

**PROJECT REPORT**

**ON**

**ACCEPTANCE OF THE TECHNOLOGY “CLOUD  
COMPUTING” BY THE PERSONAL CONSUMER**

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## **DECLARATION**

I hereby declare that the project work entitled “ACCEPTANCE OF THE TECHNOLOGY “CLOUD COMPUTING” BY THE PERSONAL CONSUMR” is submitted to the DTU, Delhi is a record of original work done by me under the guidance of Dr. Shailender Kumar and this work is submitted in the partial fulfilment of the requirements for the award of the degree of Master of Business Administration.

Place: Delhi

Name: Akshansh Gupta

Date: 11-May-2018

## **CERTIFICATE**

This is to certify that the project work titled **ACCEPTANCE OF THE TECHNOLOGY “CLOUD COMPUTING” BY THE PERSONAL CONSUMER** is the original work completed by Akshansh Gupta under me in partial fulfilment for the award of Post Graduate Degree of Master of Business Administration Course.

(Dr. Shailender Kumar)

## **ACKNOWLEDGEMENT**

Before I begin with the project report, I would like to extend my sincere & heartfelt obligation towards all the people who have helped me in this endeavour. Without their active guidance, help, cooperation & encouragement, I would not have not completed this project.

I am ineffably indebted to **Dr. Shailender Kumar** for continuous guidance and encouragement to accomplish this assignment.

I am extremely thankful and pay my gratitude to all my friends/colleagues for their valuable guidance and support on completion of this project.

I extend my gratitude to Delhi Technological University for giving me this opportunity.

Thank You

Akshansh Gupta

## **ABSTRACT**

In all the industries, technology is re-shaping the World with different and innovative ideas and thoughts which may help in bringing some or other advancements to the way companies are working, the advancements may increase the efficiency of the organization or help in decreasing the cost.

As the technologies are growing and giving advantages to different organizations, the fight for competitive advantage has also grown and pushed the businesses all across the globe to implement the new technology.

As per the Deloitte Study on “Technology Industry Outlook 2017”, there are three technologies which are going to change the industry entirely:

- Cloud Computing
- Machine Learning
- Digitalization of the enterprise

And to grow with the growing trends and technologies, it is very important to understand the growing technologies and this project report is based on the study of the “Cloud Computing” at the personal consumer level.

In my previous semester project report, I took you through the journey of few of the organizations data, understanding their pain areas and the advancements which this technology has provided, and also analysed a secondary research survey by RightScale and we concluded few of the below inferences at the organization level:

- With the increasing time, the organizations are adopting the cloud computing.
- The organizations are moving to cloud for some advantages or the other, and reaping benefits out of the same. The major benefit of the cloud adoption is faster access to infrastructure followed by the scalability.
- The challenges faced by the organization are decreasing with the time but still security and the resources/expertise remains a major concern for the organizations.
- As the technology is still emerging, an IT company providing Cloud Services has a competitive advantage over the others when all the other organizations are providing the traditional services.

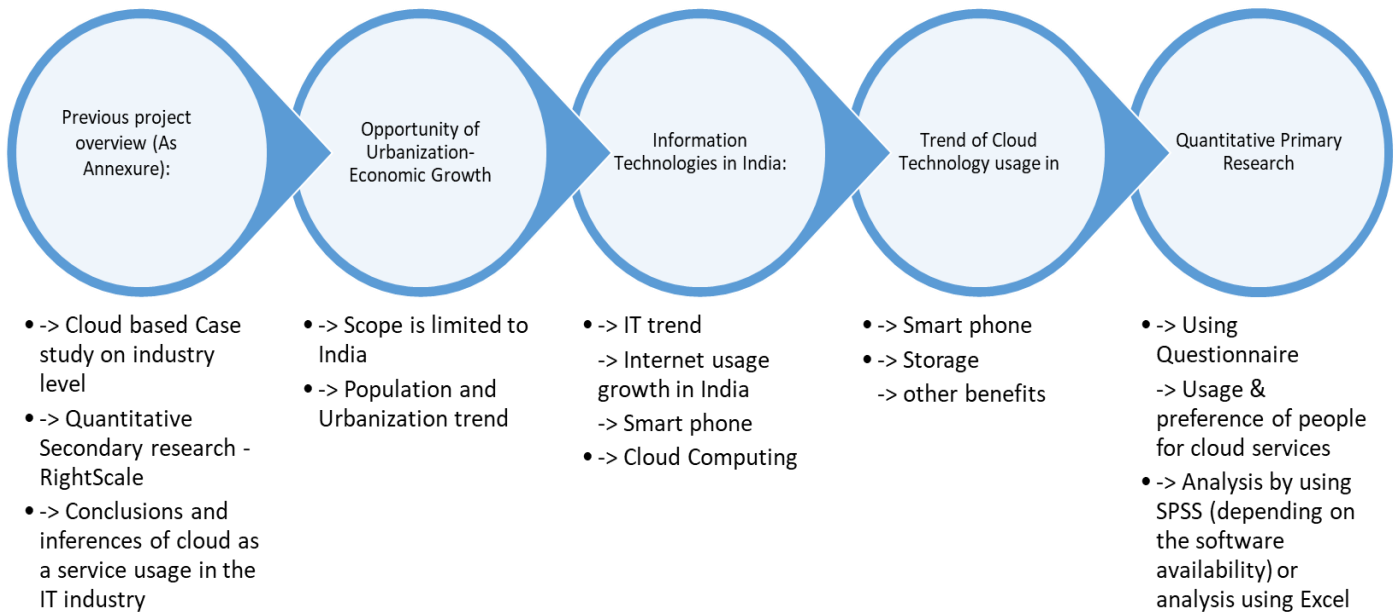
Now, the next question arises are “Are the emerging technologies only benefiting the Organizations and not to the general public using the technologies at different level? Can these technologies resolve any of the problems of the personal consumer and help them? What benefits can the consumer get from this emerging technology?”

So, to continue the focus on the “Cloud Technology”, as the technology is spreading across the globe and the organizations are reaping benefits I am going to focus on the personal consumer concerns and benefits in this report. We will be studying that how and how much the people are interacting with the technologies these days.

This report will be based upon the quantitative primary research to get the inferences for the questions above and at the end we can conclude the overall benefits of the Cloud Technology and its drawbacks.

## PROJECT APPROACH

Before we go into the details of this project report, let us understand the approach which is followed



Flowchart 1

As in this project report, we are talking about the cloud technology intervention in the personal consumer life, while dealing with day – today activities so we will be studying the growth of population, the urbanization rate and also the basic introduction of technology for the better understanding of the project.

Now, the question is if we are talking about the technology intervention in the consumer life then why we are talking about the population growth and the urbanization. I have few basic reasons behind this study as well and those are listed below;

- If there is an increasing trend in the population, then there is high probability of increasing trend in the technology usage as well over the years.
- Also, we are already aware that the technology these days is getting internet driven and our rural areas still lacks in the path of network and connectivity, which means with the increasing urbanization we can see the increasing intervention of the technology.



- In this report, we will also take a look on the demographics (age) of Indian Population and validate it by our primary research, if this factor can contribute in the technology intervention or not.

Hence, it is important to study all the factors which can contribute in the coming years for increasing the intervention of technology in the user's life.

## Overview of the India Population and its urbanization

As it is said, India is always on the move and the momentum is increasing with the increasing population. In the graph below, we can see that India has never shown any negative change over the year in terms of population growth.

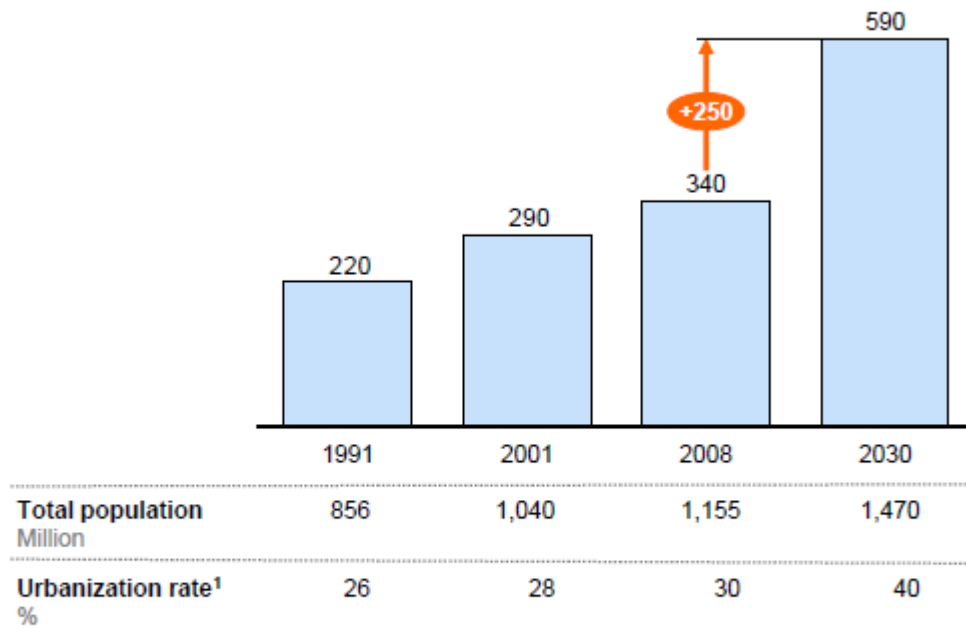


Figure 1

Also, if you review the statistics of the Indian Population over the years, you will be astonished to know that India is known as a very young country, approximately half of its population is under the age of 25 and as per as per the Bloomberg Analysis, India is likely to have the World's largest workforce by the end of 2027.

Now, let us move towards the urbanization of the India Population. As per the study by the McKinsey, the cities of India are growing and increasing the opportunities of employment. This growth and employment options is acting as a magnet and Indian urban population grew from the 290 Million (Reported in 2001 Census) to an approximate number of 340 Million in 2008 which is almost 30% of the total population. And the study also predicts that over the next 20 years, Urban India will create approx. 70% of new jobs and hence the urban population will reach a mark of 590 Million by 2030, which will be approximately 40% of India total population. The same can be seen in the below figure.

Urban population  
Million



<sup>1</sup> Defined as the ratio of urban to total population based on the census definition of urban areas; population >5,000; density >400 persons per square kilometer; 75 percent of male workers in nonagricultural sectors; and other statutory urban areas.  
SOURCE: India Urbanization Econometric Model; McKinsey Global Institute analysis

Figure 2

We can conclude with the above studies;

- The percentage of youth population is growing every year.
- Urbanization of Indian Population is showing an upward trend.

Later in the report, we will see how both the above conclusion will impact the study of cloud computing impacting the daily life of the personal consumer.

## Introduction to Information Technology Industry

Let us know, take a look on the IT Industry, its trends and also let us see which technologies which can empower India in the coming years.

IT industry in India plays a major role in our Indian economy. In 2013, IT and its different sub – sectors contributed 8% of National's GDP, and making it is as 5<sup>th</sup> largest industry of India, which is continuously growing. It expanded at a rate of 10.71% and expected to touch 167 Billion mark in FY18 from US\$ 74 billion in FY10.

It is also estimated that the industry will grow to US\$ 350 Billion by 2025.

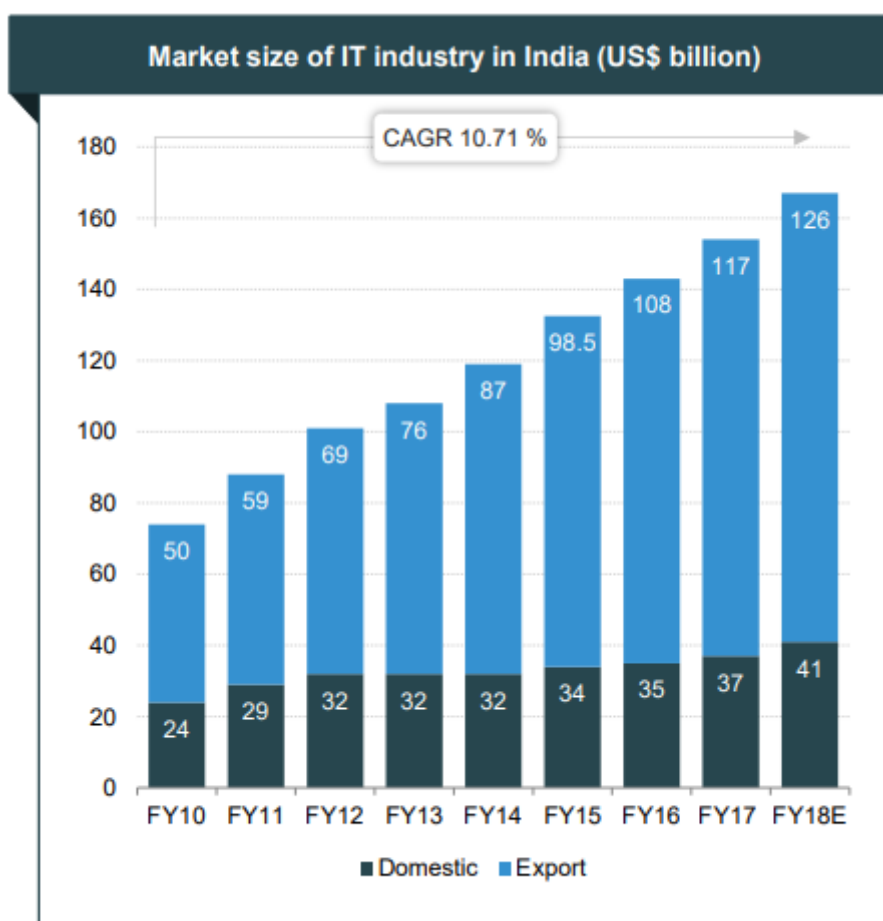


Figure 3

Few of the key pointers to look at from the industry perspective are:

- It contributed around 7.7% to the country's GDP.
- It employs approximately 3.97 million people in India.

