behavioral patterns displayed by digital natives in similar virtual reality environments. This paper attempts to compare and review relevant literature on the behavior of consumers with respect to multiple open worlds and role-playing games which simulate essence of the metaverse and identify consumer spending patterns that might be carried forward by the digital natives into the metaverse. This study shall help brand managers to get an understanding of evolution of consumer behavior in these digital environments which have simulated aspects of the metaverse and take informed strategic decisions.

Keywords—Consumer motivation, Consumer behavior, Metaverse, First person shooter games

I. INTRODUCTION

Metaverse is a relatively new term for majority of the world today due to the focus that is put upon its application by tech giants like Facebook who have now changed their holding company name to “Meta”. The salient features of metaverse have already been tested in a fragmented fashion by the gaming industry through multiple first-person shooter games. First person shooter (FPS) games have enabled players to develop various aspects of their in-game character through skill upgradation, costume upgradation and enabled them to overcome their limitations in the real world by fulfilling their ambition in the game (Herumurti et al., 2020). The FPS games on the other hand have made the players challenge their imagination in a completely virtual reality where they are able to simulate their real-life experiences without real world consequences. These types of games have broadened the horizon of digital natives in a fashion that it is crucial for the industry to understand the behavioral patterns including the motivations of the digital natives using this mode of gaming as these are the consumers of

tomorrow in Metaverse. With respect to India, the Indian gaming Industry has seen an unprecedented growth in the market size which was 800 million dollars in 2018 and is now expected to be at 7 billion dollars by 2026. This review will provide insights into the minds of digital natives, their motivations, their spending pattern and how this can amalgamate into a comprehensive business insight for development of branding strategies for companies into the metaverse through a consumer survey of 69 individuals within the age bracket of 20 to 35 years.

II. LITERATURE REVIEW

A. Evolution of the Metaverse Concept

The term “metaverse” was initially coined by Neal Stephenson in his 1992 book, “Snow Crash” (Joshua, 2017). In this seminal work, Stephenson described the metaverse as a system where individuals engage in a virtual reality, competing for status and power by customizing and upgrading their avatars. Despite its conceptualization in the early ‘90s, the development of the metaverse

is still in a nascent stage, with limited comprehensive studies distinguishing visual construction, exploration, and the role of graphics, interaction, and visualization within the metaverse context (Zhao et al., 2022). The metaverse, characterized as a hypothetical evolution of the internet into a unified virtual world, facilitated by virtual reality (VR) and augmented reality (AR) headsets, presents a digital realm of 3D virtual worlds centered on social interaction (Setiawan et al., 2022). The ongoing advancements in 5G, VR, and XR technologies are instrumental in ushering in the metaverse era, with its development heavily dependent on the adoption of these emerging technologies (Qu et al., 2022).

B. User Interaction in Metaverse

Understanding user interaction within the metaverse is crucial for comprehending the dynamics of this evolving digital environment. The effectiveness of interactions in the metaverse relies on completing user input and output through various actions and devices. Sensory elements enhance this interaction process, making it more comprehensive. User interaction tasks encompass a variety of mediums and modes through which users engage with the metaverse (Zhao et al., 2022). The Metaverse has gained significant popularity in recent years, leading to an array of evolving definitions influenced by various technological developments (Chen et al., 2022). The term 'metaverse' has emerged as a catalyst for comprehensive digital transformation across all facets of our physical lives, envisioning an immersive Internet as a colossal, persistent, and shared realm (Lee et al., 2021). This paper aims to draw correlations between user interaction interfaces in the metaverse and open-world games, emphasizing the significance of this aspect. The study on Metaverse frameworks aligns with the broader exploration of Metaverse applications in diverse settings (Jeong, Choi & Ryu, 2022).

