

# COVID-19: Boom in OTT Platforms and Video Conferencing Industry

A Research Project undertaken by students of  
**St. Xavier's College (Autonomous), Mumbai**  
**Department of Statistics**

**Robin Francis**

[robinfrancisk2001@gmail.com](mailto:robinfrancisk2001@gmail.com)

**Cheryl Saju**

[cheryl.saju@hotmail.com](mailto:cheryl.saju@hotmail.com)

**Merlin Sebastian**

[connectmerlin@gmail.com](mailto:connectmerlin@gmail.com)

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## ABSTRACT

**Researchers:** Francis, R, Saju, C, Sebastian, M

**Title:** COVID-19: Boom in OTT Platforms and Video Conferencing Industry

**Research Focus:** Impact of COVID-19 Lockdown on the usage of OTT and Video Conferencing Platforms

**Abstract:**

With the pandemic causing schools, colleges and workplaces to shut down, most people were confined to their homes during the global lockdown. In the age of rapid digitalization and with a shift to work-from-home, usage of various digital platforms has greatly increased, especially for the purposes of entertainment, education and work. This research project aims to study the impact of the lockdown on the usage of OTT and Video Conferencing platforms and to predict whether this surge in the usage of these platforms would be sustained post-lockdown. Based on a review of literature on the growth of the OTT and Video Conferencing market in India, we conducted a survey of 124 respondents and, based on the responses from the survey, performed a z-test evaluating the mean usage of the two platforms prior and post-lockdown. We also evaluated the traffic on the websites of these platforms to examine the surge in usage during the lockdown. Analysis of the responses showed that 73.6 % of respondents said that their usage of OTT Platforms has increased during the lockdown and 79.9% of them said that their usage of video conferencing platforms increased during the lockdown. We also found a surge of at least 50% in web traffic of OTT platforms during the lockdown, and video conferencing platforms such as Zoom saw a 2000% increase. The z-test revealed that the usage of OTT platforms post-lockdown would not be significantly higher than that of prior to the lockdown. However, we did find that the usage of video conferencing platforms would increase significantly post-lockdown, especially for education and work-related purposes.

**Keywords:** COVID-19, Lockdown, Impact, OTT, Video Conferencing, Work-from-home, Digital Education, Online Classes, Telephony, Streaming, Consumer Behaviour

## ACKNOWLEDGEMENT

We are grateful to have successfully completed our research project on COVID-19: Impact on OTT Platforms and Video Conferencing Industry. The success as well as the final outcome of this project required guidance and assistance from a number of people, and so we take this opportunity to express our gratitude. We would like to thank everyone who supported us throughout the course of this project.

Firstly, we would like to express our deepest gratitude to the Department of Statistics, both the faculty and the students for giving us the opportunity to undertake this research project and for their constant guidance. We would also like to thank Prof. Mayur More for his constant support throughout the course of conducting this research. His guidance has been invaluable. We would like to sincerely thank Dr. Rajendra Shinde, Principal, St. Xavier's College Autonomous, Mumbai. We would also like to express our thanks and gratitude to the faculty and staff of St. Xavier's College Autonomous, who have helped us at every step of the way.

We would like to extend our gratitude to all those who participated in our survey. Their insights and input led to the successful completion of this project. Finally, we thank our family and loved ones for their steadfast love and support throughout this endeavour.

# 1. INTRODUCTION

The coronavirus pandemic, which began as an outbreak in Wuhan, China in December 2019, has evolved into one of the most unprecedented and significant points in human history. Besides the massive spread of the disease and the global efforts to control it, the consequential lockdown has led to possibly the largest recession, global supply shortages, overwhelming of health systems in even the most developed nations, cancellation of all events around the globe, major or otherwise, halt to global air travel, a global stock market crash and a near-complete standstill of most economies of the world.

India itself has been under complete lockdown, beginning on the 25<sup>th</sup> of March and was partially lifted on the 1<sup>st</sup> of June. With schools, colleges and workplaces shut, most people were confined to their homes. With nearly a third of the world's population under lockdown<sup>1</sup>, the pandemic has led to a massive surge in internet usage and digital technologies<sup>2</sup>, be it for entertainment, work or personal use. In the age of rapid digitalization in nearly all fields and with a shift to work-from-home, it comes as no surprise to find that usage of various digital platforms has greatly increased.

With social isolation and social distancing in place, people have had to find ways of working and studying from home, turning to videoconferencing services such as Zoom, Cisco WebEx, Google Meet and Microsoft Team. Innovation and popularity on these platforms have multiplied during this lockdown, as has the need of such services arising during the lockdown; workplaces and classrooms have tuned into virtual ones, with a large section of the population availing these services.

With cultural, sport, political and social events cancelled everywhere, people have had to find means of entertainment from the confines of their homes. With no live events and sports, they have turned to online streaming. Though streaming services have becoming increasingly popular over the recent years, usage of the same has spiked during the lockdown,

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<sup>1</sup> <https://www.theguardian.com/world/2020/mar/24/nearly-20-of-global-population-under-coronavirus-lockdown>

<sup>2</sup> De', Rahul et al. "Impact of Digital Surge during COVID-19 Pandemic: A Viewpoint on Research and Practice." *International Journal of Information Management*, 102171. 9 Jun. 2020, doi:10.1016/j.ijinfomgt.2020.102171

so much so that in India, and other countries, streaming services have had to restrict the quality of streaming to 480p due to surges in online traffic.

In the project, we look at two of these digital platforms – Over-the-top (OTT) streaming and videoconferencing services. Specifically, we look at the very surge in use of digital platforms, and whether the surge would sustain once the lockdown is lifted and the population attempt to recover from the pandemic and the lockdown.

## **OBJECTIVES**

1. To examine the impact of lockdown on the usage of OTT platforms, both during and post-lockdown.
2. To analyse the impact of lockdown on the usage of video conferencing platforms, both during and post-lockdown.
3. To understand the factors that influence the usage of OTT platforms and video conferencing platforms.

## **RESEARCH HYPOTHESIS**

1. **Null Hypothesis ( $H_0$ ):** There will be no significant difference in usage of OTT Platforms post-lockdown

**Alternate Hypothesis ( $H_a$ ):** There will be a significant increase in usage of OTT Platforms post-lockdown

2. **Null Hypothesis ( $H_0$ ):** There will be no significant difference in usage of Video Conferencing Platforms post-lockdown

**Alternate Hypothesis ( $H_a$ ):** There will be a significant increase in usage of Video Conferencing Platforms post-lockdown

## 2. REVIEW OF LITERATURE

Over-the-top (OTT) refers to applications and services which are accessible over the internet and ride on operators' networks offering internet access services e.g. social networks, search engines, amateur video aggregation sites, etc.<sup>3</sup> OTT providers rely on the global internet and access network speeds to reach the user, hence going "over-the-top" of a telecom service provider's (TSP) network.

Increasingly affordable smartphones, spread of use of mobile data and faster internet speeds are among the important factors contributing to OTT growth. Digitalization of content has reduced conservation, reproduction and distribution costs, which, in turn, has promoted the explosive growth in the supply of online content.

Streaming services such as Netflix, Amazon Prime and Disney+ Hotstar have benefited massively from global lockdowns as users look for entertainment while at home. With social distancing and shutting down of entertainment avenues, people have turned to video-on-demand devices for entertainment.

Prior to COVID, the primary viewership of streaming service was restricted to residents of urban areas and millennials. But since the lockdown, with OTT platforms updating their catalogues, the viewership has expanded to the 40-plus generation that prefers old classic films and television.

The lockdown has also forced the movie industry to postpone new releases as theatres have shut down in order to contain the spread of the virus.<sup>4</sup> With no clarity on when they would open up, a few movie producers, both in India and abroad, are now releasing their movies over video streaming platforms, contributing further to the surge in usage of OTT services.

Amazon's Prime Video service, which is slowly taking over Netflix in the Indian market, is greatly benefiting in this regard, with it exclusively releasing seven Indian movies on its platform. Netflix too has produced original India-centric content that has garnered a

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<sup>3</sup> TRAI Consultation Paper on Regulatory Framework for Over-the-top (OTT) services 27th March 2015

<sup>4</sup> <https://www.fool.com/investing/2020/06/12/amazon-to-bring-more-pain-netflix-in-india.aspx>

massive audience. The move marks a significant shift for the country's film industry, which relies heavily on box office revenue, and comes as lockdown measures to slow the spread of the coronavirus wreak havoc with film launches.

According to a study by BARC, Zee5 witnessed a rise over 45 percent in paid viewership and an 80 percent increase in the number of new subscriptions during the lockdown period. Just before the outbreak of COVID-19, Hotstar had around 150 million active users and over 350 million downloads. As of May 2020, the number of users and downloads have increased to 300 million active users and over 400 million downloads respectively. MX Player, which is the fastest-growing OTT entertainment platform in India, saw an increase in 8 percent of visitors on its online Platform and an increase from 130 million to 141 million visitors during the lockdown. The average time spent online on the portal also went up by 23 percent.

KPMG had released a report titled “COVID-19: The Many Shades Of A Crisis- A Media And Entertainment Sector Perspective”, which discussed the impact of COVID-19 in the Media and Entertainment industry. The report highlighted that media consumption over time has become income inelastic, however, the current environment could result in a dip in media consumption in the near term; and also foresees key trends across Television, Print media, Films, OTT platforms during COVID along with the recovery time for the same.

There have also been talks about the negative health implications of binge-watching.<sup>5</sup> Dr. Priyanka Dattani, a Counselling Psychologist at NH SRCC Hospital, Mumbai said that binge-watching leads to instant gratification and it makes you emotionally numb. These platforms sustain on creativity which, unlike plain advertisement model, does not make up for the fickle pattern of subscription.

In the coming years, one is likely to see three trends in the context of increasing acceptance of streaming platforms. One, mid-budget and low-budget films may straight away release on streaming platforms. The second trend is the change in the economic model of film-making. Lastly, streaming platforms industry will consolidate.

The lockdown has also forced students to learn and employees to work from home. Offices have moved from physical spaces to virtual ones with the use of Video Conferencing

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<sup>5</sup> Rajesh Naidu wrote for The Economic Times about the surge in usage of OTT platforms in India during the nationwide lockdown in an article titled “Understanding India’s streaming platforms industry in the context of lockdown”.

platforms. With strict provisions regarding the number of people that can work in offices, employees have now had to work from homes.

Though many businesses have downsized their employees due to being forced to work from home and reduced revenue coming in. One can expect conversations regarding new work styles after the lockdown is lifted, due to a huge proportion of the working population working from home for 3 months during the lockdown.

On 16 March, the Union Government declared a countrywide lock-down of schools and colleges. Thus, there was a massive shift to online learning, especially through Video Conferencing Platforms. Digital learning has now become a critical lifeline for education, as institutions seek to minimize the potential for community transmission. Technology can enable teachers and students to access specialized materials well beyond textbooks, in multiple formats and in ways that can bridge time and space. Due to the pandemic, many schools began conducting classes via videotelephony software such as Zoom.

Though, lack of access to technology or fast, reliable internet access can prevent students in rural areas and from disadvantaged families. Lack of access to technology or good internet connectivity is an obstacle to continued learning, especially for students from disadvantaged families.

With social distancing in place, there is a rising need for telehealth to deliver care, especially as a means of reducing the risk of cross-contamination caused by close contact. Telehealth services have also begun being provided via video conferencing platforms. Telemedical services are ideal for the management of communicable diseases. For patients with COVID-19 or those concerned that they might be infected, telehealth can help with remote assessment and the provision of care. For people not infected with the COVID-19 virus, especially those at higher risk of being affected (e.g. older adults with pre-existing medical conditions), telehealth can provide convenient access to routine care without the risk of exposure in a congested hospital or in medical practice waiting rooms.<sup>6</sup>

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<sup>6</sup> Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19) Journal of Telemedicine and Telecare 2020, Vol. 26(5) 309–313



### 3. METHODOLOGY

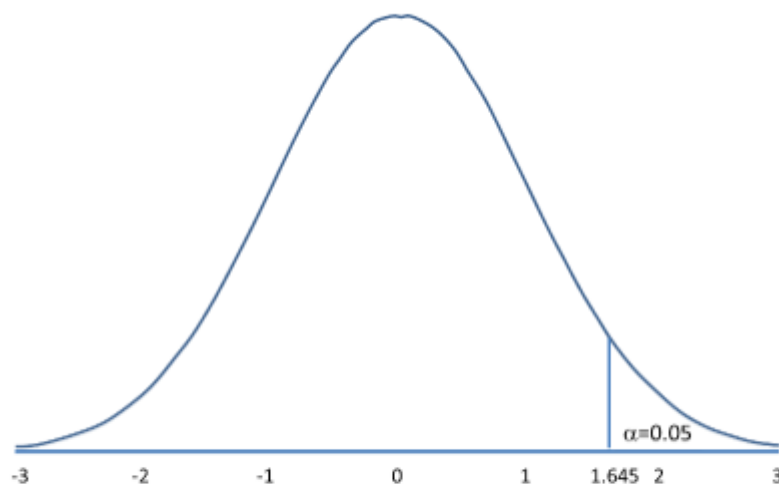
#### *Sample and Sampling Technique*

The target population of online questionnaire was 124. The majority of our respondents were females which accounted to 64.8%, while males who answered are 35.2%. Most of the participants were residents of the state of Maharashtra. The online questionnaire contained 2 sections with many specific questions.

