

CLOUD COMPUTING SECURITY ISSUES AND CHALLENGES IN BANGLADESH

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering

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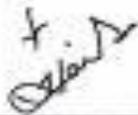
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APPROVAL

This Project/Thesis titled "Cloud computing security issues and challenges in Bangladesh", submitted by Abdurrahman Abukar Ibrahim, ID No: 191-25-727 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 06 December 2019.

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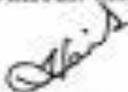
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DECLARATION

I hereby declare that, this project has been done by us under the supervision of **DR. sheakh Rashed Haider Noori, Associate professor & Associate Head, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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DEDICATION

I am greatly thankful to my beloved Parents my mother **Raho Osman Abdi** and father **Abukar Ibrahim Abdi** may Allah protect them, they are always very understanding and supportive on my choices. They love me more than themselves and have sacrificed so much to support me. They advice me all the time and encourage me to have patience. Also I am thanking to my brothers/sisters for their encouragement.

ABSTRACT

Cloud computing is a set of IT services that are provided to a customer over a network on a leased basis and with the ability to scale up or down their service requirements. Usually cloud computing services are delivered by a third party provider who owns the infrastructure. Its advantages to mention but a few include scalability, resilience, flexibility, efficiency and outsourcing non-core activities. Cloud computing offers an innovative business model for organizations to adopt IT services without upfront investment. Despite the potential gains achieved from the cloud computing, the organizations are slow in accepting it due to security issues and challenges associated with it. Security is one of the major issues which hamper the growth of cloud. The idea of handing over important data to another company is worrisome; such that the consumers need to be vigilant in understanding the risks of data breaches in this new environment. This paper introduces a detailed analysis of the cloud computing security issues and challenges focusing on the cloud computing types and the service delivery types.

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CHAPTER 1

Introduction

1.1 Introduction

Cloud computing is storing your data in cloud storage, rather than storing your data on your own storage, servers are in another place. Cloud computing has more advantage on IT those who give services on a client and allowed to scalable their storage up, or to minimize their storage basis on their needs. Usually the cloud computing services are given by cloud providers those have the infrastructure of cloud computing.

It advantages to mention but a few include scalability, flexibility, and toughness, efficiency and outsourcing non core activities. Cloud computing offers are creative commerce model for organizations to addiction IT services without buying first money to invest. Despite the potential gains accomplishment from the cloud computing, the organizations are slow in accepting it due to safety issues and challenge related with it. Security is one of the most important issues which disruption the increase of cloud. The idea of turning over significant data to a different organization is troublesome; such that the clients have to be thoughtful in consideration of the risks of data break in this new environment [1].

The cloud computing is combination of hardware and software those works together to deliver further side of computing to the end user as an online service and also use of software and hardware to convey a service through a network normally the internet. With cloud computing all the users get access files and by using any applications and any device that can access the internet. A paradigm of cloud computing service provider is Google's Gmail clients have right access applications and files hosted by Google by using the internet from any device.

Cloud Computing Architecture

According to cloud architecture cloud contains two main parts:

The first one is front end, and the second is back-end. Those two parts communicate over and through the network, front-end is the part that can access the normal users like browsers and other applications, where the back-end is cloud providers part like storage and servers that normal users cannot access directly but if they request something then they will get response [2].

Categories of Cloud Computing Security

Identity Security: It is characterized as the security and business discipline that "empowers the correct Individuals to get to the accurate assets at the specific occasions and for the precise reasons. It guarantees the honesty, secrecy of information and applications while expanding their Accessibility to reasonable clients. Start to finish personality the board, third-part verification administrations and character is key components of character security in cloud. The board in personality security have abilities that ought to be made accessible to clients and foundation segments parts in Cloud computing.

Information Security: It defines a lot of techniques for dealing with the procedures, devices and Approaches important to forestall, recognize, archive and counter dangers to advanced and non-computerized data. Information security obligations incorporate setting up a lot of business Processes that will ensure data resources paying little heed to how the data is arranged or whether it is in travel, is being prepared or is very still away. The controls on physical access, access to equipment and programming and personality controls are focused towards security of Information. The defensive hindrance in cloud that guarantees security of data is diffused. Information in a cloud needs their own security, including information separation to ensure information in open Cloud.

Infrastructure Security: it means that a virtual and physical infrastructure of a cloud can be trusted is a test. The validation of a believed outsider isn't adequate for basic Business forms. It is significant for an association to have the option to confirm business necessities that the hidden infrastructure is secure.

Network Security: Network Security is a key necessity for cloud. It concern taking software and physical safeguard measures to keep the hidden systems administration foundation from criminal access, abuse malfunction, alteration, or pulverization, in this manner making an ensured stage for clients PCs and projects to make their allowed basic capacities inside a protected domain.

Software Security: While there is a wide scope of software development activities according to Scope and problem, every one of them requires affirmations of security. Since there is no such idea as an ensured full security, the objectives are to make secure programming with security painstakingly planned into it, not after-thought add-on ability. Along these lines, it is conceivable to fabricate programming with a high level of security against attack.

Three basic requirements for securing systems

They are defined as follows:

1) Confidentiality: it is part of protecting data from unauthorized data misuse. It is the base of many security mechanisms protecting not only information even other resources.

2) Integrity: It is the skill to make sure that data is an exact and unchanged the meaning of The real information

3) Availability: it achieves that the data is reachable when the user is needed if it is not accessible when needed then there is no availability.

Types of Cloud Computing Services

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS).

Infrastructure as a Service “IAAS”

Infrastructure as a service “IAAS” is a kind of cloud computing that offer virtualized computing assets through the web. “IAAS” is one of the most three classes of cloud computing administrations, the Cloud computing suppliers gave assets are just mutual with contracted customers at a compensation for each utilization sum. This altogether limits the requirements for colossal first interest in figuring equipment, for example, organizing gadgets, servers and handling power.

Platform as a Service (PaaS)

Is a pair of development tools, those facilitating to the programmers to make their applications. This offers the cloud server supplier's. Without feeling the programmers any pressure to get platform or to download it.

Software as a Service (SaaS)

Software-as-a-Service is a software sharing form in which applications are facilitated by providers and made available to customers through a internet. Software as service knows days make cloud very famous because many business and private companies are using this type of service.

Types of Cloud Deployments

- 1) Public cloud
- 2) Private cloud
- 3) Hybrid cloud

1) Public cloud

A public cloud is a kind of computing in which service providers make resources accessible to the public through and over the internet. Resources differ by provider but may contain storage capabilities, virtual machines or applications. Public cloud allows for scalability and resource division that would not otherwise be possible for a particular organization to accomplish. Some public cloud providers gave resources for free, while customers pay for other resources by contribution or a pay-per-usage model.

2) Private cloud

The private cloud is utilized by large associations to build and deal with their very own server farms for explicit business and IT needs/tasks. The private cloud gives more command over adaptability, versatility and adaptability, while improving security of advantages and business tasks [3].

3) Hybrid cloud

Hybrid cloud is a mixture of a private and public cloud, accommodating greater adaptability to organizations while having power over basic activities and resources, combined with improved adaptability and cost productivity. The cross breed cloud design empowers organizations to exploit the open cloud as and when vital because of their simple remaining burden movement [4].

1.2 Motivation

After I realized the impact of cloud computing technology into the society I decided to write something about cloud computing security issues and challenges so that it is why I liked to talk about this topic and I can't complete to here all of the related things about this topic. But I will try my best to make some research about cloud computing security issues and challenges if I miss something about this topic I wish the other researchers will complete it.

1.3 Rationale of the Study

Cloud computing is more useful, so you want to ensure that your data is safe when stored in cloud but some persons, organizations or new business worrying about that. Because the cases of hacking is increasing each day, although cloud providers trying to minimize it. But the reality is cloud computing is safer than according to when you are using same storage in local location, because if you make backup and local failure happen then you lose your important data. But if you store it in remote location means cloud your data will be much more safe and secure.

1.4 Research Questions

1. Do you know what cloud computing is?
2. Do you have your own data in cloud?
3. Are you worrying to lose your data or documents?
4. Are you worrying about cloud security?
5. Did you ever face security problem while you are using cloud?

1.5 Expected Output

To know what cloud computing is for society.

To discover the main challenges of cloud computing.

To know the security issues that they are facing

To discover how privacy is effective in cloud computing.

To discover how cloud computing affects their documents clouded

1.6 Report Layout

The rest of this thesis is prepared into the following chapters: Chapter 1 we will talk about concept of cloud computing security issue and challenges, Rationale of the study, Motivation, Research questions and Expected Output.

Chapter 2: In this chapter we will talk about the background of study by making introduction, then related works, and we will make summarize, the scope, and finally we are talking about some challenges related.

Chapter 3 research methodologies will discuss Research Subject and Instrumentation, Data Collection Procedure, Statistical Analysis and Implementation Requirements.

Chapter 4 we will introduction, then experimental results discussion Experimental Results and Descriptive Analysis

Chapter 5 this is the last chapter and we will summarize about work to be done we will make conclusion and we will recommend by mentioning further study areas.

CHAPTER 2

BACKGROUND

2.1 Introduction

In this chapter I will talk about related work or the literatures review to the cloud computing security issues and challenges in Bangladesh. The first part is previous studies, the second section is definition, benefits and challenges and conclusion.

