VR Workspace in the New Normal: Evaluation of Factors Influencing Indian Working Population's Perception Towards use of VR Workspace in Work from Home Arrangements

Lakshya Goenka[1] and Mritunjay Sharma[#]

[1]Heritage Xperiential Learning School, Gurugram, Haryana, India
[#]Advisor

ABSTRACT

For the past one year, we all have experienced life changing situations. Due to the lockdown because of Covid-19 virus, overnight, our lives shifted from the physical world to the online world. From offices, to schools, everything was operating virtually through a laptop screen. Instead of working with a group of people like in normal times, people were now isolated in their own bedrooms. To make the 'new normal' more productive, people started looking at the problem differently and came up with the idea of VR Workspace. It gave a more realistic feel to the whole WFH Arrangement. This research study is aimed to examine the viability of promoting VR Workspace and evaluate the factors that influenced the Indian Working Population perception towards the use of VR Workspace in online collaboration for improved Work From Home Arrangements. An online survey was conducted which included two short videos. The respondents had to rate the usage of VR before and after watching the video. The responses were divided into several social groups based on age, gender and job position. From the responses we can clearly see a difference before and after watching the video in the ratings for use of VR. From all the factors, the most influential factor was the headset being portable and wireless.

Introduction

Started with 3D movies in theaters, immersive experiences are now possible anywhere thanks to the technology of Virtual Reality (VR) Headsets. Virtual Reality headset, also called VR goggle, is a head-worn apparatus that completely covers the eyes for an immersive 3D experience.

Earlier, it was used for realistic flight and driving simulators and for gaming purposes but its applications have the potential to revolutionize the online workspace and have taken new heights during this lockdown. Within the context of the post-COVID world, this technology could accelerate the transformation of the world's work culture by improving the quality of work-from-home (WFH) arrangements.

During these covid times, a new term has been used very popularly by almost every human, Work From Home or WFH. Instead of going to traditional offices physically, people are doing their jobs while sitting at their home only. Specifically, the VR workspace could make WFH arrangements more realistic, practical and efficient.

In the VR world, one can interact in real time as though one is talking face to face, thus making online work situations more realistic than ever. Furthermore, it allows you to perform various functions like live and in-room collaboration face to face in the 3D VR world rather than through a flat screen like on a computer. Artists and designers can draw, design in 3D & 2D like CAD Modeling and painting, just like they would do in a real office setup or maybe even better and faster. It is also a great tool for an advanced training simulation for people new to the job like medical and military. They can learn everything from within the comfort of their home in no time. This is a new technology

so new features come up everyday, making it more realistic and practical. One can use a browser in VR just like on a normal multi-screen setup, whether individually or even in a group. The hand tracking and keyboard support enable one to easily use the browser, navigate through various applications, and even type faster.

Virtual Reality headsets have become an independent system so one doesn't need to be connected to a laptop through a wire to use its features. It is completely portable so it can be used anywhere and at any time.

Many companies in countries like the United States are already using VR medium for work during lockdown. The market for Virtual Reality is forecasted to grow at 45.7% compound annual rate surpassing $24.5 billions by 2024. Within business it is forecasted to grow from $829 millions in 2018 to $4.26 billions by 2023 (Higginbottom J, CNBC, 2020). Companies like Spatial, have been successful at making a virtual reality version of Zoom and is now widely used in VR Interaction. However, the Indian companies are yet to take the full advantage of this revolutionizing technology.

This research could help us understand the mindset of the Indian Working sample towards this new technology of VR as the basis for Work From Home Arrangement. Majority of the responses were in favor of switching to VR workspace with an overall mean of 5.12 after watching the video. In groups based on job position, employees had the highest rating for switching to VR while self employed were relatively less interested. Females were less interested in switching the WFH arrangement to VR but there was a huge rise in rating after watching the video. The variance reduced in each case from before watching the video to after the video, which says that the opinions of the respondents was consolidating towards the mean of the responses.