All of the 124 respondents were contacted through social media handles, especially WhatsApp. The questionnaire was formed using Google Forms, a survey administration app. For the purpose of this study, availability sampling was adopted. It is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in the study.

#### *Statistical Analysis*

The statistical tools we made use of were z-test and descriptive statistics. A Z-test is a type of hypothesis test in which the z-statistic follows a normal distribution. It is used to determine whether two population means are different when the variances are known and sample is large ( $n \geq 30$ ). We used an upper tailed z-test with significance level = 0.05.



Rejection Region for Upper-Tailed Z Test ( $H_1: \mu > \mu_0$ ) with  $\alpha=0.05$

The decision rule is: Reject  $H_0$  if  $Z \geq 1.645$ .

Descriptive Statistics are used to describe the basic features of the data in a study. They form the basis of quantitative analysis of data. They provide simple summaries about the dataset, which can be either be a representation of the entire or a sample of the population.

### ***Primary Data***

Primary data is data that is collected by a researcher from first-hand sources, using methods like surveys, interviews, or experiments. An online questionnaire was used to collect first-hand data for this research. An online survey is a questionnaire that the target audience can complete over the Internet. Online surveys are usually created as Web forms with a database to store the answers and statistical software to provide analytics. We made use of the facility provided by Google Forms.

### ***Secondary Data***

Secondary data is the data that has already been collected through primary sources and made readily available for researchers to use for their own research. It is a type of data that has already been collected in the past. We collected secondary data from various credible sources like research papers, newspaper articles and YouTube videos.

We also **tracked the visitors on the websites of different OTT and Video Conferencing platforms**. We used the VStat extension/plugin for Google Chrome for the same. We used data regarding the website traffic on these platforms for the past 6 months.

### **Limitations**

1. Most of the respondents for the survey belonged to the state of Maharashtra, owing to difficulties in reaching out to others due to the nationwide lockdown.
2. Since availability sampling method was used, there are high chances of possible bias and limited validity.
3. Limited access to real-time data and research as the pandemic is ongoing.

# Sample Survey

*COVID-19: Boom in OTT platforms and Video Conferencing Industry.*

*A research study conducted by the students of St. Xavier's College (Autonomous), Mumbai.*

1. **What is your age?**
  - ☐ Below 18 years
  - ☐ 18 - 25 years
  - ☐ 26 - 40 years
  - ☐ 41 - 60 years
  - ☐ Above 60 years
2. **What is your gender?**
  - ☐ Male
  - ☐ Female
  - ☐ Other
3. **Have you used OTT platforms before?**
  - ☐ Yes
  - ☐ No
4. **Which of the following OTT platforms do you prefer the most?**
  - ☐ Netflix
  - ☐ Amazon Prime
  - ☐ Hotstar
  - ☐ ALTBalaji
  - ☐ Zee5
  - ☐ Voot
  - ☐ SonyLiv
  - ☐ MX Player
  - ☐ Jio Cinema
5. **What are the reasons for choosing this platform over others?**
  - ☐ Better regional content
  - ☐ Better international content
  - ☐ Affordable subscription rates
  - ☐ Better User Interface
  - ☐ Original content
  - ☐ Better variety across genres
  - ☐ Immediate premiere of movies on the platform after theatrical release
6. **On average, how many hours in a day did you spend on OTT platforms for streaming content prior to the lockdown?**
  - ☐ 0
  - ☐ 1-3
  - ☐ 4-6
  - ☐ 7-9
  - ☐ 10-12
  - ☐ 13-16
  - ☐ More than 16
7. **Has the time spent by you on such OTT platforms increased during the lockdown?**
  - ☐ Yes
  - ☐ No

8. **On average, how many hours in a day do you think you would spend on OTT platforms for streaming content post- lockdown?**

- ☐ 0
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ 10-12
- ☐ 13-16
- ☐ More than 16

9. **Do you think the current surge in the OTT industry will continue to sustain post – lockdown?**

- ☐ Yes
- ☐ No

*Please state your reason for the same*

**Rate the statements:**

10. **I like to spend time on OTT platforms because: It is the best way to spend time with family, friends, etc.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Strongly agree

11. **I prefer watching movies in the comfort of my home over the experience of watching it in a theatre.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Strongly agree

12. **I can watch more movies on OTT, for the price of a single movie in the theatre.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Strongly agree

13. **I can watch whatever I want, whenever I desire.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Strongly agree

14. **Do you think extended free/ trial periods and reduced pricing for subscriptions will lead to an increase in viewership on such platforms?**

- ☐ Yes
- ☐ No

*Video Conferencing Industry*

15. **Have you used video conferencing platforms prior to the lockdown?**

- ☐ Yes
- ☐ No

**16. Which of the following video conferencing platforms do you prefer the most?**

- ☐ Cisco WebEx
- ☐ Skype
- ☐ Google Meet
- ☐ Zoom
- ☐ ezTalks
- ☐ Microsoft Teams
- ☐ BlueJeans

**17. What are the reasons for choosing this platform over others?**

- ☐ Better connectivity even in case of low bandwidth
- ☐ Better User Interface
- ☐ Higher capacity in terms of no. of participants
- ☐ Better security
- ☐ Recording feature
- ☐ Cheaper paid plans with extra features

**18. On average, how many hours in a day did you spend on video - conferencing prior to the lockdown?**

- ☐ 0
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ 10-12
- ☐ 13-16
- ☐ More than 16

**19. Has the time spent by you on such video- conferencing platforms increased during the lockdown?**

- ☐ Yes
- ☐ No

**20. On average, how many hours in a day do you think you would spend on video conferencing platforms post lockdown?**

- ☐ 0
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ 10-12
- ☐ 13-16
- ☐ More than 16

**21. Do you think the current surge in the use of videoconferencing platforms will continue to sustain post- lockdown?**

- ☐ Yes
- ☐ No

*Please state your reason for the same*

**22. What is your current occupation?**

- ☐ Student (PROCEED TO SECTION 1)
- ☐ Part-time job/ Freelancer (PROCEED TO SECTION 2)
- ☐ Full-time job

### *Education (SECTION 1)*

1. **Have you used video conferencing platforms for educational purposes prior to the lockdown?**
  - ☐ Yes
  - ☐ No
2. **On average, how many hours did you spend on such platforms for educational purposes prior to the lockdown?**
  - ☐ 0
  - ☐ 1-3
  - ☐ 4-6
  - ☐ 7-9
  - ☐ 10-12
  - ☐ 13-16
  - ☐ More than 16
3. **Has the time spent by you on such platforms for educational purposes increased during this lockdown?**
  - ☐ Yes
  - ☐ No
4. **On average, how many hours in a day do you think you would spend on such platforms for educational purposes post- lockdown?**
  - ☐ 0
  - ☐ 1-3
  - ☐ 4-6
  - ☐ 7-9
  - ☐ 10-12
  - ☐ 13-16
  - ☐ More than 16
5. **According to you, will the current surge in the usage of video conferencing platforms for educational purposes sustain post- lockdown?**
  - ☐ Yes
  - ☐ No

*Please state your reason for the same*

**Rate the following statements:**

6. **I like to use video conferencing platforms because: I have the required resources to sit at home and attend lectures.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree



Strongly agree

7. **I can save the time spent on travelling and utilise that time in doing other activities.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree



Strongly agree

8. **I can attend live classes going on in other institutions outside my college.**

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Strongly agree

*Part-time/Freelancer/Full-time Working Professionals (SECTION 2)*

1. **Have you used video conferencing platforms for work-related purposes prior to the lockdown?**

- Yes
- No

2. **On average, how many hours in a day did you spend on such platforms for work-related purposes prior to the lockdown?**

- 0
- 1-3
- 4-6
- 7-9
- 10-12
- 13-16
- More than 16

3. **Has the time spent by you on such platforms for work-related purposes increased during the lockdown?**

- Yes, the time spent has increased
- No change

4. **On average, how many hours in a day do you think you would spend on such platforms for work-related purposes post-lockdown?**

- 0
- 1-3
- 4-6
- 7-9
- 10-12
- 13-16
- More than 16

5. **According to you, will the current surge in the usage of video conferencing platforms continue to sustain post-lockdown?**

- Yes
- No

*Please state your reason for the same*

**Rate the following statements:**

6. I like to video conferencing platforms because: I have the required conditions ( electronic gadgets, stable Wi-Fi, working space, continuous supply of electricity, etc.) to work from home.

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Strongly agree

7. I can save time spent on travelling since my workplace is far away from my place of residence.

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Strongly agree

8. I am not bound by fixed working hours and can work at my own pace.

0 1 2 3 4 5 6 7 8 9 10

Strongly disagree ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Strongly agree

**----- END OF SURVEY -----**



## 4. ANALYSIS:

### SECTION I

We had 124 respondents who filled our online questionnaire. Out of which majority of them were females who formed 64.8%, the remaining 35.2% were males. Responses were collected from people of all ages. Although, a majority of 66.4% were people who belonged to the age group of 18-25, followed by people who are below 18 and 41-60 years contributing to 12.8% of the responses, each.

### OTT PLATFORMS

**73.6 % of respondents said their usage of OTT Platforms has increased during the lockdown.**

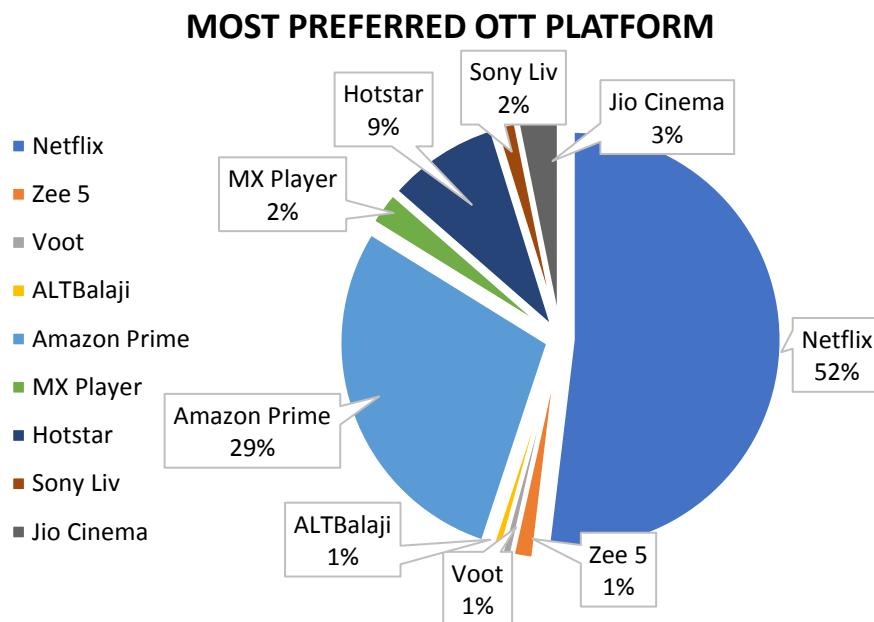


Figure 1: Preferred Choice of OTT Platform

When asked about their choice of OTT platform, most of the respondents i.e. 52% chose Netflix. 28% prefer Amazon Prime while 8.8% prefer Hotstar. Hence, the most preferred OTT platform by the respondents is Netflix. The chart also

gives us an insight into the large number of OTT platforms available in India and how each of them has a large customer base. Today, in India, there are close to 36 streaming platforms that are owned by Indian companies. Apart from these, there are global streaming platforms such as Netflix, Amazon Prime Video, and Disney+Hotstar.

A recent survey from J.D Power has found that the most popular shows users in the US watched were all on Netflix. The survey concluded by asking users which service they would pick if they could only have one and again Netflix earned the top spot easily. 54% of those surveyed picked Netflix while 17% chose Amazon Prime Video and 13% chose Hulu. Netflix has seemed to secure itself as the top competitor in the streaming wars.