- This industry added around 1 Lakh jobs in FY18 and expected to add more than 1Lakh in FY19 as well.

### **Emerging Technologies in India**













The above study talks about the overall IT growth in India, and it does not include any factor which will impact the personal consumer day-today life.

So, in the section below we will be taking a look on the 12 technologies which will impact India and the population of India in empowering them: A study by McKinsey “India’s technology opportunity: Transforming work, empowering people”

As we have seen in the section above that India has made its progress in bringing millions of people to urban cities but still most of the population lacks minimum acceptable standard of living and the same is also growing with the changing times.

Below is the list of 12 technologies which will empower the India Population;

## Twelve technologies can empower India in the next decade

Digitising life and work		<b>Mobile Internet</b>	Inexpensive and increasingly capable mobile devices and Internet connectivity enable services to reach individuals and enterprises anywhere
		<b>Cloud technology</b>	Computing capacity, storage, and applications delivered as a service over a network or the Internet, often at substantially lower cost
		<b>Automation of knowledge work</b>	Intelligent software for unstructured analysis, capable of language interpretation and judgment-based tasks; potential to improve decision quality
		<b>Digital payments</b>	Widely accepted and reliable electronic payment systems that can bring millions of unbanked Indians out of the cash economy
		<b>Verifiable digital identity</b>	Digital identity that can be verified using simple methods, enabling secure delivery of payments and access to government services
Smart physical systems		<b>Internet of Things</b>	Networks of low-cost sensors and actuators to manage machines and objects, using continuous data collection and analysis
		<b>Intelligent transportation and distribution</b>	Digital services, used in conjunction with the Internet of Things, to increase efficiency and safety of transportation and distribution systems
		<b>Advanced geographic information systems (GIS)</b>	Systems that combine location data with other types of data to manage resources and physical activities across geographic spaces
		<b>Next-generation genomics</b>	Fast, low-cost gene sequencing and advanced genetic technologies to improve agricultural productivity, nutrition, and health care
Rethinking energy		<b>Advanced oil and gas exploration and recovery</b>	Techniques that make extraction of unconventional oil and gas (usually from shale) economical, potentially improving India's energy security
		<b>Renewable energy</b>	Generation of electricity from renewable sources to reduce harmful climate impact and bring power to remote areas not connected to the grid
		<b>Advanced energy storage</b>	Devices or systems for energy storage and management that reduce power outages, variability in supply, and distribution losses

SOURCE: McKinsey Global Institute analysis

Figure 4

As you can see even here Cloud technology is coming up as an important and top technology which will empower India and hence will play a major role in the day – today life.

Now, let us understand the basic of cloud technology and where it will play a part in the consumer life.

## Introduction – Cloud Computing

Generally, known as “The Cloud” and it is commonly defined as a technology for storing and accessing the data and applications over the Internet.

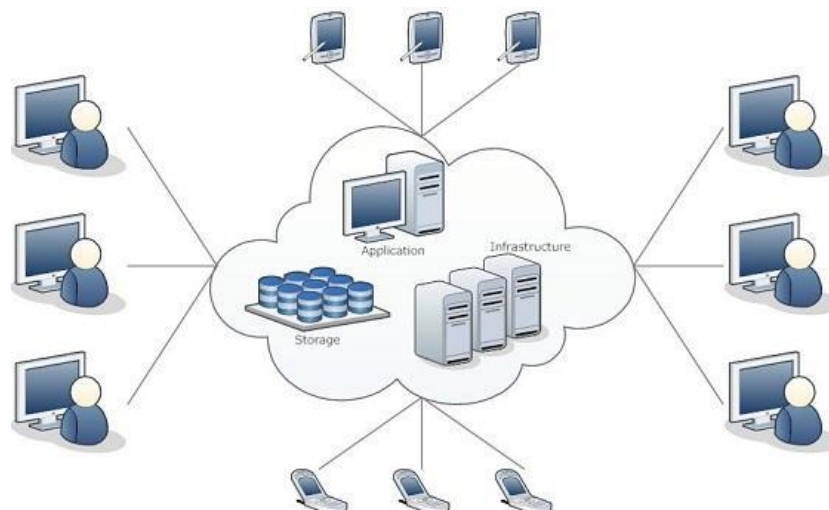


Figure 6

It is a practice of utilizing the group of servers remotely provisioned via internet to store and access applications and data, instead of saving all of them on the local server or the personal computer.

It provides easy access to the data and applications wherever you want and whenever you want without being physically linked to the server or personal computer. Also, in case of cloud technology customer pays only for the service that is being used by them similar to how the consumer is billed for the water or electricity at home.

As the definition says, usage of Cloud Technology is feasible only in the presence of Internet, and the basic question arises is “Presence of Internet in India”.

## Internet Growth in India

We are all well aware about the Government's push towards a Digital India, which is increasing the internet usage across the cities but still there is a wide gap between the internet usage in Urban and Rural India. The internet penetration in Urban India is 64.85% as compared to just 20.26% in Rural India. A report by Internet and Mobile Association of India (IAMAI), disclosed that the growth rate in rural India is picking the speed up but the overall internet users in rural India is very low.

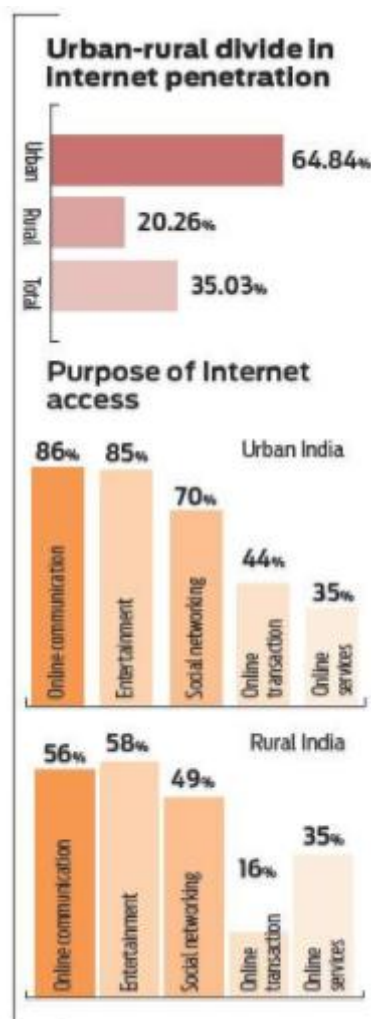


Figure 7

As we have read in the section above, that India is overall moving towards the urbanization and by 2030, **40% of India Population will move to urban cities which means 40% of the population will surely have the access of Internet and hence the cloud technology can increasing its penetration with the increasing trend of population and in turn the urbanization.**



Coming back to the basic understanding of Cloud Computing, let us also study where all the user can use this technology and how it will benefit the personal consumer.

In my previous project report of third semester, we have seen that the organizations use the Cloud Computing Technology mainly for below mentioned reasons;

- Storage of data
- Backup of the data
- Easy access
- Geographic reach
- Cost Savings

Before analysing the role of the above factors in the life on day-today basis, we have to see how the consumer is accessing the internet these days as the Cloud is dependent totally on the Internet.

Below is the diagram showcasing the stats of the internet usage Worldwide, which shows that slowly and gradually there is a decrease in the internet usage over a desktop whereas the internet usage is increasing with time over mobiles and tablets.

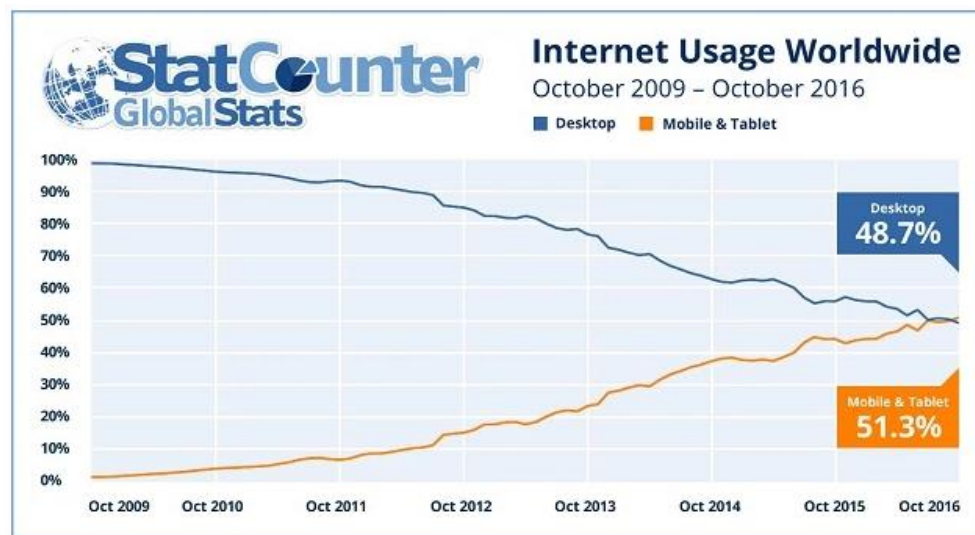


Figure 8

As the above graph is at the worldwide level, this surely includes India but as our focus is only on India then let us see India facts and figures only for India by statistica 2018.

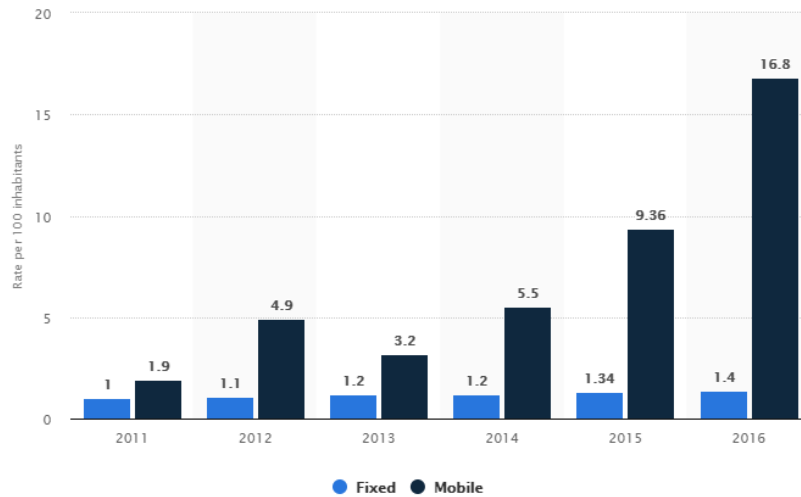


Figure 9

The stats above clearly illustrate that the reach of mobile broadband is much higher than the fixed internet subscriptions in India from 2011 to 2016 and hence the scope of usage of cloud technology is more in case of mobile phone users as compared to the desktop users.

Also, if we look at the figures mentioned below then it will strengthen my point of increasing mobile phone users in India.

As per the “India Brand Equity Foundation”, growth in mobile phone penetration and decreasing trend of data charges will increase the mobile internet users by 500 million in next 5 years. And, the data usage is projected to increase from 3.9GB (2017) to 18GB (2013) on the basis of each smartphone in India.

## Cloud Technology and its benefits in day-today life

Now, let us look at how Cloud Technology can help the personal consumer's in daily life;

**Storage:** As we have already seen above that the users are using internet over the mobile phones and storage is a big challenge in the mobile phone industry these days, this is becoming a competitor and deciding factor for the end users. But if the mobile phone companies can provide the storage space over a cloud than the sales is surely going to rise with time.

Below is the advertisement of Pixel 2, which provided unlimited storage and that became the USP of this phone as storage is one factor on which consumers compares the products.



The advertisement features a yellow background at the top with the text "Why do I have to delete my memories?". Below this is a smartphone displaying the Google Photos app, which shows a grid of various photos. To the right of the phone, the Google logo is followed by the text "Pixel 2 with unlimited storage." At the bottom of the ad, there is promotional text: "Buy Pixel 2 Now | Pre-order Pixel 2 XL by 14<sup>th</sup> Nov '17 to get free Sennheiser Bluetooth earphones worth ₹11,990." and "No-cost EMI starting at ₹3,389/month; ₹8,000 cashback on HDFC bank credit cards with EMI | HDFC BANK We understand your world". Below this, logos for retail partners Flipkart, Croma, Digital, and Vijay Sales are shown. At the very bottom, there is a small, dense list of retailer names and addresses across India.

Figure 10

**Backup of the data:** Whether it is your personal data or your professional data, taking backup is one of the most important parts of the data cycle. In case of any natural disaster or any damage to the device, it is the archived data which is required. Currently, backup is done over

different storage media like pen drives, hard disks which are also prone to disaster or viruses and can damage the data. Also, the storage capacity of these devices are not expandable, so if your requirement changes or data increases then you may have to go and buy another storage device and then manage all the devices.

In this project report, we will consider an option of storage on cloud and would like to study the response of the respondents whether this will be acceptable by the personal consumer and what options they would want to opt for.

**Easy access:** As the data will be available on cloud, then the user can access it from anywhere and from any device which can be connected through an Internet Connectivity. Let us take an example, you have clicked multiple photos by your phones and you may like to see them on your TV but you have not taken the back of the same or do not have the hard disk on which you have copied data handy with you then you will not be able to access them. Now, if the photos were copied on the cloud then you could have easily accessed them on TV with internet connection no matter where in the World you are sitting.

**Geographic reach:** As highlighted above, the easy access to the data helps us to cross all the geographic boundaries for accessing the data.

**Cost Savings:** Let us discuss this benefit with an example, consider that you want to take the backup of the your data which is of 100GB in size but while buying a hard disk you may go for an option of buying 500GB or 1TB storage considering the future requirements which may arise but the extra space which you have purchased will be lying unutilized till the time you have the data and hence the extra money spent on buying that extra space is also wasted. But in case of cloud technology, you pay for what you use so currently if you require only 100GB space you may opt for that and decrease/increase the storage capacity as per your requirement and pay only for what you use and avoid extra expenses.