Description of Research Study

Research Aim

The aim of the research study was to understand the point of view of respondents of different backgrounds like employers, employees, owners or self employed on the usefulness and future of VR Workspace and office in the present and coming time. To achieve this, an online survey containing a video that would explain how VR Workspace could improve work from home arrangements would be conducted to gather their perceptions.
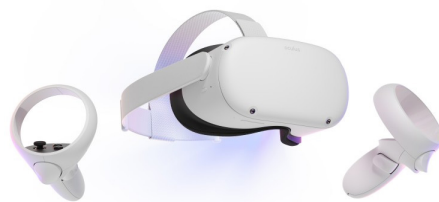

Fig 1: *Picture showing the general VR headset*

Fig 2: *Picture showing the working of a VR Headset*

Fig 3: *Picture showing the use of VR Simulation in military training*

In the survey, the following Virtual reality tools and features affecting the decision would be rated on a scale of 1-7, "1" being "least important" and "7" being "most important" in influencing their receptivity towards the effectiveness of VR in enhancing their work from home experience.

The list of relevant factors that have been identified are-

A) Enhanced and realistic online interaction experience- people get an option to interact in a 3d alternate world face to face rather than through a flat screen
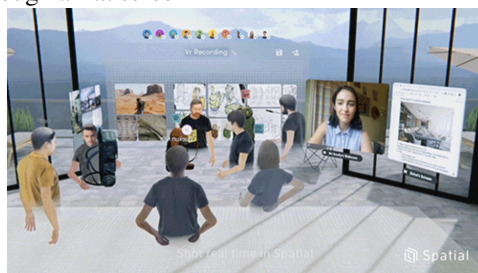

Fig 4: *Picture showing the inside view of VR headset and the working of realistic interaction*

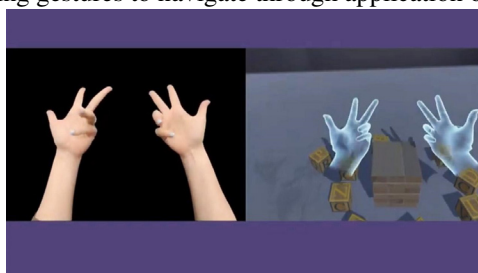B) Hand tracking support- using gestures to navigate through application or use browser

Fig 5: *Picture showing the working of hand tracking support in VR*

C) Keyboard tracking- The headset can scan a keyboard and projects an image in the 3d world which allows you to use it for typing without removing the headset.

Fig 6: *Picture showing the working of keyboard tracking support in VR*

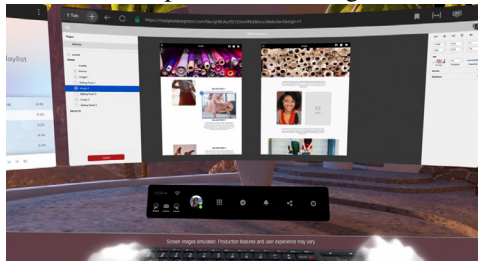D) VR Browser- Accessing multi screen setup for internet usage in individual or shared workspace

Fig 7: *Picture showing the working of VR Browser*

E) Facility for 3D designing and drawing- this would enable artists to create masterpieces together or engineers to design products while collaborating and communicating more efficiently.
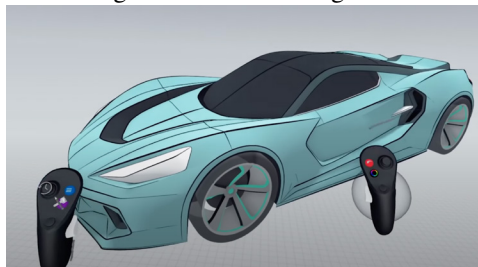
Fig 8: *Picture showing the working of 3D Design in VR*

F) Wireless and Portable- it doesn't need any cables to work and its very compact so can be taken any and every where

In addition to this, the survey asked the respondents to tell their general receptivity to the idea of VR Workspace before and after watching the videos.