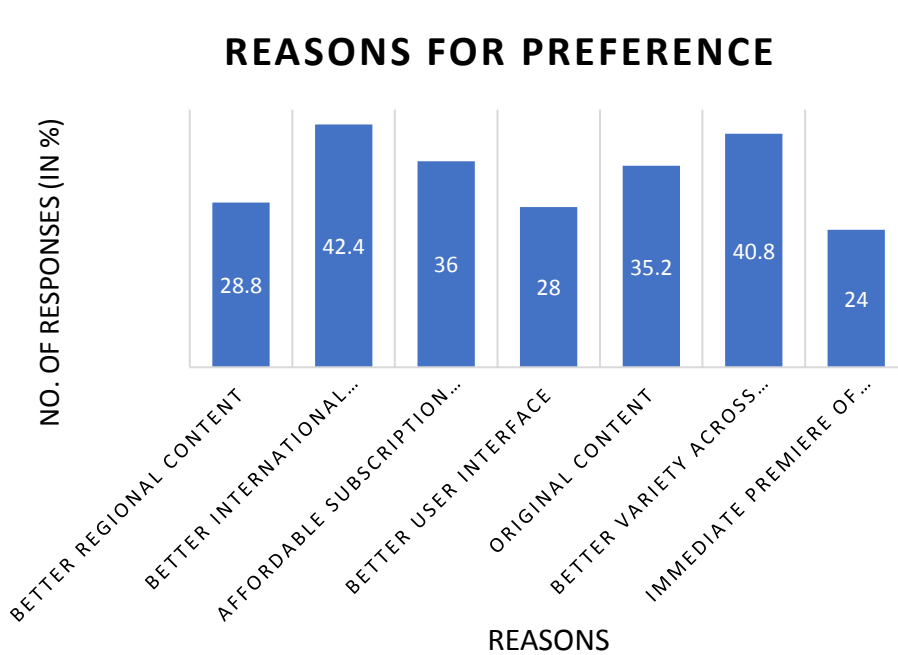


Figure 2: Reason for Preference

When asked what made them choose OTT platforms over conventional forms of media, better international content was the most commonly chosen reason. On the other hand, 40.8% prefer a particular OTT platform because of better variety across genres. Other reasons for

preference include affordable subscription rates, original content, better regional content and immediate premiere of movies on the platform. So, from this chart, we can derive that better international content is what boosts viewership for a certain streaming service.

Sarandos Jr. who is the chief content officer for Netflix said, “Indians are big fans of our global original content. La Casa De Papel was a huge hit in India for us as well as most of our other originals out of the US. So, we are growing the business, licensed, original, international, domestic, across the board in terms of content and content taste.”

This chart depicts a Likert scale of 10 points. It is used to allow the individual to express how much they agree or disagree with a particular statement.

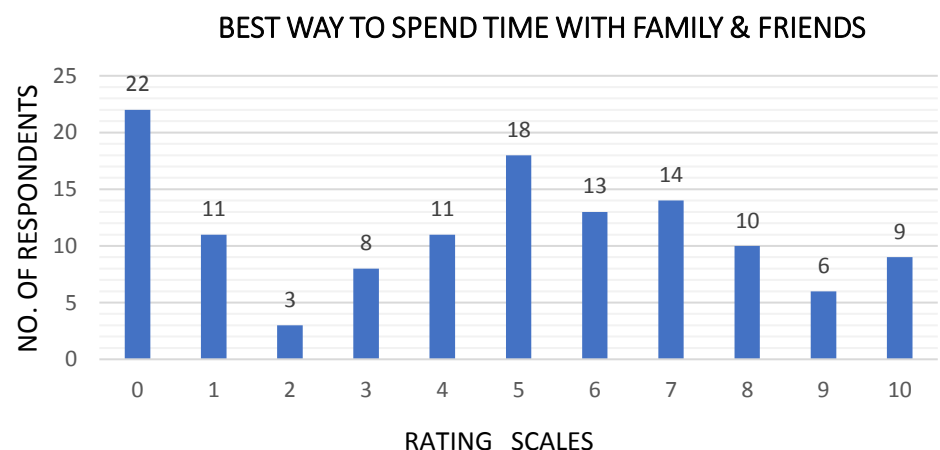
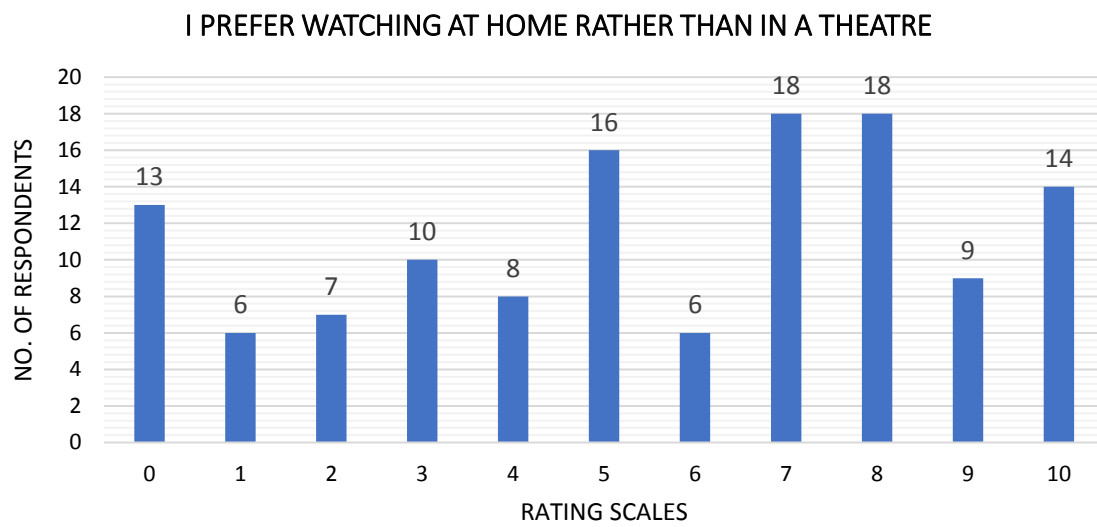


Figure 3: Rate the Statement: It is the best way to spend time with family and friends

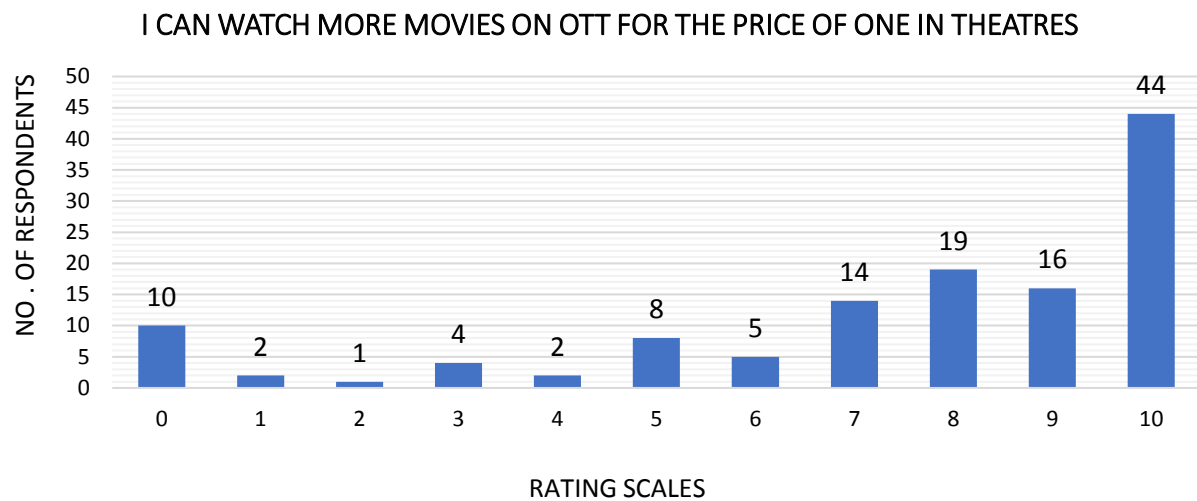
22 respondents strongly disagreed that spending time on OTT platforms is the best way to spend time with family. People would possibly think that dining in a restaurant, watching movies in a cinema hall, going on trips, etc. are better ways of spending quality time with family members. 18 respondents expressed neutral sentiments to this statement and 9 respondents agreed that spending time on OTT platforms is the best way to spend time with family.



*Figure 4: Rate the statement: I prefer watching content at home rather than in a theatre*

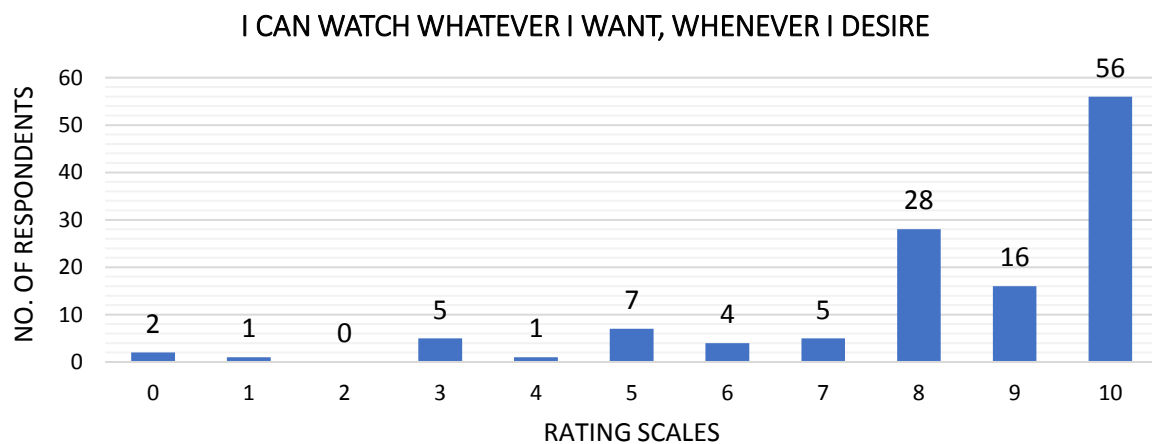
A large number of respondents i.e. 14 agreed that watching movies in the comfort of their homes is more preferable over the experience of watching it in a theatre while 16 respondents expressed neutral sentiments to this statement and 13 respondents strongly disagreed. It is similar to the situation that all of us have kitchens at our homes, but still prefer to dine out.

“The cinema offers a larger than life experience. That cannot be replicated easily by television or OTT platforms. Films can be seen by several means. However, going to the cinema hall adds an important dimension - it becomes a social occasion and a collective experience. The OTT platforms will clearly not match up with that,” veteran filmmaker Shyam Benegal told BusinessLine. The majority of the cinema hall owners are optimistic that people will continue to prefer to watch movies in cinema halls for better experience post-lockdown, following the social-distancing norms.



*Figure 5: Rate the statement: I can watch more movies on OTT for the price of one in the theatre*

A clear majority of respondents, i.e. 44 respondents strongly agreed that they can watch more movies on OTT, for the price of a single movie in the theatre. 19 respondents agreed to the statement. Free trial periods make it even more feasible and exciting for potential subscribers. According to the KPMG report, OTT players are offering extended free periods to drive subscription up through habit formation. For example, Eros Now had provided two-months of free subscription to its Indian viewers amidst the COVID-19 pandemic. On the other hand, 8 respondents expressed neutral sentiments to this statement and a minimum of 10 respondents strongly disagreed with the statement.



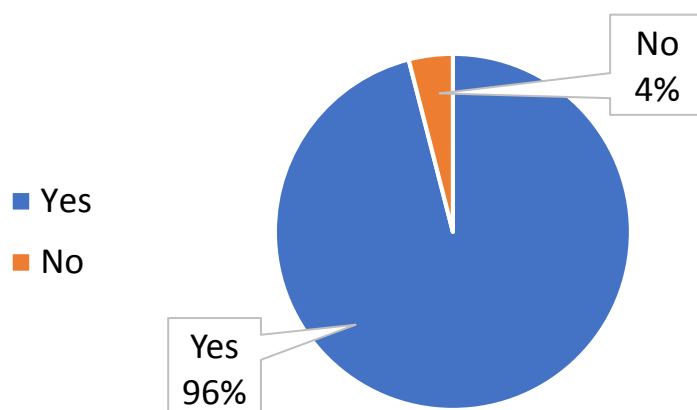
*Figure 6: Rate the statement: I can watch whatever I want, whenever I desire*

56 respondents strongly agreed that they can watch any content on OTT platforms whenever they desire. Many research papers and articles have highlighted that maximum number of consumers of OTT platforms stream content on mobile phones and while traveling. “The usual watch time in mornings used to be while travelling, and therefore on

phones. Now, we are witnessing a surge in content being watched on television,” said a senior official of an Indian OTT platform. Consequently, viewership has surged in metros like Delhi, Mumbai and Bangalore where people spend more time for commutation as compared to small cities.

7 respondents expressed neutral sentiments to this statement and 2 respondents strongly disagreed that they can watch whatever they want at any time.

**Would extended trial periods and reduced prices increase viewership?**



An overwhelming majority (96%) of the respondents think that extended free/trial periods and reduced pricing for subscriptions will lead to an increase in viewership on such platforms.