The above study, benefits are all related to the mobile phones and storage but there is one more industry with which we interact on regular basis and cloud technology is changing its dynamics as well: EDUCATION INDUSTRY.

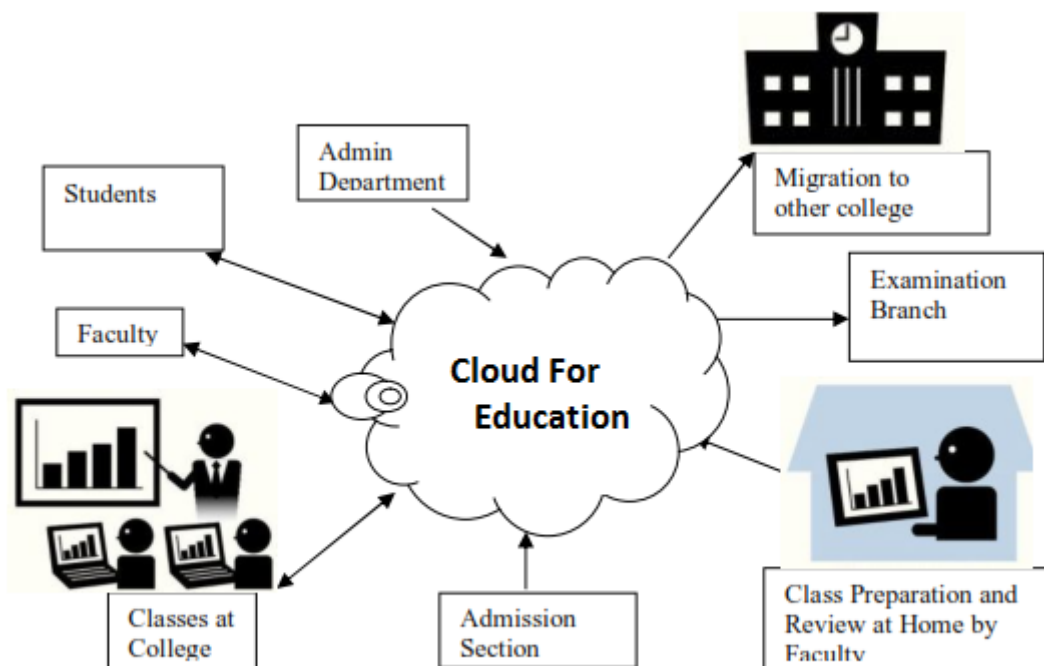
## Cloud Technology and Education Industry

Technology has touched everything we do today from shopping to social networking to travelling and now it has spread its wings to the learning as well.

Education is the foundation and back bone of country's bright future and overall development. And in today's scenario future is all about technology hence there is a major need for merging the education and technology or we can say giving education using the new technology trends. The educational institutions all over the World face different kind of challenges whenever they try and adopt any change. However, the presence of Cloud Computing has reduced this burden.

There are various benefits which can be seen with the Cloud Computing, some of them are listed below;

- Cloud Technology creates a new World of accessibility. All the data can reside on the cloud and can be accessed based on the controls provided to the user and brings more efficiency in the system. It can also reduce the chances of communications gaps in terms of information as the same copy is available for the people to view.



Services attached to Education Cloud

Figure 11

- Another important advantage, the cloud technology brings is for the Students. They do not have to carry the books to the school; all they will require is a tablet/laptop to store

all the soft copies of the books. With this technology, students and staff (school teachers and other staff) can exchange the data and information over the internet without using the storage devices and tension of the crashes.

- Another factor which can needs discussion is the Security. Everything that will be stored on the Cloud, will be accessed with a help of user id and password. And in case of any interruption or natural disaster, the data will be stored on the cloud and can be retrieved any time and from anywhere.
- Also, Cloud can provide the storage space as and when it is required and even all the data can be accessed whenever the need arises.
- The various applications/software which are required by the educational institutions can be used by using the technology of “Software as a Service” over the cloud, this will enhance the efficiency as the application will be available all the time wherever required and also will help in cost savings.
- Cloud Technology has opened the door for Virtual Learning, which is a new way of teaching.

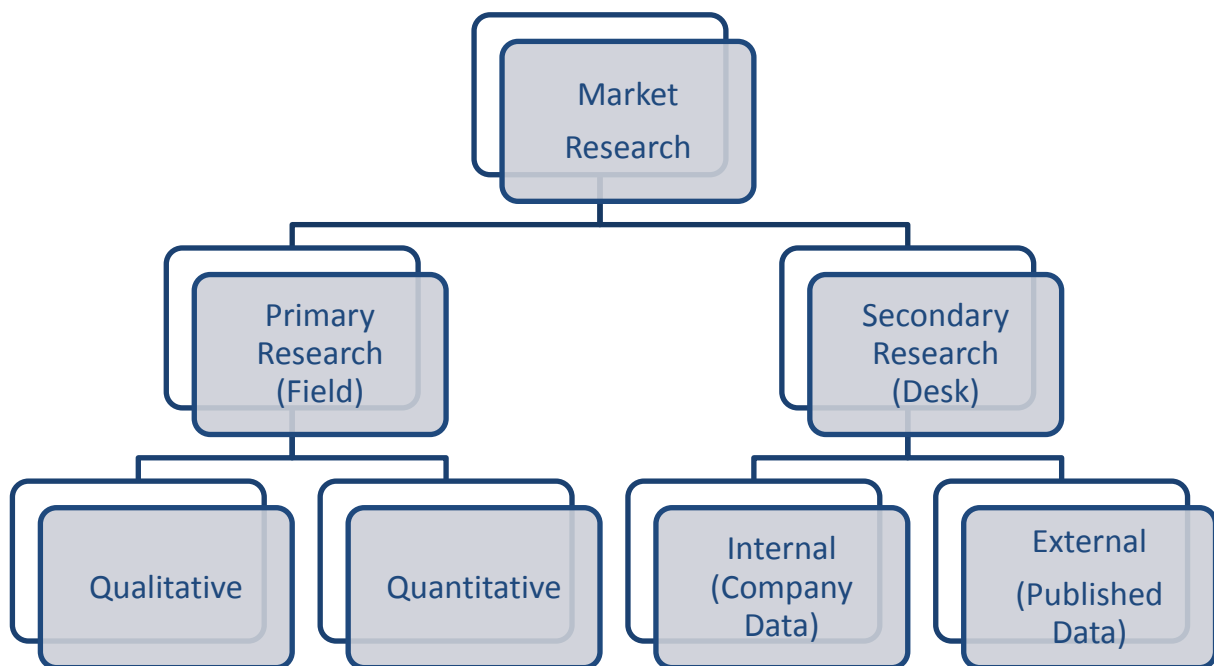
In all different sections of the project report above, we have studied different factors which can contribute to the growth of technology in our lives and also we have seen the advantages which this new technology “Cloud Computing” can bring in our lives. But, to validate the same and analyse the penetration of the technology we will be doing a primary research on this and then the inferences can be compared and concluded.

The next section of this project report will take you through the Primary Research and the analysis of the research.

## RESEARCH METHODOLOGY

Market research is any organized effort to gather information about target markets or customers. It is a very important component of business strategy. Market Research is divided into mainly 2 types:

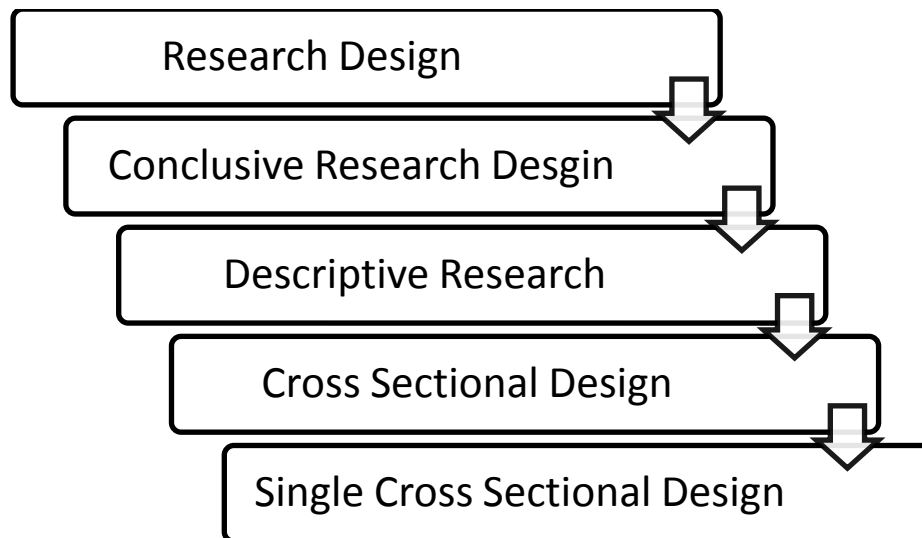
- Primary Research
- Secondary Research



Flowchart 2

For this research, we have chosen conclusive research methodology, which is the quantitative research and falls under the primary research methodology.

Some the of secondary external data is also analysed to strengthen the points and conclusions derived from the primary research.



Flowchart 3

Conclusive research design is chosen to obtain the conclusion out of the research.

The methodology used for the Research is the Questionnaire.

The longitudinal survey is not chosen because of the time constraint, though the experience can vary with the growing technology and urbanization with time but cannot be taken due to the time constraint. As the data collection happened only once with a single set of people, it is a single cross sectional design.

### **Scaling Techniques and the Questionnaire**

To discuss and conclude the survey, various scales were used.

**Nominal Scale:** The numbers serve only as labels or tags for identifying and classifying objects and do not reflect the amounts of the characteristic possessed by the object.

**Likert Scale:** In this survey, we are choosing one option and is not compared to the other in the questionnaire. Hence, we have chosen Non Comparative Scale. Though the same can be done in the analysis.

### **Questionnaire**

Attached as Annexure in this project



## **Sampling Techniques and the fieldwork**

In our survey, we have used Non Probabilistic Sampling Technique as we have used our judgement to choose the sample.

Within the Non Probability sampling, we have chosen Snowball sampling technique, as this helps us in having data of similar age group, mind-set or income level and this will help us in generating conclusions amongst the different factors.

Sample Size: The sample size taken into consideration is of around ~100 people. And the sample varies on the basis of the below factors:

- Gender
- Occupation
- Age Group

The data collection happened through the internet, questionnaire was created on google docs and was shared across to complete the survey.

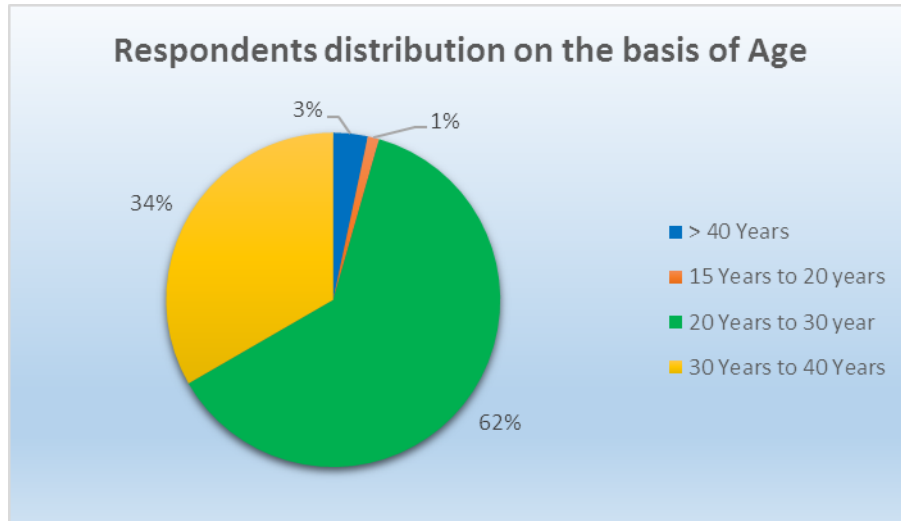
## **LIMITATIONS**

- The survey was conducted only with ~100 respondents and generalized for overall consumer experience and this may have resulted in a sampling error.
- The respondents were asked for the age group but due to unavailability of the responses in any other segment except for the age group of 30-40 and 40-50, that parameter is not considered as a base for in depth analysis but, this can be an important factor to study.
- Out of 100 responses, 10 responses were not taken into consideration because duplicity in the responses.
- This survey takes into consideration overall experience of the personal consumer for the cloud technology, but this may change if the same survey will be conducted for a specific application or specific mode of internet is chosen.
- As this a growing technology, hence doing this survey again after a period of time will definitely going to add more on the inference as this technology is increasing, internet network connectivity is improving.

## Research Analysis

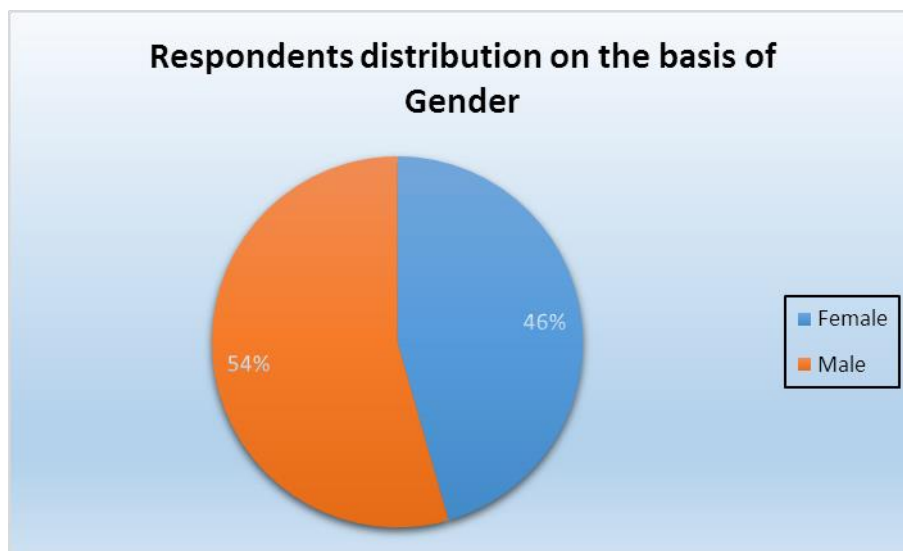
Below are the Graphs and their inferences collected from the data and we will be looking at each aspect of the questionnaire to conclude the project analysis.