Null Hypothesis 1a: There are no differences in the mean ratings, before and after watching the video, of respondents' receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Alternative hypothesis 1b: There are differences in the mean ratings, before and after watching the video, of respondent's receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Null Hypothesis 2a: There are no differences in the mean ratings between factors influencing respondents' receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Alternative hypothesis 2b: There are differences in the mean ratings between factors influencing respondents' receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Apart from evaluating the hypotheses with the entire sample, additional statistical analyses would be conducted among the sample segments: respondents who were employers and those who were employees and between different age groups.

Null Hypothesis 3a: There are no differences in the mean ratings, before and after watching the video, of employers, employees and self employed respondent's receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Alternative hypothesis 3b: There are differences in the mean ratings, before and after watching the video, of employers, employees and self employed respondent's receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Null Hypothesis 4a: There are no differences in the mean ratings, before and after watching the video, of different age group's respondent's receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Alternative hypothesis 4b: There are differences in the mean ratings, before and after watching the video, of different age group's respondent's receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Null Hypothesis 5a: There are no differences in the mean ratings, before and after watching the video, between male and female respondents' receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Alternative hypothesis 5b: There are differences in the mean ratings, before and after watching the video, between male and female respondents' receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement.

Finally, the qualitative approach involved a question to elicit additional insights and perspective about the concept of VR Workspace.

Data Collection

Data were collected through an online survey (Appendix A). This survey was targeted towards the working population of India and aimed at capturing their perception towards the use of VR Workspace in Work From Home Arrangements. The survey questionnaire was divided into three sections. The first section asked people to answer some basic questions that would sort them into different groups based on their age and job position. Further it asked of their receptivity towards the idea of VR Workspace using the prior knowledge on this subject. In the second part of the survey there were two videos and a couple of pictures which would allow them to understand the functioning and use of VR in the field of Workspace. Finally the third section asked them to rate their receptivity towards VR Workspace after watching the videos and also rate the relevance of important factors influencing the receptivity. In total, 119 respondents participated in the survey, excluding invalid respondents, thus constituting a good representative sample to evaluate perspectives towards VR Workspace.

Out of the 119 responses, there were 91 males and 28 females. According to the age group, there were 23 respondents aged 20-35 years, 66 aged 35-50 years and 33 aged 50+years. 28 respondents were employees, 47 were employers and 44 were self employed according to job position.

Data Analysis

For the analysis of the data, 9 paired t-tests were performed to compare the responses before and after watching the video about their general receptivity for following categories:

1. All Respondents
2. Groups based on role at job
   a. Employee
   b. Employer
   c. Self-employed
3. Age
   a. 20-35
   b. 35-50
   c. 50+
4. Gender
   a. Female
   b. Male

Also, 9 One-Way ANOVA tests were run on the responses to evaluate the significance of different factors influencing their receptivity.
1. Enhanced and realistic online interaction experience
2. Hand tracking support
3. Headset is wireless and portable
4. Keyboard support
5. Browser
6. Facility for 3D designing and drawing

Results

In this section, the results from the statistical analysis, as mentioned in the 'Description of Research Study', are presented and examined in detail. This discusses the research outcomes pertaining to the factors influencing the respondents' decision towards use of VR Workspace. It compares the responses of different social groups towards the overall use and also gives a comparison between the ratings of different factors influencing their decision.

Evaluation of mean ratings of all respondents for the overall receptivity towards VR Workplace as an ideal WFH arrangement before and after watching the video and of the factors affecting these ratings.

This section explores the difference in mean ratings of Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 1: *Summary of t-Test analysis for all respondents.*

Source	All Respondents		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.57	1.64	1.98	0.000
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	5.12	1.47		

As shown in Table 1, the mean ratings before watching the video (M=4.57, SD=1.64) and after watching the video (M=5.12, SD=1.47). A significant difference has been found between the two , t(df)=1.98, p<.05. The variance decreased from 2.72 to 2.18 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 2: *Summary of One-Way Anova for all respondents.*

Source	df	SS	MS	F	p
Between groups	5	13.68	2.73	2.209	.005
Within groups	702	869.77	1.23		
Total	707	883.46			

Table 2 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.66, SD- 1.24); Enhanced and Realistic online interaction experience (M- 5.78, SD- 1.12); Facility for 3D designing and drawing (M- 5.93, SD- 1.10); Keyboard Support (M- 5.94, SD- 1.02); Browser (M- 6.04, SD- 1.07); and Portable and Wireless Headset (M- 6.05, SD- 1.07).