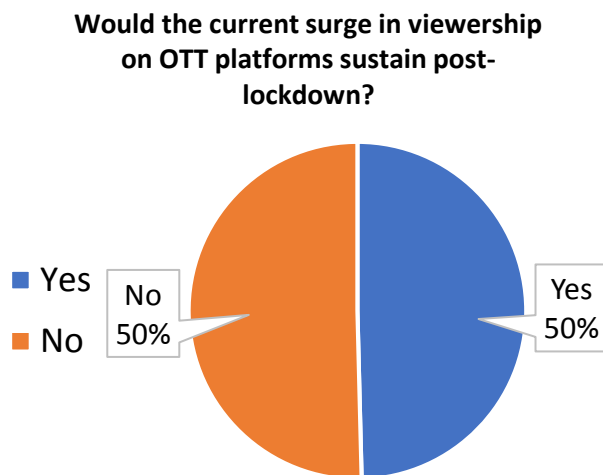
Raghav Anand,  
segment leader, digital media,

at EY, said digital as a sector will grow both in terms of viewership and advertising since other avenues of entertainment have temporarily taken a hit. “More consumers are paying for access to premium OTT content since they are at home. Short-form videos typically viewed during commutes have given way to short clips for news sharing, he said.

According to the KPMG report, “OTT players are offering extended free periods to drive subscription pick up through habit formation. Habit formation could result in a new normal and accelerated growth in consumption and monetisation. Platforms also expect that new viewers will join in during this period, and once normalcy is restored, consumption of online videos shall continue.

On the other hand, 4% of the respondents do not think the same, as people might get busy with their routines and may not find enough time to watch content on OTT platforms.

When asked if the current surge in viewership on OTT platforms would sustain post lockdown, opinion was split in the middle. Those that agreed said they would prefer to watch content at home as it’s economical in comparison to theatres, accessibility, habit formation,



*Figure 8: Would the current surge in viewership on OTT platforms sustain post-lockdown?*

plenty of free time and it's less risky in the current situation. 50.4% think that the surge will continue post- lockdown but 49.6% do not think the same, since people will get busier after the lockdown as schools and offices resume and physical presence will be required and hence, less time for recreation will be available.

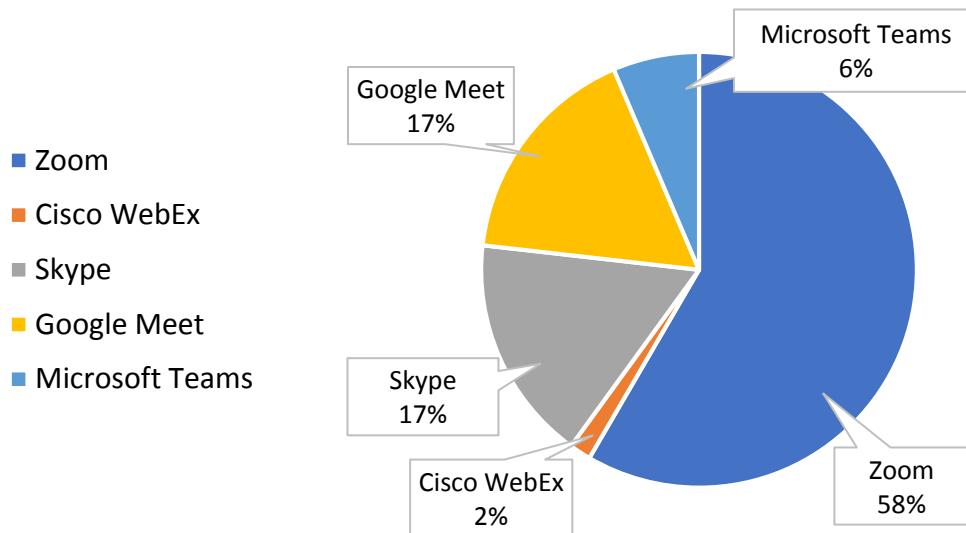
At home entertainment options (digital, TV, gaming) to see an upswing as 'lockdown behaviour' results in habit formation. Digital consumption to see rapid incremental growth with India's

'digital billion' trajectory likely to accelerate materially. Digital media consumption, particularly OTT, has seen a surge during the lockdown period in terms of both time spent and newer audiences. The resultant habit formation is likely to result in a new higher normal once the situation around COVID-19 comes under control. Digital subscription revenues could see an upswing post COVID-19 as habit formation in terms of OTT video consumption sets in, according to the KPMG report.

## VIDEO CONFERENCING PLATFORMS

**79.9% of respondents said that their usage of video conferencing platforms increased during the lockdown.**

**Most Preferred Video Conferencing Platform**



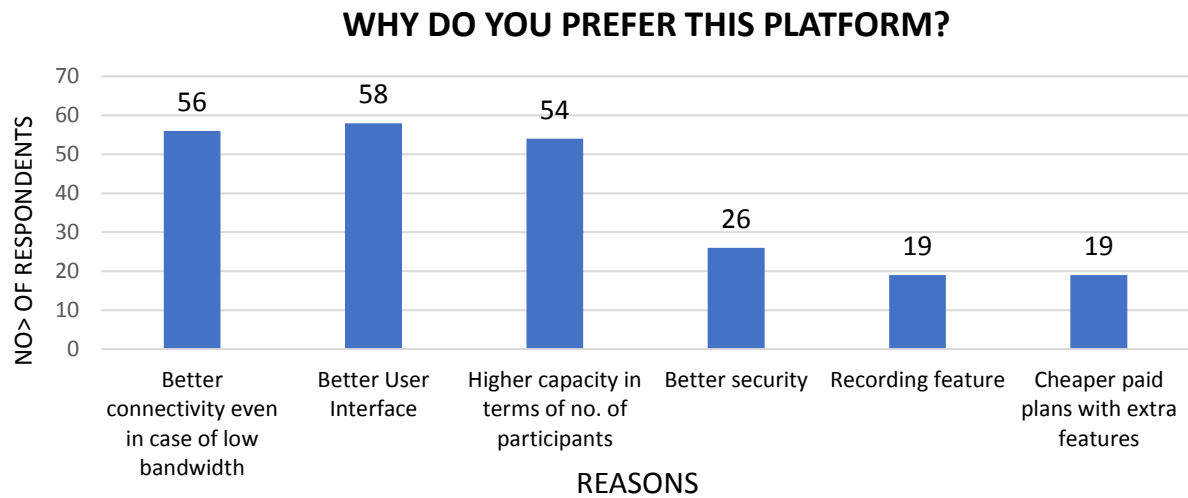
*Figure 9: Most Preferred Video Conferencing Platform*

The chart highlights the preferences of consumers of video conferencing platforms. Clearly, most of the respondents i.e. 58.4% prefer Zoom. 16.8% prefer Skype, while 16.8% prefer Google Meet. The chart clearly highlights that Zoom is the most preferred video conferencing platform.

**Zoom Video Communications Inc.** has been lambasted for its security flaws, but the backlash hasn't slowed growth. Zoom daily users surge to 300 million despite privacy woes. Before the COVID-19 pandemic, Zoom was focused on business communications and used by about **10 million people**, mostly office workers. However, now schools, colleges as well as office goers utilise this video conferencing platform. Zoom's stock prices had even surged early in the year as it emerged as a dominant player during the pandemic.

Zoom boasts of flawless video, crystal clear audio and instant sharing capabilities that make it our favourite option for video conferencing. Many people who use Zoom often switch from other conference call software because of the frustrations they face using other available platforms. Numerous exciting plans that Zoom offers includes screen sharing from desktops, tablets or mobile devices, whiteboard, unlimited number of meetings per month, Secure Socket Layer (SSL) encryption, chat and messaging (private and group), scheduling with

chrome extensions, meeting record option, ability to join a meeting by telephone, instant or scheduled meetings, online support, breakout rooms, etc.



*Figure 10: Reasons for preference for Video Conferencing Platforms*

A large number of respondents prefer a certain video conferencing platform because of better user interface. And, 56 respondents prefer a particular video conferencing platform because of better connectivity even in case of low bandwidth. Other reasons include higher capacity in terms of number of participants, better security, recording feature and cheaper paid plans with extra features.

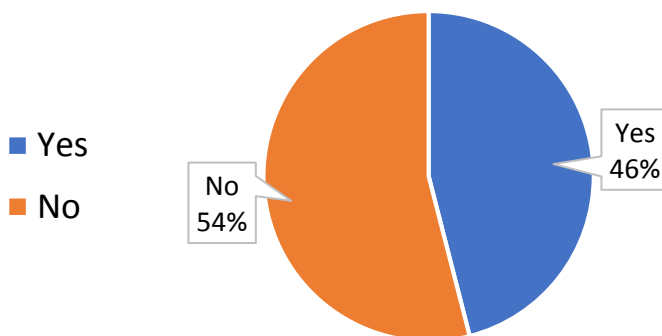
A good user interface provides a "user-friendly" experience, allowing the user to interact with the software or hardware in a natural and intuitive way. For e.g.: Zoom is the ideal web meeting software for users who want to simply and effectively connect with customers and clients remotely. It also has Chrome and Linux OS support for increased flexibility and secure socket layer (SSL) encryption to guarantee secure communications.

Product Names	No.of Participants	Timelimit	Chat Feature	Recording	Conferencing Phone Support
Google Hangouts	10	None	Yes	No	No
Google Meet	150	None, post September 30th - 60mins	Yes	No	Yes
Google Duo	12	None	No	No	No
Zoom	100	40 mins per session	Yes	Yes	Yes
Slack	15	None	Yes	No	No
Skype	50	24 hours (+1 hour)	Yes	Yes	Yes
Microsoft Teams	10K	None	Yes	Yes	Yes
Facetime	32	None	No	No	No
Facebook Live	None	4-8 hours, depends on device	Not directly	No	No
Facebook Messenger	50	None	No	No	No
Whatsapp Video Call	8	None	No	No	No



The above picture helps us understand the various outstanding features offered by several video conferencing platforms. This helps us to throw some light on consumer preferences based on the additional features offered by numerous video-conferencing platforms.

**Will the current surge in users on Video Conferencing platforms sustain post-lockdown?**



*Figure 11: Will the current surge in users on Video Conferencing platforms sustain post-lockdown?*

The graph depicts public opinion on whether the current surge in the use of videoconferencing platforms will continue to sustain post- lockdown. 53.6% of respondents feel that the surge will continue because of habit formation, ease in organizing, aids companies in reducing their cost of renting office spaces and other expenditures, few people prefer

virtual meetings and it helps to save time and money. On the other hand, 46.4% of respondents do not think that the surge will continue as people prefer real interaction for better communication rather than virtual interaction, it does not provide a suitable atmosphere to study and attend meetings, low bandwidth at times leads to inability to attend meetings, etc.

“However, previous research experiences and studies have shown that when crisis situations fade and circumstances return to the normal, individuals and organizations tend to go back to the original way of functioning due to habit and status quo bias”, **said the writers of ET Government, Jang Bahadur Singh and Sujeet Kumar Sharma in the article ‘Opinion: Surge in use of video-based collaborative technologies in response to COVID-19’.**

## EDUCATION

**Will these platforms continue to be used post-lockdown for educational purposes?**

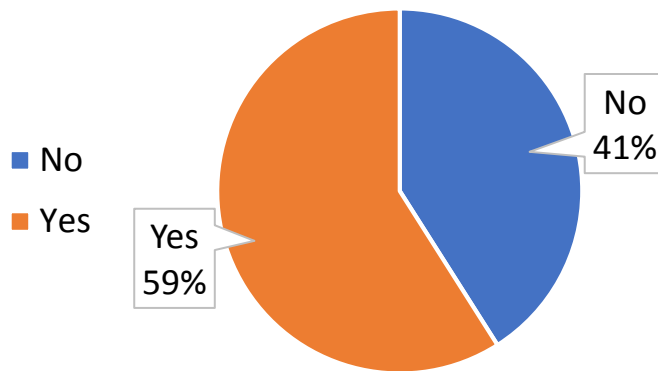


Figure 13: Will these platforms continue to be used post-lockdown for educational purposes?

Majority of the respondents, 58.9%, of the respondents felt that the current surge in the usage of video conferencing platforms for educational purposes will sustain post- lockdown because of convenience, habit formation, efficiency, interesting way to learn and it helps in saving time and money. There are many advantages of video conferencing in education. It helps to reduce cost of education.

Some schools, especially in remote rural areas, may not have enough funds

to build or expand buildings because of a variety of reasons. In this circumstance, using video conferencing for education is a good choice. It also helps teachers to connect closely with students and their parents. On the other hand, 41.4% of respondents do not feel that the current surge in the usage of video conferencing platforms will continue because virtual classrooms do not provide an atmosphere to study and possibly lesser interaction as compared to real interaction in schools and colleges.