Let's have a look at the gender and the age group of the respondents:



Graph 1

The survey was mostly completed by the people between the age-group of 20-30 years followed by the group of people belonging to 30-40 years of age circle.

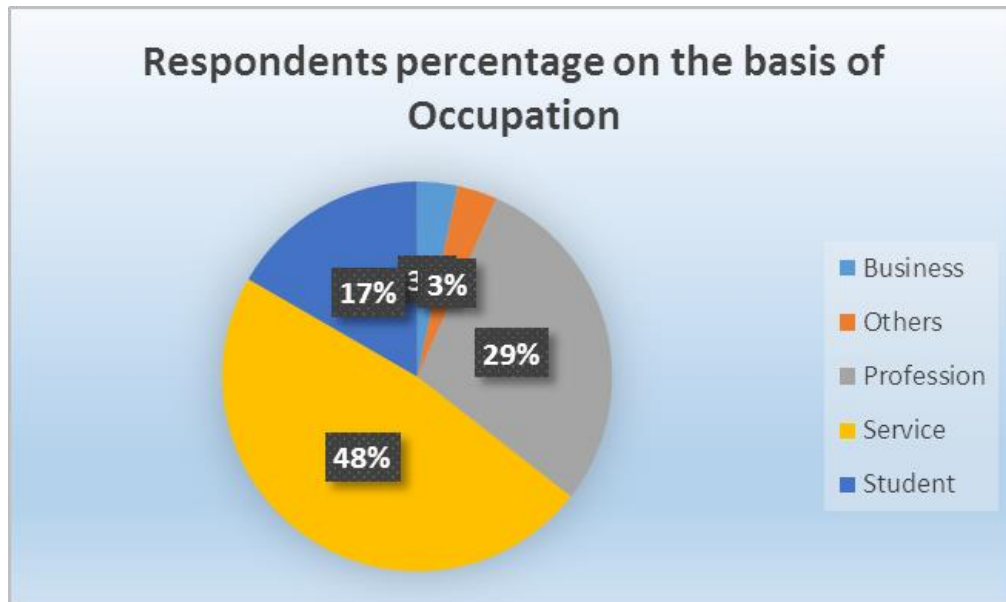


Graph 2

If I look at the gender ratio in my survey report, then it is a male dominated survey where 54% of my respondents are male and 46% of them are females.

We will be using these bases to analyse and see the cloud adoption percentage or to check if this varies basis on age or gender.

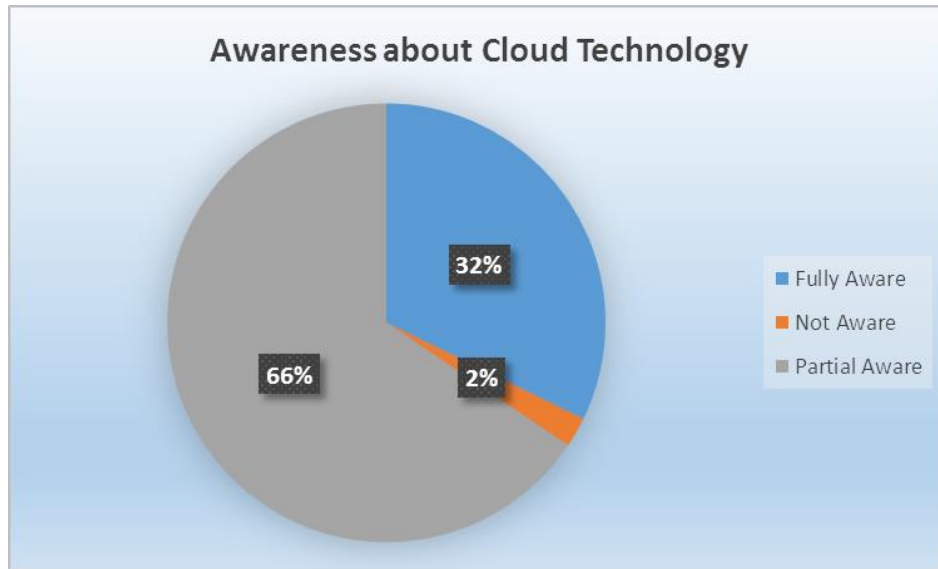
This survey was sent across to various people of different occupation and below is the distribution of the same across the respondents.



Graph 3

Most of the respondents in our survey are from Service Class Segment and hence this survey dominated by the Service Class people.

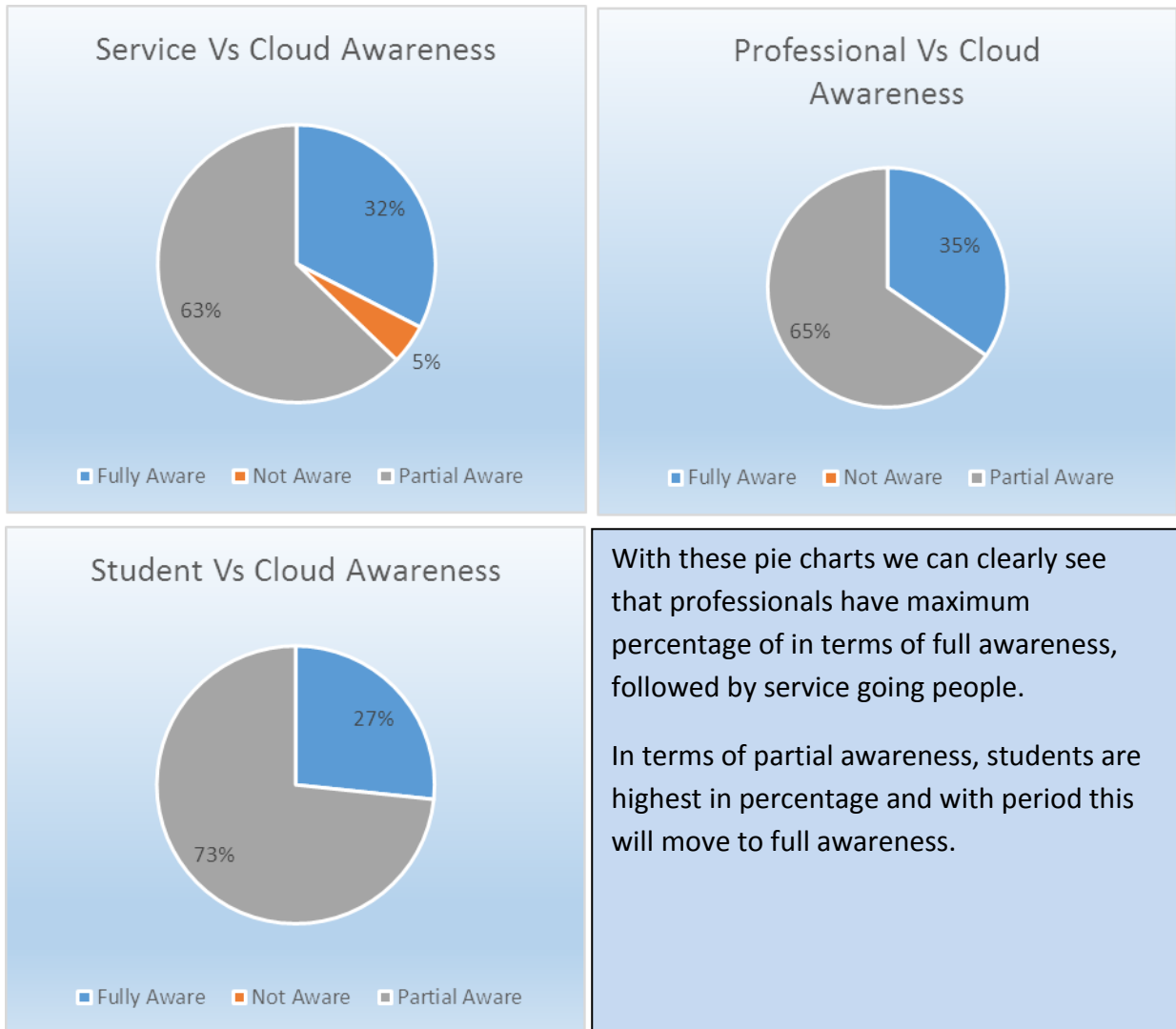
Let us see, the awareness about the cloud technology amongst all the respondents of the survey and below figure clearly highlights that most of the people are partially aware of the Cloud Technology and only 32% of the people are fully aware of the Cloud Technology.



Graph 4

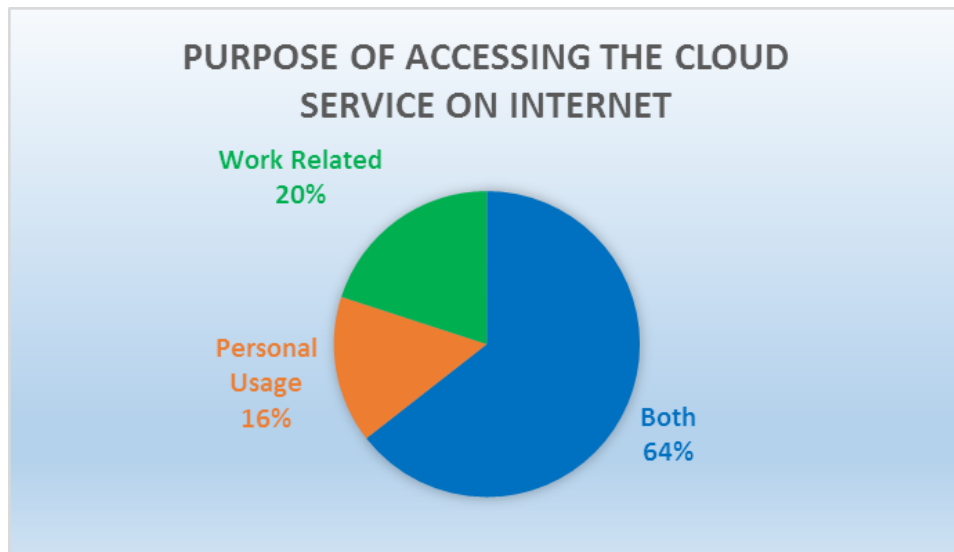
As per the above analysis we are sure that except for 2% of the people most of the people are aware about the cloud technology.

Now let us look at the status of awareness amongst the respondents based on occupation and let's see if that can be one of the deciding parameter.



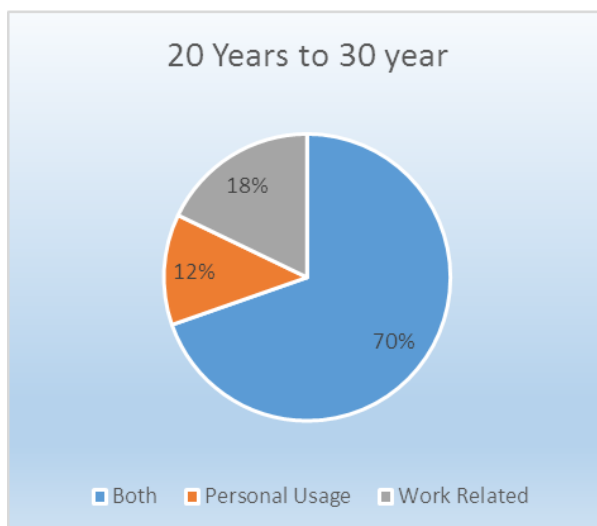
Graph 5 – 7 (Clockwise Direction)

If the people are using the Cloud technology, it is important to look at the reason why they are using and for what benefits they are reaping out of the same.

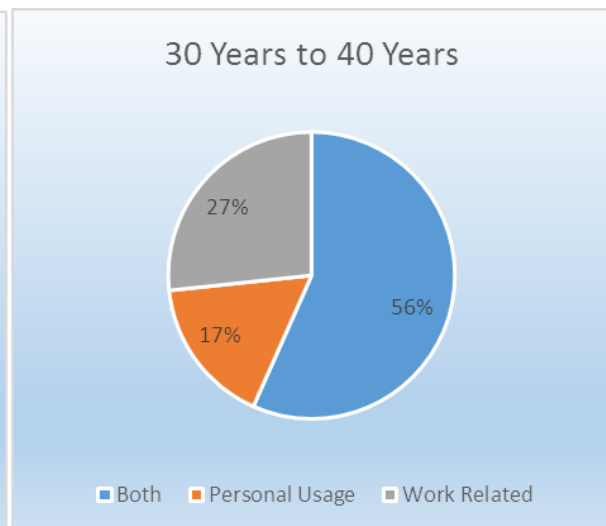


Graph 8

We can see that 64% of the people are using the Cloud technology for both professional and personal usage. And even if we take major 2 age segments of our respondents to check the purpose of usage, it is found that most of the people are using Cloud for both Personal and Work.

