نموذج رقم (1)

إقـــــــرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

الحوسبة السحابية كإطار عمل مستقبلي لإدارة المنظمات الدولية غير الحكومية،
دراسة حالة على المنظمات الدولية غير الحكومية العاملة في قطاع غزة

Cloud Computing as a Future Framework for INGOs Management,
a Case Study on INGOs working in Gaza Strip

أقر بأن ما اشتملت عليه هذه الرسالة إنما هو نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيثما ورد، وإن هذه الرسالة ككل أو أي جزء منها لم يقدم من قبل لنيل درجة أو لقب علمي أو بحثي لدى أي مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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بسم الله الرحمن الرحيم

الجامعة الإسلامية – غزة
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نتيجة الحكم على أطروحة ماجستير

بناءً على موافقة شئون البحث العلمي والدراسات العليا بالجامعة الإسلامية بغزة على تشكيل لجنة الحكم على أطروحة الباحث/ **عمر خليل طه سمور** لنيل درجة الماجستير في **كلية *التجارة*/ قسم إدارة الأعمال** وموضوعها:

الحوسبة السحابية كإطار عمل مستقبلي لإدارة المنظمات الدولية غير الحكومية

دراسة حالة على المنظمات الدولية غير الحكومية العاملة في قطاع غزة

Cloud Computing as a Future Framework for INGOs Management, a Case Study on INGOs working in Gaza Strip

وبعد المناقشة العلنية التي تمت اليوم الاثنين 20 ذو القعدة 1435 هـ، الموافق 2014/09/15م الساعة الواحدة ظهراً بمبنى القدس، اجتمعت لجنة الحكم على الأطروحة والمكونة من:

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وبعد المداولة أوصت اللجنة بمنح الباحث درجة الماجستير في **كلية *التجارة*/ قسم إدارة الأعمال.**

واللجنة إذ تمنحه هذه الدرجة فإنها توصيه بتقوى الله ولزوم طاعته وأن يسخر علمه في خدمة دينه ووطنه.

والله ولي التوفيق ،،،

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Cloud Computing as a Future Framework for INGOs Management, a Case Study on INGOs working in Gaza Strip

Submitted by
Omar Khalil Sammour

Supervisor
Prof. Yousif Ashour

This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of MBA

September, 2014

﴿ قُلْ إِنَّ صَلَاتِي وَنُسُكِي وَمَحْيَايَ وَمَمَاتِي لِلَّهِ رَبِّ
الْعَالَمِينَ، لَا شَرِيكَ لَهُ وَبِذَلِكَ أُمِرْتُ وَأَنَا أَوَّلُ الْمُسْلِمِينَ ﴾

صدق الله العظيم
(سورة الأنعام : آية 162)

Cloud Computing as a Future Framework for INGOs Management
(Case Study on INGOs working in Gaza Strip)

ABSTRACT

The objective of this thesis is to understand to what extent are the INGOs using and managing Cloud Computing services as a future framework in their daily operations, The descriptive analytical method is used to study the effects of the main five dimensions (E-Management, Organization Performance, Organization Management, Risks and Security, Cost and Benefits) on Cloud Computing as a Future Framework on INGOs Management.

In order to address the main objective of this thesis a questionnaire is designed to INGOs working in Gaza strip. This questionnaire is used as a data collection tool. The research population was (160) of the INGOs IT and management employees whose their works are involved with cloud computing. (121) questionnaires were recollected, filled by related specialized employees.

The results showed that there is a significant relationship between the adoption of Cloud Computing and the five independent variables mentioned above at level of significance $\alpha \leq 0.05$. Based on the findings, the study strongly recommended to implement cloud computing as a framework for INGOs which has great benefits returned for their organizations.

الحوسبة السحابية كإطار عمل مستقبلي لإدارة المنظمات الدولية غير الحكومية
(دراسة حالة على المنظمات الدولية غير الحكومية العاملة في قطاع غزة)

ملخص الدراسة

إن الهدف من هذه الأطروحة هو أن نفهم إلى أي مدى تستطيع المنظمات الدولية غير الحكومية استخدام وإدارة خدمات الحوسبة السحابية كإطار عمل مستقبلي في عملياتها اليومية، وقد استُخدم المنهج الوصفي التحليلي لدراسة الآثار المترتبة على الأبعاد الرئيسية الخمسة (الإدارة الإلكترونية، أداء المنظمة، إدارة المنظمة، المخاطر والأمن، والتكلفة والفوائد) على الحوسبة السحابية كإطار عمل مستقبلي للإدارة المنظمات الدولية غير الحكومية.

ولقد تم تصميم استبيان خاص بالمنظمات الدولية غير الحكومية العاملة في قطاع غزة من أجل معالجة الهدف الرئيسي لهذه الأطروحة، ولقد استخدمت الاستبانة كأداة لجمع البيانات، حيث كانت عينة الدراسة (160) من موظفي تكنولوجيا المعلومات والإدارة الذين ترتبط أعمالهم بالحوسبة السحابية في المنظمات الدولية غير الحكومية. ولقد تم استلام (121) استبياناً تم تعبئته من الموظفين ذوي الاختصاص.

أظهرت النتائج أن هناك علاقة ذات دلالة إحصائية بين الحوسبة السحابية والمتغيرات المستقلة الخمسة للدراسة عند مستوى الدلالة $\alpha \leq 0.05$. واستنادا إلى النتائج، أوصى البحث وبقوة بتنفيذ الحوسبة السحابية كإطار عمل مستقبلي للمنظمات الدولية غير الحكومية لما لها منافع عظيمة تنعكس على العمليات اليومية لهذه المنظمات.

DEDICATION

To all the martyrs of Palestine whose are nobles from all of us,

To my lovely parents, who have supported me all the time since the beginning of my studies. I have a special feeling of gratitude to them, because without their love and support I could never achieve this accomplishment,

A special big thank to my lovely small family, my wife and my little son Yazan who are constant source of support and encouragement in all my undertakings,

To my dear brothers, sisters and their kids as well as my friends specially the closest of them,

To Islamic Relief Organization which I am proud to work for, also my dear colleagues,

I dedicate this work to all of you and prayed Allah Almighty to be beneficial.

ACKNOWLEDGMENTS

I start this section with the first word revealed in the Quran "Read" .

"Read: in the name of your Lord who created. He created man from a clot. Read ، and your Lord is the Most Honorable. who taught with the pen. He taught man what he did not know"

(Surat Al-Alaq, Ayat 1:5)

First of all thanks to my most beloved ALLAH almighty, for giving me guidance and strength to complete this work.

It is difficult to overstate my gratitude to my supervisor Prof. Yousif Ashour, I would like to express my appreciation to him for his help and support during my research. Undoubtedly, without his guidance and persistent help finishing this thesis would not have been possible.

Also I would like to thank Dr. Ayman Abusamra and Prof. Samy Abunaser for accepting to discuss my research with aim of making it better.

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ABBREVIATION

Abbreviation	Description
API	Application Programming Interface
ARPANET	Advanced Research Projects Agency Network
AWS	Amazon Web Services
CBOs	Community Based Organizations
CIO	Chief Information Officer
CRM	Customer Relationship Management
EC2	Elastic Compute Cloud
E-Management	Electronic Management
ENISA	European Network and Information Security Agency
FHNW	University of Applied Sciences and Arts Northwestern Switzerland
IaaS	Infrastructure as a Service
ICT	Information Communication Technology
INGOs	International Non Governmental Organizations
IT	Information Technology
JASDAQ	Japanese
NCC	National Computing Center
NGOs	Non Governmental Organizations
NIST	National Institute of Standards and Technology
PaaS	Platform as a Service
PC	Personal Computer
RDBMS	relational database management system
S3	Simple Storage Service
SaaS	Software as a Service
SLA	Service Level Agreements
SPSS	Statistical Package for the Social Sciences
SQS	Simple Queue Service
SWAF	Swedish Armed Forces
USAID	United States Agency for International Development
VPN	Virtual Private Network

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Chapter 1

General Background

1.1 Introduction:

In current computing world, It is believed that ICT is very important for the workflow in any organization especially those depend on e-Management basically, this study will talk about one of the most modern ICT models which is Cloud Computing that has got lots of attention analysts because of the opportunities it is offering.

Cloud Computing is defined by The National Institute of Standards and Technology (NIST), as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction (NIST, 2011). Furthermore, Cloud Computing refers to the delivery of computing resources over the Internet. Instead of keeping data on hard drive or updating applications for the organization's needs, the organization can use a service over the Internet, at another location, to store information or use its applications. Doing so may give rise to certain privacy implications.

Enterprises have been striving to reduce computing costs and for that reason most of them start consolidating their IT operations and later using virtualization technologies.

For the good of the enterprises there is a new technology to help them in this i.e. Cloud Computing. Cloud Computing claims to take enterprises search to a new level and allows them to further reduce costs through improved utilization, reduced administration and infrastructure cost and faster deployment cycles (Boss et al., 2007).

Also Cloud Computing can significantly reduce the cost and complexity of owning and operating computers and networks. If an organization uses a cloud provider, it does not need to spend money on information technology infrastructure, or buy hardware or software license (Florence, 2012).

One of the things which make Cloud Computing useful to INGOs is the fact that all software and applications update automatically. With regards to performance, the cloud service allows employees to work from whatever locations as long as they have reliable internet connection. Cloud Computing enforces the best security policies which makes it hard for unauthorized parties to access or modify any organizational data.

Based on the foregoing reasons, organizations may turn to Cloud Computing services for data processing, storage and backup, to facilitate productivity, for accounting services, for communications, or for customer service and support. The interference of cloud can transform a nonprofit, or an entire sector of nonprofits, achieves its mission and creates lasting impact in its communities, where it is handled and discussed in the light of e-Management interference effects on the INGOs' operations. Moreover, Cloud Computing has a clear impact on INGOs where the adoption of the technology can help cutting operational costs, streamline the flow of communications, modernize accounting systems, and facilitate resource management and help an organization in creating new business opportunities. as show in Figure1.1

This study highlights the role of Cloud Computing in INGOs and presents the case study of those working in Gaza Strip, INGO which may depend on e-Management on their daily works, so there is a need to keep up-to-date with technology through the application of Cloud Computing. There is a necessity for that as there are many employees who work in the field and they need to work remotely in order to access the existing database for all offices employees.

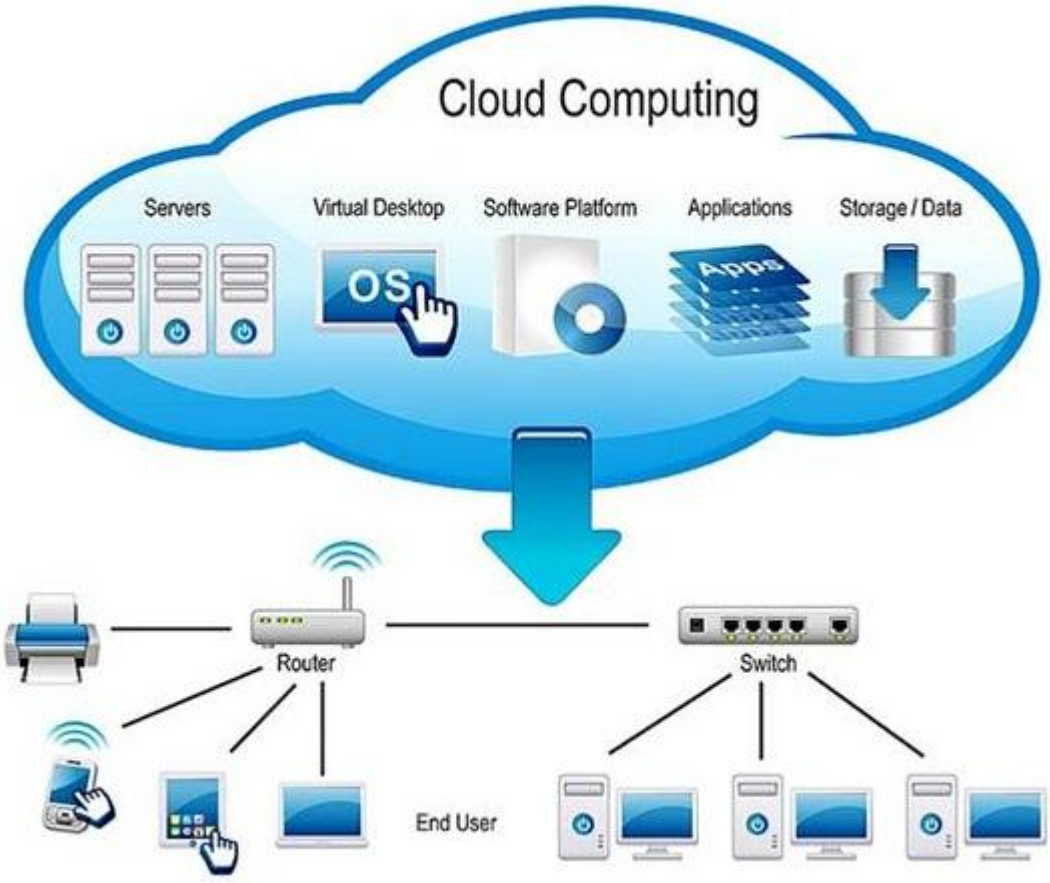

Figure 1.1: Cloud Computing Diagram (Pritchard, 2010).

1.2 Problem Statement and Justification:

Cloud Computing has a main role in Management processes as a facilitator to improve performance. In the recent decades, numerous studies have documented the importance of Cloud Computing but none of them discussed Cloud Computing as a future framework for INGOs Management.

International Non-governmental organizations (INGOs) in the Gaza Strip suffer from hard circumstances, especially the electricity problem, which affect the work of INGOS, where the servers do not always work. There is also the work of branches between the West Bank and Gaza, as well as correspondence with

the head quarter outside Palestine, where there is a lack of reliable data transfer because local servers may be down.