A main effect of the testing was found F (5,702)= 2.02, p<.01.

It is interesting to note that the general mean ratings are high across all factors, ranging from 5.66 to 6.05 out of 7. This suggests that although some factors are more important compared to others, none can be truly ignored since all have a key role in influencing the respondents decision.

Evaluation of mean ratings of different groups based on job position for the overall receptivity towards VR Workplace as an ideal WFH arrangement before and after watching the video and of the factors affecting these ratings.

Employees

This section explores the difference in mean ratings of Employees in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 3: *Summary of t-Test analysis for the employees.*

Source	Employees		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR work-space as an ideal work-from-home (WFH) arrangement?	5.03 1.42		2.05	0.10
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	5.37	1.21		

As shown in Table 3, the mean ratings before watching the video (M=5.03, SD=1.42) and after watching the video (M=5.37, SD=1.21). An insignificant difference has been found between the two, t(df)=2.05,p=n.s. The variance decreased from 2.03 to 1.47 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 4: *Summary of One-Way Anova for the employees.*

Source	df	SS	MS	F	p
Between groups	5	9.58	1.91	1.64	.155
Within groups	156	183.85	1.17		
Total	161	193.43			

Table 4 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Enhanced and Realistic online interaction experience (M-5.40, SD- 1.11); Hand Tracking Support (M- 5.51, SD- 1.01); Facility for 3D designing and drawing (M- 5.85, SD-1.31); Portable and Wireless Headset (M- 5.88, SD- 1.04); Keyboard Support (M- 5.92, SD- 1.03); and Browser (M-6.11, SD- 0.96) .

A main effect of the testing was found F (5,156)= 1.62, p=n.s.

Employers

This section explores the difference in mean ratings of Employers in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 5: *Summary of t-Test analysis for the employers.*

Source	Employers		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.53 1.86			
			2.01	0.003
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	5.25	1.72		

As shown in Table 5, the mean ratings before watching the video (M=4.53, SD=1.86) and after watching the video (M=5.23, SD=1.72). A significant difference has been found between the two, t(df)=2.01, p<.05. This shows a significant increase in the ratings which says that employers are looking for a way to increase productivity during the work from home period by adopting VR Workspace.The variance decreased from 3.47 to 2.97 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 6: *Summary of One-Way Anova for the employers.*

Source	df	SS	MS	F	p
Between groups	5	7.77	1.55	1.08	.36
Within groups	276	395.19	1.43		
Total	281	402.96			

Table 6 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.70, SD- 1.55); Enhanced and Realistic online interaction experience (M- 5.93, SD- 1.25); Facility for 3D designing and drawing (M- 5.95, SD- 1.05); Keyboard Support (M- 5.97, SD- 1.02); Browser (M- 6.12, SD- 1.13); and Portable and Wireless Headset (M- 6.23, SD- 1.04). A main effect of the testing was found F (5,276)= 1.08, p=n.s.

Self- Employed

This section explores the difference in mean ratings of Self- employed in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 7: *Summary of t-Test analysis for the self employed.*

Source	Employers		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.34 1.50		2.01	0.02
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.84	1.30		

As shown in Table 7, the mean ratings before watching the video (M=4.34, SD=1.50) and after watching the video (M=4.84, SD=1.30). A significant difference has been found between the two, t(df)=2.01, p<.05. This shows that even though their ratings are lower in comparison to employees and employers, there is an increment after watching the video. The variance decreased from 2.27 to 1.71 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 8: *Summary of One-Way Anova for the self employed.*

Source	df	SS	MS	F	p
Between groups	5	2	0.4	0.36	.87
Within groups	258	280.59	1.08		
Total	263	282.59			

Table 8 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.70, SD- 1.00); Enhanced and Realistic online interaction experience (M- 5.86, SD- 0.95); Browser (M- 5.90, SD- 1.07); Keyboard Support (M- 5.93, SD- 1.03); Facility for 3D designing and drawing (M- 5.95, SD- 1.02); and Portable and Wireless Headset (M- 5.95, SD- 1.14).