### I HAVE THE REQUIRED RESOURCES TO SIT AT HOME & ATTEND LECTURES

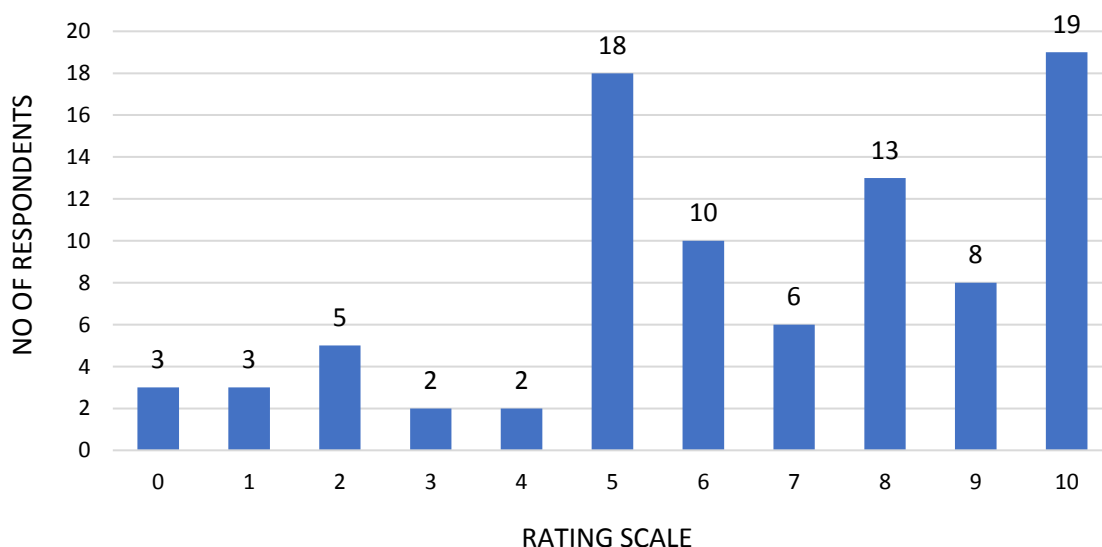
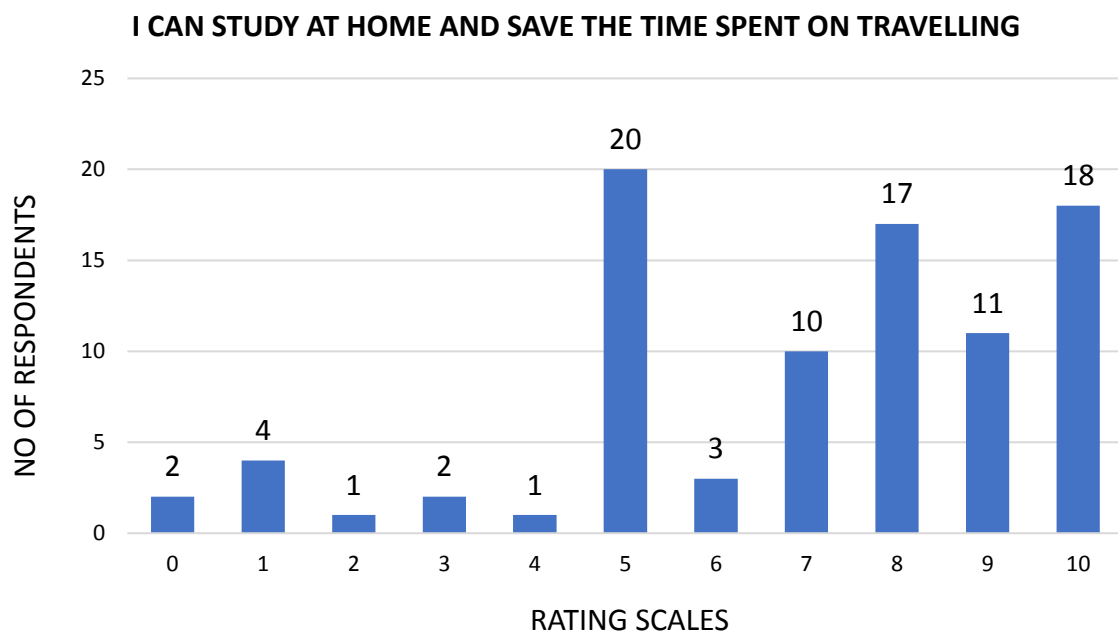


Figure 12: Rate the statement: Figure 13: Rate the statement: I have the required resources to sit at home & attend lectures

A large number of respondents i.e. 19 respondents strongly agreed that they would like to attend lectures within the comforts of their home with the required resources. Additionally, the benefit that video conferencing offers is that it supports recording and playback. Hence, there is no chance of missing out on lectures. At the same time, 18 expressed neutral sentiments to this statement while merely 3 respondents strongly disagreed. They say that despite having the required resources, they would not like to attend lectures at home.



*Figure 14: Rate the statement: I can study at home and save the time spent on travelling*

A clear majority of respondents, i.e. 20 respondents expressed neutral sentiments to this statement, while, 18 respondents had strongly agreed that they can save the time spent on travelling and utilise that time in doing other activities. 17 respondents agreed to the statement. In contrast, a minimum of 2 respondents strongly disagreed to the statement.

Students that live in remote rural areas or even suburbs might be unable to utilise opportunities when their educational institutions are far away from their homes. In this case, it's a good idea to adopt video conferencing for virtual classrooms. This would help students to cut down on their travelling expenditures and increase their concentration and hence, sharpen their minds and cultivate a good attitude towards study. They can attain more knowledge and even experience a virtual school trip without stepping outside. At the same time, going to educational institutions helps us to socialise, creates an atmosphere to study, etc.

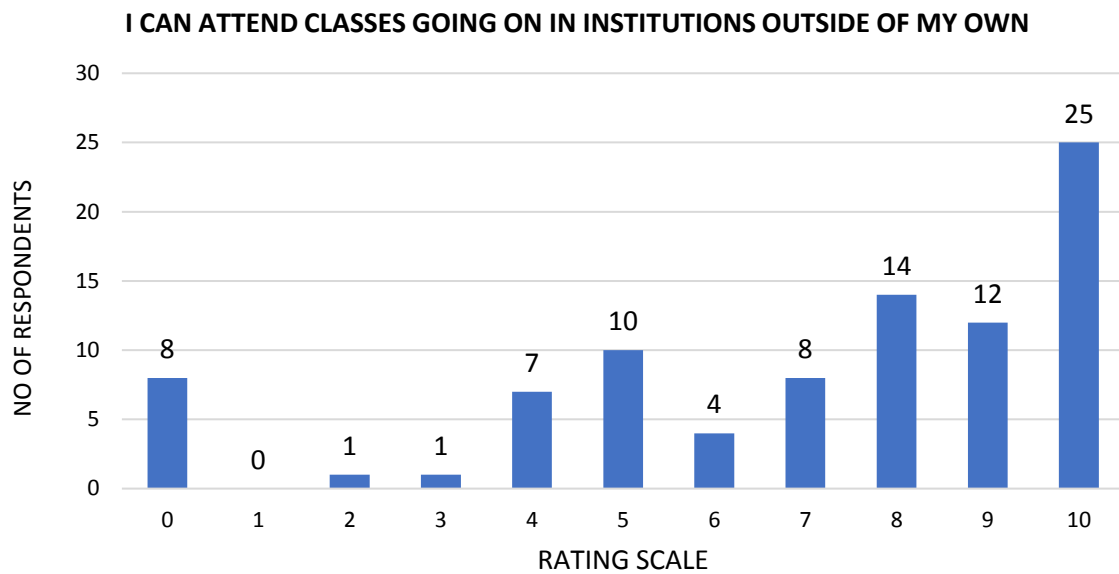


Figure 15: Rate the statement: I can attend classes going on in institutions outside of my own

25 respondents strongly agree that they can attend live classes going on in other institutions outside their college. Video conferencing connects different educational institutions for collaboration. It helps see and hear other attendees dispersed in different places, chat with them, and share useful information through whiteboard, screen and more with each other, as if all are in the same room. It gives an opportunity to educational institutions to invite experts to impart knowledge to teachers and give classes for students. Teachers and students can chat and interact with the experts. On the other hand, experts always have a busy schedule, and this kind of conferencing helps them to save a lot of time and money for travel. 10 respondents expressed neutral sentiments to this statement and 8 respondents strongly disagreed.

## WORK-RELATED PURPOSE

Will these platforms continue to be used post-lockdown for work-related purposes?

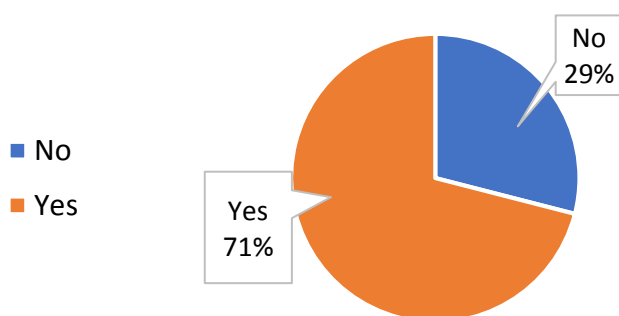


Figure 16: Will these platforms continue to be used post-lockdown for work-related purposes?

A huge majority of 71.4% of respondents have said that they feel the current surge in the usage of video conferencing platforms would be sustained post-lockdown. It would help companies cut their cost on maintenance of offices and other related costs, it is an easy method of conducting meetings,

delegating work, sharing presentations or documents, less time consuming, reduced travel time and less expensive.

Working from home, research has found, can boost employee productivity, improve work/life balance and foster better mental health (not to mention reduction in pollution with fewer commuters). But now that work-from-home is an established possibility for millions of workers, odds are that when the COVID-19 crisis is over, more employers will shift their workspaces to virtual ones.

“Once businesses and individuals invest in the fixed costs of remote work,” the MIT researchers wrote in their recent report, “they may decide to stay with the new methods. “Partly, that will be because staffers demand it after having worked remotely successfully. Partly, it’ll be to reduce the cost of the employer’s real estate.

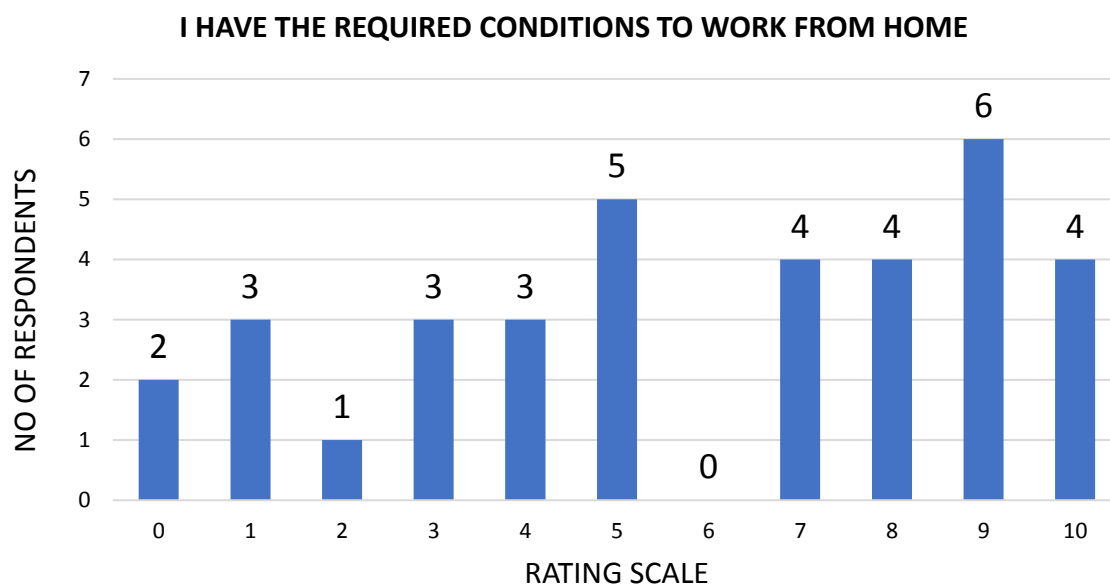
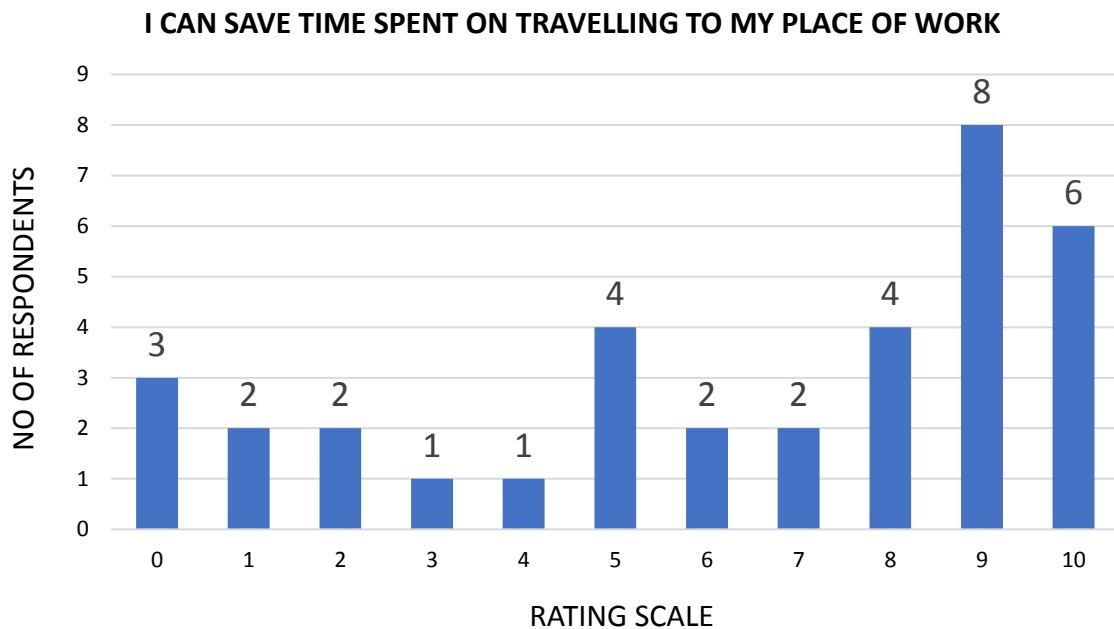


Figure 17: Rate the statement: I have the required conditions to work from home

On a scale of 1 to 10, majority of the respondents have agreed that they would like to work from home given the required conditions like electronic gadgets, stable Wi-Fi, working space, continuous supply of electricity, etc. 5 respondents had expressed neutral sentiments to this statement. Merely 2 respondents had disagreed with the same.