2.2 Related Works

Cloud computing has recognized the way we do commerce and how we cooperate the data and services in our daily lives. Instead of administration applications from the software to be downloaded into physical system and equipment, cloud uses services and a cookie stored into the online and provides same service or applications to the consumers that they can access anywhere that is available internet connection. The cloud computing provides business better agility, less than first setup costs, decreases operation costs, better use of resources and a greatly narrowed capital expenses. But how did we obtain from putting software CDs into a physical hard disk tray to be able to use applications within few seconds of educating their existence?

Cloud computing began additional back than the majority of people think. The idea began by ARPANET in 1969, which was the ancestor to what we familiar today about the internet.

Firstly it intended to connect computers together in excess of great distance for the sake of military and scientific purpose no one can have the same opinion on which, and it was the majority possible a bit of both, this technology sprang off the back of Mainframe Computing, that was developed in the 1950s.

Different technological advances had allowed the internet and mainframe computing to enlarge in scope and power until the innovation and appearance of what we would identify as the baby version of our up to date internet.

The middle-1990s saw the improvement of the internet being connected to large numbers of personal computers, more willingly than just business ones. Both computers and a wired internet connection become cheaper in anticipation of the average home could have one without economic complexity.

At The end of the century in 1999 brought with it Salesforce.com that was the ones company to provide business applications through the internet and heralded the arrive of Software as a service commonly known as SaaS.

With the coming of greatly extended web capability in 2003 “known in the industry as Web 2.0”, music, videos, and other multimedia can be hosted and deliver online which resulted in deeply improved popularity, as well as extremely stretched horizons in terms of what web designers possibly will accomplish.

In 2006, ‘the Cloud computing starts to talk about openly. Despite being primary mention in a 1996 study paper, Google CEO Erich Schmidt brought it to public awareness in terms of its nickname and all of the possibilities that come with the cloud [5].

Google sustained to make cloud computing into well-known usage with the release of Google Apps in 2009. Microsoft was not long time before, and before long an internet arm began that has to this day not at all cooled or slowed down. Opportunely, it has all the time functioned to drive ahead cloud computing technology at an accelerated pace as a straight result of this challenging between tech goliaths.

2.3 Research Summary

Anyone of society is likely prospect his/her data being secured for using cloud computing by cloud computing service applications like Gmail , google drive. Using of cloud computing has become commonplace, but their influences over the society requires deeper understanding.

We illustrated cloud concepts and demonstrated the cloud capabilities through simple application, also we mentioned the related security issue and challenges that may affect the privacy of user and finally we will recommend how improve their security.

2.4 Scope of the Problem

This study is in terms of Geography limited to Bangladesh, and it will focus about cloud computing security issues and challenges. This research explains how Cloud security affects different part of population in term of the privacy of data. The introduction carefully elaborates on Cloud Computing and some of its theoretical characteristics and cloud computing models, while the rest of the study will explored on the cloud computing security issues and challenges.

2.5 Challenges

Nowadays cloud computing is relating a different challenges because the users are suspecting and worrying how will be the accuracy of their data. A census made in 2008, the basic challenges that are facing the people to use a cloud computing is registered and it's as follow:

Security: It is evident that the security issue has assumed the most significant job in ruining Cloud computing approval. Without uncertainty, putting your information, running your application or software on someone else's hard disk utilizing another person's CPU seems frightening to many. Well understood Security issues, for example, information loss, phishing, burnet "running remotely on a combination of machines" present serious dangers to association's information and applications. Also, the multi_occupancy model and the pooled figuring assets in distributed computing has presented new security provokes that Require tale systems to handle with. For example, hackers can use Cloud to order "botnet" As Cloud regularly gives increasingly dependable foundation administrations at a generally less expensive cost for them [6].

Cost management and containment: Another part of cloud computing challenges registered concerns cost. Cloud computing mostly saves the cost. If a company needs to scalable the company just pays per use storage no need to buy new equipment either software or hardware. The company has right to use extra storage if needs through pay-per-use system that cloud providers are allowed. On the other par if needed to scalable cloud computing service it will be hard to describe the cost of the size company are needed [6].

Lack of resources/expertise: Perhaps the greatest test that distributed computing clients and endeavors are confronting now days is absence of asset and aptitude. Organizations and associations are expanding putting more loads in the cloud while distributed computing advancements keep on rapidly push ahead. Because of these variables, associations have an opportunity to thought staying aware of the devices. Additionally, the require for ability keep on developing. These distributed computing difficulties can limit to make preparing to new IT innovation stuff [6].

Governance/Control: There are a few difficulties inverse distributed computing and administration control. Great IT administration will guarantee IT resources are actualizing and utilized by settled upon arrangement and methods; and furthermore ensure that advantages are accurately controlled and kept up, and assurance that these benefits are helping your association's

business objectives and plan. Presently day's cloud-based world, IT doesn't generally have full oversight over the provisioning. This has improved the intricacy for IT to offer the administration, dangers consistence, and information quality overseeing fundamental. To diminish the various dangers and questions in moving to the cloud, IT must adjust its past IT administration and control procedures to incorporate the cloud [7].

Managing multiple clouds: Challenges facing cloud computing is not only one cloud usage, single cloud. The situations of more clouds at a time are increasing now years. Most companies are going to combine both public and private clouds as we explained before tech giants example Amazon and Alibaba are the leaders of that idea. Census made 81 percent of organizations have a multi-cloud strategy. Companies with a hybrid plan (“means making public and private cloud together”) become their chart down from 58 percent in 2017 to 51 percent in 2018. And those who have strategy of using multiple private clouds or multiple public cloud increase [6].

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter defines the method or methodology that was cloud computing security issues and challenges. The discussion will include the design of the study, Research Subject and Instrumentation, the procedure of data Collection, Statistical Analysis.

3.2 Research Subject and Instrumentation

Research instruments were used and played key role in guiding the researcher into choosing and combination of qualitative and quantitative research methods that were considered sufficient in addressing the research blame in satisfactory manner.

Point out that a survey is only good as a question it asks, hence that questionnaire is critical stage in the survey research process, and the questionnaire must be relevant and accurate in trying to capture the essence of the research objective.

To achieve this end, a researcher will be required to make several decisions:

- How the questions are phrased?
- How the questions can be arranged sequentially?
- Which questionnaires will the best server the research objectives?
- How the questionnaire is tested before?
- Does questionnaire need to be revising?

3.3 Data Collection Procedure

The data collection procedure is the process of collecting data including data instruments and its questionnaire. It also contains questions related research questions, literature review and the theoretical position presented in this study. The research questions will investigate the impact of security challenges in cloud computing.

3.4 Statistical Analysis

SPSS is the short form of “Statistical Package for Social Sciences” SPSS it is used by researchers to make statistical decisions. SPSS is very useful for students and all researchers those are searching to get result for researchers that they make.

The “Statistical Package for Social Scientists” “(SPSS)” was used for data entry and analysis.

The SPSS then will analyze have variable labels and values also each question in SPSS will have values that must be enter.

CHAPTER 4

EXPERIMENTAL RESULTS AND DISCUSSION

4.1 Introduction

This chapter will focus the experimental analysis and result obtained from that analyze. The analyze of the data and analysis interpretation based on research objectives. The Presented and analysis of the collection data was computed using percentages and frequency.

4.2 Experimental Results

In order to show the division of responds on different questions. Graphs and tables were used the representation of the data. All the respondents or people have same questionnaire and the total sample size was 151

4.3 Descriptive analysis

Descriptive analysis is used to define the main features the research or the study. and it provides and summaries the sample and measure. Collectively with sample graphics analysis, they form the basis of virtually quantitative analysis of data.

4.3.1 What is your gender?

Table 4. 1 What is your gender?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	107	70.9	70.9	70.9
Female	44	29.1	29.1	100.0
Total	151	100.0	100.0	

The above table 4.1 shows that 107(70.9%) of respondents was male and (29.1%) of respondents was Female. The below figure 4.1 indicates table 4.1 as a graph.

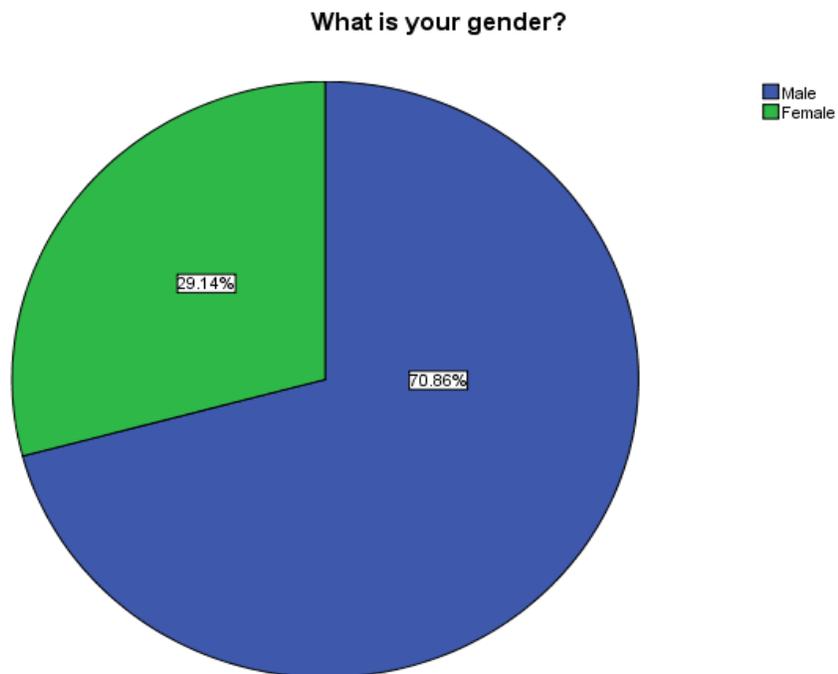


Figure 4. 1 what is your gender?