A main effect of the testing was found F (5,258)= 0.36, p=n.s.

Evaluation of mean ratings of different groups based on age for the overall receptivity towards VR Workplace as an ideal WFH arrangement before and after watching the video and of the factors affecting these ratings.

Aged 20-35 years

This section explores the difference in mean ratings of people aged 20-35 years in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 9: *Summary of t-Test analysis for respondents aged 20-35 years.*

Source	Employers		t	p
	M	**SD**		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR work-space as an ideal work-from-home (WFH) arrangement?	**4.82** **1.46**			
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	**5.43**	**1.34**	**2.07**	**0.01**

As shown in Table 9, the mean ratings before watching the video (M=4.82, SD=1.46) and after watching the video (M=5.43, SD=1.34). A significant difference has been found between the two, t(df)=2.07, p<.05. This shows there is an increment after watching the video in the general receptivity to the idea of VR Workspace. The mean ratings are higher among people aged 20-35 compared to the ones of other age groups. It says that people aged 20-35 are more ready to adapt to this new technology and are willing to increase productivity in these difficult times. The variance decreased from 2.15 to 1.80 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 10: *Summary of One-Way Anova for respondents aged 20-35 years.*

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups	**5**	**4.40**	**0.88**	**0.67**	**.64**
Within groups	**132**	**172.08**	**1.30**		
Total	**137**	**176.49**			

Table 10 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.65, SD- 1.18); Facility for 3D designing and drawing (M- 5.65, SD- 1.46); Keyboard Support (M- 5.69, SD- 1.06); Enhanced and Realistic online interaction experience (M- 5.95, SD- 1.02); Portable and Wireless Headset (M- 6.00, SD- 0.84); and Browser (M- 6.08, SD- 1.16).

A main effect of the testing was found F (5,132)= 0.67, p=n.s.

Aged 35-50 years

This section explores the difference in mean ratings of people aged 20-35 years in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 11: *Summary of t-Test analysis for respondents aged 35-50 years.*

Source	Employers		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.37 1.76		1.99	0.002
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.95	1.56		

As shown in Table 11, the mean ratings before watching the video (M=4.37, SD=1.76) and after watching the video (M=4.95, SD=1.56). A significant difference has been found between the two, t(df)=1.99, p<.05. This shows that even though their ratings are lower in comparison to other age groups, there is a significant increment in ratings after watching the video. The variance decreased from 3.10 to 2.44 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 12: *Summary of One-Way Anova for respondents aged 35-50 years.*

Source	df	SS	MS	F	p
Between groups	5	9.23	1.84	1.44	.20
Within groups	390	497.19	1.27		
Total	395	506.43			

Table 12 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.59, SD- 1.35); Enhanced and Realistic online interaction experience (M- 5.74, SD- 1.16); Facility for 3D designing and drawing (M- 5.93, SD- 0.97); Portable and Wireless Headset (M- 5.96, SD- 1.16); Keyboard Support (M- 5.96, SD- 1.00); and Browser (M- 6.01, SD- 1.05).

A main effect of the testing was found F (5,390)= 1.44, p=n.s.

Aged 50+ years

This section explores the difference in mean ratings of people aged 50+ years in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 13: *Summary of t-Test analysis for respondents aged 50+ years.*

Source	Employers		t	p
	M	**SD**		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	4.83 1.48		2.04	0.09
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	5.30	1.34		

As shown in Table 13, the mean ratings before watching the video (M=4.83, SD=1.48) and after watching the video (M=5.30, SD=1.34). A significant difference has been found between the two, t(df)=2.04, p=n.s. They are willing to change the medium to have better productivity. The variance decreased from 2.21 to 1.80 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 14: *Summary of One-Way Anova for respondents aged 50+ years.*

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups	5	5.26	1.05	0.94	.45
Within groups	174	194.53	1.11		
Total	179	199.8			

Table 14 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Enhanced and Realistic online interaction experience (M- 5.76, SD- 1.13); Hand Tracking Support (M- 5.86, SD- 1.03); Browser (M- 6.03, SD- 1.06); Keyboard Support (M- 6.1, SD- 1.02); Facility for 3D designing and drawing (M- 6.16, SD- 1.04); and Portable and Wireless Headset (M- 6.26, SD- 1.01).

