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Research Article: 1

The Perception Of Metaverse And Its Potential Impact On Mental Health Among Individuals

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Abstract

One may argue that the Metaverse is the most recent development in the information technology industry. The cyberspace industry has continuously evolved since the internet was introduced in the 1990s. In just a few decades, innovations like artificial intelligence and augmented reality, also known as extended reality, have allowed us to achieve unprecedented development by enhancing physical reality with virtual programs.

Nowadays, the metaverse is thought of as the next development in the aforementioned technologies. According to current marketing, the Metaverse offers a fully virtual world that is distinct from the real world we live in. As is the case with every new technology, the metaverse has the potential to have a significant impact on practically every facet of human existence, including the social, economic, and personal spheres. The negative impact of this new technology on mental health is one such issue that is hotly contested nowadays. There is ongoing debate on whether the metaverse, like other comparable technologies that came before it like social media, the internet, etc., might be harmful to users' mental health. Although the precise effects of the metaverse on users' mental health are still unknown, the purpose of this article is to ascertain public opinion regarding the potential implications for mental health and to determine whether or not technology such as the metaverse is truly appropriate for the current world.

Keywords: *Metaverse, Information Technology, Cyberspace, Mental Health.*

1. INTRODUCTION

In 2021, after the CEO of the tech giant Facebook officially changed its name to Meta, the concept of metaverse has been thrust into the limelight with its development being spearheaded by leading tech companies such as Microsoft and Amazon. It is even being termed as the "new" or the "next internet" by the common public. Though the concept of metaverse does indeed look very tempting, we need to be aware of the damages that can be caused by such technologies. One of the most common rising concerns today is mental health and what implications technology like the metaverse could have.

Whenever there is a technological innovation, it often comes with a plethora of benefits as well as drawbacks. With technology like social media, internet, video games etc. one common drawback is that it can often be a means of breeding addiction and mental health problems. There have been several researches that show that technology such as those mentioned above can create or intensify previously existing mental health issues such as anxiety, depression, insecurity etc. Metaverse as it is advertised today can be seen as a blend of all previously mentioned technologies. As such, it is only common that there have been concerns rising up regarding its mental health implications. This is why this topic was chosen to investigate and speculate what the common public thinks about the different mental health implications this new form of internet and social media, the metaverse could have.

2. LITERATURE REVIEW

Owens et.al (2011) show how social existence and technical and social interchange characterize the Metaverse, underscoring the potential of creating virtual worlds. This Metaverse feature currently satisfies the strong demands of physicians, patients, and other stakeholders in the medical and health industry, opening up a variety of innovative applications for telemedicine, virtual care, personal health management, and surgical aid. Consequently, the Metaverse is intended to revolutionize medical and health informatics by raising virtual care from a two-dimensional to a three-dimensional experience.

As per the study conducted by **Hassouneh and Brengman (2015),** the Metaverse is a modern take on social networking that is thought to be in harmony with reality. Facebook, being the social media behemoth that it is, surely has defined a generation. Facebook's revolution has reshaped the way billions of people across the world think about communication, networking, news reporting, e-commerce, and social interaction.

Lee, Lik - Hang *et.al* (2021) in their research paper provide an understandable overview of the evolution of various technologies that fall under the Metaverse

category, including blockchain, artificial intelligence, and extended reality. It also discusses the various metaverse design factors in a section titled "Social Acceptability." Several issues like user addiction, privacy threats, fairness, cyberbullying, etc. are among these factors. All of these can be considered as potential risk factors for the general public's mental health in one way or another.

Chen, D. & Zhang, R. (2022), investigate how the metaverse is affecting the health sector. It mainly focuses on ideas like telemedicine, online health management, infusing social and medical data, etc. Even while the study concludes that metaverse may present chances for the health sector in the future, it also acknowledges several difficulties and obstacles, most of which centre on detrimental impacts on one's physical or mental health as well as privacy concerns.

Gopala & Gopala (2022), the goal of the research paper is to examine and clarify fundamental Metaverse concepts as well as other related concepts. This work, like the earlier literature, includes a section headed 'Open Issue' that aims to address any problems that might arise with Metaverse. The primary issues recognised and identified in this section are interaction issues, ethical issues, privacy issues, and cyber syndrome, which is defined as the social, physical, and mental disorders brought on by widespread problems with the internet.

3. RESEARCH GAP

The majority of the metaverse research that has been conducted focuses on augmented reality's scholastic and scientific progress and its effects on diverse disciplines. Nonetheless, there is a lack of thorough knowledge and wide-ranging research into how people's perceptions, attitudes, behaviour, and mental health have been profoundly affected by the artificial world. There is a deficiency in the body of knowledge concerning people's perceptions of the metaverse, their inclination to interact with it, and the profound psychological effects it may have. Comprehending these facets is crucial for the well-rounded and selective assimilation and acceptance of the metaverse within the community. Therefore, there is a need for research that explores the human perspective and illuminates the elements influencing people's perception in the acceptance and incorporating the metaverse into their daily lives.

4. OBJECTIVES OF THE STUDY

The Objectives of the Study are as follows:

- To examine the level of understanding common people possess about the Metaverse.
- To analyse how people now comprehend the Metaverse in light of their current knowledge.

- To find people's perception of what mental health consequences could arise with the implementation of Metaverse and how to mitigate it in daily life.

5. RESEARCH METHODOLOGY

The article in question is predicated on primary data collected using simple random sampling. Therefore, utilising a Google Forms questionnaire, primary data was gathered for this study from **124** people in total. The respondents' degree of agreement or disagreement with several potential negative consequences on their mental health that might result from using the metaverse in their daily lives is one of the questionnaire's questions.