4.3.2 How old are you?

Table 4. 2 How old are you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	81	53.6	53.6	53.6
	26-35	63	41.7	41.7	95.4
	36-45	7	4.6	4.6	100.0
	Total	151	100.0	100.0	

The above table 4.2 shows that 81(53.6%) of respondents was age of 18 to 25 years, 63 (41.7%) of respondents were age between 26 to 35 years, and 7(4.6%) of responds were 36 to 45 years. The below figure 4.2 indicates the graph of table 4.2.

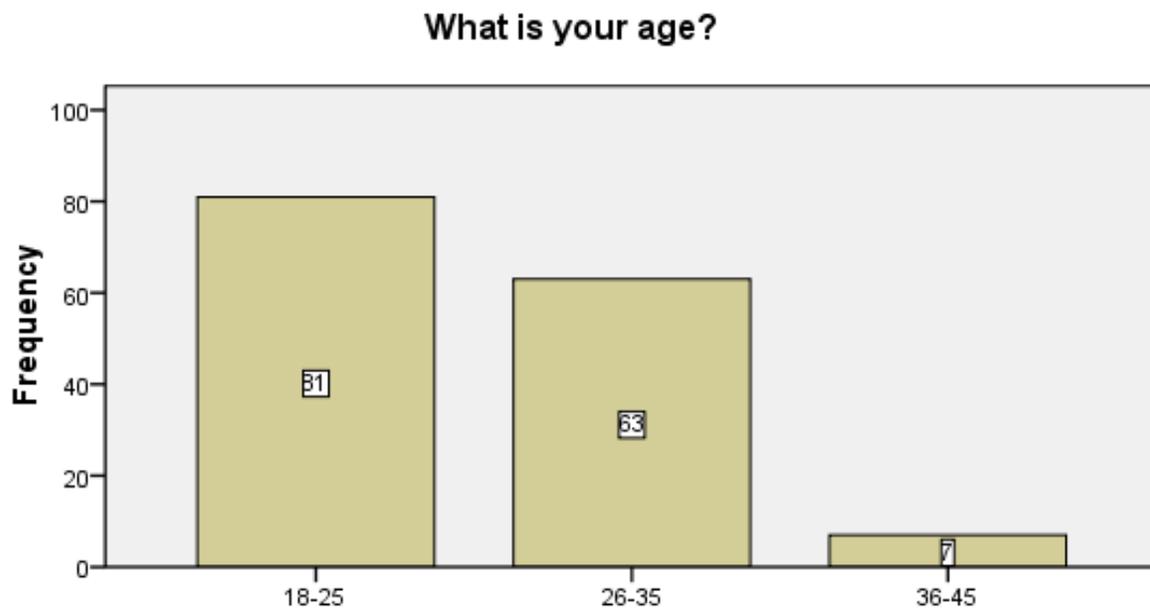


Figure 4. 2 what is your age

4.3.3 Are you student?

Table 4. 3 Are you student?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	141	93.4	93.4	93.4
	No	10	6.6	6.6	100.0
	Total	151	100.0	100.0	

The above table 4.3 shows that 141(93.4%) of respondents said yes that means they are students and 10(6.6%) of respondents said no, that means they are not students. The figure 4.3 below shows the graph of table 4.3.

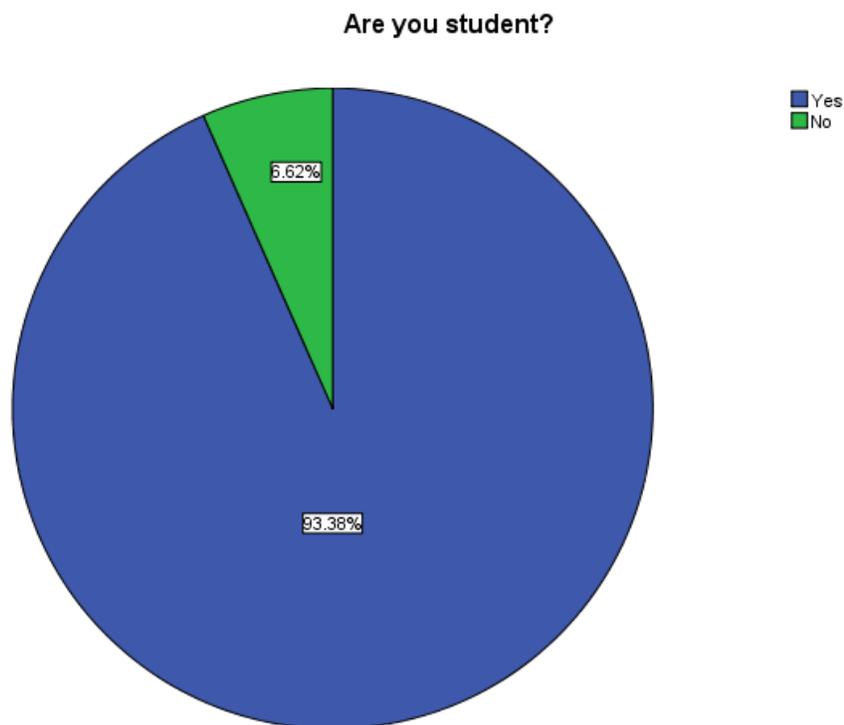


Figure 4. 3 are you student

4.3.4 Which faculty do you study?

Table 4. 4 Which faculty do you study?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CSE	109	72.2	72.2	72.2
	SE	23	15.2	15.2	87.4
	ETE	3	2.0	2.0	89.4
	EEE	10	6.6	6.6	96.0
	MIS	6	4.0	4.0	100.0
	Total	151	100.0	100.0	

The above table 4.4 shows that 109(72.2%) of respondents was CSE, 23 (15.2%) of respondents was SE (software engineering), 3(2.0%) was ETE, 10 (6.6%) of respondents was EEE, 6(4.0%) of respondents was MIS. The below figure 4.4 indicates table 4.4 as a graph.

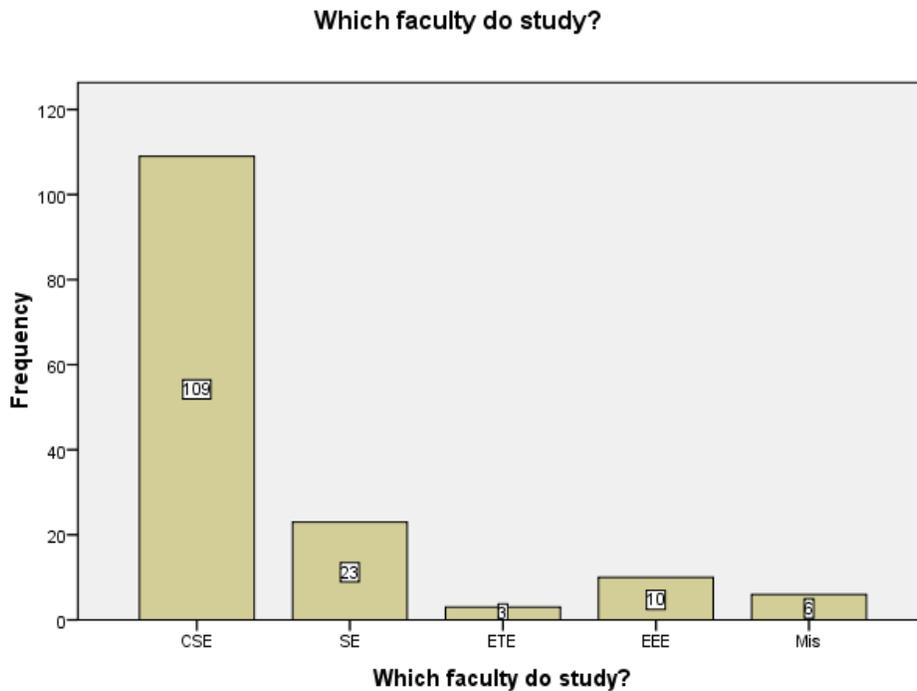


Figure 4.4 which faculties do you study?

4.3.5 What is your degree?

Table 4. 5 What is your degree?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Undergraduate	48	31.8	31.8	31.8
Graduate	100	66.2	66.2	98.0
PHD	1	0.7	0.7	98.7
other	2	1.3	1.3	100.0
Total	151	100.0	100.0	

The above table 4.5 shows that 48(31.8%) of respondents was Undergraduate, 100(66.2%) of respondents was graduate, and 1(0.7%) of respondents was PHD the below figure 4.5 indicates table 4.5 as graph.