From the above mentioned, the researcher chose to write on the topic of Cloud Computing as the information becomes available to management or the employees whether they are working in the field or at home, or from tablet computers or from any branch of the INGOs regardless of the circumstances that hamper access to the data. Furthermore, a recommendation from a previous thesis entitled "The Adoption of Cloud Computing Technology in Higher Education Institutions" motivated this thesis to be written on Cloud Computing.

This study will seek to answer the main question:

What is the main role of Cloud Computing as a future framework for INGOs management in Gaza strip?

1.3 Study Questions:

What are the factors that lead to implement Cloud Computing in INGOs?
What are the benefits and risks of implementing Cloud Computing as a framework in INGOs management?

1.4 Study Variables:

Following will be the study variables as shown in Figure 1.2:

a. Dependent variable: Cloud Computing

b. Independent variables: Cloud Computing is affected by the following factors:

- Organization Management
- E-Management
- Organization Performance
- Security and Risks
- Cost and Benefits

Figure 1.2: Variables of the Study (Articulated by the researcher)

1.5 Study Hypotheses:

The main hypothesis for this study:

There is a statistical significant relationship at ($\alpha \leq 0.05$) between independent variables and Cloud Computing in INGOs. This hypothesis can be split into the following sub-hypothesizes:

a. There is a statistical relationship between Management Support and Cloud Computing.
b. There is a statistical relationship between e-Management and Cloud Computing.
c. There is a statistical relationship between Organization Performance and Cloud Computing.
d. There is a statistical relationship between Security and Risks and Cloud Computing.
e. There is a statistical relationship between Cost and benefits and Cloud Computing.

There is a statistical significant differences at ($\alpha \leq 0.05$) among respondents toward Cloud Computing as a future framework for INGOs Management due to personal traits (Gender, Scientific qualification, Scientific specialization, Age, Job title, Experience years in job title, and Extent of organization dependency on Information Technology systems).

1.6 Objectives of the Study:

The purpose of this study will be:

a. To evaluate and explore the role of Cloud Computing as a future framework among INGOs in the Gaza Strip.
b. To identify the characteristics of Cloud Computing and e-Management in INGOs
c. To enrich the Palestinian content of studies of such study.
d. To provide recommendations that could support managers in implementing Cloud Computing as a framework for Management in INGOs
e. To explore the variation in Cloud Computing implementation in relation to cost and benefits to INGOs.

1.7 Importance of the Study:

The following points will demonstrate the importance of this study:

a. Findings of this study are significant and insightful in regard to the present and future of strategic organizational planning and management practices in INGOs. This study will produce new frontiers in INGOs interventions which can enhance achievement of them.
b. This study will benefit researchers in conducting similar studies in new communities and using new variables. It will open up the door for researchers to discuss the concept of Cloud Computing and its practices in other sectors.
c. This study will contribute towards enriching the researcher's knowledge regarding the concept of Cloud Computing and its practices through access to literature, articles and books related to the research subject. It also contributed towards increasing researching skills. This study will contribute to the development of career opportunities in the field of cloud computer as a future framework for NGOs management generally and in INGOs management specially.

1.8 Research Methodology

The researcher will follow a descriptive analytical approach in conducting this study as it is considered the most used in business and social studies. This research is categorized under the applied research that depends mainly on data collection from primary sources through distributing a questionnaire that will be designed especially for this research. Questionnaires will target the study sample and the collected data will be analyzed by SPSS.

1.8.1 Research Population and Sample

The target population of this study will consist of INGOs in the Gaza Strip. The number of INGOs working in the Gaza Strip is 79 according to the Ministry of Interior for the year 2014.

1.8.2 Duration of the Study

The study was conducted from April 2014 to July 2014 and The questionnaire was distributed in a period of two weeks which were the last two weeks of May 2014.

1.8.3 Place of the Study

The study was applied on the International Non-Governmental Organizations (INGOs) working in Gaza Strip.

1.8.4 Study Limitations

The limitations of the study are as follows:

- The study was conducted only in a sample of INGOs in Gaza Strip.
- The only source of primary data was the questionnaire.
- The study depends on the previous studies conducted on supplier selection, published researches, papers, documents and other related literature.

1.8.5 Methods of Data Collection

The researcher used two sources of data gathering in regard to the components of Cloud Computing and related subjects affecting it and they are as follows:

- **Secondary Data:** In writing the theoretical sections of the study used:

a. Scientific journals and academic magazines.

b. Thesis accessed through the universities' libraries.

c. Textbooks.

d. Research papers, business articles and reports connected to the research topic.

e. Online resources.

- **Primary Data:** A questionnaire will be designed by the researcher especially for this study.

1.8.6 Statistical Analysis Tools

The researcher used both qualitative and quantitative data analysis methodology. The Data was analyzed using (SPSS 15). The researcher utilized the following statistical tools:

- Kolmogorov-Smirnov test of normality.
- Pearson correlation coefficient for Validity.
- Cronbach's Alpha for Reliability Statistics.
- Frequency and Descriptive analysis.
- Parametric Tests.

☒ Definition of Key Terms:

For the purposes of this study, the following terms will be critical:

i. Cloud Computing:

The US National Institute of Standards and Technology (NIST) defines Cloud Computing as "Cloud Computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three delivery models and four deployment models" (Takabi et al., 2010).

ii. International Non-Governmental Organization (INGO):

The World Bank defines a non-governmental organization (NGO) as "private organizations that pursue activities to relieve suffering, promote the interests of the poor, protect the environment, provide basic social services, or undertake community development". An **international non-governmental organization** (**INGO**) has the same mission as a non-governmental organization (NGO), but it is international in scope and has outposts around the world to deal with specific issues in many countries. (“World Bank and NGOs”, 2010)

1.9 Research Structure

The structure of this thesis was organized as follows:

Chapter one: Present the general framework that includes: introduction, research problem and justifications, hypothesis, objectives and research methodology.

Chapter Two: Provide the literature review on the Cloud Computing**.**

Chapter Three: List the previous studies and the commentary.

Chapter Four: Explain the practical framework including the research methodology, testing research tool, questionnaire data analysis, discussion, and interpretation.

Chapter Five: Focus on the conclusion, recommendations and related future studies.

Chapter 2

Theoretical Framework

Section 1: Cloud Computing.

Section 2: INGOs in Gaza Strip.

Section 1

Cloud Computing

2.1.1 History of Cloud Computing

2.1.2 Definition

2.1.3 Cloud Computing Architecture

2.1.4 Cloud as an Internet

2.1.5 Virtualization

2.1.6 Characteristics

2.1.7 Deployment Models

2.1.8 Service Models

2.1.9 Cloud Computing Vendors

2.1.10 Cloud Computing in Small Organizations

2.1.11 Legal Issues When Using Cloud Models

2.1.12 Advantages of Cloud Computing

2.1.13 Disadvantages of Cloud Computing

2.1.14 Need for Cloud Computing

2.1.15 Cloud Computing Adoption

2.1.16 Drivers for Cloud Computing

2.1.17 Barriers to Cloud Computing

2.1.18 Actors of Implementing Cloud Computing

Introduction:

Cloud Computing has been a much debated topic in the IT sector today (Vaquero et al, 2009). According to Haag and Cumming (Haag and Cumming ,2010) "Cloud Computing is a technology model in which any and all resources-application software, processing power, data storage, backup facilities, development tools… literally everything (in the computing context) - are delivered as a set of services via the Internet".

Enterprises have been striving to reduce computing costs and for that reason most of them start consolidating their IT operations and later using virtualization technologies. For the good of the enterprises there is a new technology to help them in this i.e. Cloud Computing. Cloud Computing claims to take enterprises search to a new level and allows them to further reduce costs through improved utilization, reduced administration and infrastructure cost and faster deployment cycles (Boss et al., 2007).

Enterprises need to consider the benefits, drawbacks and the effects of Cloud Computing on their organizations and usage practices, to make decision about the adoption and use. In the enterprise, the "adoption of Cloud Computing is as much dependent on the maturity of organizational and cultural processes as the technology (Fellowes, 2008).

There are many benefits stated of cloud computed by different researchers which make it more preferable to be adopted by enterprises. Cloud Computing infrastructure allows enterprises to achieve more efficient use of their IT hardware and software investments.

This is achieved by breaking down the physical barrier inherent in isolated systems, automating the management of the group of the systems as a single entity. Cloud Computing can also be described as ultimately virtualized system

and a natural evolution for data centers which offer automated systems management (Boss et al., 2007).

This section provides the background material for the remainder of this thesis. It provides the definition of Cloud Computing, a brief history of Cloud Computing, its benefits for INGOs, underlying technologies, service and delivery models offered by Cloud Computing, characteristic, factors to be considered in cloud adoption.

2.1.1 History of Cloud Computing

The underlying concept of cloud computing was first introduced in 1950. During that time large scale mainframes was available for academia and corporations use. Mainframes were too costly and it was not practical to have separate mainframes for each user; therefore a new architecture was developed. Based on this new architecture users from different terminals were able to access the mainframe and share the CPU time and power. By doing so, the return on investment was increased and the mainframes' idle (inactive) time was decreased. Later, in 1960s this phenomenon became more popular after John McCarthy started to argue that computation will someday become a public utility (McCarthy, 1960). Nowadays this idea has become more popular than ever. Many believe that in near future, just like other types of utility (water, electricity, gas and telephony) the basic level of computing will be provided to people to meet their day to day needs (Buyyaa et al, 2009). Another influential person to the history of cloud is J.C.R. Licklider who developed APRANET.

He was probably anticipating the power of Internet and cloud computing when he was introducing his famous "intergalactic computer network" concept (A Complete History of Cloud Computing , 2012). In 1990s telecommunication

companies, who used to deliver their services based on point to point data circuits, changed their service delivery strategies. They offered Virtual Private Networks (VPN) services. It was during those days when the symbol of cloud was first used to depict the connection between providers and users. Later, when computers become more popular, scientists and technologists developed new algorithms by which the computing resources were allocated to users more efficiently. These algorithms were providing the optimal use of computing resources, such as infrastructure, platform and applications (Cloud computing , 2013).

Salesforce.com, which started its operation in 1999, delivered the first actual cloud computing service. It was the first company who delivered an application from its own website. After the dot-com bubble collapsed, many companies went out of business. Research shows that only 50% of dot-com companies survived until 2004. Companies which survived had to redesign their business processes, to find new ways to make money. Internet was an opportunity to be used by these companies. For them Internet was not just a medium to do business but a vital part of their businesses. In 2002 Amazon.com introduced Amazon Web Service; this service was giving customers the ability to store their data and also to allow many people to work on the same task. In 2004 Facebook, which is a social networking website, was launched. Amazon's Elastic Compute Cloud (EC2) was launched in 2006, which was enabling users to run their application on cloud. The pay-as-you-go model of payment which is now the standard for cloud computing was first introduced by Amazon's Simple Storage Service (S3). In 2007, force.com which was a Platform-as-a-Service, was launched by Salesforce.com. In 2009, Google Apps, which was allowing people to create and store their documents online, was launched. Right now major cloud providers are thinking about finding a way by which they can

integrate. In 2010, salesforce.com launched a cloud-based database which enabled customers to develop applications on cloud. Developed application can be used by any device, run on any platform and be written in any language. (A Complete History of Cloud Computing , 2012)

2.1.2 Definition:

The main idea of Cloud Computing is not a new one but it has already existed through the grid computing systems and time sharing systems. The reason which made it as a trend in Information Technology (IT) nowadays is the advances in web technologies, virtualization, and software technologies (Kim et al., 2009; Etro, 2009) defines Cloud Computing as an Internet-based technology where data is stored on servers and made available to customers as a service (SaaS) and on-demand to clients.

The Cloud Computing service is provided to users in a new service model independent of location, device, and time. It will be provided by a network of interconnected, virtualized, and powerful computers (Misra and Mondal, 2011; Marston et al., 2011).

The computing resources in Cloud Computing can be dynamically allocated, scaled up, or de-allocated which means that the users do not have to invest in new infrastructure or licensing new software as their needs increase and they do not even need any upfront capital investments in IT (Subashini and Kavitha, 2011).

The new service model in Cloud Computing comes with a new on-demand service model and a "pay as you go" payment method where the users use the

service when they need it and pay only for what they used of computing resources (Marston et al., 2011).

Kim et al. (2009) stated that if the technology does eventually take root, it will have a real impact on the IT landscape. First of all, a big change in the deployment and pricing method of software will happen. Secondly, as the whole processing operations will take place in the remote servers the user devices will become lighter and less expensive.
Finally, they also believe that the adoption of Cloud Computing will create a new IT ecosystem between different type model providers.

Cloud Computing is also about how IT is provisioned and used and not only about technological improvements of data centers (Creeger, 2009). Enterprises must consider the benefits, drawbacks and other effects of Cloud Computing on their enterprises and usage practices before adopting and using Cloud Computing (Khajeh-Hosseini et al., 2010b).

Larry Ellison founder of Oracle says "we've defined Cloud Computing to include everything that we already do... I don't understand what we would do differently in the light of Cloud Computing other than change the wording of some of ours ads" (Farber, 2008). Richard Stallman founder of the Free Software Foundation and creator of the operating system GNU says "it's stupidity. It's worse than stupidity: it's a marketing hype campaign" (Johnson, 2008).

The Gartner consulting propose a definition as follows “A style of computing where scalable and elastic IT-related capabilities are provided as-a-service using Internet technologies to multiple external customers” (Plummer et al., 2009).

The National Institute of Standards and Technology (NIST) defines Cloud Computing as “ a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., network, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics and three service models and four deployment models” (Mell and Grance, 2009b, Mell and Grance, 2009a).

The European Network and Information Security Agency (ENISA) has defined Cloud Computing as “on-demand service model for IT provision, often based on virtualisation and distributed computing technologies” (Catteddu and Hogben, 2009). However the first academic definition of Cloud Computing was offered by Ramnath Chellapa in 1997 where he defined the term cloud as “a computing paradigm where the boundaries of computing will be determined rationale rather than technical” (Chellapa, 1997).