The questionnaire's numerous mental health impacts were derived from research that used academic publications and online sources. To determine the various levels of agreement or disagreement, a Likert scale was used.

To get a firm conclusion, some analyses namely Descriptive Analysis and Statistics, The Cronbach Alpha Reliability Test, Correlation Matrix, Chi-squared test, KMO and Bartlett's Test, Communalities, The Scree Plot, Component Matrix and Rotated Component Matrix were performed on the aforementioned collected data.

6. ANALYSIS

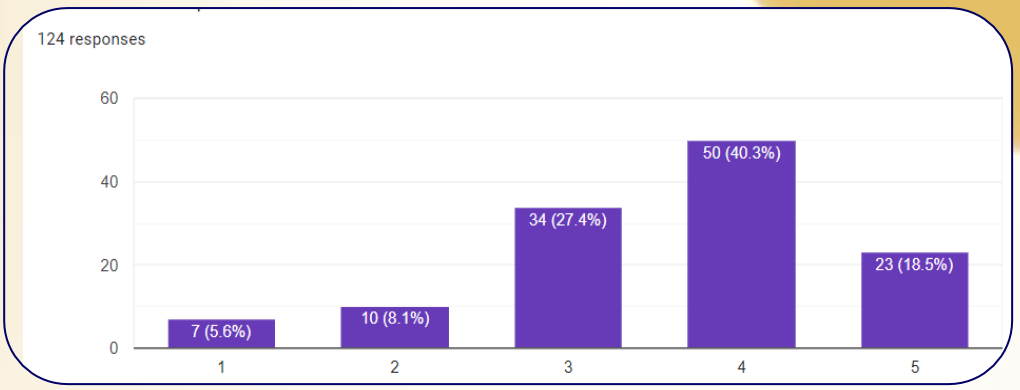
- ### Descriptive Analysis Of Variables

For this study, for collecting the relevant data, a Likert scale was employed in the form of a questionnaire to measure the level of agreement or disagreement the respondents held regarding the various questions. The Likert scale employed had 5 possible options from which the respondents could select any one option. The 5 possible options are:

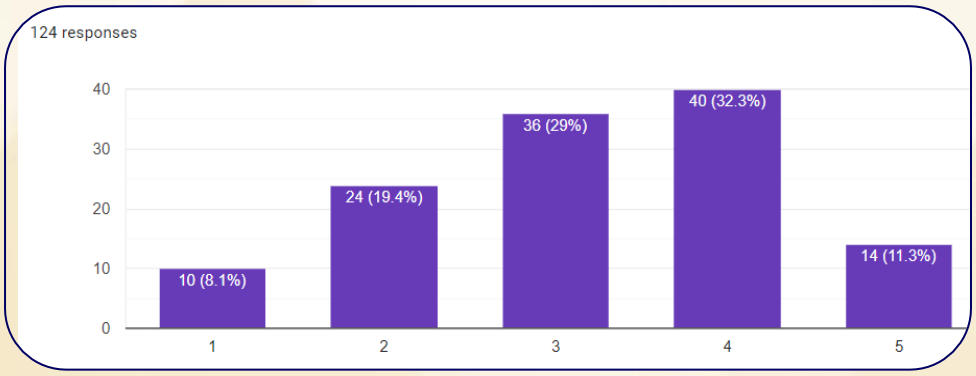
- 1 being, "Completely Disagree"
- 2 being, "Somewhat disagree"
- 3 being, "Neutral"
- 4 being, "Somewhat Agree"
- 5 being, "Completely Agree"

The following data was observed from the collected responses which can be interpreted as:

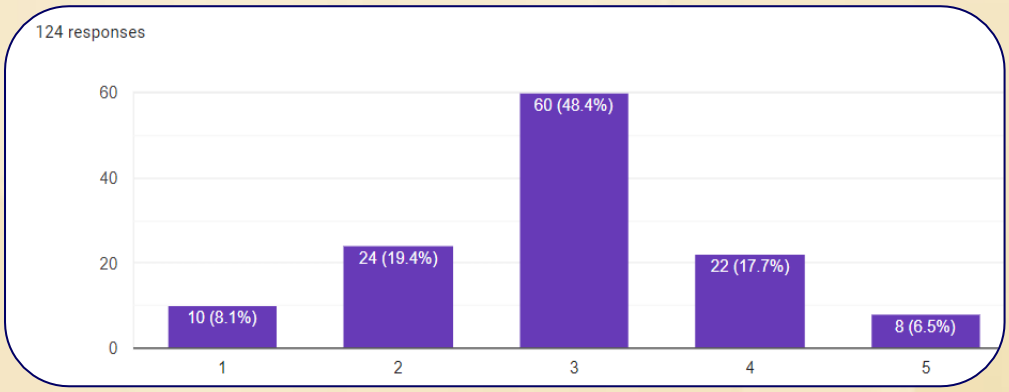
SITUATION 1: When asked if the implementation of the Metaverse could have any mental health implications, it was observed that almost 60% of the total 124 respondents felt that it could have some sort of mental health implication. Of which nearly 20% strongly agreed to the notion. Only approximately 13% of the people disagreed with 27% remaining neutral.