Raaen and Sørsum further classified metaverse user interfaces into functions of menu, interaction, and locomotion (Zheng & Xu, 2020). Understanding these classifications contributes to a deeper comprehension of how users engage with and navigate the metaverse, forming a critical foundation for the study's exploration into consumer behavior and preferences in these digital spaces. This research aligns with the broader exploration of Metaverse, considering its various field cases and potential impacts on individuals and enterprises (Lee, Yeo, & Lee, 2022).

III. RESEARCH METHODOLOGY

For the purpose of this research 69 university students volunteered to participate in this survey and provide their opinion.

A. Research Design

This research was conducted to understand the preferences of Indian digital natives between the age 20-35 with respect to their motives behind playing first person shooter games and mapping their opinion towards futuristic gaming ideas that can be incorporated with metaverse.

B. Research Methodology

A survey was conducted on volunteering basis amongst the students of Symbiosis Institute of Digital and Telecom Management. The survey participants responded to a pre-selected questionnaire that was released to them through a google form. The questionnaire involved questions on age range, most played FPS game, aspects of FPS games that excite you the most, preference of the social setting while playing an FPS game, Motive for playing FPS games, Understanding if the user has been to a cybercafé, Users average spending on cyber cafes on a monthly basis, would the user prefer to upgrade to buy an expensive console, what would be the amount he would be open to spend on the console, the users willingness to visit a cybercafé with AR VR capabilities, willingness to spend money on such upgraded cyber cafes, fair amount of money to spend on in game purchases, biggest issue with FPS games, Will spending increase on AR VR games with an increase income, what amount of surplus savings will motivate them to spend on AR VR based FPS games.

IV. SURVEY FINDINGS

A. Question 1

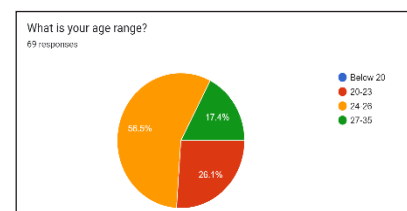


Fig. 1: This Figure Shows the Age Classification of the Survey Participants

The graph above shows that (56.6%) of the survey

participants are in the age group 24 to 26, the second highest percentage is (26.1%) for the age group of 20 to 23 and 17.5 percent for 27 to 35 years of age. The survey can be considered heavily influenced by digital natives of India in the age range of 20 to 26 years of age with a cumulative (82.7%) of the survey participants being in this age range.

B. Question 2

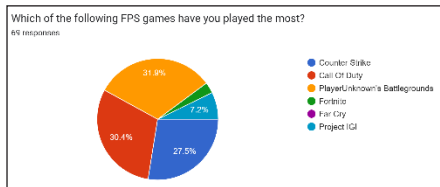


Fig. 2: This Figure Shows the Age Classification of the Survey Participants

The responses are showing a clear picture that an overwhelming majority of the respondents have played PUBG (31.9%) and Call of Duty (30.4%) both of which were also available in mobile format for the Indian market. This represents high exposure to first person shooter games with an environment similar to open world games. Counter strike emerged as the third most played game with 27.5% followed by Project IGI at (27.5%) with Fortnite receiving least amount of response at just (2.9%).

C. Question 3

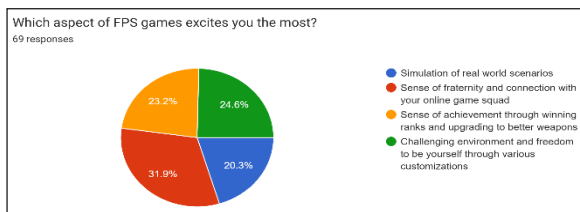


Fig. 3: This Figure Illustrates the Responses of Survey Takers to the Question of Which Part of FPS Games Excites Them the Most

(31.9%) of the survey takers had the response that they play FPS games due to the excitement factor of the fraternity aspect of the game and to socialize with their online gamer friends. (24.6%) of the respondents did it for the challenging environment and freedom of expression through customizations. These two significant

finding indicate that the digital natives are looking at online interactions as a medium for socializing and to express themselves beyond their physical limitations. (23.2%) of the respondents played FPS games for a sense of achievement and upgrading to better weapons and (20.3%) respondents played FPS games for simulation of real-world scenarios.