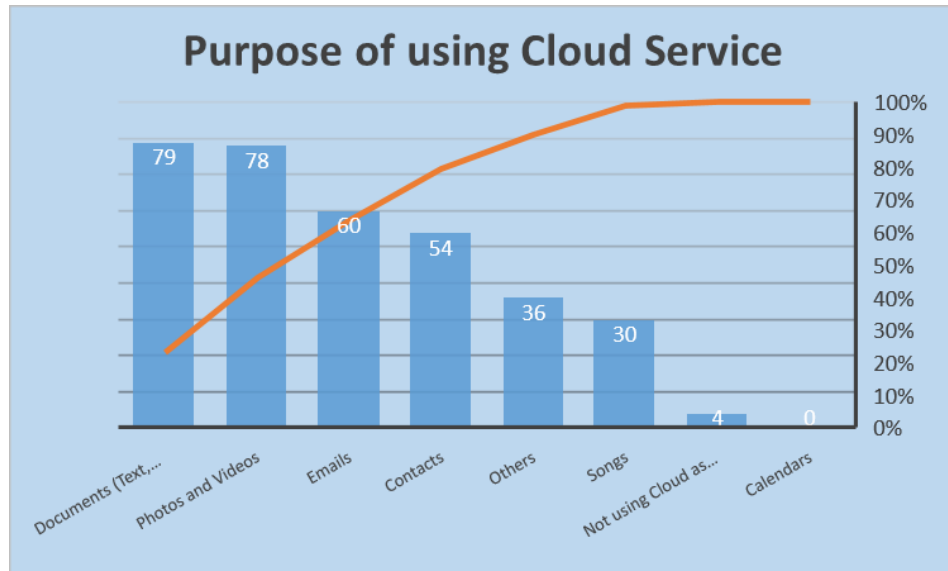


Graph 9



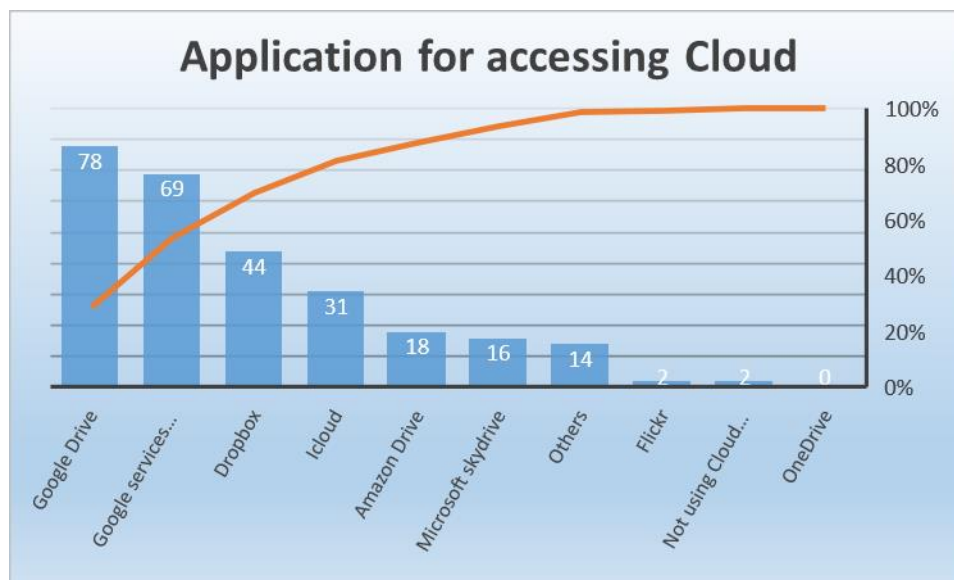
Graph 10

Post looking at the awareness trend and the usage of the cloud technology, let us look at, why the people are using the same. And from the figure below, we can check that most people are using cloud for document and photos/videos followed by emails.



Graph 10

Below graph shows the applications being used by the respondents for accessing the cloud services.



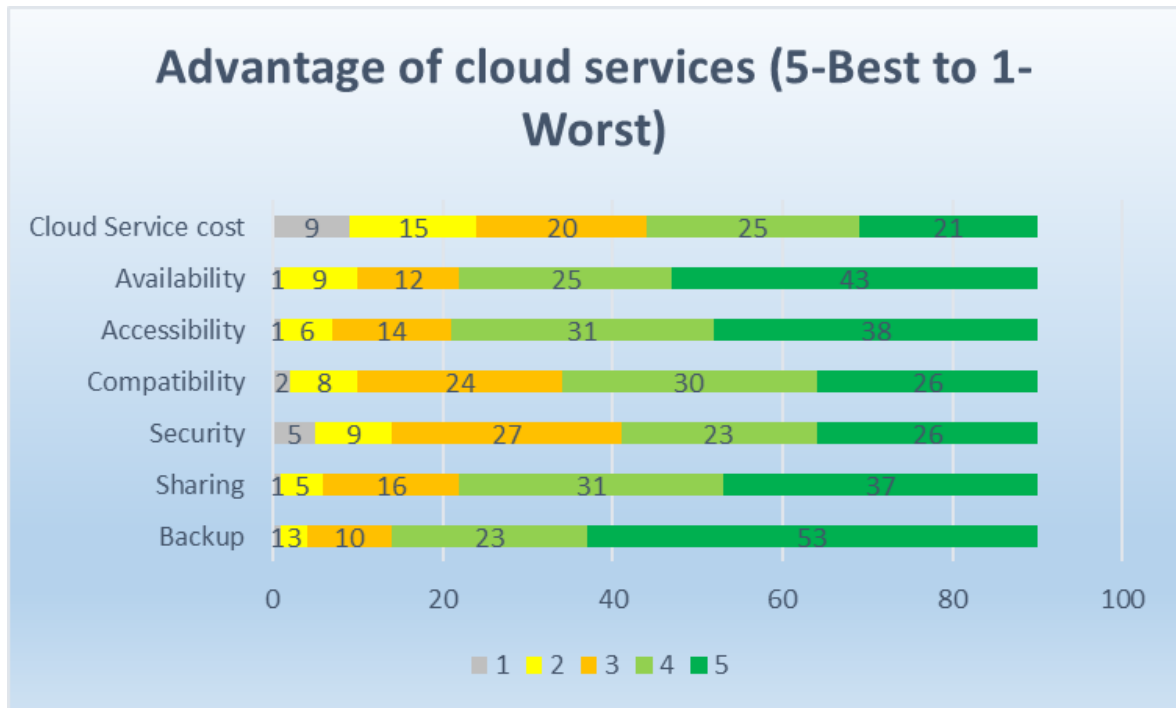
Graph 11

Google Drive taking the lead in the applications, just behind it are other google services and dropbox.



We have taken the overall review of the Cloud Services, and have seen that most people are either fully aware or partially aware of the Cloud Services, they are using different applications to access cloud and accessing cloud for different purposes.

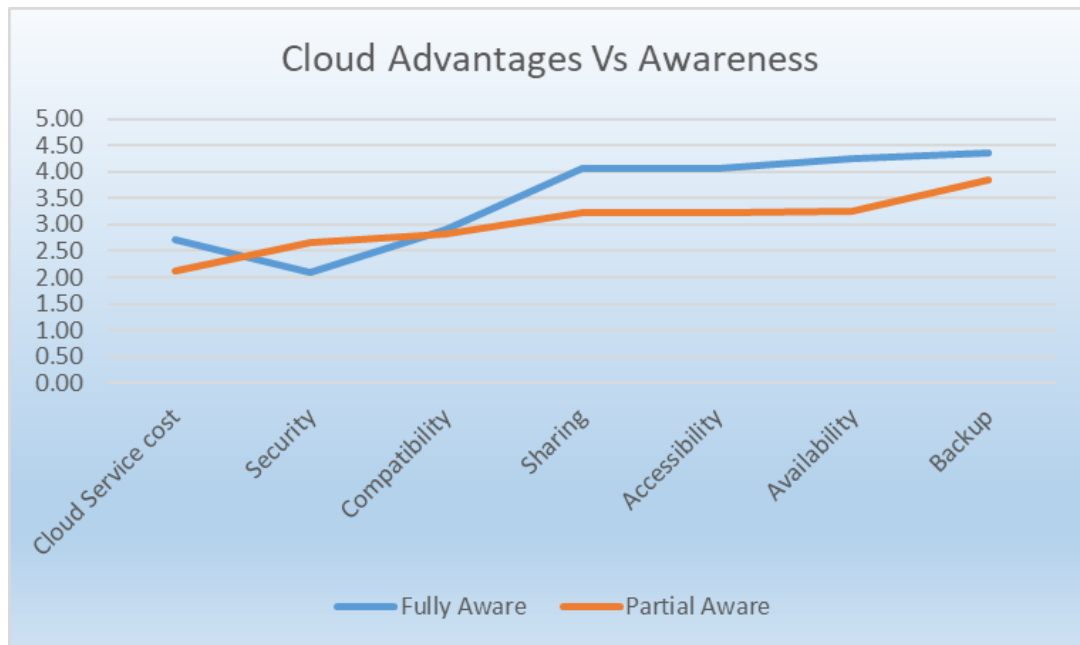
The below pie charts will talk about the benefits, respondents are looking in Cloud Services:



Graph 12

From the above graph, we can conclude that Backup is the most important factor for the people accessing the Cloud, followed by Availability and Accessibility.

The other question which needs answer is: Are the people who are fully aware and respondents who are partially aware look at the benefits in a similar way or there is some other aspect to look at these advantages. Below figure illustrates the findings;

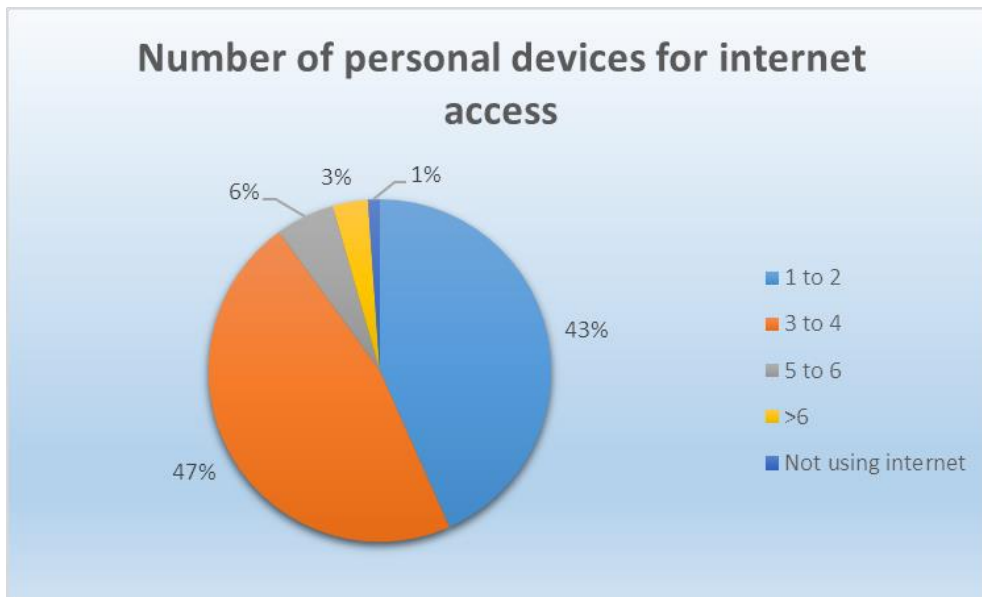


Graph 13

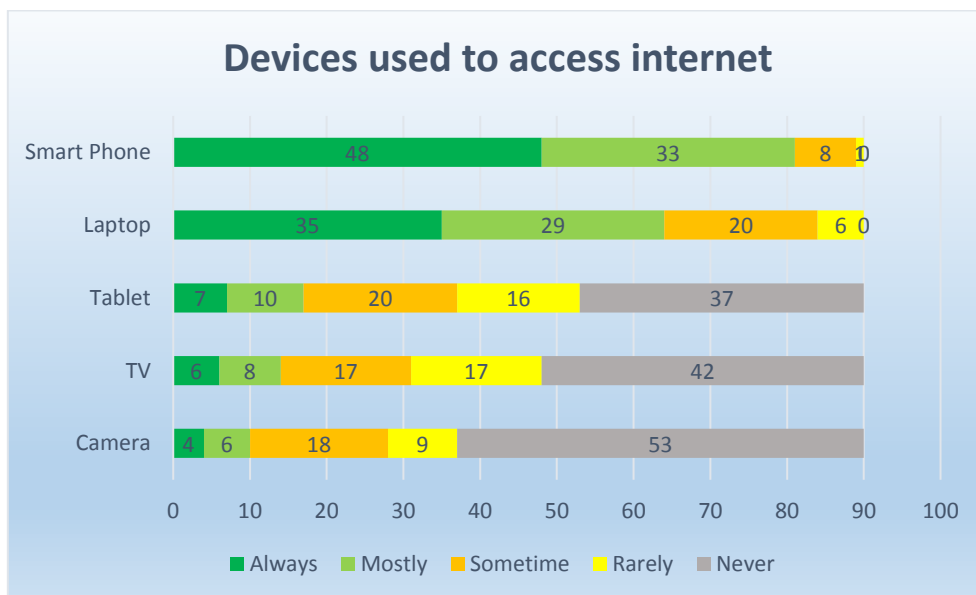
For both types of respondents, backup remains the most important factor or major benefit from the Cloud technology. But for the people who are fully aware of the technology, security becomes the biggest weakness whereas for a partially aware respondent cost is the biggest challenge.

Let's move on the other side of the project analysis, the cloud is based on internet technology, and hence it is very important to look at the factor of Internet in our study how often people are using internet and how it is impacting the cloud adoption.

Below graph shows the percentage of people with the number of devices they are using for accessing the internet and there is only 1% of respondent have mentioned that they are not using internet.