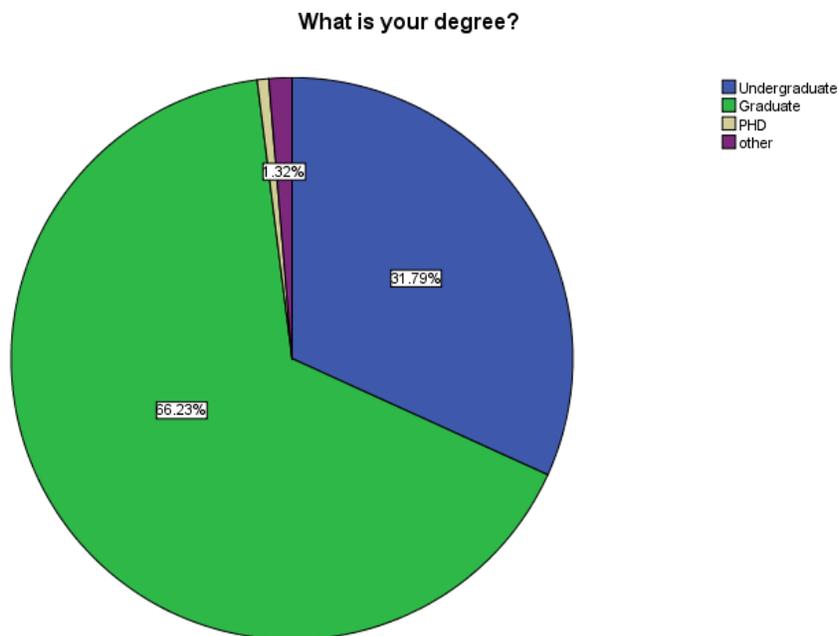


Figure 4. 5 what is your degree?

4.3.6 Do you work?

Table 4. 6 Do you work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	35.8	35.8	35.8
	No	97	64.2	64.2	100.0
	Total	151	100.0	100.0	

The above table 4.6 shows that 54(35.8%) of respondents was said yes it means they are working, 97(64.2%) of respondents said “NO” means they are only students. the below figure 4.6 indicates table 4.6 as graph.

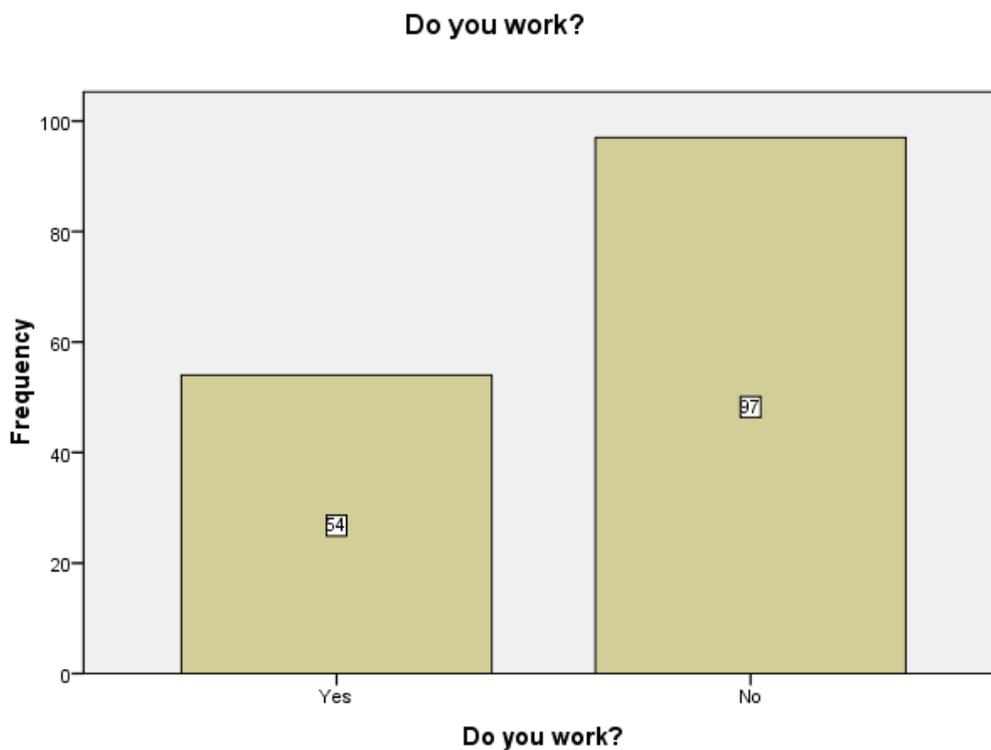


Figure 4. 6 Do you work?

4.3.7 Which type of work do you do?

Table 4. 7 Which type of work do you do?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Teacher	18	11.9	11.9	11.9
Business	13	8.6	8.6	20.5
Developer	17	11.3	11.3	31.8
Freelancer	8	5.3	5.3	37.1
Student	95	62.9	62.9	100.0
Total	151	100.0	100.0	

The above table 4.7 shows that 18(11.9%) of respondents was teachers, 13(8.6%) of respondents was business, 17(11.3%) of respondents was developers, 8(5.3%) was freelancers, 95(62.9%) of respondents was students. The below figure 4.7 represents table 4.7 as graph.

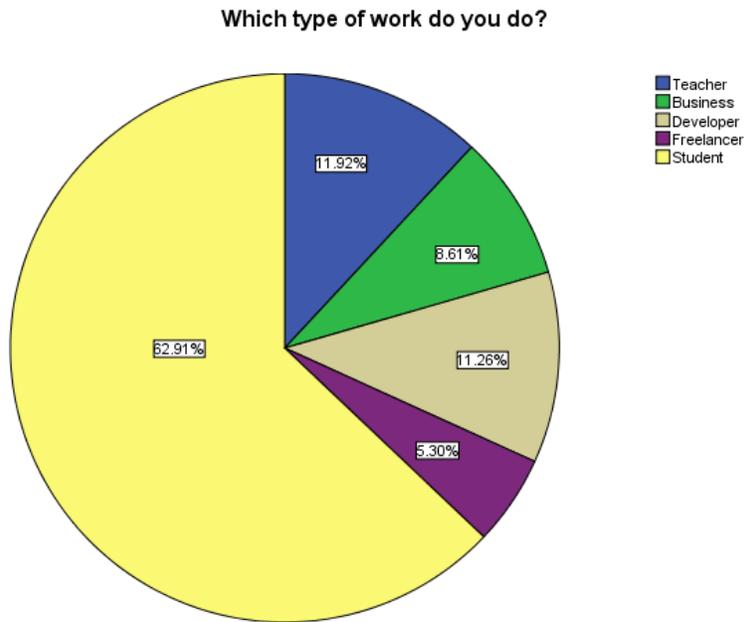


Figure 4. 7 Which type of work do you do?

4.3.8 Do you have computer?

Table 4. 8 Do you have computer?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	149	98.7	98.7	98.7
No	2	1.3	1.3	100.0
Total	151	100.0	100.0	

The above table 4.8 shows that 149(98.7%) of respondents have their own computer, 2(1.3%) of respondents said that they have no computer. The below figure 4.8 represents table 4.8 as graph..

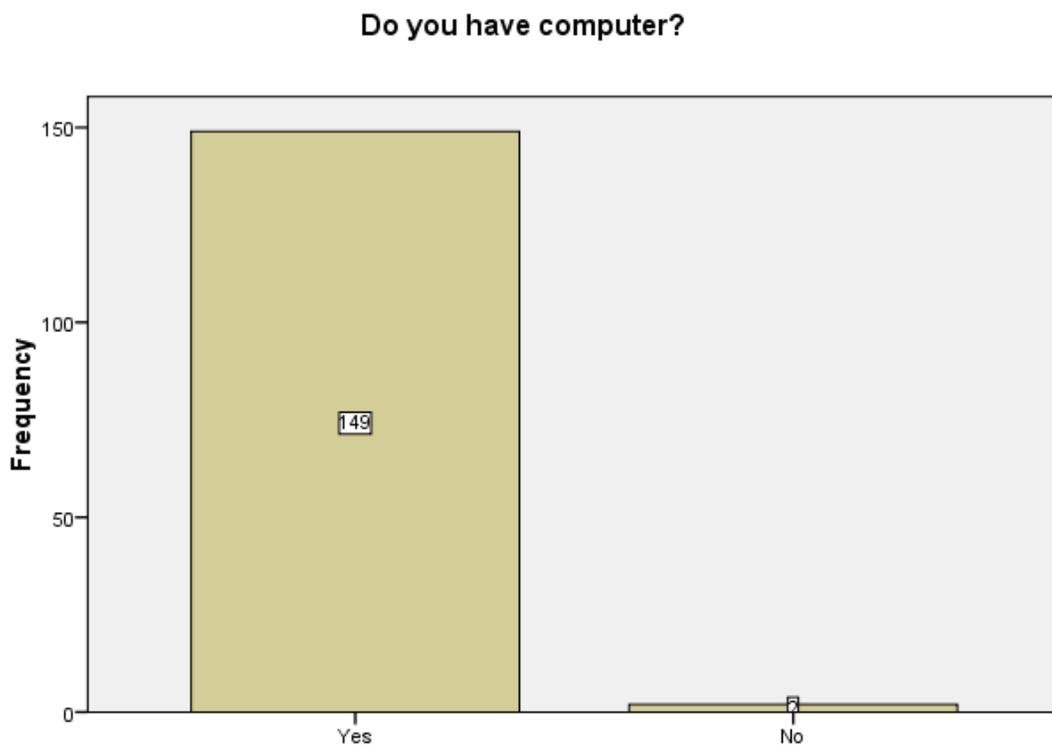


Figure 4. 8 Do you have computer?