D. Question 4

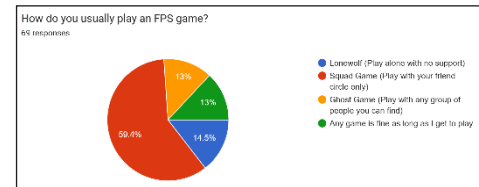


Fig. 4: This Figure Illustrates the Responses of Survey Takers to the Question of What User Setting They Usually Prefer to Play FPS Games

(59.4%) of the respondents said that they prefer squad games where they can interact and play with their friends and teammates. (14.5%) respondents preferred to play alone to accomplish individual targets. (13%) respondents said they prefer to play with strangers and another (13%) respondents are fine with any setting as long as they get to play the game. This also states that a significant majority of the respondents play FPS games with socialization as a motive either to play with their friends or strangers.

E. Question 5

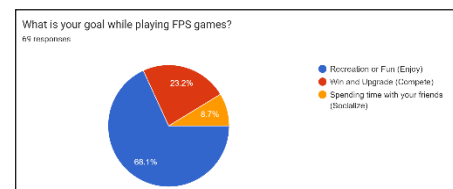


Fig. 5: This Figure Illustrates the Responses of Survey Takers to the Question of what is the Goal of Respondents to Play an FPS Game

As Fig. 5 shows (68.1%) of the respondents play the game only for recreation or fun purposes. (23.2%) of the respondents played to compete and (8.7%) of the respondents played with the goal of socializing in mind. This implies that majority of the respondents look at FPS game as simply a part of recreation or fun.

F. Question 6

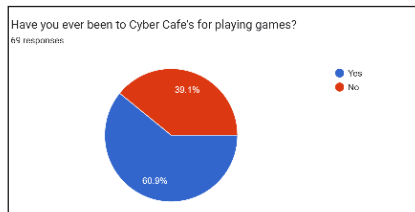


Fig. 6: This Figure Illustrates the Responses of Survey Takers to the Question of Whether They Had Visited Cyber Cafes Before

As the Fig. 6 Illustrates (60.9%) of the respondents had visited a cybercafé before and (39.1%) of the respondents had never visited a cybercafé before.

G. Question 7

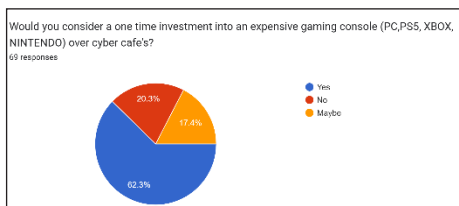


Fig. 7: This Figure Illustrates the Responses of Survey Takers to the Question of Whether They Would Prefer to Buy an Expensive Console Over and Above a Cybercafé

An overwhelming majority of the respondents (84.1%) said they are open to the idea of playing their favorite FPS games in an AR VR setup with (11.8%) respondents being unsure and (4.3%) respondents stating a clear no.

H. Question 8

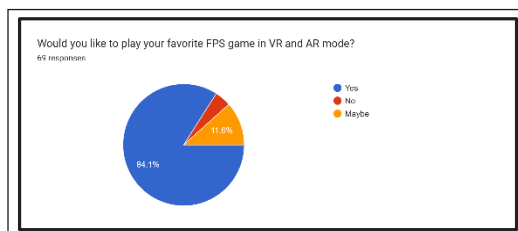


Fig. 8: This Figure Illustrates the Responses of the Survey Takers to the Question of Whether They Would Prefer to Play Their Favorite Game in AR VR Mode

An overwhelming majority of the respondents (84.1%) said they are open to the idea of playing their favorite FPS games in an AR VR setup with (11.8%) respondents being unsure and (4.3%) respondents stating a clear no.