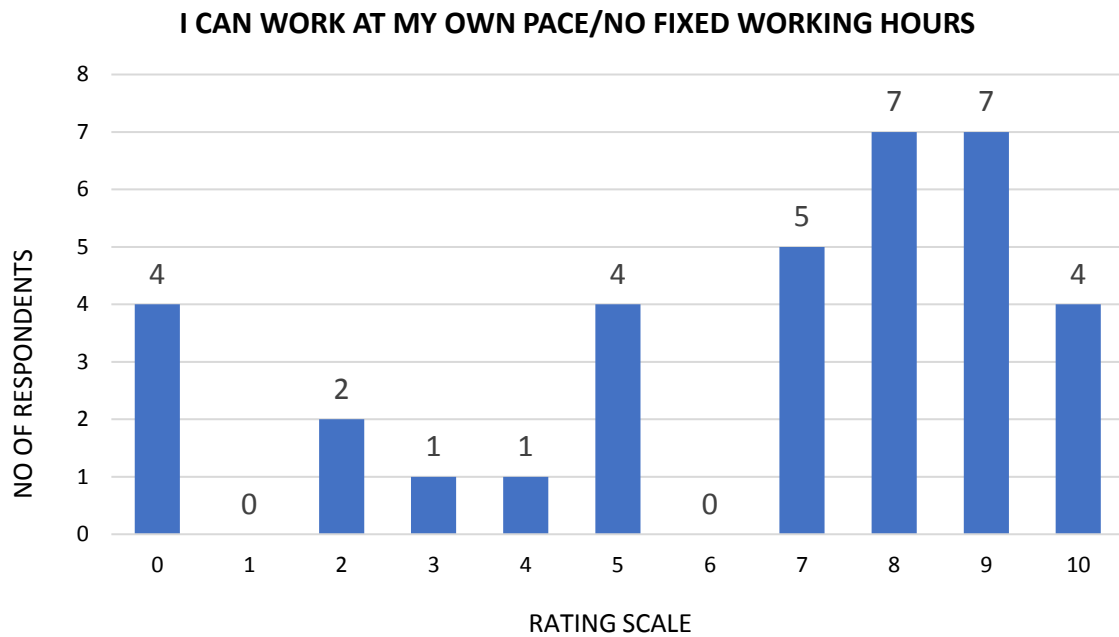
“But, let’s not forget that working from home is “a sign of privilege,” said Schulte, author of the bestseller *Overwhelmed: Work, Love & Play When No One Has the Time*. It’s mostly something that knowledge workers with computer-based jobs are being told to do. AARP analysts have noted that many older workers also live in places with inefficient broadband access, making remote work difficult or impossible. Also worth remembering:

some people who are now working remotely aren't doing so because their employer likes it, but because it's become a necessity to get jobs done", said Richard Eisenberg in his article 'Is Working From Home the Future of Work?' which was featured in Forbes.



*Figure 18: Rate the statement: I can save time spent on travelling to my place of work*

6 respondents strongly agreed that they can save time spent on travelling since their workplace is far away from their place of residence. 8 respondents have agreed to the same. Because travelling decreases productivity, contributes to pollution, causes stress, etc. Work from home helps to balance work and personal life. 4 respondents expressed neutral sentiments to this statement while 3 respondents strongly disagreed.



*Figure 19: Rate the statement: I can work at my own pace/no fixed working hours*

A clear majority of respondents agreed that working from home enables them to not be bound by fixed working hours and that they can work at their own pace. This would help reduce stress and increase productivity. It would enable companies to have a competitive edge, widen their pool of talent and staff retention.

Gill Stewart, Managing Director of Capability Jane, a recruitment agency that deals with high-calibre, part-time, professionals said, “I believe we will genuinely stop talking about it; flexible working will just be normal. There will be a home-working space in every home. Co-working, which is already on the rise, will be the norm as big firms as well as small make use of these scalable spaces—and this will not only benefit employees but also allow organizations to keep a cap on real-estate expenditure. The environmental impact will also be front of mind as travel by cars and planes will be frowned upon”. 4 respondents had expressed neutral sentiments to this statement. In contrast, 4 respondents had strongly disagreed.

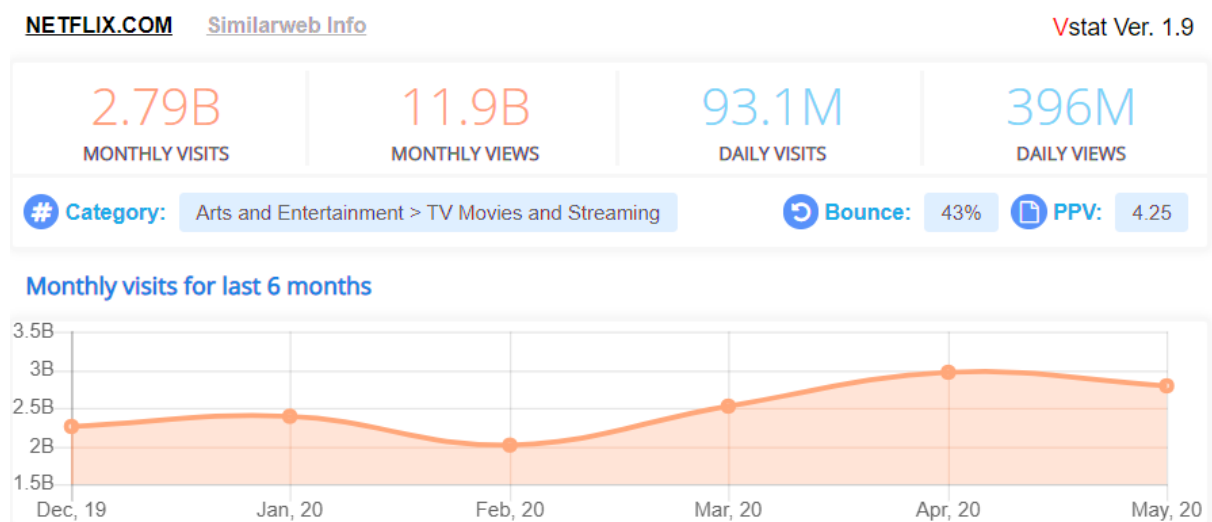
## SECTION II

Using secondary data, we analysed the impact of the lockdown on the number of users on OTT and Videoconferencing Platforms.

### ➤ OTT PLATFORMS

The graphs shown here have been obtained by **tracking visitors on the websites of different OTT platforms**. VStat extension/plugin for Google Chrome has been used for the same. The data shows the website traffic of these platforms for the past 6 months.

**NOTE:** The website traffic displayed by the graphs obtained using VStat shows worldwide traffic and is not restricted to the Indian Sub-continent.



Supporting the responses received by conducting surveys, it can be clearly seen that among all the popular OTT platforms, Netflix is the platform with the maximum viewership. It currently has an average of 2.79 billion monthly visits and the average daily visits amount to 93.1 million. A sudden spike of 50% in visitors can be seen from the month of February to April 2020, with an increase of 1 billion visits within two months; the growth a consequence of the lockdown imposed due to the spread of COVID-19 and the subsequent closure of cinema halls in malls, standalone theatres, etc. Hence, it can be seen that people have shifted to Netflix in search of entertainment to a great extent. However, with the gradual easing of lockdown in the month of May in several parts of the world, there has been a slight fall in the visits which is currently at 2.8 billion.



[PRIMEVIDEO.COM](https://www.primevideo.com)

[Similarweb Info](#)

Vstat Ver. 1.9

207M

MONTHLY VISITS

572M

MONTHLY VIEWS

6.92M

DAILY VISITS

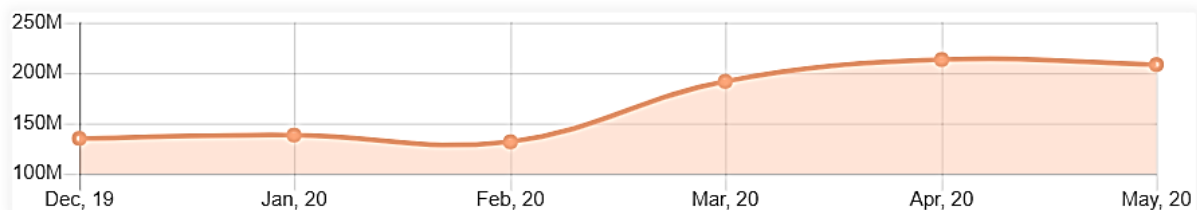
19M

DAILY VIEWS

# Category: Arts and Entertainment > TV Movies and Streaming

Bounce: 46% PPV: 2.75

Monthly visits for last 6 months



The second most popular platform is Amazon Prime Video, with an approximate 207 million monthly visits and 6.92 million daily visits as of May 2020. The responses obtained from the survey have also pointed out that Amazon Prime Video is the second most preferred OTT platform by users. Prime Video can be seen following a similar trend when compared to Netflix, i.e. a sudden boom from February to April 2020. Subsequently, a gradual decline can be observed in the month of May 2020.

[HOTSTAR.COM](https://www.hotstar.com)

[Similarweb Info](#)

Vstat Ver. 1.9

68.6M

MONTHLY VISITS

257M

MONTHLY VIEWS

2.28M

DAILY VISITS

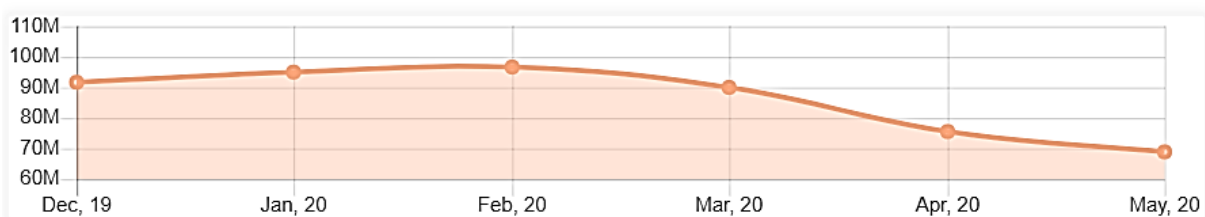
8.58M

DAILY VIEWS

# Category: Arts and Entertainment > TV Movies and Streaming

Bounce: 34% PPV: 3.75

Monthly visits for last 6 months



On the other hand, even though Hotstar seems to be a household name, there has been a considerable decline in the monthly visits in spite of the lockdown imposed. The monthly visits have sharply declined from approx. 98 million to 70 million visits in May 2020. This can be due to the comparatively better offerings by competitors like Netflix and Amazon Prime Video.