After a thorough review of existing Cloud Computing definitions and the computing paradigms from which Cloud Computing borrows terms and concepts, in this study the Cloud Computing defined as the set of hardware, networks, storage, services, and interfaces that combine to deliver aspects of computing as a service. Cloud services include the delivery of software, infrastructure, and storage over the Internet.

2.1.3 Cloud Computing Architecture: NIST (National Institute of Standards and Technology) is a well accepted institution all over the world for their work in the field of Information Technology. I shall present the working definition provided by NIST of Cloud Computing. NIST defines the Cloud Computing architecture by describing five essential characteristics, as shown in figure 2.1 three cloud services models and four cloud deployment models (Cloud Security Alliance, 2009).

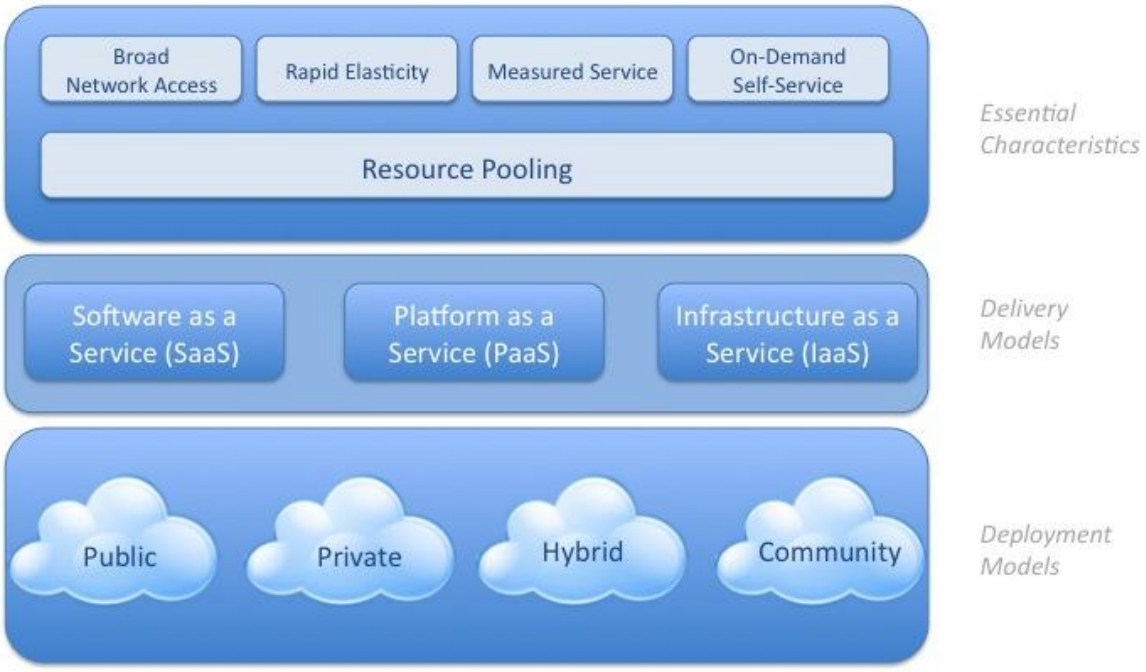

Figure 2.1- Visual model of NIST Working Definition of Cloud Computing (Cloud Security Alliance, 2009)

2.1.4 Internet as a Cloud:

Toby Velte records that the Internet has for some years been represented in network diagrams as a cloud intended to represent "all that other stuff" (Velte et al., 2009) that makes the network work, purposely transparent to the browser viewer who needn't bother about how it works - the other stuff is someone else concern, so the diagram need not be detailed.

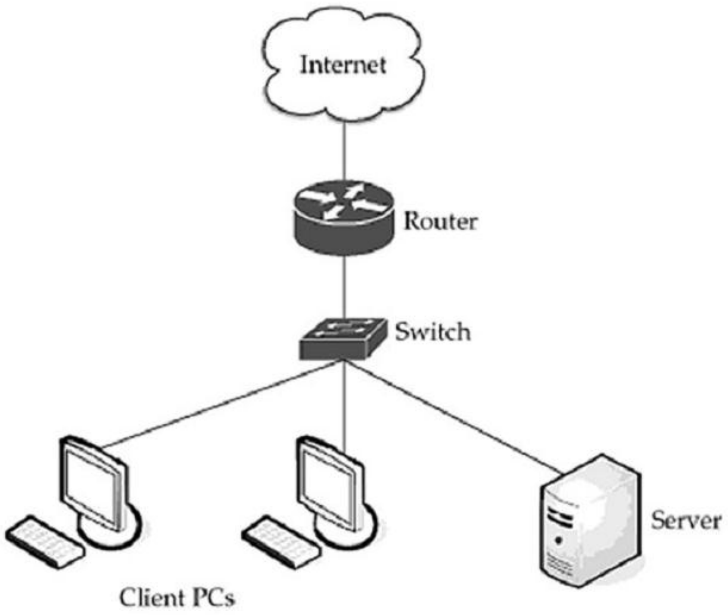

Figure 2.2 - Internet as Cloud (Velte et al, 2009)

It is the user's freedom from concern about the infrastructure that renders the services offered across the Internet – or cloud – so much like a utility that the user may regard them as accessible as water or electricity, to be switched on and off when desired.

The concept of computing as a utility had first been mentioned by MIT Professor John McCarthy in a speech for MIT‟s 1961 Centennial when he famously said:

"computing may someday be organized as a public utility just as the telephone system is a public utility.... The computer utility could become the basis of a new and important industry". In 1969, Leonard Kleinrock, a scientist of the Advanced Research Projects Agency Network (ARPANET) which created the foundation of the Internet, said: "we will probably see the spread of 'computer utilities' which, like present electric and telephone utilities, will service individual homes and offices across the country" (Kleinrock, 2005).

Cloud Computing is not just the Internet, but the combination of both the applications delivered as services over the Internet and the hardware and systems software in the data centers that provide those services. It is the combination of the data centre hardware and software that makes up the Cloud.

2.1.5 Virtualization

Apart from a computer and an internet connection virtualization is the most important technology which allows Cloud Computing to reach its full potential (Böhm et al, 2009).

With virtualization, applications and infrastructure are independent, allowing servers to be easily shared by many applications where applications are running virtually any-where in the world. This is possible as long as the application is virtualized (Armbrust et al., 2009).

Thanks to virtualization a physical server can be split into several virtual servers, this way an entirely new service emerged. These virtual severs are called “virtual instances” (Zhang et al, 2010). Consequently, the could vendor sell two different basic options: the rent of the physical servers and the rent of these virtual instances (Mazzuco and Dumas, 2011).

Although these two options are able to perform the same functions there are some differences, for example the virtual instances are cheaper since it is not necessary the physical server but they are also seen as less secure than the physical servers (Barnatt, 2010).

Virtualizing the application for the cloud means to package the bits of the application with everything it needs to run, including pieces such as a database, a middleware and an operating system. This self-contained unit of virtualized application can then run anywhere in the world (Armbrust et al., 2009).

In the cloud model what customers really pay for, that is what they dynamically rent, are Virtual machines. This enables the cloud service provider to share the cloud infrastructure Located in a data center between multiple customers. The level of virtualization of what is offered depend on which of the three (SaaS, PaaS, or IaaS) service models the user requires. Virtualization allows multiple operating systems to be executed simultaneously on the same physical machine. Virtualization and the dynamic migration of virtual machines allows cloud computing to make the most efficient use of the currently available physical resources (Delgado, 2010)

2.1.6 Characteristics:

Cloud Computing has characteristics can be categorized as essential characteristics and common characteristic. The NIST has identified five essential characteristics (Plummer et al., 2009) and eight common characteristics of Cloud Computing (Grance, 2010, Mell and Grance, 2009a). The essential characteristics are:

- **On-demand self-service.** A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
- **Broad network access**. Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).
- **Resource pooling.** The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to

consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.

- **Rapid elasticity.** Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.
- **Measured service.** Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.
- **Other common characteristics of Cloud Computing**: massive scale availability of computing and storage capabilities, homogeneity, use of virtualization technology, resilient computing, and pay-as- you go model. Low or no up-front IT infrastructure costs, geographical distribution of clouds, low overhead costs for IT and administration personnel.

2.1.7 Deployment Models:

There are four models for Cloud Computing service deployment, regardless of the service or delivery model (IaaS, PaaS, or SaaS) adopted. These deployment models may have different derivatives which may address different specific needs or situations (Dustin Amrhein et al., 2010, CSA, 2009). The basic

deployment models are public cloud, private cloud, community cloud and hybrid cloud (Grance, 2010).

- **Public cloud** in this deployment the cloud infrastructure is accessible to general public and shared in a pay as you go model of payment. The cloud resources are accessible via the internet and the provider is responsible for ensuring the economies of scale and the management of the shared infrastructure. In this model clients can choose security level they need, and negotiate for service levels (SLA). The first and most used type of this offering is the Amazon Web Services EC2. Figure 2.3 shows the structural formation of a public cloud.

  In this type of cloud, the organization does not access or use the public cloud which is accessible to the general public.

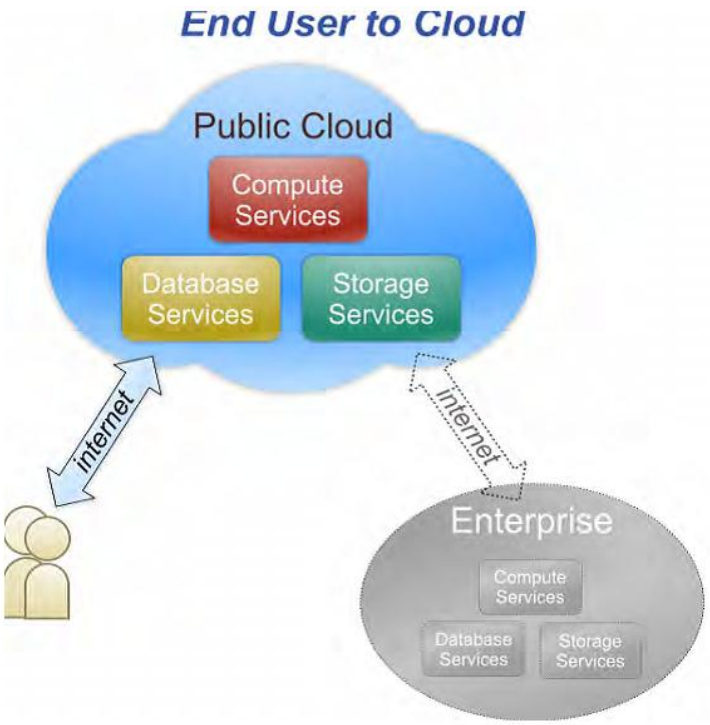

Figure 2.3: Public Cloud (Dustin Amrhein et al., 2010)

- **Private cloud** is another deployment model for cloud services. In this model the cloud resources are not shared by unknown third parties. The cloud resources in this model may be located within the client organization premises or offsite. In this model the clients security and compliance requirements are not affected though this offering does not bring the benefits associated with reduced capital expenditure in IT infrastructure investments. Figure 2.4 shows the structural formation of a private cloud.

  In this type of cloud the general public does not have access to the private cloud neither does the organization use the public cloud.

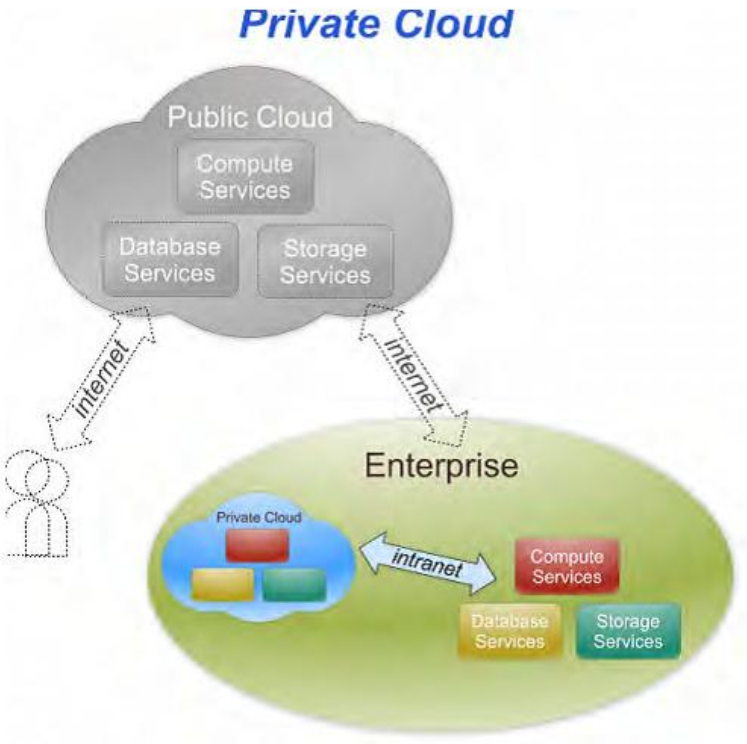

Figure 2.4: Private Cloud (Dustin Amrhein et al., 2010)

- **Hybrid cloud** as its name implies is a model of deployment which combines different clouds for example the private and public clouds. In this model the combined clouds retains their identities but are bound together "by standardized or proprietary technology" (CSA, 2009). Figure 2.5 shows the hybrid cloud formation.

  In this type of cloud the general public does not have access to the cloud, but the organization uses infrastructure in both the public and private cloud.