Graph 14

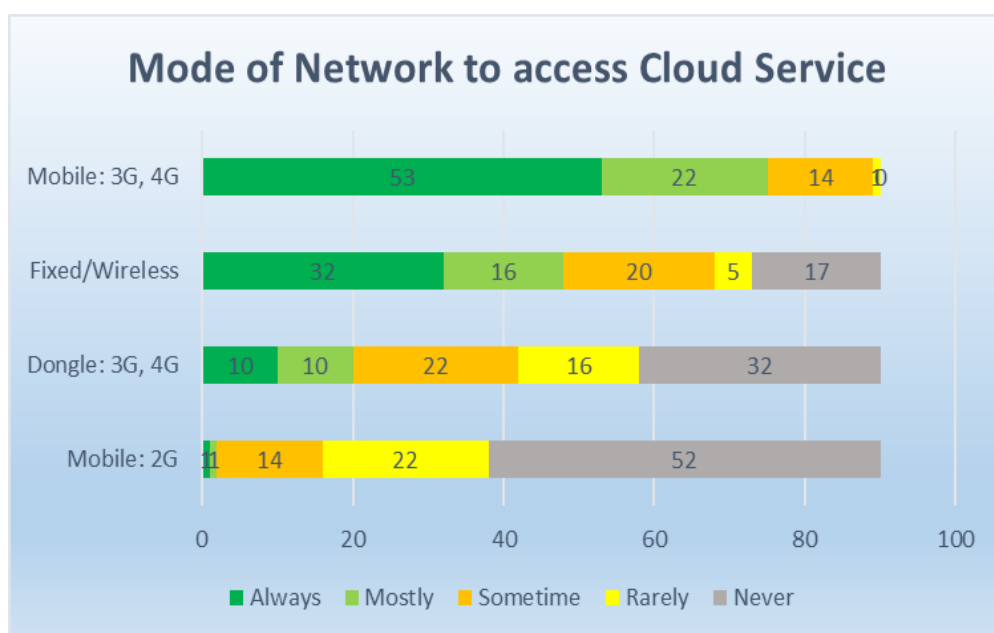


Graph 15

As per the above diagram, mobile devices are being used maximum for internet access and it will be interesting to look at the adoption percentage of the cloud services in mobile users.

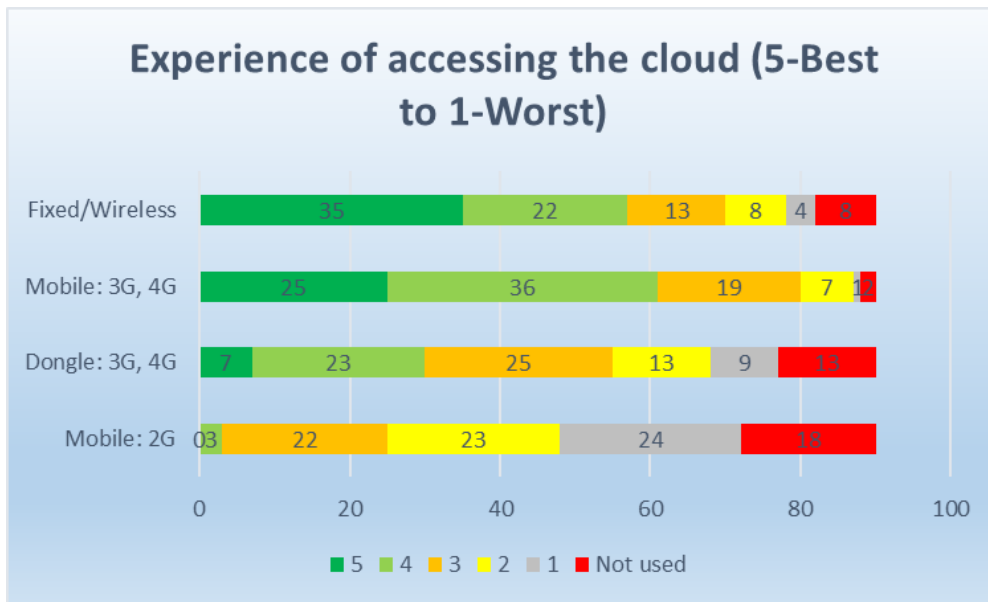
As per the study (secondary data) above, the mobile penetration of the Mobile Phone is increasing and hence there is a scope that with the increase in mobile phone users the access to internet increases and in turn increases the cloud adoption.

Is only mobile phone important for adoption Cloud, the answer is clear No. And what is most important: INTERNET and how the network is. Below two charts will show the Mode of network respondents are using and what is the experience of the same.



Graph 16

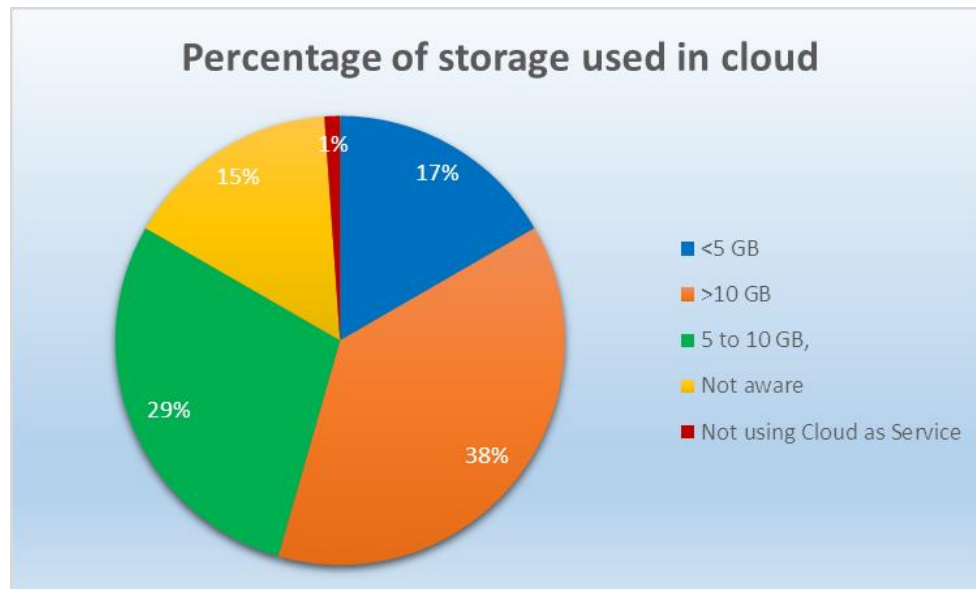
Most of the people are using 3G and 4G for the internet access, followed by Fixed/Wireless Home Network but still the experience of the respondents is best over the Home Network as per the graph below. And also people who are still on 2G have never used the Cloud Services.



Graph 17

This clearly states that if the connectivity of Mobile Network improves, we have a very big scope of more Cloud Penetration in the Market.

In the secondary research (theoretical Analysis) and in our primary research analysis, we have seen that storage and backup becomes one of the major advantage of the cloud service. So, let us look at how much storage personal consumers are using on cloud.



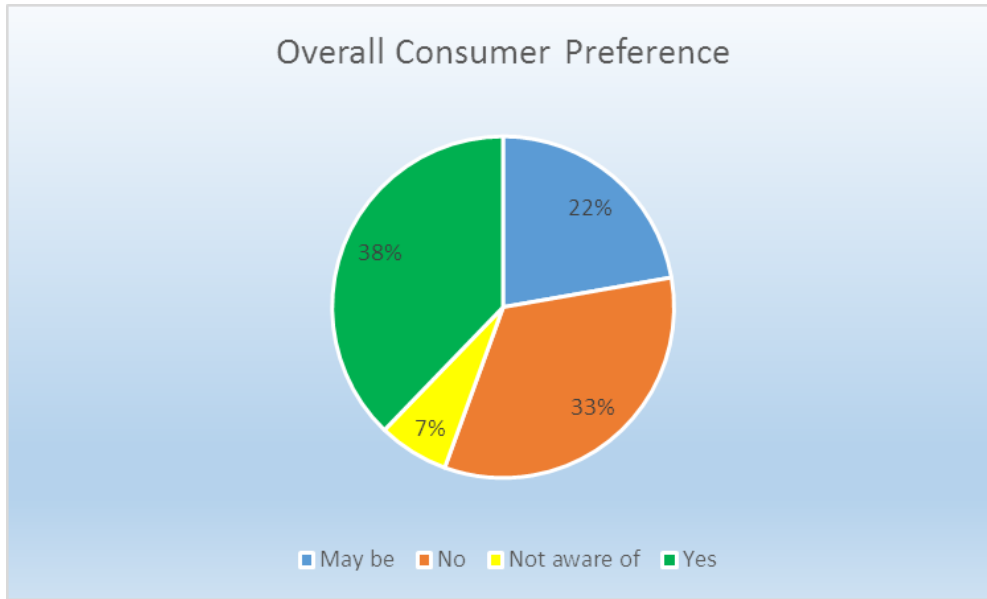
Graph 18

By looking on this data, we can conclude that maximum number of respondents are using more than 10GB of storage over the cloud followed by the 29% of people using 5 to 10GB of storage on cloud.

That means storage becomes one of the reason for accessing cloud. Now, coming on to the innovation and thinking one step ahead. Currently, people are using hard disk for storage and backup which is required to carry if you need data access and if you forget carrying the same, the data is not accessible.

So, thinking of a product if you get storage on cloud like your own hard disk and which is expandable or can be reduced based on your requirement then let us see how many respondents will be interested in the same.

So, the new product can be **“Hard Disk on Cloud”**

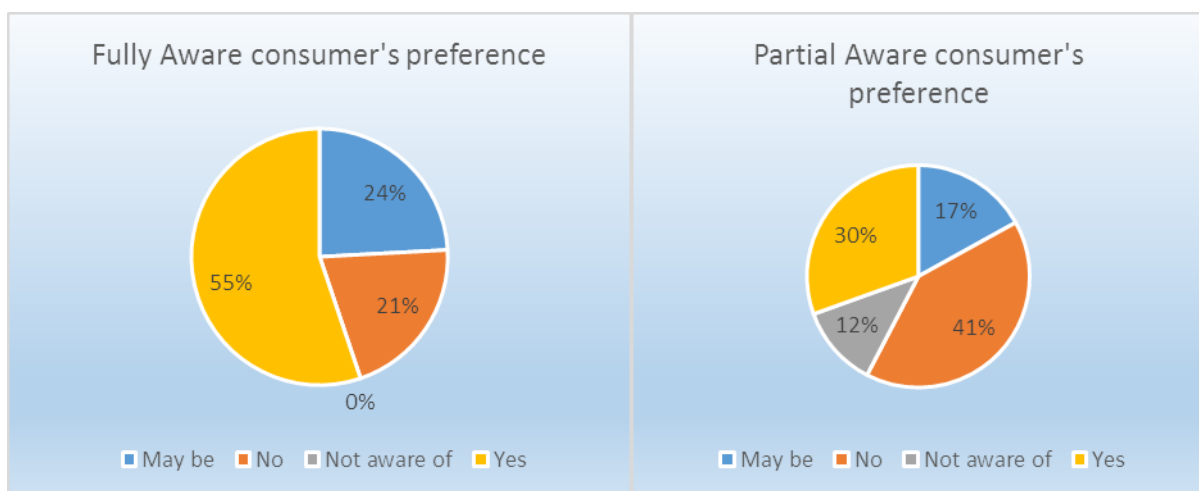


Graph 19

By looking at the graph above, we can see that the respondent's preference for the Cloud Hard Disk is somewhat equal.

- 38% respondents agreed that they will move on to new technology, followed by 33% of respondents which did not agree and were not ready to move.
- 22% of the consumers were not sure and hence were sceptical about this new technology.

Let us look at the below graphs to check if this percentage will vary basis on the awareness of the respondents on Cloud technology.



Graph 20

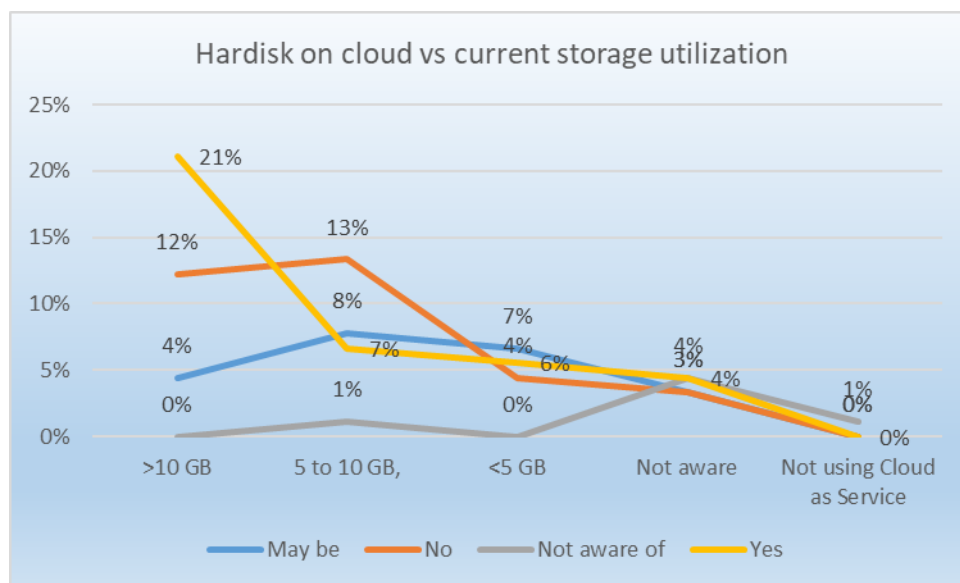
Graph 21

By looking at the above graph, we can see that with the level of awareness the preference of having hard disk on cloud will also decrease.

- 55% consumers who are fully aware of the Cloud Technology will be ready to move on move on cloud hard disk and only 30% people who are partially aware will be ready to go on cloud hard disk.
- Even the knowledge of Cloud hard disk reduces with the reduction in awareness of cloud technology. Respondents who are fully aware of cloud are all aware of this concept whereas 12% of the partially aware respondents have no know-how of this technology.

This concludes any new cloud technology, then the people who are aware of cloud as a service have the knowledge of the new product and ready to move on the same.

Let us look at this from other aspect, as we are talking about storage will the people switching on this technology is dependent on the storage they are currently using on cloud.



Graph 22

We can clearly see from the above graph, that the with the increase of current storage utilization on cloud the preference of the people moving on Cloud Hark disk increases.

- 21% of people currently using >10GB of data on cloud will switch to Cloud Hard disk.



## **INFERENCES**

The questionnaire created above was sent across to gather average of 100 responses and below are the inferences which can be concluded on overall basis.