I. Question 9

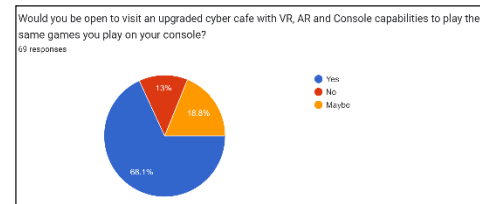


Fig. 9: This Figure Illustrates the Responses of the Survey Takers to the Question of whether they Would be Open to Visit a Cybercafé Where They Can Play Their Favorite FPS Games in an AR VR Mode

As Fig. 9 Indicates 68.1% respondents responded affirmatively to the notion of visiting a cybercafé with inbuilt AR VR capabilities to experience their favorite FPS games. Another (18.8%) respondents were neither for and neither against the idea of this cybercafé and (13%) of the respondents explicitly mentioned they would not prefer to visit such cyber cafes.

J. Question 10

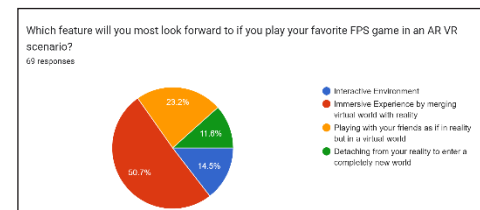


Fig. 10: This Figure Illustrates the Responses of the Survey Takers to the Question of Which Feature of Their Favorite FPS Games will They Most Look Forward to in an AR VR Mode

A substantial number of participants (50.7%) expressed their anticipation for an immersive experience, emphasizing the integration of the virtual world with reality. This involves creating a durable and expansible platform centered around a virtual metaverse (Yoon et al., 2022). Followed by (23.2%) of the respondents playing it to socialize with their friends in the virtual world which is a simulated version of reality. (14.5%) respondents will play it simply for the interactive environment and (11.6%)

respondents will play to detach from reality and enter a new world altogether.

K. Question 11

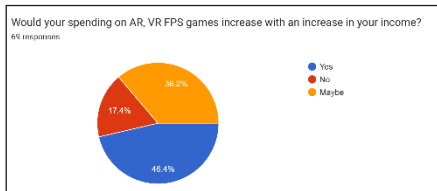


Fig. 11: This Figure Illustrates the Responses of the Survey Takers to the Question if Their Spending on AR VR FPS Games Increase with an Increase in Their Income

The survey shows a majority of the respondents actually responded affirmative (46.4%) to the notion that their spendings on games will increase with an increase in their income. Another (36.2%) respondents were unsure whether they will or will not spend more money on AR VR FPS game with an increase in their income however they did not choose to explicitly say no. Only (17.4%) of the respondents explicitly rejected spending on AR VR FPS Games with an increase in their income.

L. Question 12

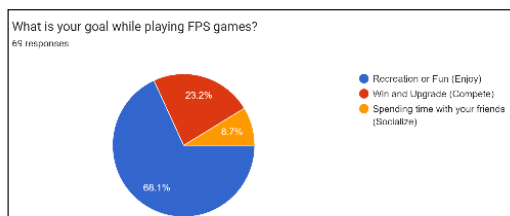


Fig. 12: This Figure Illustrates the Responses of the Survey Takers to the Question How Much Would You Spend on a Monthly Basis in Cyber Cafés

Majority respondents (34.8%) mentioned to the fact that they haven't spent any significant amount of money in cyber cafes. (33.3%) paid between 100 to 500 rupees per month. Followed by (23.2%) of the respondents paid up to 100 rupees per month on cyber cafes and (5.8%) respondents have paid rupees 500-1000 per month. (2.9%) respondents have paid 1000 to 5000 rupees per month for cyber cafes. This shows that 65.2% respondent have already shown historical tendencies to spend money

on cybercafé experience to substitute the lack of gaming technology at home.