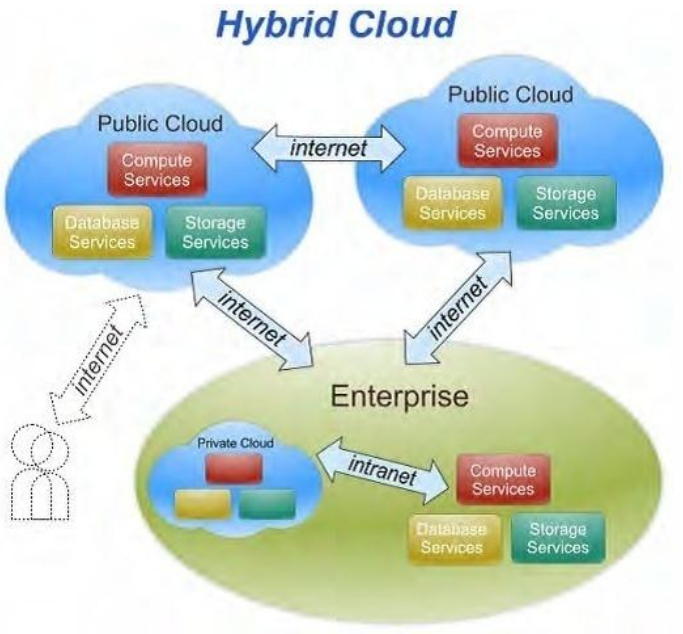

Figure 2.5: Hybrid Cloud (Dustin Amrhein et al., 2010)

- **Community cloud** is the fourth deployment model that can be used to deliver Cloud Computing services. In this model the cloud infrastructure is shared by multiple organizations or institutions that have a shared concern or interest such as compliance considerations, security requirements. This type of cloud may be managed by the organization or by a third party and may be located on-premises or off-premises. Figure 2.6 shows the community cloud.

In this type of cloud both the public and the organizations forming the community cloud have access to the cloud services offered by the community cloud.

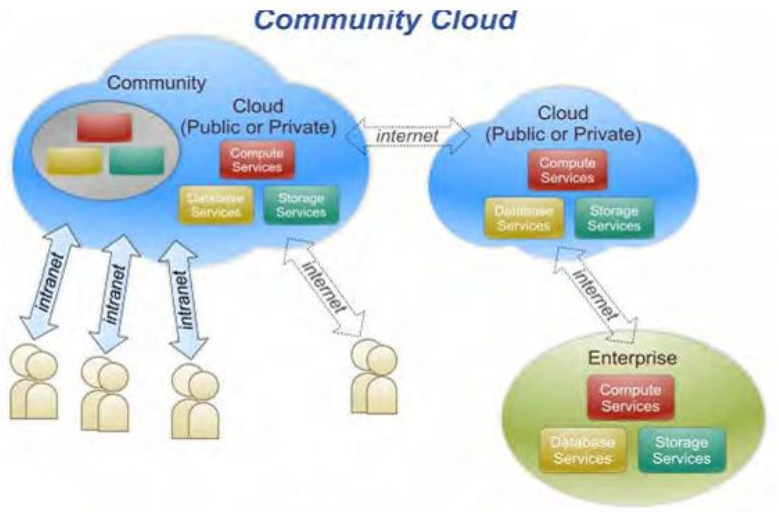

Figure 2.6: Community Cloud (Dustin Amrhein et al., 2010)

2.1.8 Service Models:

Cloud Computing services are provided in many forms to customers according to their specific needs with the possible deployment models (Ahronovitz et al, 2010). There are three common service models for offering Cloud Computing services. These models are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

A. Software as a Service (SaaS)

In Software as a Service, the client would use a web- browser to access software that others have developed, maintain and offer as a service over the web. However in this delivery model the client does not have control or manage the

infrastructure through which the applications are running (CSA, 2009, Mell and Grance, 2009a).

Examples of SaaS providers are salesforce.com, Gmail, Netsuite and Oracle CRM on Demand.

B. Platform as a Service (PaaS)

In Platform as a Service, the client has the ability to deploy on the cloud his/her own created applications or software using programming languages and tools supported by the provider. This model offers some control to the user which is related to the deployed applications but not to the cloud infrastructure (CSA, 2009, Mell and Grance, 2009a).

Examples of PaaS services are Google Application Engine, Azure, force.com and cloud analytics.

C. Infrastructure as a Service (IaaS)

The third delivery model for Cloud Computing is Infrastructure as a Service (IaaS). In this service model dedicated resources are offered to a single tenant or client and do not allow sharing of dedicated resources to unknown third parties. The model provides the customer with ability to deploy applications on the cloud infrastructure. The applications may include operating systems and other applications. However, the customer does not have control over the infrastructure but may control the deployed applications and operating systems, storage and selected network components (Mell and Grance, 2009a). However, flexibility comes with a cost and users are responsible for updating and patching the operating system at the IaaS level (Murphy, 2009) Examples of IaaS services are Amazon Web Services' EC2 and S3. Figure 2.7 explains delivery and deployment model and characteristics of Cloud Computing.

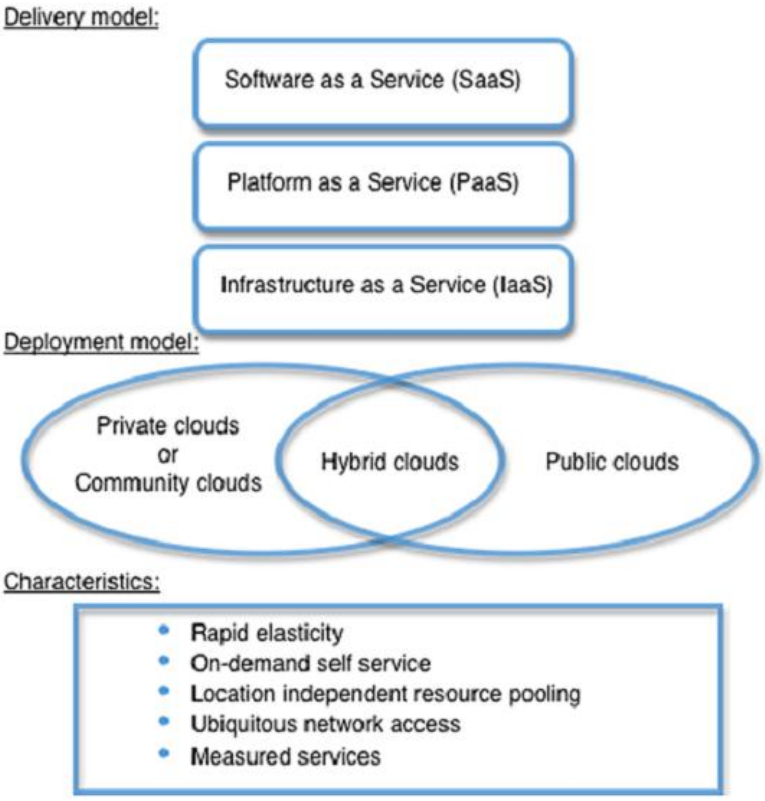

Figure 2.7 - Cloud Deployment Models & Services (Per Karlberg).

2.1.9 Cloud Computing Vendors

There are many vendors who offer cloud services with different pricing models. We will take a peek in few of the leading vendors like Amazon, Google and Microsoft (Velte, 2009).

A. Amazon

Offers a number of cloud services, which are;

- **Elastic Compute Cloud (EC2)**

EC2 offers virtual machines and extra CPU cycles for an organization. EC2 is rented in units called instances. Where each instance, is a virtual server. There are five different types of instances to rent from, each with varying CPU power, memory, hard disk space and IO performance.

- **Simple Storage Service (S3)**

S3 was launched in 2006. S3 allows company to store items up to 5GB in size in Amazon's virtual storage service.

- **Simple Queue Service (SQS)**

With message passing API the machine can talk between distributed software components. This service is used with EC2 to coordinate between different instances.

- **SimpleDB**

This service works with S3 and EC2 and collectively providing the ability to store, process and query data sets in the cloud. It is a relational data storage service like RDBMS. SimpleDB is accessible independent of EC2 instances and SQL-like query language is used. These services are command line because Amazon's virtual machines are Linux based.

B. Google

Google offers Google's App Engine, which enable developers to build their own applications like Google's own applications. It is the example of PaaS offering. Google removed the feature to write file out of security reasons. To store, company must use Google's database. App Engine is not as uptake as Amazon because it is newer and is only out for test basis.

C. Microsoft

Microsoft offers operating system Windows Azure to run Windows applications and store files and data using their datacenters. Key features of Azure platform are;

- **Windows Azure**

Windows Azure provides service hosting and management of storage and networking. Users have to choose Web or Worker roles for application

instances. Web role is suitable for application interacting with outside world using the network while the worker role is for applications just needed for simple processing. The Azure platform provides storage in three forms that are Blobs, Tables and Queues. Blob storage is similar to Amazon's S3.

Table storage is similar to Amazon's SimpleDB. Queue storage is similar to Amazon's SQS.

- **Microsoft SQL Services**

Microsoft SQL service provides database services and reporting. The software is similar to RDBMS SQL server with a slight modification to the interface. This service is similar to Amazon's SimpleDB.

- **Microsoft .NET Services**

Provides service based implementation of .NET framework. .Net services has three components which are Access control service, Service Bus and Workflow Service. Live Services: used to share, store and synchronize documents, photos and files.

D. Salesforces

It is one of the fastest growing cloud providers in the market; it is a leader for business applications.

- **Sales Cloud**

All leading sales organizations are moving to the cloud. For fast, easy access to the tools, services and build strong relationships with customers, without the risk and expenses associated with traditional software.

- **Service cloud**

Service cloud is platform for next generation (future) customer service; the feature every-thing from "knowledge as a service" to make your agents and customers smarter, a simple and easy to set up a call center, and

Facebook/Twitter integration for realtime service conversations. It provides services faster and more responsive across every channel (from the call centers to the social websites).

- **Database.com or cloud**

Database.com is a first enterprise cloud database and it is only built for the cloud. Database.com is designed for next generation applications (social and mobile enterprise applications).

- **Force.com**

Force.com is leading cloud platform for business applications. Force.com developed the first service allowing for developers to build the multi-tenant applications hosted on salesforce servers. It is 100% cloud, no need of software and hardware for developing the applications and websites. It offers the mobility, it means, it can run application from any platform or device and also have social feature such as add collaboration features on every app.

E. RackSpace

Rackspace is the leader in enterprise-level hosting services to businesses of all sizes and kinds around the world in Gartner's Magic Quadrant for Cloud Infrastructure as a Service and Web Hosting. It offers mainly Managed hosting, Cloud hosting and Email and apps.

F. EMC

EMC’s Symmetric V-Max is a management system that supports high end virtual datacenters. It provides storage facilities and different datacenters can be managed from one place.

G. NetApp

NetApp and Cisco have joined together to provide dynamic data centers and storage service and server virtualization.

H. IBM

IBM offers Smartcloud. It provides both public and private cloud solutions. Customer can choose from the available servers, operating system and applications. It provides PaaS, IaaS and SaaS services.

I. OpenStack

OpenStack is open source cloud computing platform for public and private clouds. It is founded by RackSpace hosting and NASA.

J. Eucalyptus

Eucalyptus provides the platform for private cloud computing. It has an API which can be integrated with Amazon cloud. It uses current infrastructure to create an AWS compatible cloud resources for storage, network and compute.

The following Table 2.1 shows a detailed comparison between the most popular companies for cloud computing services providers

Table (2.1): A comparison between cloud computing service providers (Al-Refai et al., 2011)

	AmazonAWS	**Google**	**Microsoft Azure**	**Salesforce**
Age of service	Since early 2006	Since July2008	Since October 2008	Since 1999
Cloud Type	Public Cloud	Public Cloud	Public Cloud, Private Cloud	Private Cloud
Cloud Services	IaaS, PaaS	SaaS, PaaS	PaaS, IaaS	SaaS, PaaS
Products and services	**Compute:** Amazon Elastic Compute Cloud (EC2), Amazon Elastic MapReduce, Auto Scaling **Content Delivery:** Amazon CloudFront **Database:** Amazon SimpleDB, Amazon Relational Database Service (RDS) **Deployment & Management:** AWS Elastic Beanstalk **E-Commerce:** Amazon Fulfillment Web Service (FWS) **Messaging:** Amazon Simple Queue Service (SQS), Amazon Simple Notification Service (SNS), Amazon Simple Email Service (SES) **Monitoring:** Amazon CloudWatch **Networking:** Amazon Route 53, Amazon Virtual Private Cloud (VPC), Elastic Load Balancing **Storage:** Amazon Simple Storage Service (S3), Amazon Elastic Block Storage (EBS), AWS Import/Export **Workforce:** Amazon Mechanical Turk	**Google Apps Engine:** Memcache URL Fetch Mail XMPP Images Google Accounts Task Queues Blobstore **Google Apps:** Gmail Google Docs Google Calendar Youtube Google Videos Picasa News Etc...	Windows Azure: Compute, Storage, Virtual network, CDN, Appfabric, Marketplace, Appliance **SQL Azure:** SQL Azure database, SQL Azure data Sync, SQL Azure reporting, Appliance	Sales Cloud Chatter Service Cloud Force.com Data Cloud Jigsaw Heroku Remedyforce AppExchange
Data Hosting Locations	US-N. Virginia, US-N. California, EU-Ireland, APAC- Singapore Cloud Zones: EC2East, EC2 AsiaPacific, EC US-East, EC-US-West	Not available	Not available	United States Singapore
Payment Model	On-demand pay as you go model They have two type special services 1. Amazon Flexible Payments Services (AFS) 2. Amazon Devpay	On-demand pay as you go model	On demand pay as you go, and subscription offer	Using (Payment Connect) for small businesses and large enterprises.
Market Share	50%-60%	9%-10%	8%-9%	8%
Availability guarantees with SLA	Amazon EC299.95%, Amazon S3 99.99% and Amazon CloudFornt 99.99%	100% uptime	99.9% uptime	99.9%+ uptime

2.1.10 Cloud Computing in Small Organizations

Small organizations usually lack the human and financial resources to invest in ICT due to their size and because of this they struggle to gain competitiveness and productivity in the market. Research indicates that organizations in the United Kingdom are quickly shifting to the Internet to tackle potential business opportunities yet they hesitate to accept e-business for communications and transactions (Wei, 2009).