- 66% of the respondents highlighted that they are partially aware of the technology and only 32% are fully aware of the Cloud Technology. These figures clearly highlight that there is a lot scope in people to increase the awareness of cloud technology.
- The awareness of Cloud as a service varies as per the occupation and the same can be seen from the figure 5 to 7. The drawback of this research that the respondents lies in the age group between 20-40 and hence the awareness on the basis cannot be captured.
- Most of the people are using Cloud Services for both personal and professional work and uses the same for storing the documents and photos or videos.
- The **biggest advantage** that they are reaping out of Cloud Services is the **backup of data** followed by the accessibility of the data anywhere and anytime.
- The **challenge** that can be seen from the study which consumers feel is **Cloud Cost** and people are reluctant to use Cloud Services because of the **Security Concerns** of their data.
- By the analysis, we can see that most of the people are using more than 1 device for accessing internet and most of the respondents are accessing internet over the mobile devices. If the penetration of internet increases (which is a positive trend due to urbanization and population growth) then the internet access will increase and hence we have a positive scope in increasing the penetration of Cloud Technology.
- The overall experience of people accessing Cloud Services is better if they are accessing it over a home network over the mobile network. This clearly reflects that to increase overall consumer experience, the mobile network needs improvement.
- With upcoming 5G technology, the speed of internet will move up and hence may add in increasing the overall experience of the consumer for Cloud.
- This study also talks about an innovative product “Hard Disk on Cloud” and the research shows that 53% of the respondents who are fully aware of the cloud technology are ready to move on Hard Disk as Cloud, but this percentage reduces when we talk about the respondents who are partially aware of the Cloud Technology.
- Percentage of respondents who are ready to move or buy Hard Disk on Cloud also increases with the increase in the current storage utilization on cloud.

- In the secondary research above, we have also seen that one of the big industry which is changing by Cloud Technology is “Education”.
- Virtual Learning is going to change the future of the Education Industry and the young generation which is still growing, and learning will have know-how of Cloud Technology and hence once they will have access to Mobile Phones and Internet will use the Cloud Technology. This is going to increase the penetration of Cloud in India.

## Overall Conclusion of the Project (Industry and Consumer)

This project report was an extension of the previous year project report, where we studied about the organization know-how of Cloud Technology and the advantages they are reaping.

### Overall Awareness of Cloud Technology

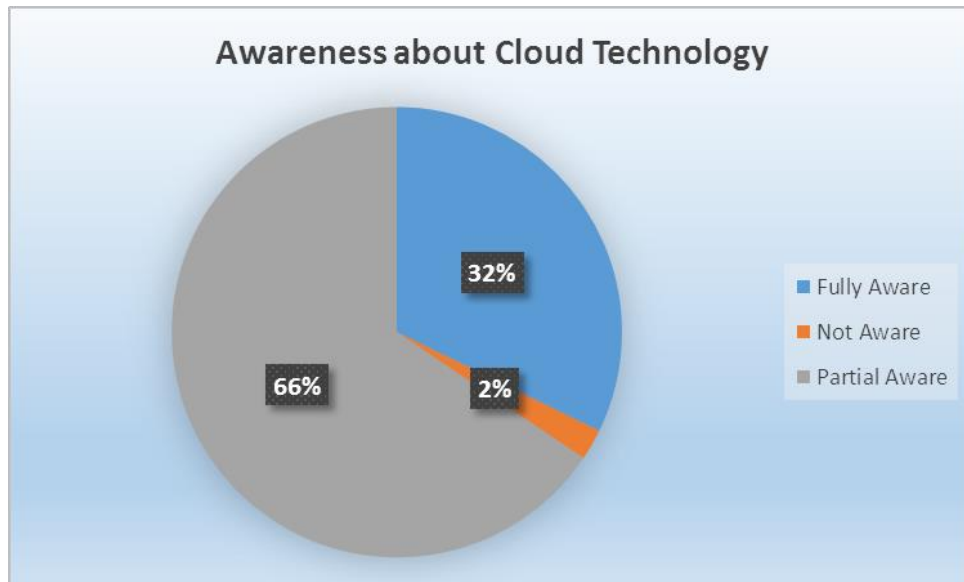


Fig 12 – Consumer Response on Awareness

### **Cloud Maturity of Respondents**

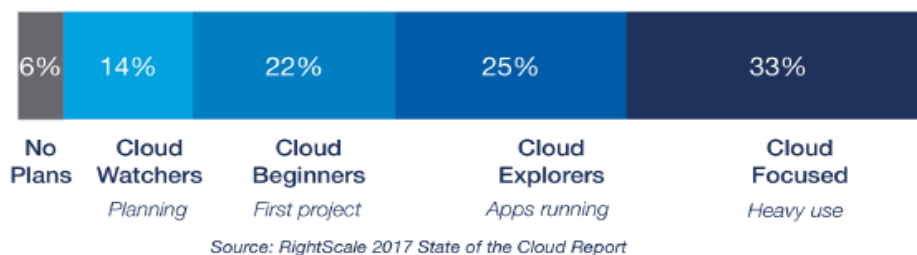


Fig 13 – Industry Response on Awareness

If we look at the fig 23 and Fig 24, we can see the percentage of respondents who are fully aware is very much similar, and in both the categories consumers whether industrial or personal are still learning more about Cloud and hence the penetration and knowledge will definitely increase over a period of time.

## Overall Benefit of Cloud Technology

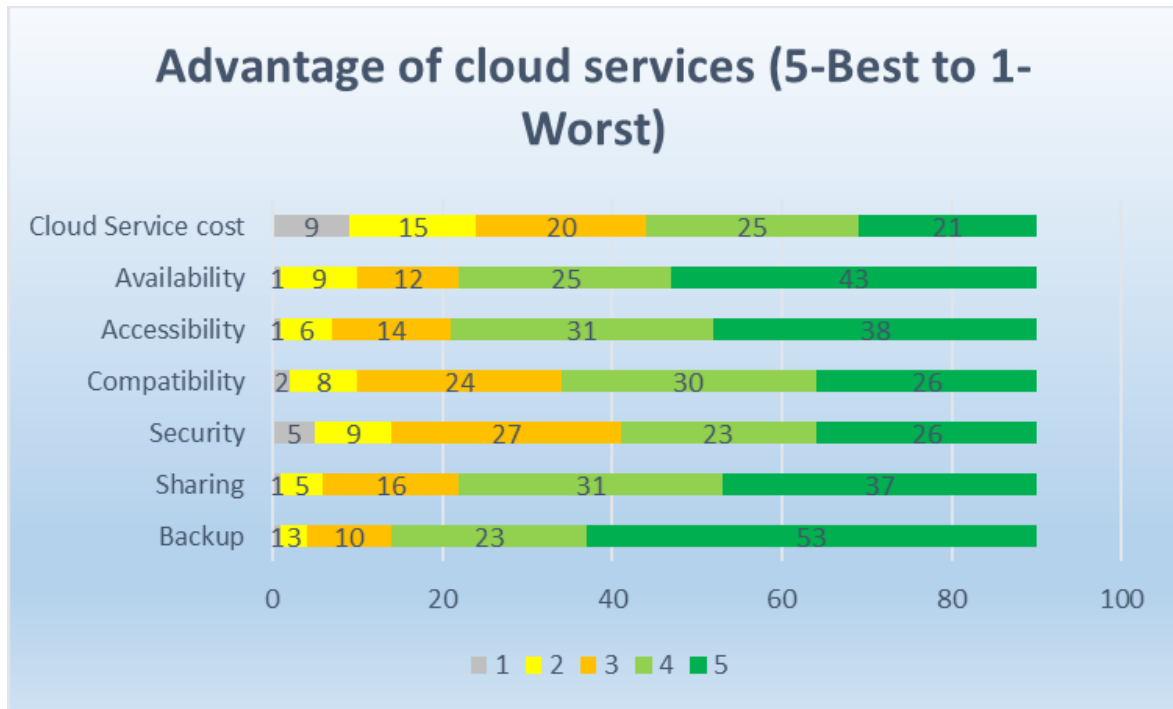
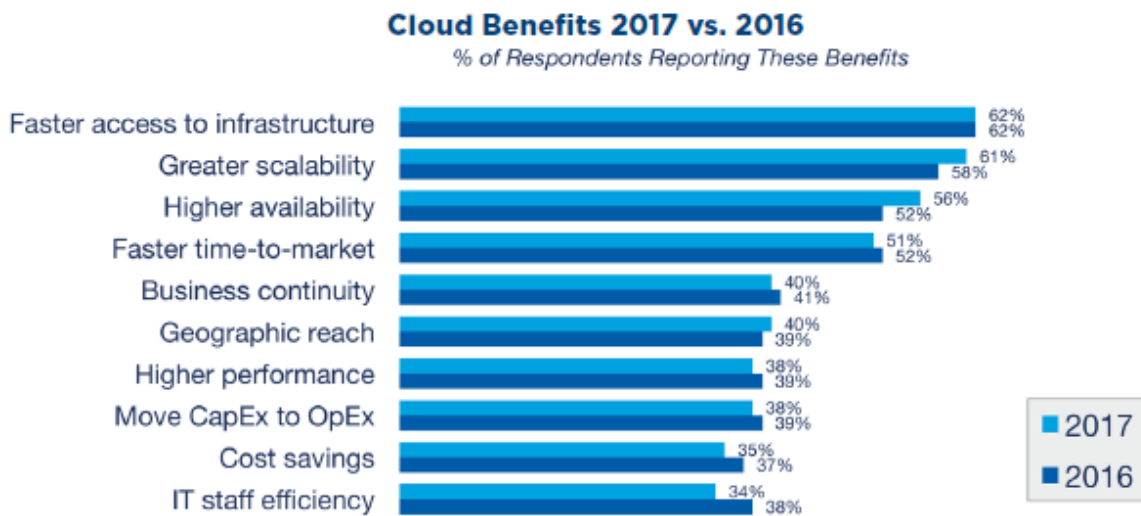


Fig 14 – Consumer Response on Benefits of Cloud



Source: RightScale 2017 State of the Cloud Report

Fig 14 – Industry Response on Benefits of Cloud

In both the cases, the Cloud Infrastructure adds different advantages to the consumers. If backup is an important benefit at the personal consumer level, then the business continuity is important factor to look at on the industry level.

If availability and accessibility is an advantage for the personal consumers then industry consumers are also looking at these factors as one of the major advantage from the Cloud Technology.

**Does Benefit Grow with the Cloud Maturity?**

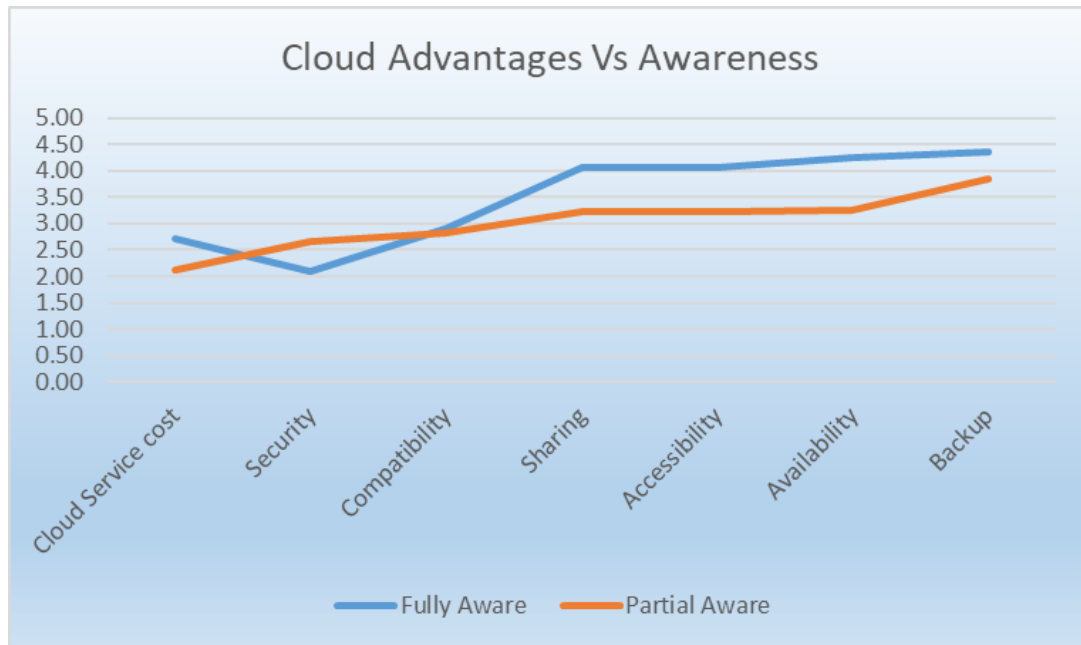
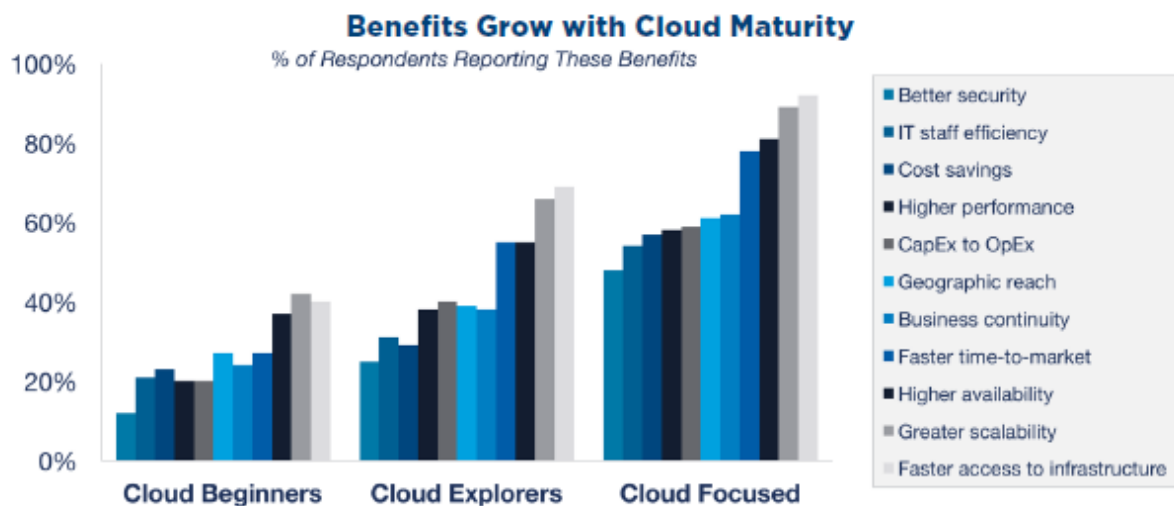