M. Question 13

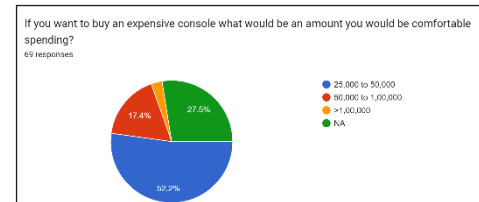


Fig. 13: This Figure Illustrates the Responses to the Amount the Responders Would Spend On an Expensive Console for Their Gaming Experience

(52.2%) respondents affirmed that they are comfortable spending 25000 rupees to 50000 rupees for a one-time purchase of an expensive console. Followed by (27.5%) preferred to not spend lumpsum money on buying an expensive console. (17.4%) respondents were willing to spend between 50000 to 100000 rupees and (2.9%) respondents would prefer to spend more than 100000 rupees.

N. Question 14

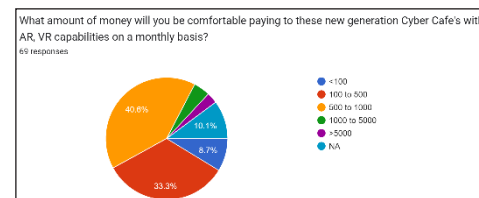


Fig. 14: This Figure Illustrates the Responses to the Amount the Responders would Spend on a Monthly Basis on Cyber Cafes with Metaverse Capabilities

(40.6%) respondents affirmed that they are comfortable spending 500 to 1000 rupees per month on cyber cafes with AR and VR capabilities. Followed by (33.3%) will prefer spending rupees 100 to 500 per months. (10.1%) respondents were not willing to spend money on the advanced cybercafé. (8.7%) respondents would prefer to spend less than 100 rupees per month in the cyber cafe. (4.3%) respondent would like to spend between 1000 to 5000 rupees per month on metaverse cyber cafes and (2.9%) respondents would like to spend more than 5000 rupees. This shows a heavy inclination towards optimistic adaptation of metaverse through cyber cafes enabled with

digital, AR and VR capabilities as 89.9% respondents responded positively for their willingness to spend for such experiences.

O. Question 15

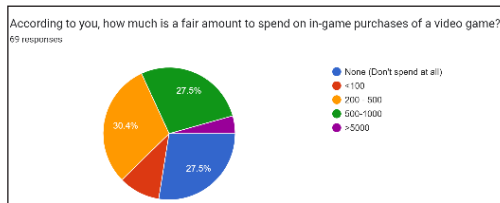


Fig. 15: This Figure Illustrates the Responses to the Amount of Money the Respondents are Comfortable with Spending on In-Game Purchases for a Video Game

(30.4%) respondents declared that they would like to spend 200 to 500 rupees as a fair amount for in game purchases. Followed by (27.5%) will prefer spending rupees 500 to 1000. (27.5%) respondents were not willing to spend money on the in-game purchases. (10.1%) respondents would prefer to spend less than 100 rupees in the in-game purchases. (4.3%) respondent would like to spend more than 5000 rupees per month on in game purchases.

V. CONCLUSION

The survey conducted by us elaborates on the Indian digital natives' sentiments with respect to their response for FPS games that simulate the metaverse in controlled situations and limited scope (Pant & Agarwal, 2021). As represented in (Fig. 4) an overwhelming majority of the respondents played first person shooter games to socialize and to interact with other people with similar interests therefore it shows a strong tendency to use these mediums as a platform for social interactions. Referring to (Fig. 3) we can also deduce that simulation of real-world scenarios which help them overcome their physical limitations, sense of fraternity with their online gaming squad, sense of achievement through upskilling and the freedom to express yourself through customizations are all the factors that are tempting the digital natives of our country to play first person shooter games with open world scenarios. The psychological impact of online gaming has become a focal point of discussions among netizens, particularly concerning the potential for addiction leading to behavior restrictions and psychological dependence