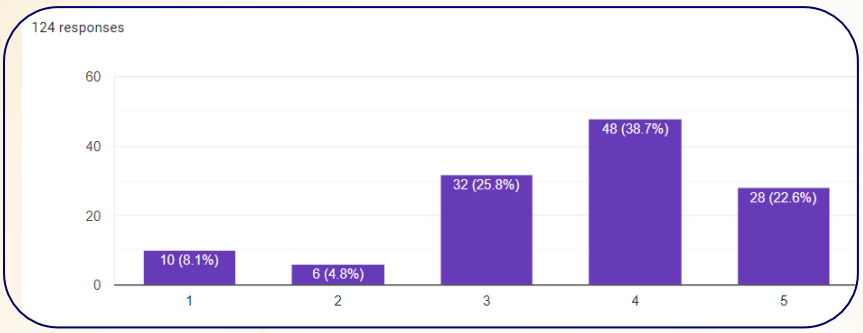
SITUATION 2: When asked if the use of metaverse could increase overall productivity when employed in a professional environment, 43% of the respondents agreed to the notion with varying levels of agreement. In comparison, 28% disagreed with the notion with 29 % of the respondents remaining neutral.



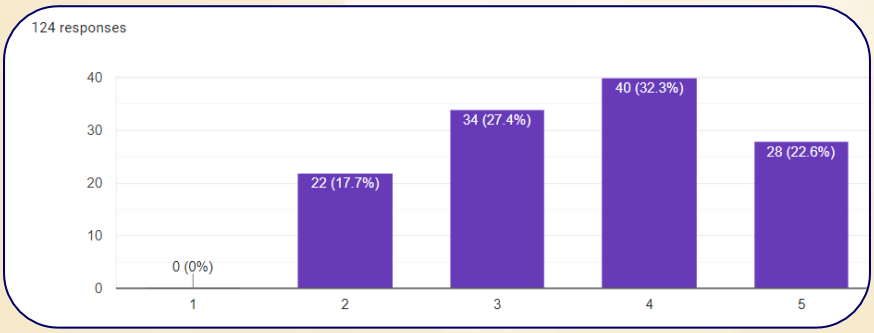
SITUATION 3: Metaverse, as advertised will be able to provide unparalleled recreational experiences along with several quality-of-life benefits which should in theory help reduce stress. When asked if the use of metaverse in daily life could help in alleviating stress and thereby reducing some or any stress-related problems, of the 124 respondents, almost 50% of the respondents remained neutral in the responses. Only about 24% of the respondents agreed that metaverse could help reduce stress-related problems and 27% of the respondents believed it could not.



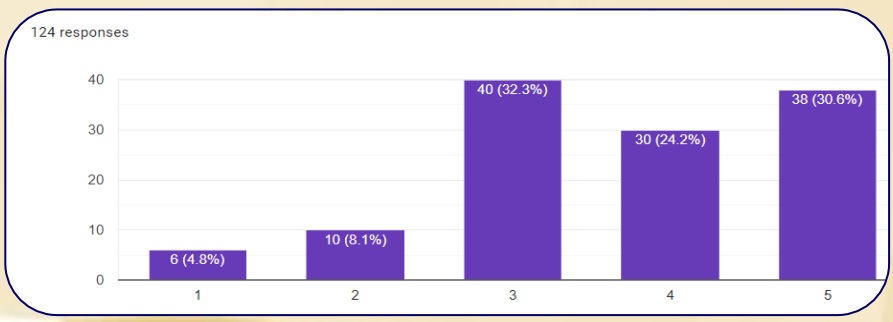
SITUATION 4: When asked if the use of virtual avatars could help those with problems socializing to expose themselves without having to feel vulnerable in public, a large 60% believed it to be the case and thought it could be beneficial to certain groups of people. Whereas 12% did not believe it could help people socialize and 25% remained neutral.



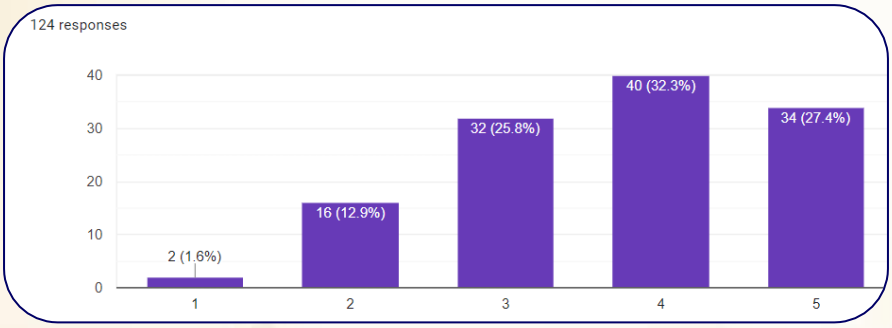
SITUATION 5: If virtual avatars are made the only mode of representation in the virtual world. There could be a possibility that it could adversely affect their self-esteem since avatars enable people to be "the best versions" of themselves in terms of appearance. When asked about this, a majority of 54% of the respondents believed it could affect the self-esteem of the person. 17% of the respondents on the other hand disagreed with the notion and 27 % decided to stay neutral.



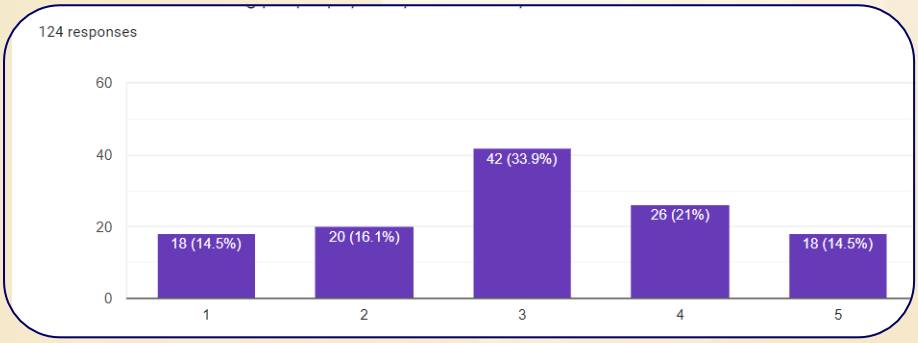
SITUATION 6: Since being able to use virtual avatars for representation can open up the possibility of looking like anyone or anything; this can be easily exploited in a space where there is no actual 'physical' consequence. This can greatly reduce the sense of accountability for one's actions. When asked about this in the survey, 54% of the respondents felt that the sense of accountability could be diminished. About 12% on the other hand did not think it could diminish the accountability factor. 32% of the respondents decided to stay neutral on the question.