A main effect of the testing was found $F_{(5,174)}= 0.94$, p=n.s.

Evaluation of mean ratings of different groups based on gender for the overall receptivity towards VR Workplace as an ideal WFH arrangement before and after watching the video and of the factors affecting these ratings.

Male

This section explores the difference in mean ratings of males in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 15: *Summary of t-Test analysis for male respondents.*

Source	Employers		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	**4.76**	**1.60**		
Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	**5.18**	**1.50**	**1.98**	**0.003**

As shown in Table 15, the mean ratings before watching the video (M=4.76, SD=1.60) and after watching the video (M=5.18, SD=1.50). A significant difference has been found between the two, t(df)=1.98, p<.05. Their ratings are significantly higher than that of the females. The variance decreased from 2.57 to 2.26 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 16: *Summary of One-Way Anova for male respondents.*

Source	*df*	*SS*	*MS*	*F*	*p*
Between groups	**5**	**7.28**	**1.45**	**1.12**	**.34**
Within groups	**540**	**701.27**	**1.29**		
Total	**545**	**708.56**			

Table 16 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.75, SD- 1.30); Enhanced and Realistic online interaction experience (M- 5.86, SD- 1.08); Facility for 3D designing and drawing (M- 5.94, SD- 1.15); Keyboard Support (M- 5.95, SD- 1.02); Browser (M- 6.05, SD- 1.13); and Portable and Wireless Headset (M- 6.10, SD- 1.36).

A main effect of the testing was found F (5,540)= 1.12, p=n.s.

Female

This section explores the difference in mean ratings of Females in the Indian Working Population's receptivity towards use of VR Workspace before and after watching the video. It further evaluates the relative influence of factors affecting this decision.

Table 17: *Summary of t-Test analysis for female respondents.*

Source	Employers		t	p
	M	SD		
Based on your current knowledge of the VR workspace, how would you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	**3.96**	**1.64**	**2.05**	**0.002**

Now that you have watched the video, how do you rate your receptivity towards the VR workspace as an ideal work-from-home (WFH) arrangement?	**4.96**	**1.37**

As shown in Table 17, the mean ratings before watching the video (M=3.96,SD=1.64) and after watching the video (M=4.96, SD=1.37). A significant difference has been found between the two, t(df)=2.05, p<.05. This shows that even though their ratings are lower in comparison to males and to all other social groups, there is a vast increment after watching the video. The variance decreased from 2.70 to 1.88 suggesting that opinion of respondents is consolidating towards the mean responses of the respondents.

Table 18: *Summary of One-Way Anova for female respondents.*

Source	df	SS	MS	F	p
Between groups	5	8.19	1.63	1.60	.16
Within groups	162	165.75	1.02		
Total	167	173.94			

Table 18 talks about the influence of the factors affecting their receptivity. The factors, presented on the order of influence from least important to most important are as follows- Hand Tracking Support (M- 5.39, SD- 0.94)8; Enhanced and Realistic online interaction experience (M- 5.53, SD- 1.22);Portable and Wireless Headset (M- 5.85, SD- 1.00); Keyboard Support (M- 5.92, SD- 1.01); Facility for 3D designing and drawing (M- 5.92, SD- 0.93); and Browser (M- 5.96, SD- 0.83).

A main effect of the testing was found F (5,162)= 1.60, p=n.s.

Discussion

This research study aimed to examine the viability of promoting VR Workspace and evaluate the factors that influenced the Indian Working Population perception towards the use of VR Workspace in online collaboration for improved Work From Home Arrangements. Every null hypothesis mentioned has been rejected on the basis of results.