For startup businesses, Cloud Computing may be an attractive opportunity. According to the United Kingdom's National Computing Center (NCC), small organizations can reduce the cost of ownership of technology hosted solutions. This is reinforced in a survey conducted by the Cloud provider "Gooroo" which revealed that small organizations in the UK will accept Cloud Computing in order to decrease costs during the economic downturn (Nabil, 2009).

Like all technologies, Cloud Computing has its advantages and disadvantages. Taking the Cloud provider "Amazon" as an example, they offer their customers Elastic Compute Cloud web services which has many advantages ranging from elasticity and flexibility to decreased costs and reliability. Another service Amazon offers is S3, where business information is stored in the cloud, saving organizations a lot of expenses for storage and backup. Moreover, the web service can also decrease the expenses of new servers, cooling, and server administration and management. (Abdulaziz, 2012).

Moreover, Amazon's Elastic Compute Cloud services can save companies a lot of money on hardware expenses along with the number of employees they should hire and this is ultimately beneficial for new (small) businesses which are trying to get started. Cloud Computing can help reduce required personnel for a

certain task and due to the reduction of acquired hardware, the number of operations once required to maintain and manage them would be significantly lowered (Abdulaziz, 2012).

During these tough economic times and as businesses are beginning to downsize their staff, Cloud Computing can serve not only as a tool to decrease cost but also to increase profit, remain current on technological advances, and strengthen their business relations.

Cloud Computing services can be used by all business types yet they can be more ideal for smaller and especially startup businesses and their adoption will help organizations gain a competitive advantage over their rivals, which can in turn increase business value (Wei, 2009; Abdulaziz, 2012).

2.1.11 Legal Issues When Using Cloud Models

One of the main issues which need to be clearly defined in cloud computing are legal issues. Recently there have been some efforts to create and unify the legal environment specific to the cloud. For example, the United States–European Union Safe Harbor Act provides a seven-point framework of requirements for U.S. companies that may use data from other parts of the world, namely, the European Union.

In summary, the agreement allows most U.S. corporations to certify that they have joined a self-regulatory organization that adheres to the following seven Safe Harbor Principles or has implemented its own privacy policies that conform to these principles (Rittinghouse et al., 2010):

- Notify individuals about the purposes for which information is used.
- Give individuals the choice of whether their information can be disclosed to a third party.

- Ensure that if it transfers personal information to a third party, that third party also provides the same level of privacy protection.
- Allow individuals access to their personal information.
- Take reasonable security precautions to protect collected data from loss, misuse, or disclosure.
- Take reasonable steps to ensure the integrity of the data collected;
- Have in place an adequate enforcement mechanism.

Major service providers such as Amazon Web Services cater to a global marketplace, typically the United States, Japan, and the European Union, by deploying local infrastructure at those locales and allowing customers to select availability zones. However, there are still concerns about security and privacy at both the individual and governmental levels.

2.1.12 Advantages of Cloud Computing

Cloud Computing offers a lot of advantages. In his book 'Cloud Computing: Web-Based Applications that Change the Way You Work and Collaborate Online' (Miller, 2008), Michael Miller provides an extended overview of advantages of Cloud Computing. The overview of advantages in this chapter is based on Millers' overview, elaborated with advantages presented by Bruening and Treacy (Bruening and Treacy, 2009; Linetal, 2009).

- **Lower IT costs**

IT costs are decreased on several areas:

- Applications are no longer run on the desktop Personal Computer (PC),but are run in the cloud. This means that the PC does not need the processing power or harddisk space as demanded by traditional desktop software.

- Powerful servers and the like are no longer required. The computing power of the cloud can be used to replace or supplement internal computing resources.
- Organizations no longer have to purchase computing resources to handle the capacity peaks. Peaks are easily handled by the cloud.
- Payment for most Cloud Computing services is based on a pay-as-you-go model. This means that customers only pay for what they use.
- The IT staff does not have to install and maintain the software on every desktop in the organization..

- **Fewer maintenance issues.**

With less hardware on hand in the organization, the maintenance costs are accordingly decreased. Also, software is run in the cloud, not on the PC. So there is no software for the IT staff to maintain.

Also, organizations do not have to face the choice between obsolete software and high upgrade costs. The service provider upgrades the software in the cloud, so whenever the customer logs in to the cloud, the latest version is loaded, with no need to pay for or download an upgrade.

- **Increased computing power**

No longer is the computing power limited to the power of the desktop PC. The power of the entire cloud is at the disposal of the user. This means that bigger tasks can be performed in the cloud than on the desktop.

- **Unlimited storage capacity**

- The cloud offers virtually limitless storage capacity.
- Improved compatibility between operating systems and documents
- Documents can be shared with computers that run different operating systems such as Windows, Apple’s MAC OS, Linux or UNIX.

- **Easier group collaboration**

One of the most important advantages to many users of Cloud Computing is the easy collaboration on documents and projects. Cloud Computing no longer requires the correspondence of documents from one user to another, for example by e-mail, and work on them sequentially.

Cloud Computing allows simultaneous access to documents, and edits in the document are updated real-time.

- **Universal access to documents**

Documents are stored in the cloud. This means that documents can be accessed from anywhere, as long as a computer and an Internet connection is available.

2.1.13 Disadvantages of Cloud Computing

A lot of papers report on the advantages of Cloud Computing. The overviews and summaries of disadvantages of Cloud Computing are less numerous. Miller (Miller,2008) provides, next to the overview of advantages, also an overview of disadvantages.

- **Requires a constant Internet connection**

Cloud Computing is impossible without the connection to the Internet. Internet is needed to Access both documents and applications. If no Internet connection is available, this means that no work can be done.

- **Does not work well with low-speed connections**

Web-based applications and large documents require both a lot of bandwidth to download. With a low-speed connection, such as dial-up, it might take a while to even change pages in a document. Web-based applications have to send

everything back and forth from the PC to the cloud, From the interface of the application to the document that is being edited. Even on a fast connection, Cloud Computing can be slower than accessing a similar application on a desktop PC.

- **Features might be limited**

For now, web-based applications are not as full-featured as their fellow desktop applications. This might be a big disadvantage for advanced users.

- **Stored data might not be secure**

All data is stored in the cloud, and thus outside the sphere of control. As shown in the previous section, this provides a lot of advantages. However, safety cannot be guaranteed. Cloud systems can be hacked and documents can be accessed by unauthorized users.

2.1.14 Need for Cloud Computing

Cloud Computing addresses a variety of needs for providing computing resources to organizations. This includes making large amounts of computing resources available upon demand to meet user needs, minimizing up-front resource commitments for users, and enabling users to pay for services upon demand (Armbrust et al., 2009). The Cloud Computing provider also manages system security for customer data. One attractive area for Cloud Computing is for affordable, available high performance computing for demanding applications. While the emphasis of this study is on Cloud Computing provided by commercial vendors, an individual organization can provide Cloud Computing services to its organizational members, sometimes referred to as enterprise computing. Such an arrangement could be appropriate for a large organization, such as in the government, financial services, or health care

industries. According to Biddick (2008), the most likely applications to migrate to Cloud Computing are storage and business applications, while specialized information technology applications, such as security, management, or compliance, are far less likely to migrate to Cloud Computing.

This shows a tendency to use Cloud Computing for data intensive applications but less so for sensitive, proprietary applications.

2.1.15 Cloud Computing Adoption

Youseff et al., (2008) explored methods to foster rapid adoption of Cloud Computing by the scientific community. This trend toward adopting Cloud Computing has been perceived differently by various prominent members of the computing community.

For example, Microsoft did not foresee the trend toward Cloud Computing, which is being led by Amazon and Google (Cusumano, 2009). Even though many firms showed little early interest in Cloud Computing, with the maturation of virtualization technology and the current, almost explosive increase in interest in Cloud Computing, many firms are joining the Cloud Computing wave.

To evaluate reasons affecting management decisions to employ Cloud Computing, adoption theory is being considered.

The field of adoption theory applies to the reasons and methods that information technology decision making managers use to guide them in the adoption of Cloud Computing as a method for meeting some or all of their organizational computing needs. In the literature, adoption theory addresses reasons for choosing to adopt a new approach or method for doing something (Da Costa Hernandez & Mazzon, 2008; Glynn, Fitzgerald, & Exton, 2005; Hansen, 2004; Lease, 2005).

The field of adoption theory, though fairly new, is gaining in research interest. More detailed seminal work on adoption theory is being used. Overall, while there is extensive current research interest in Cloud Computing, one area that needs more investigation is to evaluate the factors influencing a management decision to adopt Cloud Computing. This applies to any Cloud Computing adoption decision, whether large or small. Studying the factors influencing an organization's decision to adopt Cloud Computing is the topic of this research effort Cloud Computing is an approach that provides computing resources to a large number of users or organizations while concentrating the overhead for providing, maintaining, and administering the computer systems on a central provider (Armbrust et al., 2009; Buyya et al., 2008).

Additionally, it is being investigated as a way to minimize costs, maximize reliability, and meet organizations' needs for computing resources, while maintaining security for the systems and the data stored on them (Armbrust et al., Foster et al., 2008).

The advantages of Cloud Computing include cost savings, meeting growing computational needs for organizations and individuals, enhanced computational and information handling reliability, and the convenience of a centralized security function. Overall, this equates to lower costs, improved computational and information handling capabilities, and greater convenience to the users.

All of these mentioned advantages make Cloud Computing an attractive option to consider. As organizations are being tasked with finding ways to minimize costs, while their computing and data management needs grow, Cloud Computing can be a viable option to consider.

With its economy of scale and high performance assets, it has the potential for meeting increased organizational computing and data management needs, and

surges in demand, while minimizing costs. The challenge is to determine what factors drive decision makers to choose or not choose to employ Cloud Computing to meet organizational needs.

2.1.16 Drivers for Cloud Computing

As discussed earlier, Cloud Computing is the comprehensive method of providing computing services using high speed Internet connections. Today's Internet environment has contributed directly to the shift from traditional in-house computing to Cloud Computing. This transition is gradually modifying the way information system services are developed, scaled, maintained and paid for (Melvin and Greer, 2009).

In brief, this tendency indicates that there is a rise in the propensity for replacing in-house computing with new on-demand computing services. The results obtained from a CIO survey on business priorities and strategies reports that CIOs ranked cloud services second among the top ten technology priorities in 2010 (Misra and Mondal, 2011).

A survey by Forrester's Business Technology (May 2006) about North American and European large enterprise infrastructure and data centres indicated that 80% of the overall IT budget in these enterprises goes to recurring operations and maintenance (Gillett and Yates, 2006). This makes Cloud Computing a strategic technology option for them. Positive market prospects are also driven by the anticipation that Cloud Computing may become the essential approach towards Green IT (Stanoevska-Slabeva and Wozniak, 2010).

As can be seen from Table 2-1, Cloud Computing reported improved attributes compared to in-house computing in different ways. For instance, when using Cloud Computing, businesses will have the opportunity to adopt a "pay-per-use"

modelfor on-demand ICT scalability. In other words, it helps firms to do away with costly fixed assets such as firm-owned hardware and software. As shown in table 2-2 The Distinguishing Attributes of Cloud Computing.

Table (2.2): Comparison between traditional and Cloud Computing (Melvin and Greer, 2009)

	Traditional Computing	**Cloud Computing**
Acquisition Model	Buy assets and build technical architecture	By service
Business Model	Pay for fixed assets and administrative overhead	Pay based on use
Access Model	Over Internal network to corporate desktop	Over the Internet, to any devices
Technical Model	Single tenant, non-shared, static (often not shared)	Scalable, elastic, dynamic, multi-tenant

2.1.17 Barriers to Cloud Computing

Although the benefits of adopting a cloud-centric environment provide an improved IT enterprise, Cloud Computing services are not without their limitations since, like any technology, this type of computing service has a distinct set of problems and challenges associated with it. In fact, Cloud Computing is still considered to be in the early adoption stage. Therefore, it is normal that it suffers from several issues which suppliers need to address to drive mainstream adoption. One of the most significant current client concerns is security. With Cloud Computing, users take into consideration that their data and critical ICT resources will be off-premises.

In this context, it is important to distinguish between security and privacy. Security is about protecting data from unauthorized access, while privacy refers

to who is allowed to access data. Both are critical concerns for enterprises, but for slightly different reasons (Kushida et al., 2010b).

Another two concerns are performance and availability, as businesses need confirmation that critical services will be accessible on demand. Businesses realise that these services are supported by a complex web of interdependency, which generates concerns about the availability and performance of the service provider's systems.

2.1.18 Actors of Implementing Cloud Computing

The study has mentioned through literature review the perceived factors, risks, and opportunities of adopting Cloud Computing was conducted to be able to analyze these factors, measure their importance, and discover other potential factors during our study. Researchers in the area have studied the possible influential factors of adopting Cloud Computing and identified the possible risks and opportunities:

- **Performance**

The main source of performance problems come from the connection quality between the user and the Cloud Computing server, mainly when more users are connecting at the same time and large amounts of data are transferred between the end user and the cloud server. This results in a slowdown in the cloud service. (Kim at al., 2009 ; Benlian and Hess, 2011).

The performance issue is an important factor which companies have to think about when adopting Cloud Computing. Companies should measure their possible current and future bandwidth and processing requirements before they decide to adopt Cloud Solutions. Performance is seen as one of the main risks, and an important opportunity at the same time, (Marstonet al., 2011).