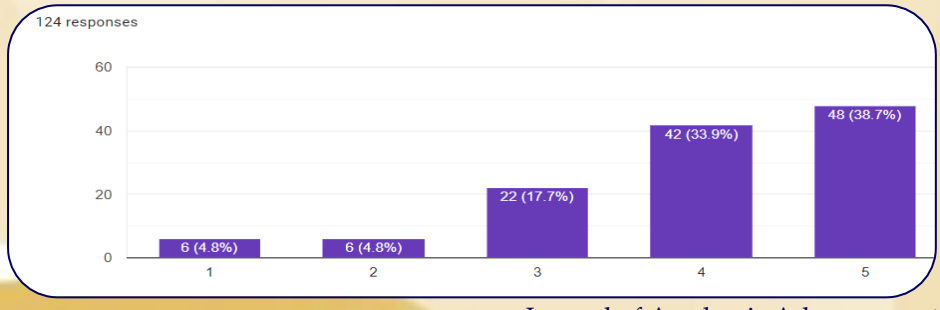
SITUATION 7: If the Sense of accountability does get diminished, it could easily translate to there being an increase in cases of harassment and cyberbullying in virtual spaces. When asked about their opinion, almost 60% of the respondents agreed with the notion. Whereas about 13% of the respondents disagreed with 25% staying neutral.



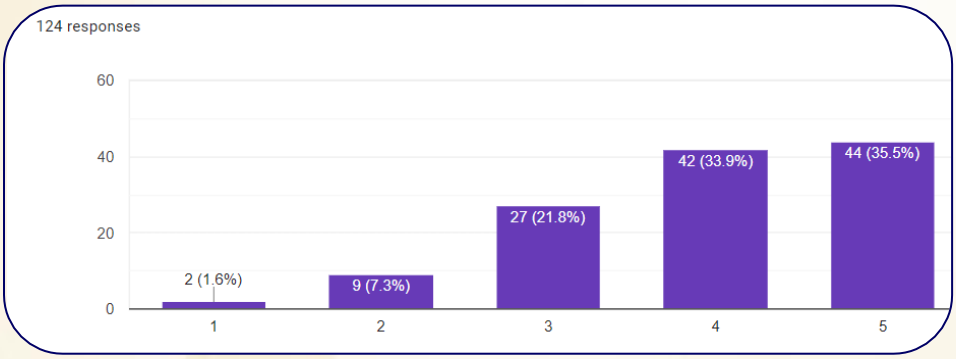
SITUATION 8: The way Metaverse is being advertised today, it is setting up to be a complete substitute for reality. With many businesses expanding into the development of the metaverse, virtually everything would be possible using this artificial reality. Thus, doing things physically could very well be substituted with virtually. When asked about their opinions, an equal percentage of people with about 30-35% of the respondents being equally split between agreement and disagreement. The remaining 33% decided to stay neutral in their opinion.



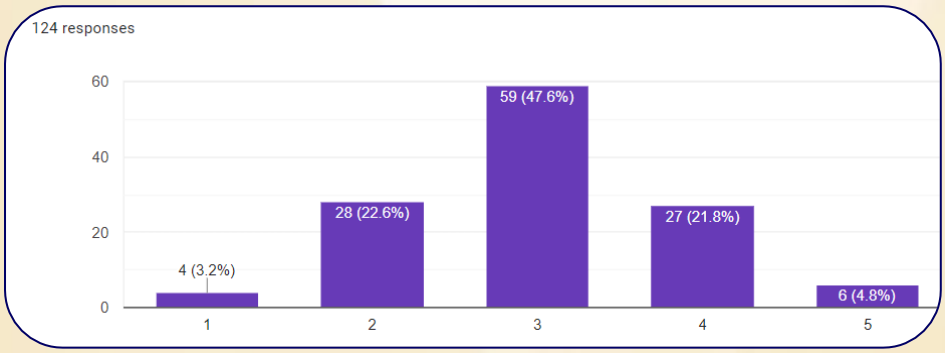
SITUATION 9: Because of the features of the metaverse discussed above, there can be a possibility that at one point, people would be unable to distinguish between the virtual worlds with the actual, physical ones. As such there is a chance of eventually "losing touch with reality". When asked about their opinion, a large majority of 70% of the respondents felt this could be a genuine risk in the future. A small 10% of the respondents felt otherwise with 17 % remaining neutral.