There is a significant increment in the ratings for use of VR as a medium for WFH Workspace before and after watching the video. People have a positive outlook towards VR becoming the future of online collaboration as most people have rated it above 5 from a scale of 1 to 7 and the average of all ratings was increased by 12% from 4.5 before the video to 5.1 after watching the video. This shows that after understanding the capabilities of a VR Headset, people see it as a viable option for WFH Arrangement.
This can also be seen in some of the qualitative responses received-

1. "Working in an IT company, also working on strategic suggestions and enhancements, I particularly feel that we still haven't used VR to its potential yet whereas this could be the game changer in a work from home scenario which seemed little distant some 15 months ago, is a reality worldwide today. So, anything which can help enhance productivity is definitely a go for me."
2. "It's very important to have such technology. It is very useful during the current pandemic situation and good for all kinds of things like working from home, good for students, etc."
3. "VR has so much potential when it comes to connections across the world for so many different settings. It would make work from home so much easier."

Though the differences in the average ratings for all factors influencing the decision was very less with the difference between lowest rated and highest rated factor being 4%, some interesting observations were made. From all the responses, the most important factor influencing their perception is that the VR headset is the headset being portable and wireless. It is followed by the availability of browsers in the headset to carry out various tasks. Conversely, hand tracking support has had a lower overall rating. This trend continued in most of the smaller social groups into which the respondents were divided.

However, some people also felt that though VR is the future and a further step into Work From Home Arrangements, its realistic interaction and communication features still need some improvement to make it a worthy medium. Only after having a striking benefit against the general computer set up can it drive people to switch instantly.

Different groups based on Job Position

Out of the three categories based on the position in the job, people who are working as employees have rated the use of VR higher than the rest with a small margin from Employers. However, there is a significant improvement in rating before and after watching the video explaining the concept of VR Workspace. The self-employed were relatively less interested in switching to the VR Workspace. The availability of browsers and its being wireless and portable are the biggest factors influencing it but support for 3D drawing in self-employed and keyboard support in employees are also major factors. Hand Tracking support has had a bit less effect on their decision and has been rated the lowest.

Different groups based on Age

The people aged 20-35 years have had a more positive outlook towards the change and VR becoming a viable option as they have rated the VR Workspace higher than other two age groups. They are followed by people aged 50+ and finally the 35-50 years age group. The people in the mid age group are less interested in having a change in their usual set up and are finding VR Workspace less probable. Some felt that VR wouldn't improve their workspace as their work was completely based on human interaction. This can be seen in some of the qualitative responses received-

1. VR is a revolutionary step in many senses but work from home is specific to the kind and nature of work. VR cannot be a suitable arrangement for all. It can be excellent for some.
2. The technology is good and futuristic. This might be a great breakthrough for a certain industry and work model. But for businesses which are based on personal relations and network, VR world might not be a relevant solution.
3. VR is a good option for the service sector only. Where production is concerned this seems difficult. For ex - milk factory, manufacturing unit, sales and repair unit. Plus, a working environment shall be missing if VR takes on Office spaces
4. Transitioning to VR will be a great cost for the companies. While big mnc would be able to do that, not all businesses in the local market will adapt. It won't find much use in companies where physical presence is essential thereby reducing the scalability aspect of it.

The most important factors based on readings of different age groups are also 'Wireless and Portable Headsets' and availability of 'Browser'. Hand tracking support also had some effect but was less probable a reason for someone to switch to VR Workspace.

Different groups based on Gender

In this, the males had a higher rating for VR Workspace both before and after watching the video however, the increase in the average after watching the video was higher in females with an increase of 20% while in males, it was 8% only. Most females rated it between 4-5 out of 7 while most males rated it 6 or above. In females, the general trend for the importance of factors was followed with browser and portable headsets being the most important and hand tracking being least. In contrast, in males, browsers had a much lower rating while facility for 3D designing was one of the highest rated factors.

Conclusion

The research shows that VR can be seen as a viable option for Work From Home Arrangements in most office spaces but considering the cost of investment, it will surely take some time to be seen as the only medium used for official communication and work. However, there still will be industries like manufacturing which would have the minimum benefit of switching to VR. In the meantime, the service sector will be able to take the benefit out of this revolutionizing technology.

Acknowledgments

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