[MXPLAYER.IN](#) [Similarweb Info](#)

Vstat Ver. 1.9

42.1M

MONTHLY VISITS

126M

MONTHLY VIEWS

1.4M

DAILY VISITS

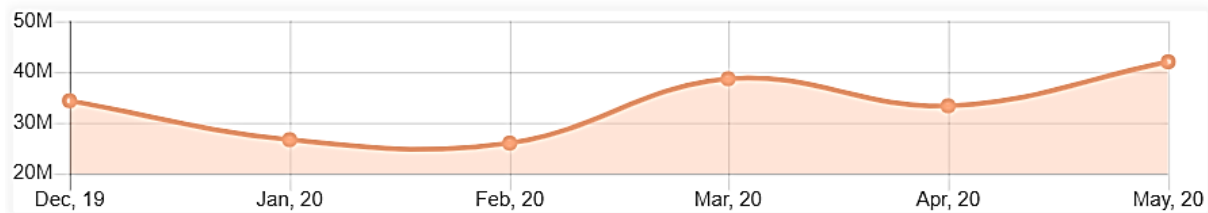
4.22M

DAILY VIEWS

# Category: Arts and Entertainment > TV Movies and Streaming

Bounce: 56% PPV: 3

Monthly visits for last 6 months



MX Player has gained immense popularity in the past few months and is a new player in the industry which launched its OTT platform on 20<sup>th</sup> February 2019. MX Player has been one of the most popular video players for mobile devices since the past few years. The company has utilised this user base to popularise its content streaming platform. MX Player currently stands with 42.1 million monthly visits.

[JIOCINEMA.COM](#) [Similarweb Info](#)

Vstat Ver. 1.9

2.82M

MONTHLY VISITS

8.72M

MONTHLY VIEWS

94.2K

DAILY VISITS

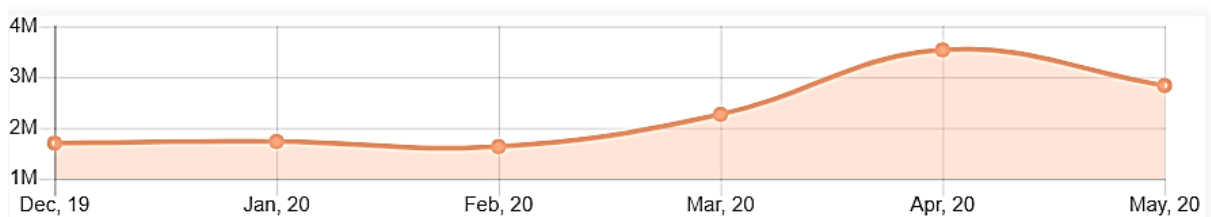
290K

DAILY VIEWS

# Category: Arts and Entertainment > TV Movies and Streaming

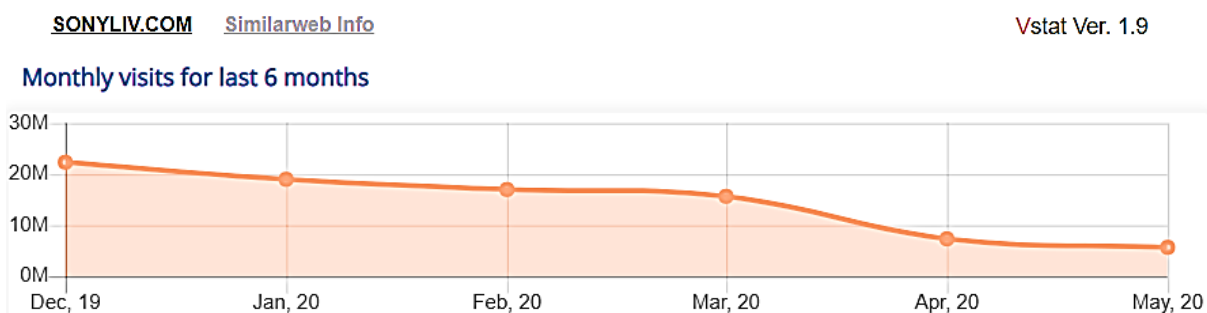
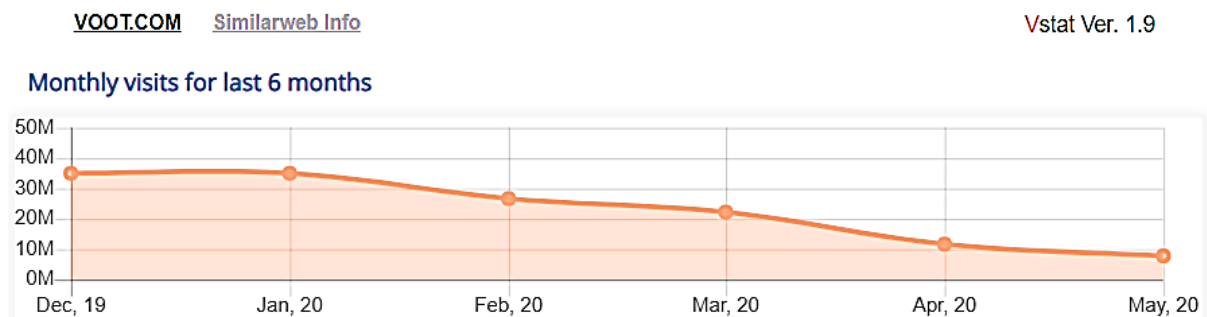
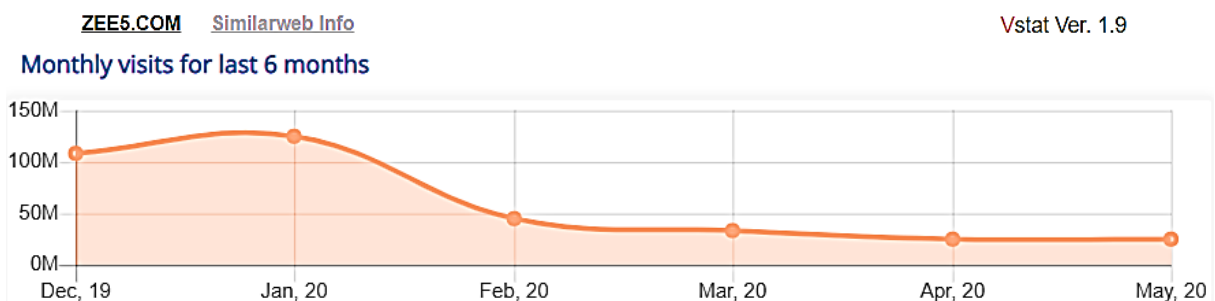
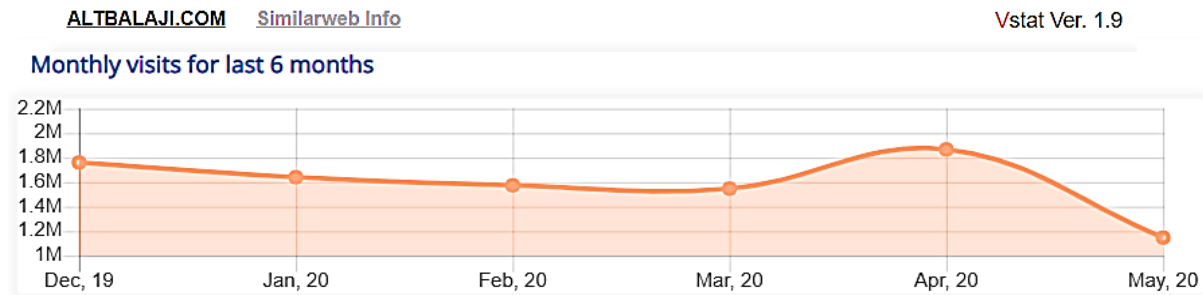
Bounce: 33% PPV: 3.08

Monthly visits for last 6 months



Jio Cinema has also witnessed an increase from 1.7 million monthly visits in the month of February 2020, peaked around 3.5 million visits in April 2020 and is currently at 2.82 million visits.

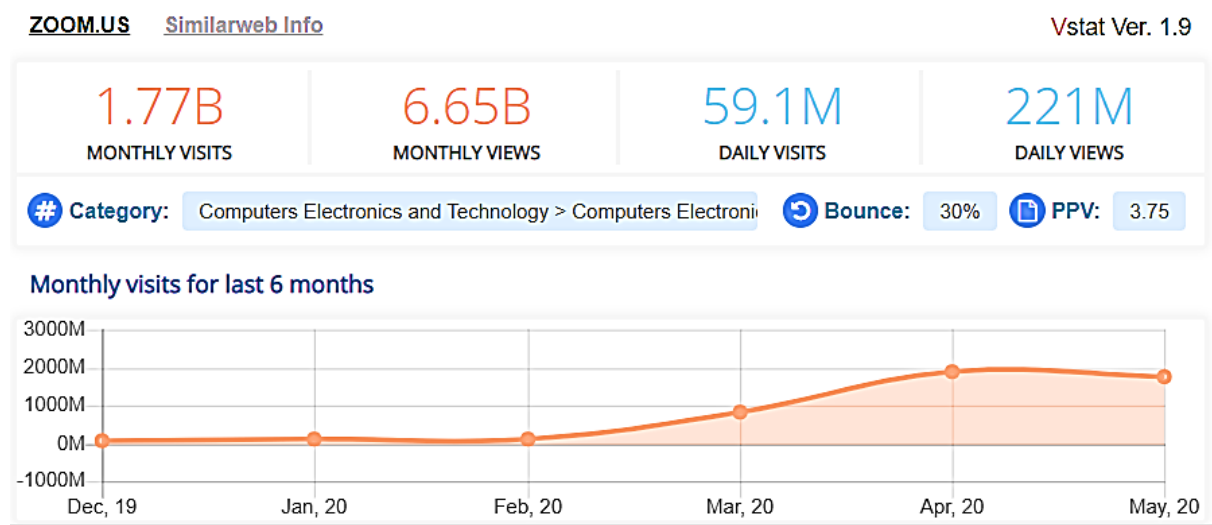
The remaining platforms including ALTBalaji, Sony Liv, Voot and ZEE 5 have shown a considerable decline in the past few months. This decrease can be mainly attributed to the capture of market share by stronger competitors like Netflix, Amazon Prime Video and MX player.



## ➤ VIDEO CONFERENCING PLATFORM

The graphs shown here have been obtained by tracking visitors on the website of Zoom. VStat extension/plugin for Google Chrome has been used for the same. The data shows the website traffic for the past 6 months.

**NOTE: The website traffic displayed by the graphs obtained using VStat shows worldwide traffic and is not restricted to the Indian Sub-continent.**



Zoom Video Communications Inc., the most preferred platform by the respondents has witnessed an exponential growth in the past 6 months. According to the website traffic data, the platform has seen a 2000% growth within 2 months, from merely 100 million monthly visits in the month of February 2020 to a staggering 2 billion monthly visits in April 2020. As of May 15, 2020, Zoom's market capitalization had skyrocketed to \$48.8 billion, despite posting revenues of only \$623 million over the past year. For comparison, Zoom is now worth more than the world's 7 biggest airlines, a sector that has been adversely affected by the pandemic, according to a recent study.

## SECTION III

### Z-TEST: TESTING HYPOTHESES

We performed an upper-tailed two-sample z-test where we compared the mean usage of (a) OTT Platforms prior lockdown and post-lockdown, (b) Video Conferencing Platforms prior lockdown and post-lockdown.

We used an upper-tailed test because we wanted to examine whether the mean usage (no. of hours) on (1) OTT Platforms and (2) Video Conferencing Platforms would be higher post-lockdown compared to prior lockdown.

**NULL HYPOTHESIS:**

$$H_0 : \mu_2 \leq \mu_1$$

$$(\text{or}) H_0 : \mu_2 - \mu_1 \leq 0$$

**ALTERNATIVE HYPOTHESIS:**

$$H_a : \mu_2 > \mu_1$$

$$(\text{or}) H_a : \mu_2 - \mu_1 > 0$$

*where  $\mu_2$  &  $\mu_1$  are the mean usage post-lockdown and prior lockdown respectively*

**CONFIDENCE INTERVAL = 95%**

**SIGNIFICANCE LEVEL ( $\alpha$ ) = 0.05**

**CRITICAL VALUE FOR ONE TAILED Z-TEST = 1.644853627**

(1) Testing mean usage on OTT Platforms prior lockdown and post-lockdown

Mean Usage (no of hours) prior lockdown is taken as  $\mu_1$

and post-lockdown is taken as  $\mu_2$

	Prior Lockdown	Post-Lockdown
<b>Mean</b>	$\bar{x}_1 = 2.26612903$	$\bar{x}_2 = 2.65322581$
<b>Variance</b>	$\sigma_1^2 = 2.87981904$	$\sigma_2^2 = 4.47226593$
<b>No of observations</b>	$n_1 = 124$	$n_2 = 124$

$$Z = \frac{\bar{x}_2 - \bar{x}_1}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} = \frac{2.65322581 - 2.26612903}{\sqrt{\frac{2.87981904}{124} + \frac{4.47226593}{124}}} = 1.589736465$$

As  $z < \text{Critical Value}$ ,  $z$  is in the 95% critical value accepted range:  $[-\infty : 1.6449]$ .  **$H_0$  is not rejected.**

Also,  $p\text{-value} = 0.0582202 > \alpha$ ,  **$H_0$  is not rejected.** (The larger the  $p$ -value the more it supports  $H_0$ .)