- **Cost effectiveness**

Cloud Computing addresses computing as a utility, providing computing as a service (Armbrust et al., 2009). One attractive cost issue is the ability to pay for services as they are needed, avoiding large up-front expenses for computer system purchases (Armbrust et al.). Another attractive aspect of Cloud Computing is the savings on space, utilities, and maintenance staff which can be realized by outsourcing computing applications to a cloud computer provider. This practice can also be attractive to organizations interested in green issues, enabling efficient use of power and other utilities by shared use of computing resources. According to Healey (2009), about ten percent of recent IT purchased to support green initiatives went to support services contracts, such as Cloud Computing.

Cost is a very important factor and opportunity in Cloud Computing. "Cost advantages are the strongest driver affecting IT executives' perceptions of SaaS opportunities" (Benlian and Hess, 2011)

Marston et al. (2011) stated that companies need to spend a big part of their balance on the IT infrastructure, while less than 10 % of their servers can be really utilized, resulting in a big waste of money. In addition, these servers need to be replaced almost every three years and need to be maintained and administrated, increasing the total cost of IT operations radically.

Cloud Computing can reduce these costs remarkably. "Economies of scale for datacenters cost savings can lead to a five to seven-time reduction in the total cost of computing" .

Furthermore, Cloud Computing reduces the cost of entry for small companies and developing countries. By adopting cloud solutions, small companies can use expensive business analytic software, which require high level of IT infrastructure to enhance their business at relatively low cost, while this kind of

applications was available only for large companies or enterprises before (Marston et al., 2011).

However, other researchers point out some possible economic risks. Benlian et al. (2011) argued that there is a hidden additional cost in Cloud Solutions more than the anticipated one. For instance, Cloud Solutions adopters might need to customize these common solutions to fit their specific requirements and consequently they will be responsible for maintaining the customized code and have to pay additional cost more than what they expected at first.

Kim et al. (2009) asserted the same idea and mentioned that adopters of the cloud solutions take the "only pay for what you use" into account and they forget about the other potential hidden costs.

Kim et al. (2009) gave an example that adopters cannot totally rely on the providers to administer their solutions and maintain them, they still need to do monitoring of performance and availability of resources in the cloud which require additional time and cost, moreover, they will need to pay for the additional bandwidth they might use in the future. Finally, adopters should choose the suitable pricing strategy for the adopted solutions which fit their needs. For instance they might choose to pay per use, monthly, or yearly.

In conclusion, cost is seen as an opportunity as it reduces cost for Cloud Solution adopters but it still has some potential reasonable economic risks.

Lower IT infrastructure costs is one of the major benefits that businesses are expecting from using cloud services is cost saving (Miller, 2008). This financial benefit is expected mainly because of the usage-based pricing model. In terms of start-up organizations, using cloud services can help them to decrease their capital expenses and any hurdles to entry (Grossman and Gu, 2009). Cloud Computing provides almost direct access to shared computing resources and, therefore, small and start-up businesses can launch new operations quickly with

little to no upfront capital investment; this will assist with a faster time to market in many businesses (Marston et al., 2011).

West (2011) noted that using software from the cloud will lead to a reasonable reduction in systems maintenance and updating requirements.

Clients will be able to reduce software updating and maintenance costs, by having most of the IT software, operations and functions done by a third party. In other words, there will be fewer in-house IT staff and lower costs.

- **Security issues**

Users of Cloud Computing give the cloud provider full control over their data and they should trust that this third party will take care of their business, secure the data, and do backups for them. This issue can be partly solved by Service-Level Agreements (SLA) where the conditions of security issues in the contract will be clarified. Benlian and Hess (2011) found that the security issue is one of the biggest doubts when users think about adopting Cloud Computing as the users do not have their own data in their companies anymore. "Our findings suggest that in respect to both SaaS adopters and non-adopters, security threats are the dominant factor influencing IT executives' overall risk perceptions" (Benlian and Hess, 2011).

Marston et al. (2011) asserted the same idea stating that "almost 75 percent of IT executives and CIOs report that security is their primary concern" (Marston, 2011).

However, Kim et al. (2009) argue that security issues is a concern in all computer systems not only the cloud hosted ones and achieving a 100% secure computer system is almost impossible as expert hackers will have new ways for breaking the security strategy in any system.

Kim et al. (2009) argue that we can enhance the security of the computer system by hosting it in the cloud as we will have some expert people who will care about securing the server and the computer system which might not be possible for small and medium companies. Moreover, the same technologies which are used for securing the on-premise computer system can be also used in the cloud.

Finally, the cloud providers today are employing the latest technologies and the highest standards in securing their servers and hosted applications. "We believe, however, that the clouds are not less secure than on premises computing systems" (Kim et al., 2009). Marston et al. (2011) also agrees that this issue is being enhanced now and it also has some advantages by giving the company more control options over their data.

In conclusion, security issues can be seen as an opportunity and a risk at the same time, but it is mainly a doubt as it is seen by cloud adopters and non-adopters. It plays an important role in determining the kind of applications which are taken into the cloud and the industry type which can adopt cloud solutions. For instance banks, hospitals, and governments are used to avoid adopting cloud solutions because of the security concerns (Benlian and Hess, 2011).

- **Capacity and Reliability**

This includes increased computing power, improved performance, unlimited storage capacity, increased data safety, and fewer maintenance issues (Miller, 2008). Most firms do not use more than half of their total ICT resource capacity (Leavitt, 2009) and, therefore, most computing suppliers try to focus on the idea of offering computing services to their clients where they can scale up their capacity on demand (Grossman and Gu, 2009). Whenever the client needs

additional computing resources such as storage space, the provider can simply increase the provision accordingly in order to handle the increased business needs. Increased reliability comes from the fact that on-demand computing usually employs systems that are extremely reliable and that provide some kind of redundancy to customers. Mainly for SMEs, a general-purpose data centre makes it easier for enterprises to scale their services and can present more availability compared to an in-house ICT infrastructure.

In fact, one of the most appealing benefits of Cloud Computing is to scale resources up or down dynamically through software application programming interfaces (APIs), relying on customer load with minimal service provider interaction (Marston et al., 2011).

An outage is the absence of the Cloud service. Kim et al. (2009) stated that an outage is unavoidable and users should take it into account before adopting Cloud Solutions. It might happen for a short or a long time, a few or many times.

Even large companies such as Google and Amazon experienced many similar cases in the past and they will have many more in the future. In short, 100 % availability of the service is impossible.

Consequently, Kim et al. (2009) recommends that critical applications should not be taken into the cloud. Actually, most of the applications hosted in the cloud are currently non-critical such as back up and software testing. Moreover, users who are using Cloud Computing solutions should make sure to have backup of their data in other places.

Nowadays, cloud providers are trying to avoid outage and promise a high level of availability in the Service-Level Agreement (SLA) and try to compensate their users in the case of an outage of the service. This factor represents a risk and it is one of the effective factors in Cloud Computing adoption. It will

determine the kind of applications that can be used in the cloud along with its adoption strategy. (Kim et al., 2009)

- **Scalability**

Scalability is an important factor that should be taken into account in terms of performance. As the requirements of the Cloud Computing adopters increase, the cloud provider should be able to scale up their resources and infrastructure to satisfy the adopter's new requirements of storage, processing, and connection bandwidth. (Kim at al., 2009 ; Benlian and Hess, 2011).

On the other hand, scalability in Cloud Computing is one of the main strength points and constitutes an important opportunity for companies. As these companies' requirements change, their infrastructure will be scaled up or down dynamically providing a high level of strategic flexibility (Benlian and Hess, 2011; Marston et al., 2011).

- **IT Department's Stand and Changes**

While many people might see Cloud Computing as an innovative technology simplifying IT operations, some IT specialists might see it as a real challenging threat. They believe that it will be a threat to their job security by outsourcing their daily IT tasks to a third party company. Even some companies might see Cloud Computing as a big change in handling IT operations which is somewhat different from the method they used to follow for a long time in handling these operations (Marston et al., 2011).

Benlian et al. (2011) confirmed the importance of these psychosocial risks, stating that outsourcing IT operations by adopting Cloud Computing can result in the loss of jobs and seen as a failure of the IT departments in conducting their jobs which would harmfully impact the reputation of the IT managers. Consequently, IT managers might respond negatively to the Cloud Computing

technology. These psychosocial issues also affect the adoption decision of Cloud Computing.

- **Cloud Model**

The kind of applications that can or cannot be implemented in the public cloud is an important issue that companies should think about when they decide to adopt Cloud Solutions. Companies might have some critical applications which require a high level of availability with sensitive data such as banks and hospitals. These types of applications might be better to be hosted in a private cloud. At the same time, these banks and hospitals have other types of applications which can be taken to the cloud to benefit from its advantages (Marston et al., 2011).

The public cloud applications have different functionality characteristics from its private counterpart. They are generally suitable for the common purposes' applications such as CRM systems, while the private cloud would grant more control to its owner compared to the public cloud, and it will be suitable for customized applications. At the same time, the private cloud can provide some of the advantages of the public one. "It is also clear that not all applications are currently ripe for moving to the cloud. General-purpose applications (like office, email, collaboration technologies) are prime candidates" (Marston et al., 2011).

In this case we can have a hybrid cloud of private and public model-types depending on the sort of applications. This strategy allows us to use the advantages of the two types and has many other potential capabilities for example when the capacity of the private cloud is exceeded we might start using the public as well by moving the workload from the private to the public cloud. However, the hybrid cloud can bring some new technical challenges as both

clouds will need to have the same hypervisor, file system, and chipsets for their servers (Kim et al., 2009 ; Marston et al., 2011).

- **Compliance and Physical Location**

Since Cloud Computing is a fairly young technology, no rules and governmental regulations really exist to set the boundaries and laws regarding the storage of data by enterprises on third-party computing facilities that are shared with others. Moreover, some old regulations already exist concerning the enterprise data privacy, access, and location without taking Cloud Computing into account, and these regulations might be violated by Cloud Solutions (Kim et al., 2009).

For instance, while many countries have regulations concerning the physical location of enterprise data, the cloud providers cannot guarantee the exact physical location of the data, and even some of them have policies to hide such kind of information from the end user. However, some companies are now trying to solve this issue and comply with the local regulations. For example, Amazon Web Services (AWS) has started a new service called the Amazon Virtual Private Cloud which allows users to connect their own infrastructure to AWS computing resources (Marston et al., 2011).

Compliance with regulation is a real risk when adopting Cloud Solutions and it is being handled by cloud providers now. "Perhaps the biggest factor that will impede the adoption of the Cloud Computing paradigm is regulation at the local, national, and international level" (Marston et al., 2011).

- **Integration with other Services**

Organizations need to adopt different types of applications from different cloud providers and these applications might need to interact with each other. At the same time, some companies might adopt a hybrid strategy of Cloud Solutions as

public clouds have different characteristics from that of private clouds. Consequently, the integration between the data from these different applications needs to be achieved and this issue poses many technical and business challenges for cloud providers and adopters (Marston et al., 2011 ; Kim et al., 2009).

On the other hand, Mashups can be a real opportunity in cloud solutions. Mashups are a web service providing data or functionality relying on different external sources. Nowadays, we can see new types of Mashups relying on Cloud Services; Integrating two or more Cloud Services into one new service. Amazon's 'GrepTheWeb' is one example of Cloud Mashups (Marston et al., 2011).

- **Environmental Issues**

Environmental issues constitute a real concern for companies in this era as more regulations are issued to minimize the carbon footprint organizations leave behind. A previous 'Forrester' survey concluded that most workers in IT departments believe that the efficient use of energy and recycling IT resources are important issues that should be handled properly and these factors constitute the main element of green IT. By migrating the IT functionality into the cloud, companies not only reduce their IT infrastructure but also use the energy in an intelligent way (Marston et al., 2011). However, other researchers suggest that cloud servers are consuming a huge amount of energy and not all cloud providers are following the best standards in energy efficient consumption, consequently, moving to the cloud does not reduce the global CO2 emissions necessarily (Kim et al., 2009).

In conclusion, moving to the cloud can reduce the IT infrastructure by sharing with others and cloud providers can follow best standards in energy efficient consumption which might not be possible for the small companies as a result of

the economy scale, but adopters of Cloud Computing should make sure that these providers are applying these environmental standards before adopting their solutions.

- **Innovation**

Cloud Computing is considered as an innovative disruptive technology and it results in new types of applications with richer functionality than their in-house counterpart. The service helps IT departments' employees to innovate new core business applications instead of doing the daily backup and maintenance routine tasks. "Cloud Computing can lower IT barriers to innovation" (Marston et al., 2011).

- **Time to Market**

Another factor which should be taken into consideration prior to the adoption of Cloud Computing is the time to market. Abhinav (2011) states that time to market with Cloud Computing can be reduced from months to weeks or even days for the companies who adopt the solution. The Cloud solution helps by eliminating procurement delays for software and hardware, the upfront capital and time investment for purchasing hardware for proof of concept work, and accelerate computer power for when applications require to run at peak.

According to (Jinesh, 2010) time to market can also be considered a success criteria where an organization can launch new products much faster depending on its goals and culture.

- **Ease of use and flexibility**

This includes instant software updates, latest version availability, easier group collaboration and universal access to documents, and removes the tether to specific devices (Miller, 2008).

Perceived complexity seriously hinders the increase in adoption rates and user satisfaction. In the case of Cloud Computing, the operating interfaces of cloud applications look like browser web based applications or windows based applications. Both interfaces tend to be intuitive and easy to use (Melvin and Greer, 2009).

Nowadays, most Cloud Computing suppliers offer more flexible contract terms, which encourages firms to implement cloud services as needed to expand their businesses (Leavitt, 2009). In addition to these significant characteristics of Cloud Computing, there is the portability and accessibility feature, as the Internet is considered the backbone of the utilization idea, through which computing services are provided for clients through an active Internet connection. On-demand access to any application can be at any time from any location, provided the client has network access (Jeremy T. Lanman and Linos, 2011).