4.3.9 How long have you been using computer?

Table 4. 9 How long have you been using computer?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 year	12	7.9	7.9	7.9
2 years	11	7.3	7.3	15.2
3 Years	15	9.9	9.9	25.2
5 Years	35	23.2	23.2	48.3
Above 5years	78	51.7	51.7	100.0
Total	151	100.0	100.0	

The above table 4.9 shows that 12(7.9%) of respondents were using computer 1 years, 11(7.3%) were using 2 years, 15(9.9%) of respondents were using 3 years, 35(23.2%) of respondents were using 5 years, and 78(51.7%) of respondents were using more than 5 years. The below figure 4.9 represents table 4.9 as graph.

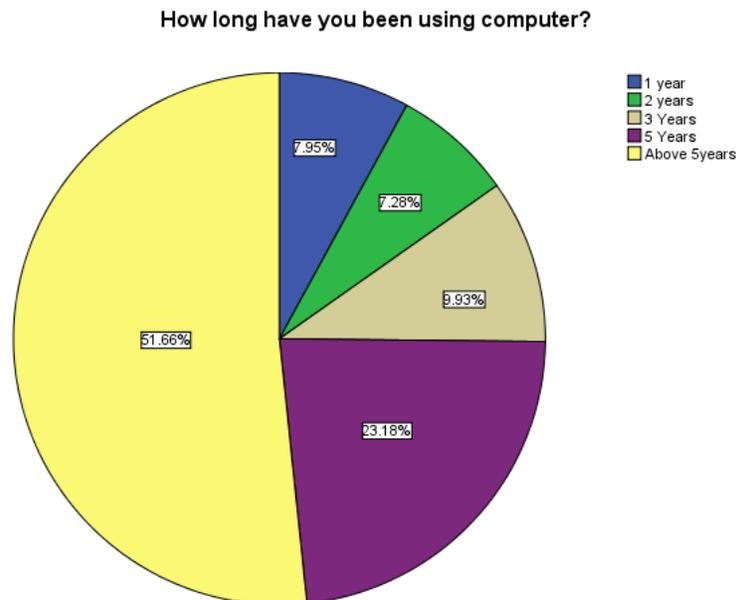


Figure 4. 9 How long have you been using computer?

4.3.10 what do you use to access cloud?

Table 4. 10 What do you use to access cloud?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Mobile	65	43.0	43.0	43.0
Computer	75	49.7	49.7	92.7
Both of them	11	7.3	7.3	100.0
Total	151	100.0	100.0	

The above table 4.10 shows that 65(43.0%) of respondents were using mobile to access cloud, 75(49.7) of respondents were using computer to access cloud, and 11(7.3%) of respondents were using both mobile and computer to access the cloud. The below figure 4.10 represents table 4.10.

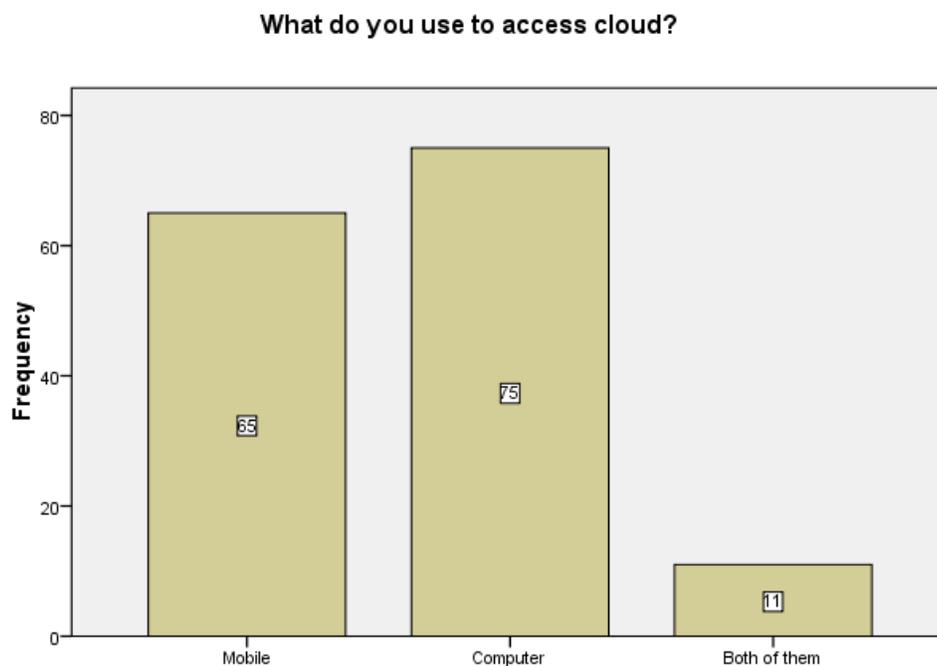


Figure 4. 10 What do you use to access cloud?

4.3.11 which purpose do you use cloud?

Table 4. 11 Which purpose do you use cloud?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Private	125	82.8	82.8	82.8
Public	26	17.2	17.2	100.0
Total	151	100.0	100.0	

The above table 4.11 shows that 125(82.8%) of respondents use for cloud as a private, 26(17.2%) of respondents use for business purpose the below figure 4.11 represents the table 4.11 as a graph.

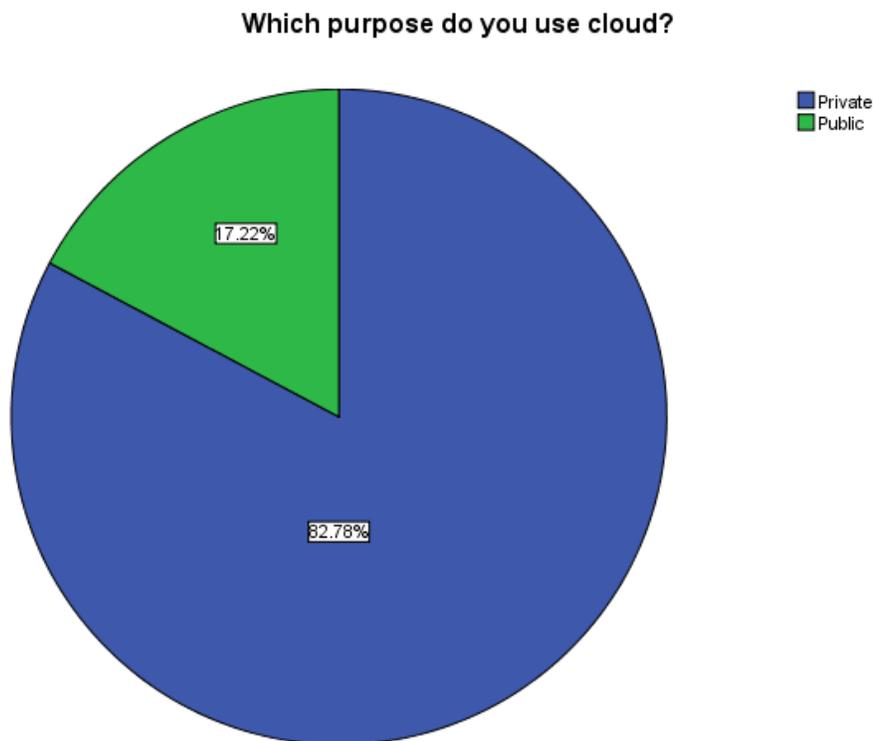


Figure 4. 11 Which purpose do you use cloud?

4.3.12 which type of cloud do you use?

Table 4. 12 Which type of cloud do you use?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Amazon	28	18.5	18.5	18.5
Google	104	68.9	68.9	87.4
IBM	2	1.3	1.3	88.7
Dropbox	17	11.3	11.3	100.0
Total	151	100.0	100.0	

The above table 4.12 shows that 28(18.5%) of respondents use Amazon cloud, 104(68.9%) of respondents use Google cloud, 2(1.3%) of respondents use IBM cloud, 17(11.3%) of respondents use Dropbox the below figure 4.12 indicates table 4.12 as a graph.