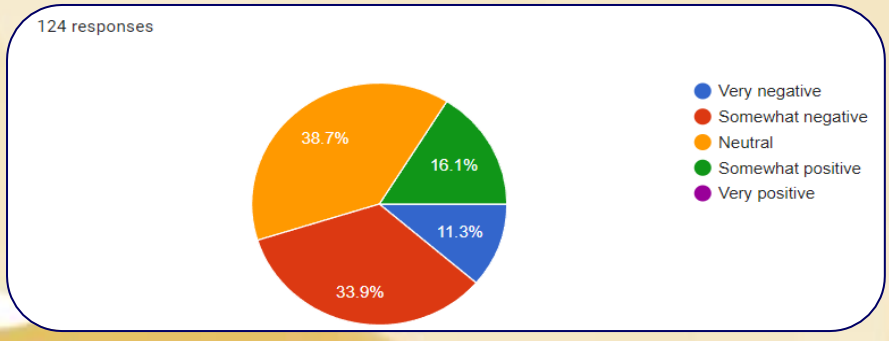
SITUATION 10: Another risk that could come up along with the aforementioned problems is that people could start relying on virtual connections for everything. Making them practically unable to properly function in the real world. When asked about their opinion, again, almost 70% of the respondents felt it to be an actual risk with 8% of the respondents disagreeing with the notion and 21% of the respondents remaining neutral in their opinions.



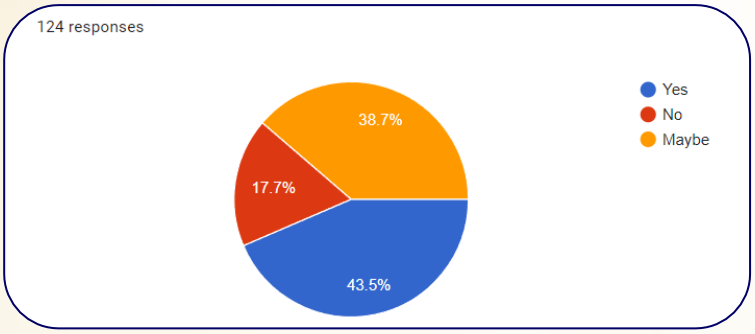
SITUATION 11: When asked about how the metaverse could affect the mental health of the respondents individually, almost half of the respondents concluded that it would not have much effect on their own mental health. The remaining responses were equally divided between both metaverse affecting their mental health positively as well as negatively.



SITUATION 12: Of the 124 respondents, the majority of the people i.e., 44% concluded that extensive use of the metaverse could prove to be adverse in terms of mental health. The second largest percentage of people concluded that it would not have much of an effect on mental health. While a minority of respondents concluded that it could prove to be somewhat beneficial to the mental health of its users. The results, again, could have been affected by the limitation mentioned beforehand.



SITUATION 13: When asked if regardless of their final verdict, technology like the metaverse is the way the future is heading, 43% of the people agreed to the notion, 17% disagreed, whereas 38% of the people were still undecided if the metaverse is the future of the internet.



SITUATION 14: When asked about how the metaverse could affect the mental health of the respondents individually, almost half of the respondents concluded that it would not have much effect on their own mental health. The remaining responses were equally divided between both metaverse affecting their mental health positively as well as negatively

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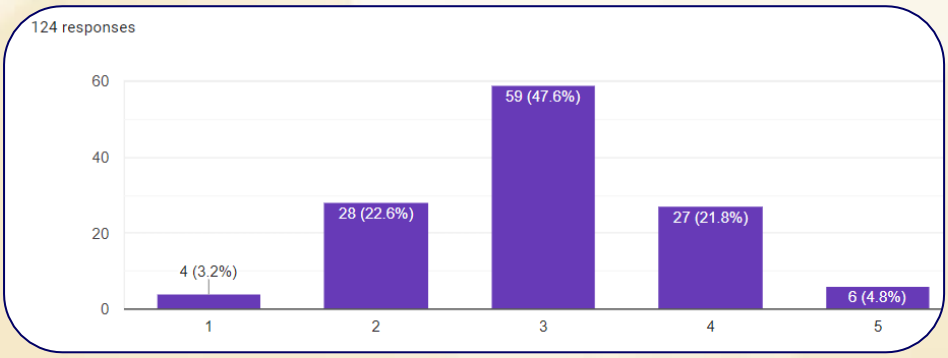

OTHER MENTAL HEALTH IMPLICATIONS

The questionnaire included a section where the respondents were asked what mental health implications, they thought could arise from the metaverse. Although the responses were mostly negative, a few noteworthy implications that could be observed are enumerated below:

- Loss of social skills in its users.
- Reduction in connectivity with people.
- Providing a means of escaping real-life problems but not solving them.
- Increased social anxiety
- Risk of addiction.
- Isolation
- Result in a restrictive mindset in people.
- Raising the inhibitions of a person

SUMMARY OF THE VARIABLES UNDER THE STUDY

For ease of understanding of the analysis, a summary of all the variables is provided below-

Sl. No	Variables	Abbr.
1	Mental Health Implication	Var 1
2	Increase in Productivity	Var 2
3	Alleviation of Stress And problems	Var3
4	Virtual outweighing Physical appearance	Var 4
5	Alleviation of socializing problems	Var 5
6	Reduction Insecurities about appearance	Var 6
7	Possibly Affect self esteem	Var 7
8	Diminishment of accountability	Var 8
9	Increase in harassment/bullying	Var 9
10	Substituting Physical gathering	Var 10
11	Chance of Losing Touch with Reality	Var 11
12	Possibility of Over-relying on virtual connections	Var 12
13	Level of effectiveness	Var 13

DESCRIPTIVE STATISTICS

Below is a detailed table on the descriptive statistics of the data

	Mean	Std. Deviation	Analysis N
Var 1	3.58	1.060	124
Var 2	3.19	1.124	124
Var 3	2.95	.978	124
Var 4	3.40	1.242	124
Var 5	3.63	1.130	124
Var 6	3.27	1.290	124
Var 7	3.60	1.027	124
Var 8	3.68	1.137	124
Var 9	3.71	1.057	124
Var 10	3.05	1.242	124
Var 11	3.97	1.096	124
Var 12	3.94	1.007	124
Var 13	3.02	.879	124

From the Descriptive Statistics above, it can be observed that:

- The mean answers for almost all the Variables from 1 to 13 except for Variable 3 lie between 3 and 4, which were "Neutral" and "Agree" respectively.
- Only the mean answer for Variable 3 lies between 2 and 3, which were "Somewhat Disagree" and "Neutral" respectively.