This can assist small businesses, which have a wide market and broad horizontal company operations, such as regional or international, to decrease external costs and make them less location dependent. According to a survey conducted by CIO Magazine, one of the top-rated factors when evaluating Cloud Computing technology was ease of use where "senior and mid-level IT managers (both with a 63% incidence) are more likely to feel ease of use is very important when compared to other IT professionals (46%)". Moreover, ease of use can be considered an important factor in Cloud solutions as user experience in human-computer interaction is a significant criterion when evaluating whether an application is successful or not. The adoption of Cloud Computing will result in improving user experience unlike traditional systems like grid computing. Therefore, ease of use can be easily achieved because of Cloud Computing and valuable resources can be easily accessed by its adopters (Chunye Gong , 2010).

Section 2

INGOs in Gaza Strip

2.2.1 Introduction

2.2.2 NGO definition

2.2.3 INGO definition

2.2.4 Characteristics of NGOs

2.2.5 Role of NGOs

2.2.6 Types of NGOs

2.2.7 INGOs in Gaza Strip

2.2.1 Introduction:

Non-governmental organizations (NGOs) are increasingly becoming an important force, because of claims that they are efficient and effective, because they are innovative, flexible, independent, and responsive to the problems of poor people. The growth of such NGOs over the past two decades has given them an increasingly important role and has led them forming a distinctive sector within civil society. They have been engaged in all sectors of social life, such as relief, rehabilitation, health, education, development programs, peace, human rights, and environmental issues, using finance raised from voluntary, private sources, and donor agencies, and managing themselves autonomously at local, national and international levels (Bagci, 2007).

The Palestinian society includes two types of social institutions. The first is the traditional social institutions, which includes tribes, clans, extended families, urban, rural, familial and sectarian networks and religious groups. The second type is the modern institution, such as political parties, charitable societies, trade unions, professional associations, women's associations, NGOs, media and advocacy groups and other service-providing organizations. Both types of social constructions are present and active in Palestinian society and represent different perspectives, whether related to Palestinian cultural heritage, modern, western or traditional patriarchal values (UN, 2004).

Non-governmental organizations are non-profit and voluntary citizens' groups operating on a local, national or international level (Kang, 2011). The term NGO includes charitable societies, development oriented non-governmental organizations, Community Based Organizations (CBOs), and other non-profit groups organized to serve public interest. These NGOs have carved a space for themselves between the community, the government, donors, civic groups,

traditional Palestinian organizations, and the international community. These NGOs are in a strategic position to influence the future of Palestinian society (NGO Development Center, 2009).

2.2.2 NGO definition

The NGO is a legally constituted organization created by natural or legal persons that operates independently from any government. It is established with seven members at least. Normally used to refer to organizations that do not form part of the government and are not conventional for-profit business. The term is usually applied only to organizations that pursue some wider social aim that has political aspects, but that are not openly political organizations such as political parties (PLC, 2000).

The definition of Palestinian NGOs by the World Bank is “private organizations that pursue activities to relieve suffering, promote the interests of the poor, provide basic social services, or undertake community development” (Bisan-Center, 2006). Moreover, the Palestine Economic Policy Research Institute (MAS) defines the NGOs as "these organizations that have an officially recognized legal existence; they must be: independent organizations, non-profit organizations and it must contain a level of voluntary participation; and it must not be an inheritable, representative, or factional" (Ladawdeh, 2007). USAID refers to NGOs as private voluntary organizations.

The Palestinian law defined the NGOs as: "Any charitable association or community organization with an independent judicial personality, established up on an agreement concluded among no less than seven persons to achieve legitimate objectives of public concern without aiming at attaining financial profits to be shared among the members or achieving any personal benefits" (Bisan Centre, 2006).

In general Non-governmental organization (NGO) is a term that has become widely accepted as referring to a legally entity, non-governmental organization created by natural or legal persons with no participation or representation of any government. In the cases in which NGOs are funded totally or partially by governments, the NGO maintains its non-governmental status and excludes government representatives from membership in the organization (Elkhateeb, 2010).

This study defines the NGOs in this thesis as: "those organization that are independent from Palestinian authority, working at the development sector in order to achieve socio-economic positive changes and are not aiming to personal profit or interests."

According to Prodi and Kinnock, the term "NGO" can nevertheless be used as shorthand to refer to a range of organizations that normally share the many characteristics.

2.2.3 INGO definition

The Palestinian law defines the INGO (foreign organization) as any society or foreign body that has its headquarters located outside Palestinian Territories or most its members are foreigners (PLC, 2000). The international organizations are neither profit making nor instruments of governments, well as internationally orientated national non-governmental organizations. A distinction is often made between international non-governmental organizations that exist simply to provide services to their members and issue-oriented international non-governmental organizations (Salamon & Anheier, 1997).

2.2.4 Characteristics of NGOs

NGOs are not created to generate personal profit. Although they may have paid employees and engage in revenue-generating activities they do not distribute profits or surpluses to members or management;

NGOs are voluntary. This means that they are formed voluntarily and that there is usually an element of voluntary participation in the organization;

NGOs are distinguished from informal or ad hoc groups by having some degree of formal or institutional existence.

Usually, NGOs have formal statutes or other governing document setting out their mission, objectives and scope. They are accountable to their members and donors; (Kinnock, 2000).

2.2.5 Role of NGOs

NGOs at various levels often form partnerships to work together for community development. The partnerships typically involve working together through ongoing negotiation, communication and sometimes debate or conflict, based on an equal power relationship. NGOs at different levels – international, national and local – learn mutually, and their role scan change according to changing needs or circumstances. NGOs are widely regarded as empowering people because they support local people initiating the development process, as well as related participatory approaches. NGOs try to involve people in the process through raising local awareness, forming groups, building leadership and providing training in management skills, in addition to providing content for the programs and activities delivered by organizations.

The implementer role of NGO is concerned with the mobilization of resources to provide goods and services to people who need them. The service delivery role embodies a very wide range of activities carried out by NGOs in fields as

diverse as healthcare, microfinance, agricultural extension, emergency relief and human rights. Moreover, a particular NGO is rarely confined to a single role, and many organizations engage in all three types of activities at once (Lewis and Kanji, 2009).

2.2.6 Types of NGOs

The term NGO is very broad and encompasses many different types of organizations. In the field of development, NGOs range from large to mediate charities such as CARE, Oxfam and World Vision to community-based self-help groups(Reiff, 2010).

The World Bank categories of NGOs: (World Bank, 2007)

i. Operational NGOs - whose primary purpose is the design and implementation of development-related projects.

ii. Advocacy NGOs - whose primary purpose is to define or promote a specific cause.

The World Bank classifies operational NGOs into three main groups:

a. Community-Based Organizations (CBOs): which serve a specific population in a narrow geographic area.

b. National Organizations: which operate in individual developing countries.

c. International Organizations: which are typically headquartered in developed countries and carry out operations in more than one developing country.

Types of NGOs can be understood too by their level of cooperation.

a. Charitable cooperation.

It often involves a paternalistic effort with little participation by beneficiaries. It includes the NGOs which directed the people towards meeting the needs of

poor and help them by gaining them food, clothing, medicine; provision of housing etc. such NGOs may also undertake relief activities during natural disaster situation.

b. Service cooperation.

It includes NGOs with activities such as the provision of health, family planning or education services in which the program is designed by the NGOs. And people are expected to participate in its implementation and in receiving the services.

c. Participatory cooperation.

It is characterized by self-help projects where local people are involved particularly in the implementation of a project in any village by contributing as, tools, land, materials and labor etc. This type is basically cooperation based and on limited scale.

d. Empowering cooperation.

The aim of these NGOs are to help poor people and develop a clear understanding of the social, political and economic factors which are effecting their lives and aware them how can they solve their problem by using their resources and purpose to mobilize the people or self mobilization. In any case there is maximum involvement of the people with NGOs acting as facilitators.

2.2.7 INGOs in Gaza Strip

According to the Palestinian Ministry of Interior, the registered number of INGOs in the Gaza Strip reached 79 organizations, with average 20 employees, almost all of them depend basically on e-Management which may facilitate in implementing cloud computing on their organizations in case they make a decision to adopt cloud technology.

Chapter 3

Previous Studies

3.1 Introduction:

Scouring through university libraries and online data for the most related and relevant studies and articles to the topic of this study, a number of previous studies are overviewed, presented and arranged in an ascending order. This study examined these studies to enrich the theoretical framework of the current study i.e. constructing the questionnaire and interpreting the resulting answers. The study clarifies the researchers' various points of view and opinions on Cloud Computing.

In terms of local studies related to Cloud Computing, after an exhaustive search, the researcher scarcely find few studies that explores the topic of this study. Thus, it chose to present just two local and fifteen foreign studies that explored related topics to Cloud Computing. Most of them explore mainly the adaption of Cloud Computing technology and its benefits.

At the end of this chapter, this study comments on all previous studies where there is a comparison between the current study and the previous literature as well as the most important points that this study adds. In each of the previous studies, the most important and related study results and recommendations are provided.

3.2 Previous Studies

3.2.1 Local Studies

a. Shaath, (2014) titled "A Proposal for Applying the Governmental Cloud to Develop E-Management in Palestinian Government"

The objectives of this study is to identify the importance of applying the private governmental cloud and the advantages of activation it, also recognize the requested benefits of applying the governmental cloud in Gaza

from the view point of computer centers managers in Palestinian ministries, in addition to determine the financial, humanitarian and legal requirements and recognize the possibilities for applying the governmental cloud, in the same time to identify the training programs required for the rehabilitation of the governmental employees, also the obstacles and problems could face applying the governmental cloud.

The findings of the study were the importance of applying the governmental cloud to develop the e-Management in Palestinian government, also the study showed the huge benefits of applying it.

The study recommended to adopt the governmental cloud as a basic to access the governmental e-Management, also it recommended to consider the governmental cloud a national project has development and economic dimensions , in the same time the study recommended the provision of appropriate training programs for employees to be able to build and manage governmental cloud, and advised to take advantage of the experiences of previous states in the field of cloud computing and keep up to date with latest technological development.

It also noted to the need to develop a plan to manage the resistance to change by managers of computer centers and the development of a specific mechanism to involve them in decision-making, in addition to the need for re-engineering of government processes and procedures to comply with the construction and applying of governmental cloud.

b. Mansour, (2013) titled "The Adoption of Cloud Computing Technology in Higher Education Institutions: Concerns and Challenges"

Cloud Computing is a term that refers to sources and computer systems available on demand through the internet , which can provide a number of

integrated computer services without being bound by local resources in order to make it easier for the user, and those resources include storage space, data backup, and self-synchronization. Also it includes processing capabilities software, scheduling of tasks, push e-mail, and remote printing. And the user can control when it is connected to the network in these resources through a simple software interface simplifies and ignores a lot of details and internal operations. This study aims at showing the concerns and challenges of the adoption of Cloud Computing technology in Higher Education Institutions, case study Islamic university of Gaza (IUG). Using the descriptive analytical method to study the effects of the main five dimensions (Top management support, Support and integration with university Services, Skills of IT human resources, Security effectiveness and Cost reduction) on the adoption of Cloud Computing technology. This study focuses on IUG as a case study of the academic institutions of Palestine which is the first from among other universities in terms of modern technology utilizing in its operations.

The study recommended that IUG can adopt Cloud Computing technology in its operations, if it is interested on the side of IT human resource through training, scientific missions, and innovations,..etc. In addition, interesting on the side of security through putting the non-critical application and data in the cloud, or through creating hybrid cloud which consists of public cloud for non critical applications like e-mail and private cloud for critical and sensitive applications and data. Without a doubt, the top management has vital role in the adoption of this technology in its operations though its decisions and facilities.

3.2.2 Foreign Studies

a. Rajendran, (2013) titled: "Organizational Challenges in Cloud Adoption and Enablers of Cloud Transition Program"

With the proliferation of Cloud Computing, organizations have been able to get access to never seen before computing power and resources. Cloud Computing has revolutionized the utilization of computing resources through automatic provisioning and release, fostered greater collaboration among the stakeholders in the organization and improved the overall business performance. The implementation of cloud in an organization however brings in changes in the IT and business operations. These shifts pose challenges related to governance, security, dependency and changes in the roles and responsibilities of employees working in the business and IT functions of the organization. This study looks into some of the challenges an organization moving to the cloud faces and using an example of a large financial institution, tries to determine the organizational structures and processes that facilitate and enable a smooth transformation.

The study also illustrates the interaction between the different factors that influence cloud adoption using the system dynamics approach. A set of causal loops that demonstrates the relationship between the different factors has been developed. The effects of these loops have then been aggregated and an abstracted version of an adoption model has been developed.

Based on the findings from study articles, existing organizational literature and the case of the large financial institution conclusions have been drawn from an organizational, managerial and non-managerial employee perspectives.

b. Tehrani, (2013) titled "Factors Influencing the Adoption of Cloud Computing by Small and Medium-Sized Enterprises (SMEs)"

The main objective of this study is to determine the factors influencing the Cloud Computing adoption by Small and Medium sized Enterprises (SMEs). Based on two dominant theories in the field of diffusion of innovation, a conceptual model is proposed. In order to test the model empirically, an online survey was designed and launched. Decision makers of 101 SMEs agreed to participate in this survey. In order to evaluate the internal, convergent and discriminate validity of the instrument, factor analysis and reliability tests of panel data were performed. The logistic regression analysis was deployed to test the research hypotheses. The results of regression analysis reveal that decision maker's knowledge about Cloud Computing is the main influential factor in adopting this technology. A comparison between two groups of cloud adopters and non-adaptors confirm the recent Gartner's hype cycle model for emerging technology indicating a high expectation from Cloud Computing in both groups.

c. Singla, (2013) titled "An enterprise personalized view for Cloud Computing life cycle management"

It will not be an understatement to say that in today's competitive world, the biggest challenge faced by enterprises is "change" and adapting itself to this change. Apart from the common hurdles faced by enterprises while adapting to change - mainly lack of competencies in new domain, supply chains and organizational culture, one of the main causes is in-flexibility of its information systems. For making the information systems more agile Cloud Computing has been gathering a lots of attention In recent years,

Cloud Computing has become an ubiquitous term in the area of information systems. The promised values of Cloud Computing, mainly on-demand access, pay-per-use and reduced time-to-market, model have been the primary reasons of this paradigm shift being noticed by the enterprises across the spectrum of industries. The business are trying to analyze how can they leverage the benefits of Cloud Computing for their enterprises in the most optimal manner.