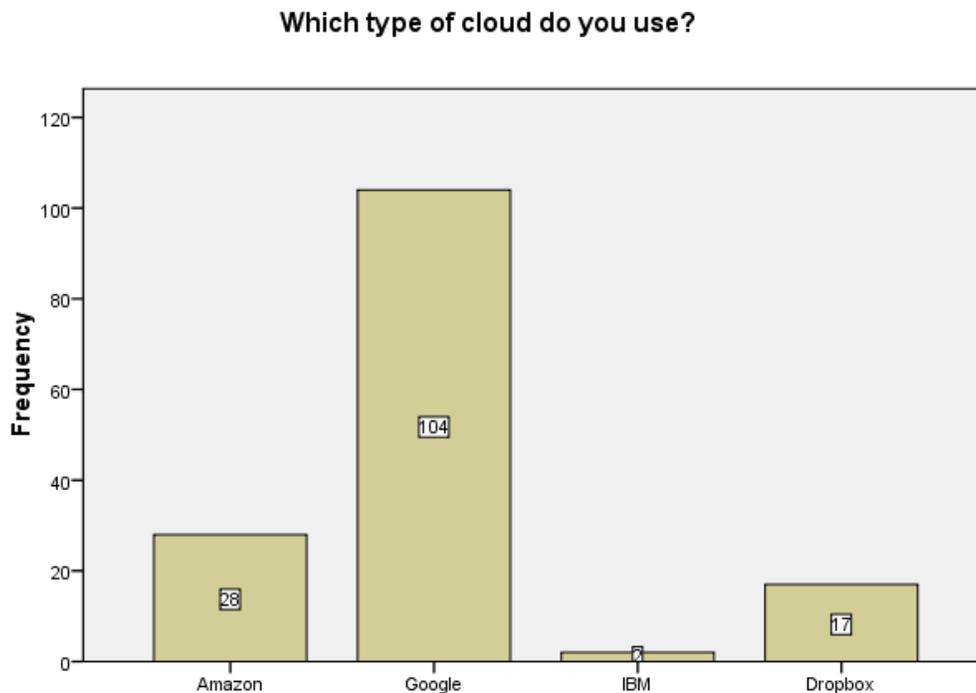


Figure 4. 12 Which type of cloud do you use?

4.3.13 How cloud computing is important in business?

Table 4. 13 How cloud computing is important in business?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Important	63	41.7	41.7	41.7
More important	84	55.6	55.6	97.4
Less important	4	2.6	2.6	100.0
Total	151	100.0	100.0	

The above table 4.13 shows that 63(41.7%) of respondents say cloud is important, 84(55.6%) of respondents say cloud is more important, and 4(2.6%) of respondents say cloud is less important but most of respondents believe that cloud has more important. The below figure 4.13 indicates table 4.13 as a graph.

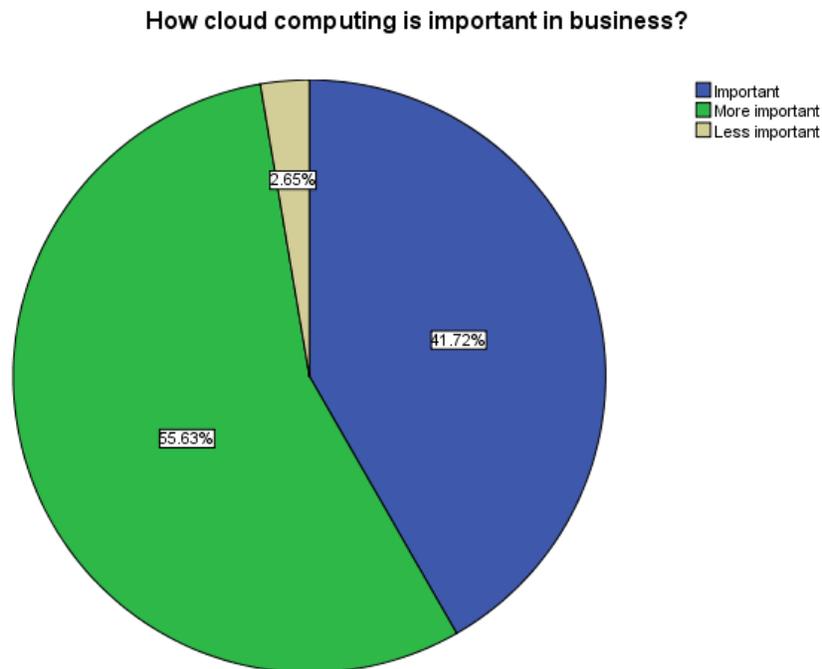


Figure 4. 13 How cloud computing is important in business?

4.3.14 how long have you been using Cloud?

Table 4. 14 How long have you been using Cloud?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2 years	52	34.4	34.4	34.4
2-5 years	79	52.3	52.3	86.8
Above 5 Years	20	13.2	13.2	100.0
Total	151	100.0	100.0	

The above table 4.14 shows that 52(34.4%) of respondents using cloud 2 years, 79(52.3%) of respondents using cloud between 2 to 5 years, 20(13.2%) of respondents using cloud more than 5 years. The below figure 4.14 indicates table 4.14 as a graph..

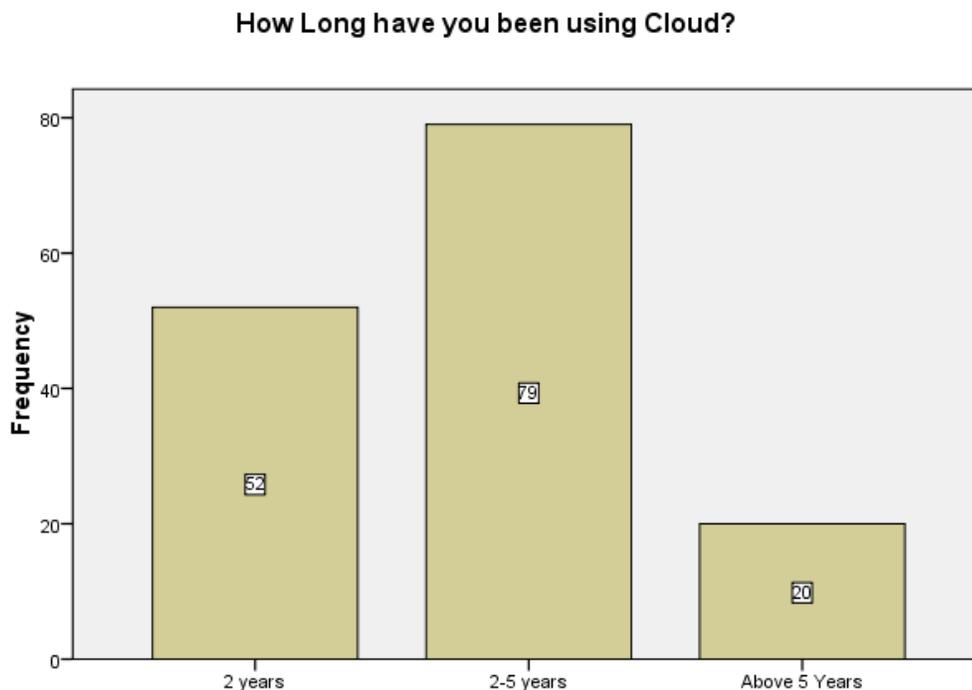


Figure 4. 14 How long have you been using Cloud?

4.3.15 Do you believe companies using cloud are increasing?

Table 4. 15 Do you believe companies using cloud are increasing?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	137	90.7	90.7	90.7
No	14	9.3	9.3	100.0
Total	151	100.0	100.0	

The above table 4.15 shows that 137(90.7%) of respondents say “yes” they believe that cloud computing usage is increasing, 14(9.3%) of respondents say “No” and they do not believe cloud usage is increasing. The below figure 4.15 indicates table 4.15 as a graph..

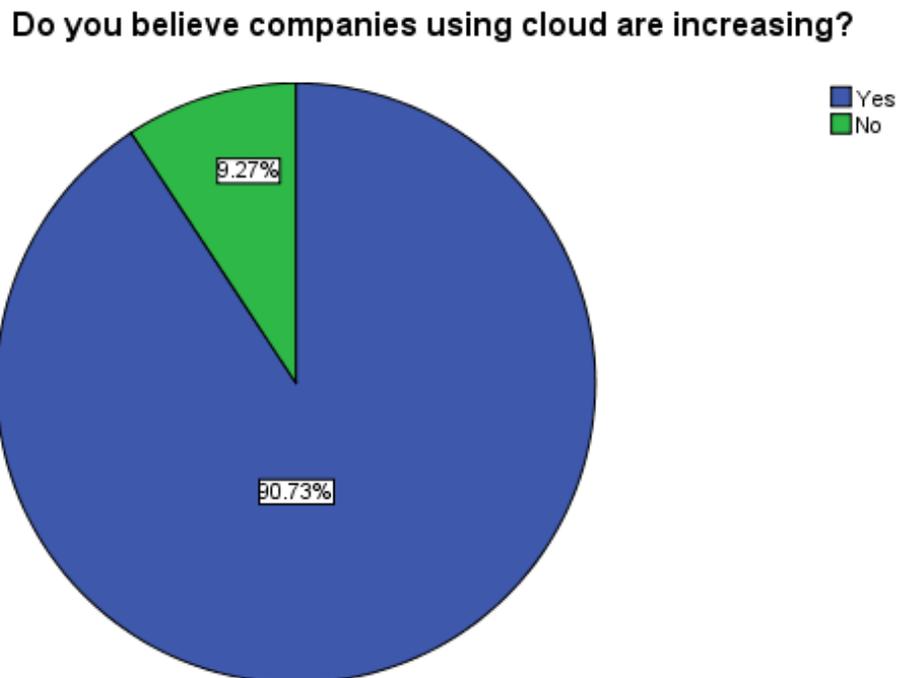


Figure 4. 15 Do you believe companies using cloud are increasing?