(Huang et al., 2022). The digital natives of our country are also significantly in favor of the notion to try their favorite FPS open world games in an AR and VR format which will help in the adaptation to the metaverse and shows promising signs for metaverse market as depicted in the (Fig. 8.) The survey then takes a deep dive in understanding what forms of consumption patterns have the respondents showed with respect to first person shooter games as elaborated in (Fig. 11). and (Fig. 12). It helps us understand that the digital natives have already shown tendencies to pay for such experiences since childhood in absence of such advanced gaming or computing facilities at home and also for the socializing aspect of cyber cafes. There is an interesting take on the willingness of the respondents to buy a gaming console with advanced capabilities with lumpsum money in comparison to renting out that experience through advanced cyber cafes with AR VR capabilities. (Fig. 8) shows the result of a significant majority of the respondents willing to invest their money in a gaming console as a lumpsum investment 62.3% and (Fig. 14) elaborates on the actual amounts of money respondents would be willing to spend on the said expensive console. In this particular question 52.2% respondents were willing to spend between 25000 to 50000 rupees as a lumpsum investment. On the contrary the respondents also showed significant interest in visiting cyber cafes with advanced AR VR capabilities 68.1% (Fig. 9). The respondents also gave a majority response 50.7% to affirm the fact that they would be open to playing their favorite game in an AR VR setting in order to see the virtual world merging with the real world through simulation. This shows that the respondents are excited to see their favorite places of recreation being served as real world through simulation and making the virtual experience as realistic as possible (Fig. 10). The respondents showed an optimistic trend towards increasing their spending as their income levels rise for such experiences as elaborated in the (Fig. 11) with only 17.4% respondents denying explicitly to spend higher sums of money as their income increased. 73.9% respondents have claimed that they would be comfortable spending between 100 to 1000 rupees for advanced AR VR cyber cafes on a monthly basis whereas only 10.1% respondents explicitly denied spending money on a monthly basis this has opened up a common consensus that the respondents in significant majority are open to expenditure on a monthly basis for the experience of the advance AR VR cyber cafes. There was an overwhelming majority of the respondents who also voted positively to the notion of in-game purchases as (72.3% respondents) voted positively

for spending money for in-game purchases (Fig. 15). This shows an optimistic vision for setting up metaverse related activities in the future as the digital natives of our country are already having consumption patterns that show adaptability to technologies required to deploy a metaverse experience. The main aim of this sentiment analysis was to understand the current adaptation of FPS games which simulate metaverse in fragments in the Indian digital natives and also to make the reader aware of their preferences (Kumar et al., 2022). We have also presented an innovative solution to overcome the issue of digital penetration in India by using the concept of cyber cafes which can be used as opportunities where people can rent the experience metaverse instead of having large sums of money on purchasing all the equipment necessary to experience the metaverse. The study delves into the concept, structure, technical requirements, and current applications of the Metaverse in the industries, analyzing both opportunities and challenges (Kim & Oh, 2022). The respondents showed a favorable response to the notion of renting the experience of metaverse in a significant majority as displayed by the illustrations above this will be a great business and advertising opportunity in the future till the point, we reach complete digital penetration and even post digital penetration this model has capabilities to function on the nostalgia and social experience value of its customers.

VI. FUTURE SCOPE OF WORK

The future scope of work can delve into topics related to what would be the expenditure expected out of digital natives in order to arrive at feasibility reports to do accurate mapping of the real market size for metaverse. There is also a stark need to evaluate the Indian market in order to consider the deployment possibility of metaverse at the scale which major companies are targeting this will involve cumulative analysis of digital penetration of the service providers in the rural parts of the nation. A comprehensive study for understanding the actual methods that companies are deciding on for deployment of metaverse in India and their possible implications on the demographics that are prevalent in the Indian digital space. There is also a stark need to understand the behavioral patterns of the Indian digital natives in Open world games which simulate the premise of metaverse in order to accurately estimate their behavior patterns in the metaverse from a neurological point of view. Neurological mapping of digital natives' reactions in open world games will also provide strong opportunities of study for neuromarketing deployment in metaverse.

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