From the Descriptive Statistics above, it can be observed that:

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INFERENTIAL ANALYSIS

The Cronbach Alpha Reliability Test

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based On Standardized Items	N of Items
.754	.759	15

For consistency score, we run a reliability analysis. Cronbach Alpha = 0.754. The overall measure of data consistency is greater than 75% which confirms that the responses are strongly reliable.

FACTOR ANALYSIS

A) Correlation Matrix

A Correlation Matrix, put simply, is a table which depicts the correlation between all the variables of the data. Following is the "Null" and "Alternative" Hypothesis for this particular study:

Null Hypothesis	H_0: Correlation doesn't exist between the variables
Alternative Hypothesis	H_1: Correlation does exist between the variables

The result of the CHI-SQUARE test gives us the value of "p" as 0.0000 which is less than 5%. If the value of "p" comes up to be less than 5%, then it implies that the probability of H_0 being true is very small or negligible, therefore H_0 is rejected and H_1 is accepted.

Hence it can be said that a correlation exists between the variables. The Correlation Matrix for the 13 variables for this study is given below as:

Correlation Matrix Table

		Var 1	Var 2	Var 3	Var 4	Var 5	Var 6	Var 7
Correlation	Var 1	1.000	-.109	.090	.179	.141	-.094	.269
	Var 2	-.109	1.000	.452	.083	.352	.569	-.129
	Var 3	.090	.452	1.000	.257	.513	.410	.110
	Var 4	.179	.083	.257	1.000	-.008	.123	.288
	Var 5	.141	.352	.513	-.008	1.000	.472	.066
	Var 6	-.094	.569	.410	.123	.472	1.000	-.106
	Var 7	.269	-.129	.110	.288	.066	-.106	1.000
	Var 8	.238	-.142	.147	.288	-.132	-.216	.159
	Var 9	.210	-.240	.096	.251	-.091	-.394	.288
	Var 10	.028	.215	.270	.251	.036	.134	.117
	Var 11	.184	.031	.150	.224	.056	-.074	.414
	Var 12	.374	-.055	-.011	.083	.103	-.038	.355
	Var 13	.063	.349	.465	.185	.247	.303	-.079

Correlation Matrix Table (Cont.)

		Var 8	Var 9	Var 10	Var 11	Var 12	Var 13
Correlation	Var 1	.238	.210	.028	.184	.374	.063
	Var 2	-.142	-.240	.215	.031	-.055	.349
	Var 3	.147	.096	.270	.150	-.011	.465
	Var 4	.288	.251	.251	.224	.083	.185
	Var 5	-.132	-.091	.036	.056	.103	.247
	Var 6	-.216	-.394	.134	-.074	-.038	.303
	Var 7	.159	.288	.117	.414	.355	-.079
	Var 8	1.000	.543	.103	.200	.169	.057
	Var 9	.543	1.000	-.076	.146	.221	.095
	Var 10	.103	-.076	1.000	.252	-.004	.148
	Var 11	.200	.146	.252	1.000	.190	-.041
	Var 12	.169	.221	-.004	.190	1.000	-.100
	Var 13	.057	.095	.148	-.041	-.100	1.000

From the above Correlation Matrix, it can be observed that some of the variables selected for the study are correlated positively while some are correlated negatively. However, it should be noted that the correlation between all the variables is not particularly strong.

B) KMO and Bartlett's Test

To prove the data is suitable for running Factor Analysis, we can use the KMO and Bartlett's test, which is a test which can measure the sampling adequacy for all the variables. Usually, a higher value on the KMO test means the variables in the data are correlated and hence factor analysis could prove useful. The KMO table obtained from this particular study is represented below as -

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.703
Bartlett's Test of Sphericity	Approx. Chi-Square	408.002
	df	78
	Sig.	.000

The KMO measure thus obtained is 0.703 which, as mentioned before, suggests that the variables are indeed correlated and thus is a good score to run Factor Analysis. Thus, the rejection of the Null Hypothesis and a decent KMO score suggests Factor Analysis can be conducted on the data.

C) Communalities

It can be defined as the medium of measuring the percentage of information extracted from each of the variables to construct the 4 final components. Thus, communalities measure the proportion of variance of the individual variables after the 4 components.

The communalities table for our data is presented below -

Communalities		
	Initial	Extraction
Var 1	1.000	.503
Var 2	1.000	.611
Var 3	1.000	.705
Var 4	1.000	.493
Var 5	1.000	.680
Var 6	1.000	.689
Var 7	1.000	.603
Var 8	1.000	.641
Var 9	1.000	.746
Var 10	1.000	.618
Var 11	1.000	.588
Var 12	1.000	.604
Var 13	1.000	.605