4.3.16 how is the risk of cloud computing?

Table 4. 16 How is the risk of cloud computing?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid low	38	25.2	25.2	25.2
Medium	84	55.6	55.6	80.8
High	29	19.2	19.2	100.0
Total	151	100.0	100.0	

The above table 4.16 shows that 38(25.2%) of respondents believe cloud computing risk is low, 84(55.6) of respondents believe that cloud risk is medium, and 29(19.2%) of respondents believe cloud risk is high. The below figure 4.16 indicates table 4.16 as a graph.

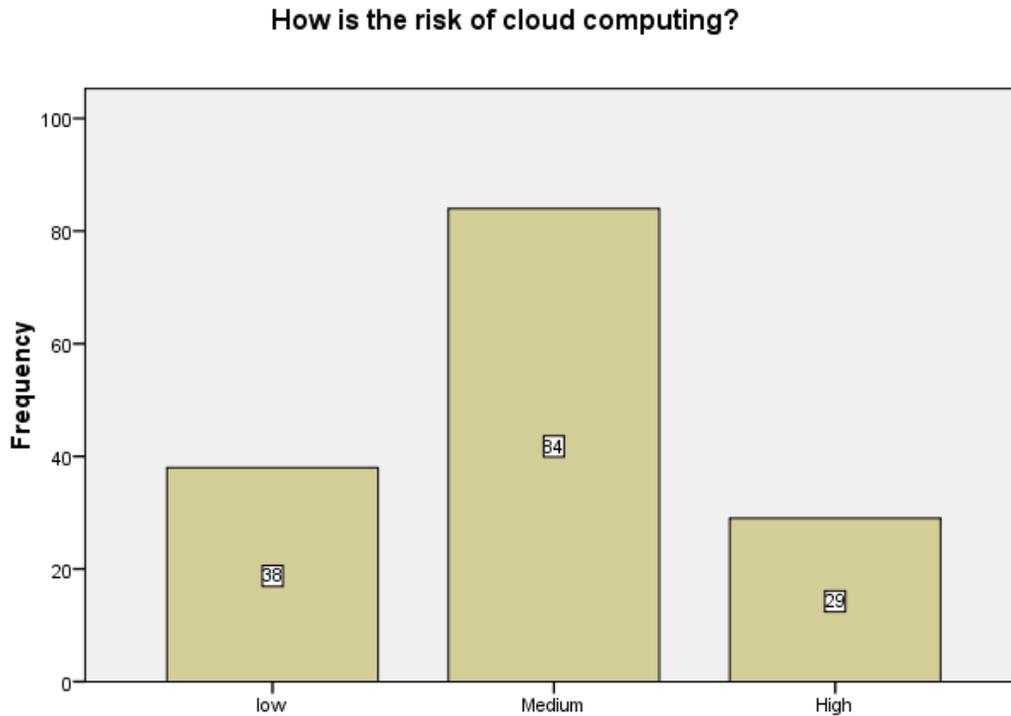


Figure 4. 16 How is the risk of cloud computing?

4.3.17 Do you believe cloud risk is increasing?

Table 4. 17 Do you believe cloud risk is increasing?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	109	72.2	72.2	72.2
No	42	27.8	27.8	100.0
Total	151	100.0	100.0	

The above table 4.17 shows that 109(72.2%) of respondents believe the risk cloud is increasing, and 42(27.8%) of respondents believe the risk is not increasing. The below figure 4.17 indicates table 4.17 as a graph.

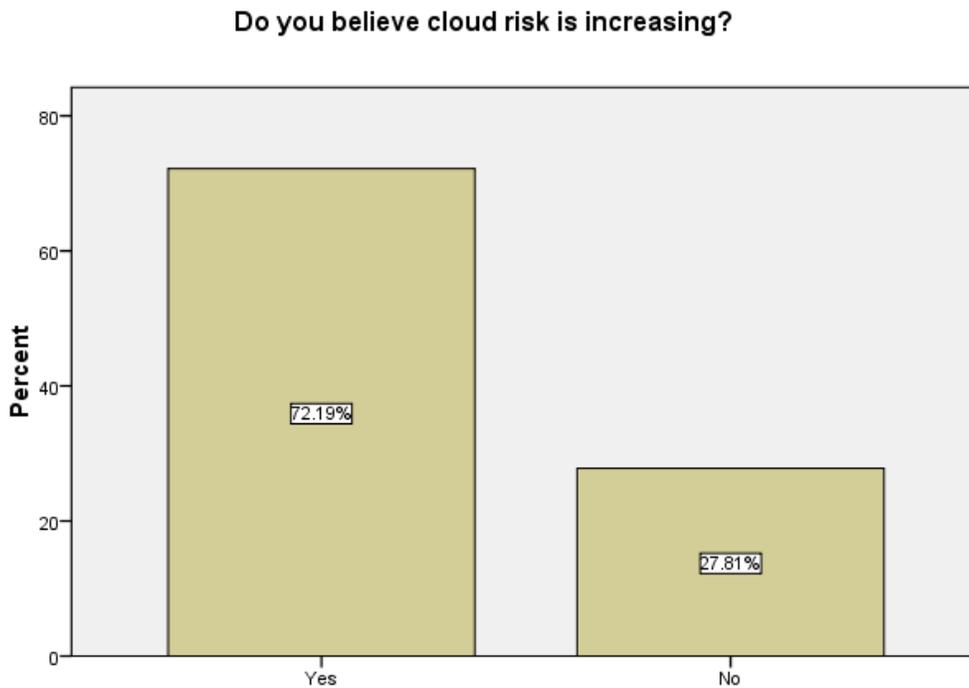


Figure 4. 17 Do you believe cloud risk is increasing?

4.3.18 did you ever face cloud security challenge?

Table 4. 18 Did you ever face cloud security challenge?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	69	45.7	45.7	45.7
	No	82	54.3	54.3	100.0
	Total	151	100.0	100.0	

The above table 4.18 shows that 69(45.7%) of respondents face cloud computing challenges, 82(54.3%) of respondents did not face any challenge of cloud computing that means the positive of cloud is high. The below figure 4.18 indicates table 4.18 as a graph.



Figure 4.18 Did you ever face cloud security challenge?

4.3.19 which type of challenge did you faced?

Table 4. 19 Which type of challenge did you faced?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Data loss	56	37.1	37.1	37.1
Data break	20	13.2	13.2	50.3
Nothing	75	49.7	49.7	100.0
Total	151	100.0	100.0	

The above table 4.19 shows that 56(37.1%) of respondents faced to loss their data, 20(13.2%) of respondents face to break their data, 75(49.7%) of respondents they didn't faced any problem. The figure 4.19 below shows the graph of table 4.19.

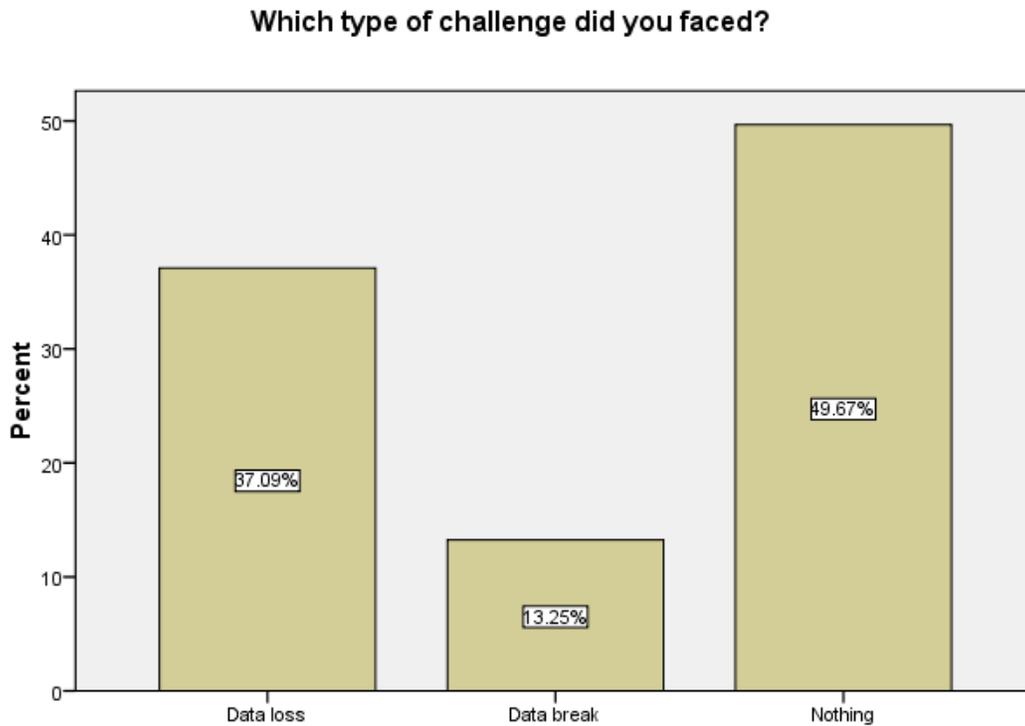


Figure 4. 19 Which type of challenge did you faced?

4.3.20 what do you think the main challenges of cloud are?