Therefore, the mean usage prior lockdown is considered to be less than or equal to the mean usage post-lockdown. In other words, the mean usage post-lockdown is bigger than that post-lockdown but the difference between the two means is NOT big enough to be statistically significant.

**THEREFORE  $H_0 : \mu_2 \leq \mu_1$  IS NOT REJECTED.**

**HENCE, THE CURRENT SURGE IN USAGE OF OTT PLATFORMS WILL NOT BE SUSTAINED POST-LOCKDOWN, i.e., IT WILL NOT INCREASE.**

(2) Testing mean usage on Video Conferencing Platforms prior lockdown and post-lockdown

Mean Usage (no of hours) prior lockdown is taken as  $\mu_1$

and post-lockdown is taken as  $\mu_2$

**a. Education purposes:**

	Prior Lockdown	Post-Lockdown
Mean	$\bar{x}_3 = 0.764044944$	$\bar{x}_4 = 1.921348315$
Variance	$\sigma_3^2 = 1.841419816$	$\sigma_4^2 = 3.527834525$
No of observations	$n_3 = 89$	$n_4 = 89$

$$Z = \frac{\bar{x}_4 - \bar{x}_3}{\sqrt{\frac{\sigma_3^2}{n_3} + \frac{\sigma_4^2}{n_4}}} = \frac{1.921348315 - 0.764044944}{\sqrt{\frac{1.841419816}{89} + \frac{3.527834525}{89}}} = 4.71178219$$

As  $z > \text{Critical Value}$ ,  $Z$  is not in the 95% critical value accepted range:  $[-\infty : 1.6449]$  AND since  $p\text{-value} = 0.0000349953 < \alpha$ , we can infer that the mean usage post-lockdown is considered to be greater than the mean usage prior lockdown. In other words, **the difference between the two means is big enough to be statistically significant.**

**HENCE, THE USAGE OF VIDEOCONFERENCING PLATFORMS FOR EDUCATIONAL PURPOSES WILL INCREASE POST-LOCKDOWN.**

**b. Work-related purpose:**

	Prior Lockdown	Post-Lockdown
<b>Mean</b>	$\bar{x}_5 = 1.34285714$	$\bar{x}_6 = 2.2$
<b>Variance</b>	$\sigma_5^2 = 2.23193277$	$\sigma_6^2 = 2.63529412$
<b>No of observations</b>	$n_5 = 35$	$n_6 = 35$

$$Z = \frac{\bar{x}_6 - \bar{x}_5}{\sqrt{\frac{\sigma_5^2}{n_5} + \frac{\sigma_6^2}{n_6}}} = \frac{2.2 - 1.34285714}{\sqrt{\frac{2.23193277}{35} + \frac{2.63529412}{35}}} = 2.29851$$

As  $z > \text{Critical Value}$ , Z is not in the 95% critical value accepted range:  $[-\infty : 1.6449]$   
 AND since  $p\text{-value} = 0.010766384 < \alpha$ , we can infer that the mean usage post-lockdown is considered to be greater than the mean usage prior lockdown. In other words, **the difference between the two means is big enough to be statistically significant.**

**HENCE, THE USAGE OF VIDEOCONFERENCING PLATFORMS FOR WORK-RELATED PURPOSES WILL INCREASE POST-LOCKDOWN.**

Now, testing hypothesis for mean usage on video conferencing platforms

	Prior Lockdown	Post-Lockdown
<b>Mean</b>	$\bar{x}_7 = 1.04838710$	$\bar{x}_8 = 1.71774194$
<b>Variance</b>	$\sigma_7^2 = 1.24967217$	$\sigma_8^2 = 2.07415421$
<b>No of observations</b>	$n_7 = 124$	$n_8 = 124$

Formula: 
$$Z = \frac{\bar{x}_8 - \bar{x}_7}{\sqrt{\frac{\sigma_7^2}{n_7} + \frac{\sigma_8^2}{n_8}}} = \frac{1.71774194 - 1.04838710}{\sqrt{\frac{1.24967217}{124} + \frac{2.07415421}{124}}} = 4.088350154$$

As  $z > \text{Critical Value}$ , Z is not in the 95% critical value accepted range:  $[-\infty : 1.6449]$ .

**H<sub>0</sub> is rejected**

Also, since  $p\text{-value} = 0.00331776 < \alpha$ , **H<sub>0</sub> is rejected.** (The smaller the p-value the more it supports H<sub>a</sub>)

**THEREFORE, SUPPORTED BY THE TESTS IN (a) AND (b),**

**$H_0$  IS REJECTED AND  $H_a$  IS ACCEPTED**

Therefore, the mean usage post-lockdown is considered to be greater than the mean usage prior lockdown. In other words, **the difference between the two means is big enough to be statistically significant.**

**HENCE, THE USAGE OF VIDEOCONFERENCING PLATFORMS WILL INCREASE POST-LOCKDOWN.**



## 5. CASE STUDY: DIGITAL INEQUALITY

With the lockdown in place and schools, colleges and other educational institutions shut, we have witnessed a push for a shift to virtual learning to address the disruption in schooling due to the pandemic. This overwhelming shift, driven by necessity, from physical to electronic mode, has highlighted the digital divide in the country.

According to the 2017-18 National Sample Survey report on education, a mere 24% of Indian households had an internet facility - 15% of rural households and 42% of urban households. Added to this is the fact that in majority of households, both rural and urban, there is a lack of constant supply of electricity. Access to electricity is crucial for digital education, both for powering devices as well as for connecting to the internet.

Even in houses that may have some form of internet connection, they may not always be broadband. The majority of households have a mobile data connection, which is not sufficient for digital education. Even in households with broadband, limited bandwidth may mean that not everyone may be able to work on the internet at the same time. A single computer or mobile device in a household brings the same problem of not everyone being able to work at the same time. Only about a third of the students will have access to any online content. Even in homes with a smartphone, usually owned by the father, it may not be available to the children for learning.<sup>7</sup>

The inequality goes beyond a class divide and becomes a geographical divide as well. In states like Delhi, Kerala, Himachal Pradesh, Haryana, Punjab and Uttarakhand, more than 40% of households have access to internet. The proportion is less than 20% for Odisha, Andhra Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh and West Bengal. The inequality is also a gender divide. As per the Internet and Mobile Association of India Report, in 2019, while 67% of men had access to internet, this figure was only at 33% for women. The disparity is more prominent in rural India, where the figures are 72% and 28% for men and women, respectively.<sup>8</sup>

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<sup>7</sup> <https://www.aljazeera.com/news/2020/04/coronavirus-lockdown-classes-reveal-india-digital-divide-200428075114733.html>

<sup>8</sup> <https://scroll.in/article/960939/indian-education-cant-go-online-only-8-of-homes-with-school-children-have-computer-with-net-link>

Other than promoting online content on applications and portals such as Diksha and SWAYAM, the Ministry of Human Resource Development has said it is working on dissemination of lessons through radio and television. State education departments are creating their own models based on local needs.

Kerala is one such state that has taken up an initiative as a solution to this problem. Kerala Chief Minister Pinarayi Vijayan inaugurated 'First Bell', an initiative to impart televised lessons through a TV channel on 1<sup>st</sup> June 2020. The classes are streamed on a free, public-run television channel available on cable networks, Direct-To-Home services and over the internet, under the project First Bell, in what could be a sign of how schooling will recast itself in India. First Bell, which is being run on a trial basis, expects to reach out to those who lack the IT infrastructure to access virtual classes. Students were thus able to start their new academic year in June.

KITE (Kerala Infrastructure and Technology for Education) Vickers Educational Channel has been telecasting classes for Classes 1 to 12. The sessions are held from 8.30am to 5.30pm from Monday to Friday, in accordance with a widely publicized schedule. The duration of the classes varies from 30 minutes to two hours. The channel is available on almost all cable and direct-to-home television networks. There are even re-telecasts of each class and the sessions on the channel are also available on their website and its social media pages for downloading. In households without a TV, citizens, the local panchayats and MLA's gifted TVs and smartphones.

## 6. RESULTS:

### OTT PLATFORMS

In the survey, when asked if the current surge in viewership on OTT platforms would sustain post lockdown, almost equal number of people opted for Yes and No. But the hypothesis testing shows that with a value of  $z = 1.5897$ , the null hypothesis was not rejected. This states that the current surge in the OTT platforms will not sustain post lockdown. The reasons mentioned by the respondents who were of the opinion that the surge will not sustain include - people will get busier after the lockdown as schools and offices resume and physical presence will be required and hence, less time for recreation will be available. This can also be attributed to the fact that the lockdown was mainly imposed during the period of summer vacation in India. Once the situation gets back to normal, with the offices and schools reopening, people will not have much time to spend on such platforms. Also, the luxury of watching movies in cinema halls with hi-tech sound systems and luxurious seats coupled with the availability of some of the most desired food outlets, cannot be replaced by OTT platforms. Also, as of now, the new movie releases do not simultaneously release on such platforms, it takes a month or two at least for such content to be available there. A major challenge here is the fact that in case movies get released on OTT platforms simultaneously, then piracy will become a major issue, since people get the content directly on their devices as compared to watching it in a theatre wherein the content is safely protected by the owners.

However, the market for OTT industry is still going to flourish the way it did prior to lockdown, just not at the pace at which it increased during the lockdown. With improving internet speeds and increasing reach in rural areas, the OTT industry has a bright future with tremendous potential and still has a big market to capture. An overwhelming majority (96%) of the respondents think that extended free/trial periods and reduced pricing for subscriptions will lead to an increase in viewership on such platforms. Habit formation could result in a new normal and accelerated growth in consumption and monetisation. Such offerings would lead to a tremendous increase in the usage of such platforms. The comfort provided by watching content at home, the fact that it is economical as compared to theatres, accessibility, etc. would be the driving factors for the expansion of OTT platforms in the future.

## **VIDEO CONFERENCING**

The z-test failed to reject the null hypothesis for the usage of video conferencing platforms for both education and work-related purposes; thus proving that the surge in the utilisation of video conferencing platforms will sustain post lockdown.

53.6% of respondents pointed out that the surge in the usage of video conferencing platforms would sustain post-lockdown because of habit formation, easiness to organise, beneficial to companies to reduce their cost of renting office spaces and other expenditures, few people prefer virtual meetings and it helps to save time and money. However, 46.4% of respondents suggested that the surge would continue as people prefer real interaction for better communication rather than virtual interaction, it does not provide a suitable atmosphere to study and attend meetings, low bandwidth at times leads to inability to attend meetings classes, etc.

In the case of education, 58.9% of the respondents pointed out that the current surge in the usage of video conferencing platforms for educational purposes would be sustained post-lockdown because of convenience, habit formation, efficiency, interesting way to learn and it helps in saving time and money. On the other hand, 41.1% respondents expressed that the current surge in the usage of video conferencing platforms will not sustain because virtual classrooms do not provide an atmosphere to study, they are less effective and there is possibly lesser interaction as compared to physical interaction in schools and colleges.

A huge majority of our respondents (71.4%) who are working professionals stated that the current surge in the usage of video conferencing platforms would be sustained post-lockdown. They reasoned that it would help companies cut their cost on maintenance of offices and other related costs, would be an easy method of conducting meetings, delegating work, sharing presentations or documents, less time consuming, reduced travel time and less expensive. In contrast, 28.6% of respondents have disagreed that the surge would be sustained. They have justified by stating that people would prefer to have physical meetings, inaccessibility, etc.

## 7. CONCLUSION

The impact of the lockdown has left nearly every industry affected, if not disrupted. With global supply disruptions and a global lockdown in place, the effects on the global economy is far-reaching. With a shift to work-from-home and need to continue to social distance, we can expect to remain within the confines of our homes even after the lockdown is lifted.

While there was evidence of a surge in the use of online platforms for entertainment, digital education and virtual workplaces during the lockdown, we did find that the usage for the former would return to the prior-lockdown levels, presumably because once people go back to their routines, they would have lesser time to spend on OTT streaming services, as opposed to during the lockdown. However, with the concerns of transmission of the virus in the absence of the lockdown, we arrived at the conclusion that there would be an increased need for virtual classrooms and workplaces via telephony services, evident in the responses we received; though we must be empathetic to the vast majority of people that engage in professions that cannot be performed from the safety of their homes and accordingly devise strategies for them to safely return to their work.

Furthermore, effective policy would be needed to accommodate this need, given India's growing digital inequality. In light of the ongoing discussion regarding initiation of digital education and online classes, consideration of alternatives to online classes must be given due consideration. States have already begun exploring education via conventional channels such as the radio and TV - a step in the right direction.

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