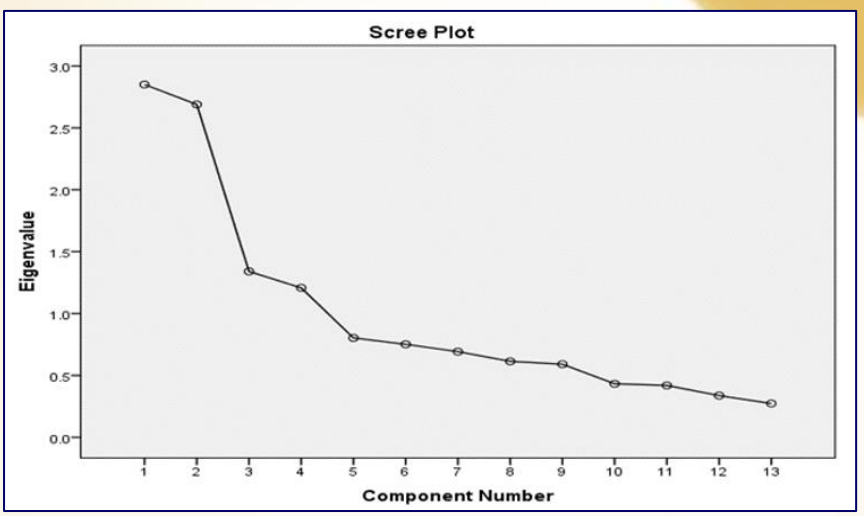
The above communalities table can be interpreted as:

- Variable 1 shows that 50.30% of the variance is captured by the 4 components extracted.
- Variable 2 shows that 61.10% of the variance is captured by the 4 components extracted.
- Variable 3 shows that 70.5% of the variance is captured by the 4 components extracted.
- Variable 4 shows that 49.30% of the variance is captured by the 4 components extracted.
- Variable 5 shows that 68% of the variance is captured by the 4 components extracted.
- Variable 6 shows that 68.90% of the variance is captured by the 4 components extracted.
- Variable 7 shows that 60.30% of the variance is captured by the 4 components extracted.
- Variable 8 shows that 64.10% of the variance is captured by the 4 components extracted.
- Variable 9 shows that 74.60% of the variance is captured by the 4 components extracted.
- Variable 10 shows that 64.80% of the variance is captured by the 4 components extracted.
- Variable 11 shows that 58.80% of the variance is captured by the 4 components extracted.
- Variable 12 shows that 60.40% of the variance is captured by the 4 components extracted.
- Variable 13 shows that 60.5% of the variance is captured by the 4 components extracted.

From the above data, it can be observed that Variable 9, which in our case is "Increase in harassment/ cyberbullying" captures the highest variance giving us 74.60% extraction of the components.

D) The Scree Plot

It refers to the line plot which depicts the graphical representation between the Eigenvalue and the principal components in an analysis. The use of a Scree plot is that it helps us determine the factors we need to retain in our Factor Analysis. The Eigenvalue is taken on the X-axis, whereas the component number is taken on the Y-axis. The Scree Plot is thus constructed which is shown below:



Only those components retained whose Eigenvalue is greater than 1, which in our case are Components 1, 2, 3 and 4 while the rest are discarded.

E) Component Matrix

It refers to a table which shows us the loading values of the variables, which are nothing but the correlation between the variable and the component.

The Component Matrix is given below:

Component Matrix[a]

	Component			
	1	2	3	4
Var 1	-.027	.556	.314	.307
Var 2	.771	-.108	-.005	-.066
Var 3	.748	.325	-.154	.129
Var 4	.221	.558	-.276	-.238
Var 5	.658	.082	.358	.336
Var 6	.791	-.190	.167	.005
Var 7	-.066	.653	.363	-.199
Var 8	-.162	.637	-.436	.139
Var 9	-.283	.651	-.358	.337
Var 10	.351	.266	-.146	-.635
Var 11	.057	.557	.221	-.475
Var 12	-.091	.502	.548	.210
Var 13	.587	.135	-.407	.278

- In the case of component 1, the Benchmark is taken to be 0.75. Thus, those variables will be considered whose loading values are greater than or equal to 0.75.
- In this study variables 2 and 6 have a loading greater than 0.75, thus it can be said that component 1 should reflect the features of variables 2 and 6.
- In this study, variable 2 is an increase in productivity, whereas variable 6 is reduction in insecurities.
- Similarly for component 2, the benchmark is taken as 0.65. Thus, giving us variables 7 and 9 since they have a loading value greater than or equal to 0.65.

- In this study, variable 7 is "changes in self-esteem", whereas variable 9 is "increase in harassment/ cyberbullying".
- For component 3, the benchmark was taken as 0.50 leaving us with only variable 12 which, in this study, is "over-relying on virtual connections".
- For the final component, component 4, the benchmark was taken as 0.60 which gives us variables 10.
- In this particular study variable 10 is "substitution of physical activities".

F) Rotated Component Matrix

Similar to the Component Matrix above, the rotated component matrix can be defined as the key output of the principal component analysis. It helps us to determine the variables' loading value on each of the rotated components. The rotated component matrix is given below:

Rotated Component Matrix[a]

	Component			
	1	2	3	4
Var 1	.071	.257	.657	-.019
Var 2	.716	-.220	-.143	.170
Var 3	.778	.227	.065	.211
Var 4	.191	.419	.052	.527
Var 5	.708	-.182	.362	-.124
Var 6	.741	-.365	-.046	.067
Var 7	-.102	.117	.615	.448
Var 8	-.060	.772	.112	.168
Var 9	-.126	.819	.242	-.023
Var 10	.185	-.013	-.149	.749
Var 11	-.057	.034	.366	.671
Var 12	-.032	.043	.775	.014
Var 13	.667	.353	-.185	-.029

From the Rotated component matrix given above, the following points are observed:

- Similar to the component matrix, in the rotated component matrix as well, in the case of component 1, the benchmark is taken as 0.75 leaving us with variable 3 since it has a loading value greater than 0.75. This, in this study, was "alleviation of stress".
- For component 2, the benchmark was taken as 0.75 giving us variables 8 and 9 since they have a loading value greater than 0.75.