Table 4. 20 What do you think the main challenges of cloud are?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid People not understand about cloud	82	54.3	54.3	54.3
High cost	20	13.2	13.2	67.5
Security	49	32.5	32.5	100.0
Total	151	100.0	100.0	

The above table 4.20 shows that 82(54.3%) of respondents believe the main challenges of cloud People not understand about cloud, 20(13.2%) of respondents believe the main challenges of cloud is high cost, 49(32.5%) of respondents believe the main challenges of cloud is security. The below figure 4.20 indicates table 4.20 as a graph.

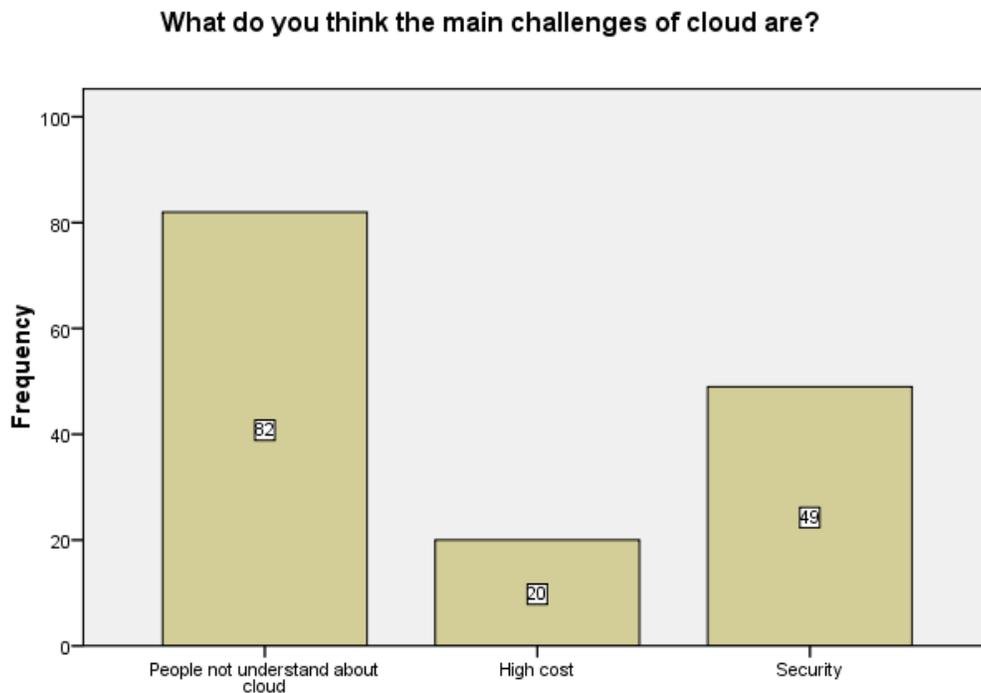


Figure 4. 20 What do you think the main challenges of cloud are?

4.3.21 what is the most important part we must protect?

Table 4. 21 What is the most important part we must protect?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Data Security	64	42.4	42.4	42.4
Network security	40	26.5	26.5	68.9
Software Security	36	23.8	23.8	92.7
All of them	11	7.3	7.3	100.0
Total	151	100.0	100.0	

The above table 4.21 shows that 64(42.4%) of respondents believe the most important part we must protect is Data security, 40(26.5%) of respondents believe the most important part we must protect is network security, 36(23.8%) of respondents believe software security. 11(7.3%) say we must protect all of them. figure 4.21 below indicates table 4.21 as graph.

What is the most important part we must protect?

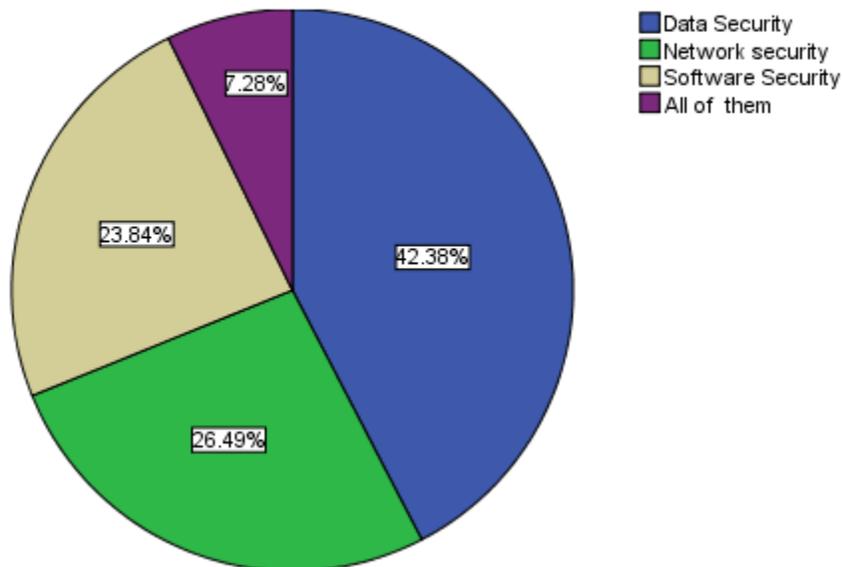


Figure 4. 21 is the most important part we must protect?

4.4 Summary

This chapter we discussed results of the survey made imperial and the results of the survey include analysis of experimental results, and also descriptive analysis, this study we make questionnaire and give to the respondents and we get good result that helped us to make the research helpful to output this frequency analysis and descriptive.

CHAPTER 5

SUMMARY OF THE STUDY, CONCLUSION AND RECOMMENDATIONS

In this chapter is the last chapter and I talk about summary of the study I will summarize the result that I get after finding also the conclusion of the study after that I will suggest recommendation and allowed for other researchers to extend and add more if its possible.

5.1 Summary of the study

After finding facts based on the questions asked researcher to the responds the researcher got this result.

5.1.1 What do you use to access cloud?

According the responds about this question (43%) of people use mobile to access cloud computing and (49.7%) of respondents use computer to access cloud computing and the rest of (7.3%) use both of them computer and mobile.

5.1.2 Which purpose do you use cloud?

About this question (82.8%) of respondents say that they use cloud computing for private and (17.2%) of respondents use cloud computing for business purpose.

5.1.3 How is the risk of cloud computing?

As we know cloud computing has advantages and risks so according to this research respondents believe that (25.2%) the risk of cloud computing is low, (55.6%) believe the risk is medium, and (19.2%) believe the risk of cloud is high.

5.1.4 Which type of challenge did you faced?

About (37.1%) of responds said that they faced data loss, and about (13.2%) faced data break it means some hackers tried to stole their data and (49.7%) of respondents they didn't met and challenges and their data is save.

5.1.5 What do you think the main challenges of cloud are?

About (54.3%) of People believe that the main challenge of cloud computing is people do not understand more about cloud computing, (13.2%) believe high cost is challenge of cloud and the rest (32.5%) security is the challenge of cloud computing.

5.1.6 What is the most important part we must protect?

About (42.4%) of respondents believe data security is the most important part to protect, (26.5%) believe network security is the most important part, (23.8%) said software security is the most part, and (7.3%) of people said all these three parts are important to protect.

5.2 conclusion

The result or outcome obtained from the respondents of this research showed that the Cloud computing has positive and negative impact and thoughts in society, most of people store to their data, they trust and they also know that cloud computing can have some problems that they can meet but they almost looking the positive side. Also the result showed that the companies and private users those are using cloud computing is increasing.

5.3 Recommendation

According to the findings and the result I get from the respondents after I analyze I realize that the most challenges of cloud computing is lack of understand about the cloud computing some of respondents said that the main challenges of cloud are cost were the rest said security, to cover this challenge the cloud users should get awareness and deeply understand about cloud computing, In this research I tried the best and I know there may be some gaps but I would like to give chance for other researchers who are interesting this topic to make further investigation to cover the needs of cloud and to overcome that challenges.

APPENDICES

Part (A) Personal detail

1. What is your gender?

Male female

2. How old are you?

18-25 26-35 36-45 46-55 56-65

Above 65

3. Are you student?

Yes no

4. Which faculty do you study or graduated?

5. What is your degree?

Undergraduate graduate PHD other

6. Do you work? If no skip no7

Yes no

7. Which type of work do you do?

Part (B) General Concept about Cloud computing part

8. Do you have you own computer or laptop?

Yes No

9. How long have you been using computer?

1year 2year 3year 5years above 5years

10. What do you use to access the cloud?

Mobile computer

11. Which purpose do you use cloud?

Private Business

12. Which type of cloud do you use?

Amazon Web Services Google Cloud Platform IBM Cloud

Oracle Cloud Dropbox other _____

13. How cloud computing is important in business?

Important more important less important

14. How long have you been using cloud?

2year 2-5year 5year above

15. Do you believe companies using cloud are increasing?

Yes No

Part (C) Cloud computing security and challenges

16. How is the risk of cloud computing?

Low medium high

17. Do you believe cloud risk is increasing?

Yes No

18. Did you ever face cloud security challenge?

Yes No

19. Which type of challenges did you faced?

Data loss data break

Other _____

20. What do you think the main challenges of cloud are?

People do not understand cloud computing High cost Security

21. What is the most important part we must protect?

Data

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