Fig 16 – Consumer Response on Benefits of Cloud with the increasing awareness



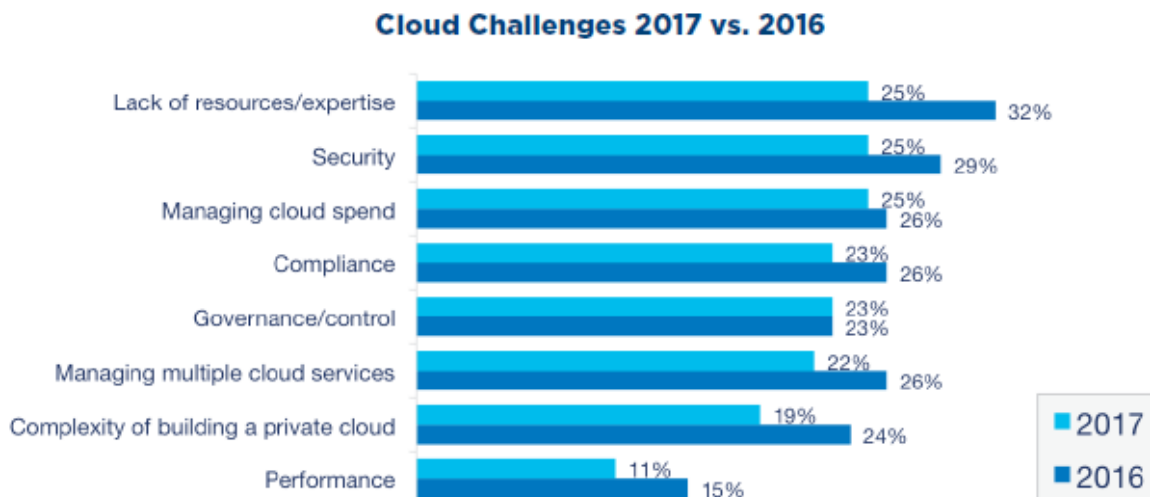
Source: RightScale 2017 State of the Cloud Report

Fig 17 –Industry Response on Benefits of Cloud with the increasing awareness/maturity

Both the above figures clearly reflect that as a consumer whether industrial or personal grows in terms of knowledge and awareness or maturity for cloud technology, the advantages of the same also increases.

**Challenges:**

The personal consumer has shown the major challenge as Cost and Security in terms of Cloud Technology by using 1 or 2 as option while asking for advantages and below is the figure for industrial consumer.



Source: RightScale 2017 State of the Cloud Report

Fig 18 –Industry Response on challenges of Cloud with the increasing awareness/maturity

The above figure also reflects the similar picture, where the cost and security is a major challenge across the industry.

**Conclusion:**

Whether a consumer is personal or an industry, cloud technology is still growing and the awareness of the same is still showing an increasing trend. The benefits which are being reaped by the people are same at all the level, but we are sure that the percentage of the benefit will be higher in terms of industrial consumer when compared to personal consumer.

Cloud Technology has arrived, and it is here to stay for a long period of time.

## ANNEXURE A

### Questionnaire

1. Name:
  
2. Age:
  - a. <15 years
  - b. 15 Years to 20 years
  - c. 20 Years to 30 years
  - d. 30 Years to 40 Years
  - e. > 40 Years
  
3. Gender:
  - a. Male
  - b. Female
  - c. Other
  
4. Occupation:
  - a. Student
  - b. Service
  - c. Business
  - d. Professional
  - e. Others
  
5. Are you aware of cloud technology?
  - a. Fully aware
  - b. Partial aware
  - c. Not aware
  
6. What is the purpose of you accessing the Cloud Service on internet?
  - a. Personal usage
  - b. Work related
  - c. Both

7. Which all applications are you accessing on cloud for personal usage?
  - a. Dropbox
  - b. Google services (eg. Gmail, Picasa)
  - c. Google Drive
  - d. Icloud
  - e. Microsoft skydrive
  - f. Flickr
  - g. OneDrive
  - h. Amazon Drive
  - i. Others
  - j. Not using Cloud as Service
  
8. If you are using cloud service, please share what you use it for:
  - a. Documents (Text, PDF, Word, Spreadsheets etc.)
  - b. Photos and Videos
  - c. Emails
  - d. Contacts
  - e. Calendars
  - f. Songs
  - g. Others
  - h. Not using Cloud as Service
  
9. How much Data is stored in Cloud, if applicable?
  - a. <5 GB
  - b. 5 to 10 GB,
  - c. >10 GB
  - d. Not aware
  - e. Not using Cloud as Service
  
10. How many personal devices (Mobile/Laptop/TV Etc.) are you using for internet access?
  - a. 1-2
  - b. 3-4



- c. 5-6
- d. >6
- e. Not using Internet

11. Which device you use to access internet?

	Never	Rarely	Sometime	Mostly	Always
Smart Phone					
Tablet					
Laptop					
TV					
Camera					

12. Which all modes of network are you using to access internet?

	Never	Rarely	Sometime	Mostly	Always
Mobile: 3G, 4G					
Mobile: 2G					
Dongle: 3G, 4G					
Fixed/Wireless					

13. Kindly rate the experience of accessing the cloud as a service through the various modes of network mentioned in the above question (1 – my experience is worst to 5 – my Experience is best).

	1	2	3	4	5	Not used
Mobile: 3G, 4G						
Mobile: 2G						
Dongle 3G, 4G						
Fixed/Wireless						

14. Please indicate from the list below which of the items and to what extent you consider advantage for using cloud Service (1 – I do not consider it advantage at all to 5 – I consider it a big advantage).

	1	2	3	4	5

Backup					
Sharing					
Security					
Compatibility					
Accessibility					
Availability					

15. With all the benefits of the cloud, will you prefer to have “My Cloud Personal Cloud Storage – Hard disk to the cloud”?

- a. Yes
- b. No
- c. Not aware of

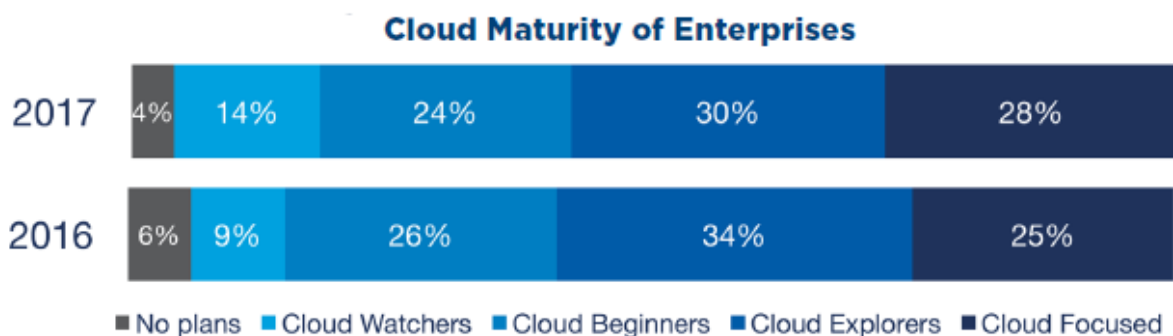
## ANNEXURE B

This annexure will give us the basic overview and highlighted of the previous semester report as this project is an extension of the same.

In the previous semester project report, we have done all the secondary research on the cloud adoption of the companies across the various industries. The research was based on different case studies of the organization and the secondary quantitative research (By RightScale).

Below are some of the inferences of my previous semester project report:

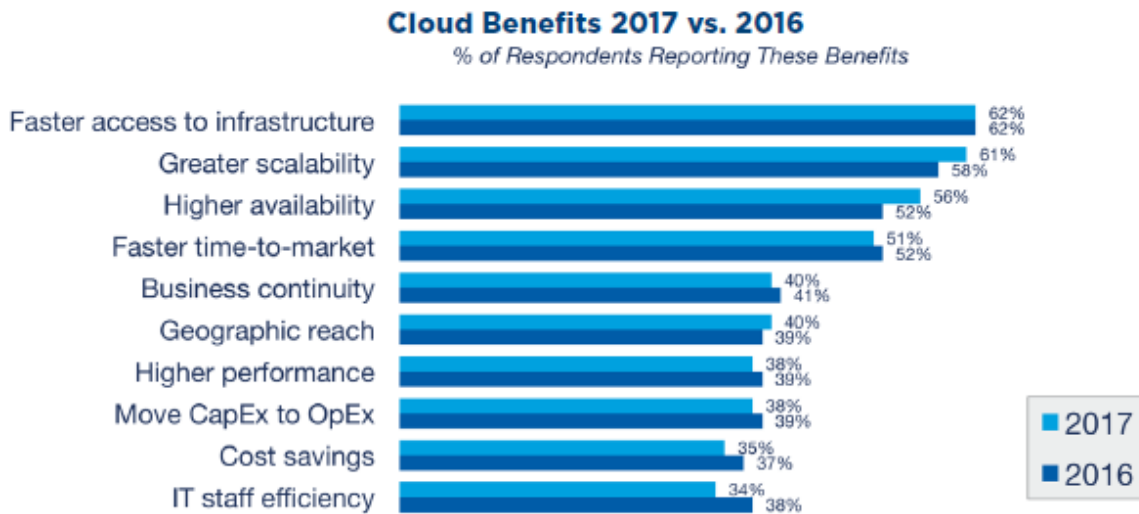
- Most of the companies moved on the cloud because of the storage challenge and also because of the fact, that in cloud they can expand or reduce the infrastructure as and when they require (faster time to market) and pay for whatever they are using.
- Data security came out as one of the concerns for the organizations and few of the companies are moving to Private Cloud because of this reason.
- As private cloud is expensive for an organization, most of the companies are moving to the Hybrid Cloud.
- As per the RightScale Survey, 33% of the organizations are cloud focussed and 25% of them are cloud explorers but only 6% of the organizations have no plans as of now for moving on to the cloud technology.
- If the organizations cloud adoption percentage is compared over an year then it is interesting to see that no plans organization are reduced from 6% to 4% and the cloud focused have increased from 25% to 28%.



*Source: RightScale 2017 State of the Cloud Report*

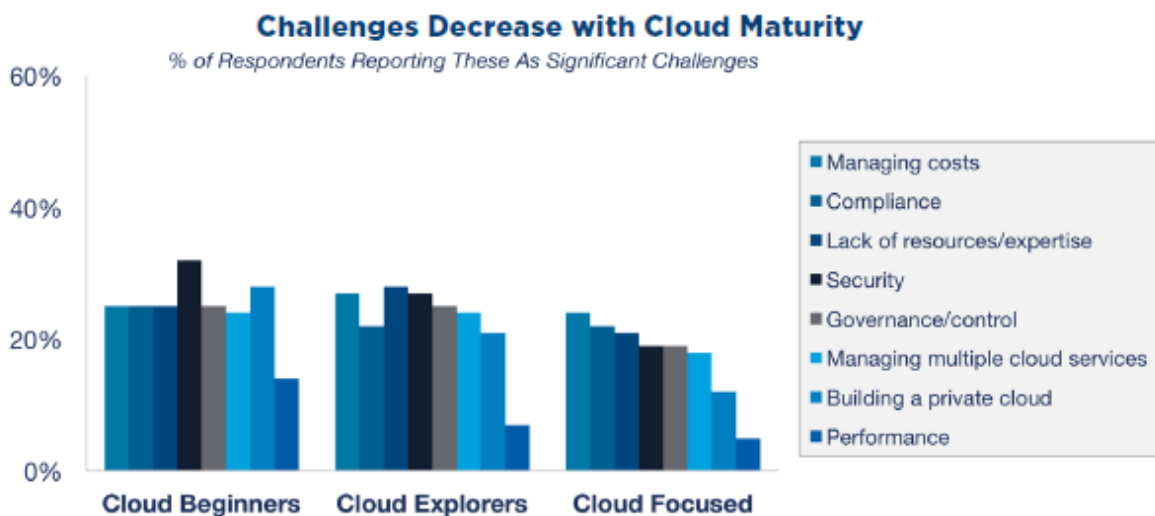
- It is very important to know the benefits companies are reaping from the Cloud Technology and hence may be concluded as reasons for the movement of organizations

to Cloud Technology. Faster Access to infrastructure came on top as benefits and as of now companies are not reaping the benefits of cost from the cloud technology.



Source: RightScale 2017 State of the Cloud Report

- If we are considering the benefits, it is important to consider the challenges with the cloud computing as well and we can see in the graph below that the challenges decline as users gain more experience and cloud maturity increases.



Source: RightScale 2017 State of the Cloud Report

The above highlights conclude that Organizations are adopting to the cloud technology and taking the advantages out of it. The similar is the conclusion of our study for the personal consumers and hence we can say cloud technology is growing and it is here to stay for a long period of time.

**ANNEXURE C**

## **REFERENCES**

- <https://tradingeconomics.com/india/population>
- <http://www.newindianexpress.com/thesundaystandard/2018/mar/03/wide-gap-in-internet-use-in-urban-rural-india-1781640.html>
- <http://bgr.com/2016/11/02/internet-usage-desktop-vs-mobile/>
- <https://www.statista.com/statistics/482142/fixed-and-mobile-broadband-internet-penetration-india/>
- <https://www.netandhost.com/blog/importance-cloud-computing-education-industry/>
- McKinsey – MGI Reports and Surveys.
- <https://www.ibef.org/industry/telecommunications.aspx>