  In this study, variable 8 is "diminishment of accountability" whereas variable 9 is "increase in harassment/ cyberbullying"
- For component 3, the benchmark was taken as 0.65 giving us variables 1 and 12 since they have a loading value greater than 0.65.

  In this study, variable 1 is "mental health implication" and variable 12 is "over-relying on virtual connections"
- For component 4, the benchmark was taken as 0.65 giving us variables 10 and 11 since they possess loading values greater than 0.65.

  In this study, variable 10 is "substitution of physical activities" and variable 11 is "losing touch with reality".

7. FINDINGS

Finding out how the general public views the Metaverse and what effects it might have on mental health was one of the main objectives of this particular study. Through the study, it was found that people generally lack a deep understanding of Metaverse and with their current knowledge majority of the respondents (i.e., 44% of the sample size) comprehend that Metaverse would harm mental health to varying degrees.

The final observations can be gleaned from two sections following a thorough research procedure that included gathering primary data, performing a factor analysis on the data, and recording the opinions of the 124 respondents.

1. The observations made from the Factor Analysis
2. The unbiased opinion of the respondents.

8. OBSERVATIONS

1. From the Factor Analysis: Several potential mental health issues were chosen as the study's variables before the factor analysis. A factor analysis was performed on the gathered data, and the findings were predicated on the eigenvalue that was discovered. Following the analysis, we found that four main components, each consisting of multiple variables, could be identified resulting in the following outcomes for us:

a. Component Matrix

- Component 1 comprised of the variables, "Increase in productivity" and "Reduction in insecurities".
- Component 2 comprised of the variables, "Changes in self-esteem" and "increase in harassment/ cyberbullying".
- Component 3 comprised of the variable, "Over-reliance on virtual connections".
- Component 4 comprised of the variable, "Substitution of physical activities".

b. Rotated Component Matrix

The following components were extracted from the rotated component matrix:

- Component 1 comprised of the variables, "Alleviation of Stress" and "Reduction in Insecurities".
- Component 2 comprised of the variables, "Diminishment of Accountability" and "Increase in Harassment / Cyberbullying".
- Component 3 comprised of, "mental health implication" and "Over-reliance on virtual connections".
- Component 4 comprised of, "Substitution of physical activities" and "losing touch with reality".

It can be observed that of the variables that make up the 4 components in both the component matrix as well as the rotated component matrix, some of the variables were positive i.e. having a positive effect on mental health such as "reduction in insecurities" and "Alleviation of Stress". But a majority of the

variables observed in the 4 components were negative i.e. having some sort of negative effect on mental health such as "Losing of touch with reality" and "increase in harassment/ cyberbullying".

Based on the findings of the factor analysis, it can be inferred that the Metaverse's potential effects on mental health are still generally perceived negatively.

2. Respondents' Opinions

In addition to the conclusions drawn from the analysis phase of the study, it is important to note the public's perception of the Metaverse's potential effects on mental health. It's interesting to note that most respondents gave neutral answers when asked directly about how they thought the metaverse could impact their mental health, regardless of the data that was taken from the analysis. In other words, they believe that their mental health will not be impacted by the Metaverse.

However, the majority of respondents (i.e., 44% of the sample size) who were asked about the metaverse's overall impact on mental health generally felt that it would hurt mental health to varying degrees. Furthermore, it was noted that most respondents (i.e., approximately 44% of the sample size) continued to believe that technology such as the Metaverse is unavoidable in the future and were prepared to accept it, regardless of any implications this may have for mental health.

Thus, by the respondent's opinions, we can understand the current perception of people about Metaverse and its probable mental health implications in future and the recommendations of the study further provide how to mitigate it.

9. RECOMMENDATIONS

A few suggestions that can be made to accomplish these objectives are as follows:

- Regulation of behaviour through the implementation of policies is necessary to ensure that people's accountability for their actions is upheld. This ought to assist in mitigating a primary concern highlighted in the research, which was the rise in instances of harassment and cyberbullying.

- To address another issue that was raised, the possibility that spending too much time in the virtual world could cause one to eventually lose touch with reality systems should be put in place that forbid people from spending too much time there. This would also alleviate the worry about the replacement of real-world activities with virtual ones.

- There are advantages and disadvantages to technology, such as the Metaverse. As a result, using this technology to improve mental health is also possible. For this reason, services should be offered utilising this technology to make it easier for people who suffer from social anxiety to interact with others. thereby supporting people who are becoming more insecure.

CONCLUSION

The result makes it clear that, in general, people's perceptions of the metaverse's implications for mental health are unfavourable. Since the Metaverse is already being heralded as the "Next internet", IT firms leading the way in development ought to take this notion into mind to create the Metaverse a far more welcoming and secure environment for people to use mentally.

From the observations from the factor analysis, it can be concluded that overall, there is still a negative perception around the mental health implications of the Metaverse. To put it in another way, from the analysis done, it is evident that people believe that the metaverse could hurt mental health.

It is evident from the respondents' unfiltered views as well that there is a bad opinion of the metaverse's implications for mental health. However, it should be noted that even though technology like the metaverse is at the forefront of development, it is still in its infancy, so it is impossible to form a firm opinion on whether it will harm mental health once it is fully implemented in society. The sole goal of this study was to record public opinion and draw conclusions about its potential effects on mental health from the data gathered.

Only once the metaverse is open to the general public can its true effects on mental health be fully evaluated. If incorporated into the finished product, the aforementioned suggestions might assist in eliminating or at least lessening some of the issues that the project has recognised and identified.

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