At FHNW a knowledge repository based approach CLiCk has been proposed by Cloud Computing competence centre, which will support the enterprises for the entire life cycle of Cloud Computing adoption, starting from various phases e.g. evaluation, preparedness to migration, provisioning and finally governance and monitoring of cloud based services. The focus of the study project is based on the enterprise case study to gather requirements related to its computing infrastructure by conducting workshops and interviews with various stake holders.

d. Akbari, (2012) titled "Cloud Computing Adoption for SMEs: Challenges, Barriers and Outcomes"

In spite of all the excitement and fuss around Cloud Computing technologies in recent years, it is believed that the industry has been to some extent lagging behind when it comes to the deployment of cloud technologies and migration from legacy Information Technology (IT) infrastructure. This study aims to investigate the influential factors that impact adoption of cloud-based technologies by various organizations. More specifically, this study focuses on the behavior of Small and Medium Enterprises (SMEs) rather than larger organizations. Such classification is crucial since the constraints applicable to SMEs are different to their larger

counterparts and subsequently the decision mechanisms and influential factors are dissimilar.

The study is conducted through design and implementation of a real cloud-based solution that has been evaluated by three SMEs from different sectors and with different requirements. Subsequently, using the cloud-based test-bed, a number of quantitative measurements are performed to provide a better understating of some of the performance aspects of the implemented solution. Along with the pilot system evaluation, two survey studies are conducted targeting both employees, as well as, organizations' chief level executives.

e. Ali and Ayub, (2012) Titled "Cloud Computing as a Tool to Secure and Manage Information Flow in Swedish Armed Forces Networks"

In the last few years Cloud Computing has created much hype in the IT world. It has provided new strategies to cut down costs and provide better utilization of resources.

Apart from all drawbacks, the cloud infrastructure has been long discussed for its vulnerabilities and security issues. Although there is a long list of service providers and clients, which have implemented different service structures using cloud infrastructure.

But still many organizations especially with higher security concerns such as military forces government sector have great doubts about the data privacy or theft protection in cloud. The study aims to encourage Swedish Armed Forces (SWAF) networks to move to cloud infrastructures as it is the technology that will make a huge difference and revolutionize the service delivery models in IT world.

Organizations avoiding it would lag behind but at the same time organizations should consider to adapt a cloud strategy most reliable and compatible with their requirements. In the study, they provide an insight on different technologies and tools implemented specifically for monitoring and security in cloud.

The study emphasize much on virtualization technology because Cloud Computing highly relies on it. We analyze Amazon EC2 cloud in detail from security point of view. An intensive survey has also been conducted to understand the market trends and people perception about cloud implementation, security threats, cost savings and reliability of different services provided.

f. Duarte, (2012) titled: "The use of Cloud Computing services by Portuguese's Small and Medium Enterprises"

The objective of this study is to understand to what extent are the Portuguese SMEs using and managing Cloud Computing services. This work strives to understand if the managers of the Portuguese SMEs are knowledgeable to embrace this technology, and identify which areas of the Portuguese SMEs' value chain is Cloud Computing being currently applied and which areas are expected to be explored in the future.

In order to address the main objective of this dissertation, an on-line questionnaire is made to several Portuguese SMEs from different economic sectors. This questionnaire has been made by taking into account the knowledge of the Literature Review and the expertise and experience of a pool of experts on the field of Cloud Computing.

With the objective of interpreting the data from the on-line questionnaire, a statistical analysis is performed. This data is analyzed trough descriptive

statistics, as well as cross-tabulations between variables, according to the study objectives of this work.

The results of this work highlights that only around 40% of the Portuguese SMEs are using Cloud Computing services consciously, meaning that there are companies using this technology without even being aware of it. According to this study, 73% of the Portuguese SMEs are using Cloud Computing applications without realizing, which consequently means that only 27% of the SMEs do not actually use any kind of Cloud Computing applications.

Moreover, the majority of the companies which use this technology are able to identify Cloud Computing most important features as its characteristics, advantages and potential risks.

Finally, regarding the Service and Deployment models used by these companies, these are mainly focused on the IaaS and Private Cloud solutions. Nevertheless, most of these companies' managers still do not see Cloud Computing services as a core technology to use on their primary activities nor use the most appropriate management procedures for the management of this technology (as for example SLAs or KPIs). Consequently, this dissertation's results show that there is still a long way to go regarding the utilization of Cloud Computing by the Portuguese SMEs.

g. Angela, (2012) titled " Cloud Computing as an innovation: Percepetion, attitude, and adoption "

The aim of this study is to investigate IT professionals perceptions and attitudes towards adopting Cloud Computing in Taiwan. Despite the efforts made by providers such as HP and IBM the interview data suggests that many IT professionals do not have an in-depth understanding of the cloud

nor are they aware of its benefits to businesses. Their main concerns revolve not around the complexity and effort that will be required but around the business applications of the cloud. Companies will wait until more sustainable business models and more successful cases of cloud adoption emerge before they make their decision.

This study aims to investigate how Cloud Computing is understood by IT professionals and the concerns that IT professionals have in regard to the adoption of cloud services. The study was carried out in Taiwan and used a survey by interview approach to understand IT professionals' understandings and concerns about Cloud Computing. The findings of the study suggest that while the benefits of Cloud Computing such as its computational power and ability to help companies save costs are often mentioned in the literature, the primary concerns that IT managers and software engineers have are compatibility of the cloud with companies' policy, IS development environment, and business needs; and relative advantages of adopting cloud solutions. The findings also suggest that most IT companies in Taiwan will not adopt Cloud Computing until the uncertainties associated with Cloud Computing, e.g. security and standardization are reduced and successful business models have emerged.

h. Jlelaty and Monzer, (2012) titled: "Factors in Cloud Computing Adoption"

Many organizations today are striving to gain competitive advantages and work efficiently in the demanding market through the adoption of ICT (Information and Communications Technology) solutions such as ERP (Enterprise Resource Management),CRM (Customer Relationship Management), and Business Analytics Systems. However, these Information

Technology (IT) solutions can be quite expensive for small organizations. On the other hand, small organizations are trying to contend with large enterprises yet lack the capital to invest in ICT solutions. Cloud Computing can play a major role in this area as it helps organizations to use these solutions in a cost effective and affordable manner. Due to the fact that Cloud Computing is a fairly new technology, enterprises are either oblivious to its existence or lack confidence in its capabilities and solutions.

During the conduction of this thesis we discover the factors organizations to consider prior to the adoption of the Cloud Computing solution while assigning each with its relevant level of significance only in relation to small organizations. The factors presented will be important to be noted as it is concluded that Cloud Computing is rather suitable for small organizations.

i. **Gronli, (2012) "Cloud Computing and Context – Awareness- A study of the adapted user experience"**

In this study, the activities, interactions and preferences help shape the quality of service, content and products that study use. Context-aware systems use such information about end-users as input mechanisms for producing applications based on mobile, location, social, cloud and customized content services. This represents new possibilities for extracting aggregated user-centric information and includes novel sources for context-aware applications. Accordingly, a Design study based approach has been taken to further investigate the creation, presentation and tailoring of user-centric information. Through user evaluated experiments findings show how multi-dimensional context-aware information can be used to create adaptive solutions tailoring the user experience to the users' needs. Study findings in this work; highlight possible architectures for integration of Cloud

Computing services in a heterogeneous mobile environment in future context-aware solutions. When it comes to combining context-aware results from local computations with those of cloud based services, the results provide findings that give users tailored and adapted.

j. Saleem, (2011) titled "Cloud Computing's effects on enterprises… in terms of Cost and Security"

Innovations are necessary to ride the inevitable tide of change. Most of enterprises are striving to reduce their computing cost through the means of virtualization. This demand of reducing the computing cost has led to the innovation of Cloud Computing. Cloud Computing offers better computing through improved utilization and reduced administration and infrastructure costs. Cloud Computing is the sum of Software as a Service (SaaS) and Utility Computing.

Cloud Computing is a new technology for the enterprises. Therefore, most of the enterprises are not very confident to adopt it. This study paper tackles this issue for enterprises in terms of cost and security. This study discuss the benefits and drawbacks an enterprise can have while they adopt Cloud Computing in terms of Cost and Security.

In the end, concluding that Cloud Computing is better for medium and small sized enterprises as compared to large enterprises in terms of both cost and data security.

k. Alvarez, (2011) "Cloud Computing: Concerns and challenges for its adoption in SMEs and large companies in Japan"

This work intends to gain an insight and see what is happening in the case of Japanese market towards adoption of Cloud Computing nascent

technology. A certain level of awareness is already present among Japanese companies. Security portrays itself as the barrier for firms looking to incorporate cloud services. Early adopters identify some elements worth mentioning for this technology to become more attractive and as part of its constant evolution.

An online questionnaire was launched aiming at Japanese companies listed in the JASDAQ document as of November 2010. The results obtained are in correspondence to those watched in similar studies performed for other markets (i.e. USA, Europe). Security concerns are still the main obstacles for adopting Cloud Computing technology, although some companies recognized their lack of savvy in this field. For early adopters the panorama looks more promising, with results showing that some companies have entrusted part of their business critical systems (BCS) to be deployed into the cloud. Also, firms are using mainly solutions in the application layer of the cloud called software-as-a-service (SaaS). The future of Cloud Computing technology looks bright for the Japanese market.

l. Bakker, (2011) " The benefits of Cloud Computing in IT intensive organization "

This thesis is talking about an emerging technology which could replace traditional IT systems. Cloud Computing makes it possible for an organizations' IT to be more flexible, save costs and process information and data faster than with traditional IT. It is important to know whether value can be added for (growing or upcoming) 'ICT intensive' (Meaning core business uses ICT) organizations through using Cloud Computing.

The existing approaches on this problem mainly focus on one side of computing, either benefits or risks.

Also these approaches are often focused on the end user of the cloud and not the organizations using it. Different aspects such as the (valuable) possibilities of Cloud Computing are discussed as also the risks and issues that Cloud Computing brings. It is necessary to point out the different views and aspects of Cloud Computing in order to provide a meaningful conclusion at the end of this study and say something useful about the possible implementation of Cloud Computing in ICT intensive companies.

This Master Thesis contains an introduction to the topic of Cloud Computing and relevant literature in the topic's area. Besides this the methodology, risks and benefits, interviews, own created models, risk assessment, conclusions, used literature and appendices are included.

m. Shimba, (2010) " Cloud Computing: Strategies for Cloud Computing Adoption"

This is a result of the new economic model for the Information Technology (IT) department that Cloud Computing promises. The model promises a shift from an organization required to invest heavily for limited IT resources that are internally managed, to a model where the organization can buy or rent resources that are managed by a cloud provider, and pay per use. Cloud Computing also promises scalability of resources and on-demand availability of resources.

This study project aims at developing a roadmap called ROCCA (Roadmap for Cloud Computing Adoption), which provides organizations with a number of steps for adopting Cloud Computing and building trust. An associated framework called ROCCA Achievement Framework (RAF) is

This study focuses on a range of strategic issues from a broad cross section of areas of expertise required to ensure a successful Cloud Computing adoption.

It presents in detail the technological factors key to a successful Cloud Computing adoption, and it introduces the technology underlying Cloud Computing, and describes different Cloud Computing delivery and deployment models.

It explains how an emphasis on collaboration between clients and vendor is essential for successful adoption of Cloud Computing. If the organization feels free, confident and secure to use cloud services then it is more likely that the adoption rate will increase.

n. Virginia, (2010) titled " Factors Influencing The Adoption of Cloud Computing by Decision Making Managers"

Cloud Computing is a growing field, addressing the market need for access to computing resources to meet organizational computing requirements. The purpose of this study is to evaluate the factors that influence an organization in their decision whether o adopt Cloud Computing as a part of their strategic information technology planning.

Factors related to Cloud Computing being considered include its cost-effectiveness, the need for Cloud Computing, its reliability, and the perceived security effectiveness of Cloud Computing. This study addresses these factors from the viewpoint of decision- making professionals that determine information technology policy for organizations. Each independent factor or variable was analyzed directly in comparison to the management interest in adopting Cloud Computing. A strong positive relationship was found between each of these four independent variables: cost-effectiveness, the need for Cloud Computing, its reliability, and the perceived security effectiveness of Cloud Computing; and the dependent variable: the management interest in adopting Cloud Computing technology.

3.2. Commentary :

Due to the lack of Arab and Palestinian studies on the subject of Cloud Computing, this study chose to present some studies that explore independent variables, which contributed to promoting the concept of Cloud Computing.

The mentioned studies also discuss the main benefits of adopting Cloud Computing such as savings, efficiency, accessibility and flexibility but little of them concern about security and risks, also the study will examine to which extent the ability of implementing Cloud Computing as a future frame work for INGOs management. Also, are top management managers able to make a decision to adopt Cloud Computing technology for their organization?

The study shows that Cloud Computing technology is still new in the Middle East, and there is a little number of Arabic studies about this topic while most of these studies took place in foreign countries, also there is no academic study dedicated in Palestine, which deals with Cloud Computing as a future framework in INGOs management. Cloud Computing can be applied in INGOs using different deployment and technology models according the need of Cloud technology in the organization.

It is believed that many new features will be available by the way for INGOs team when they implement the Cloud Computing technology. Although there are some barriers that prevent institutions from adopting Cloud Computing, such as security issues but there are many advantages such as performance and costs in addition of many new features will be available for INGOs team, all previous reasons drive the top management to make a decision to implement Cloud Computing in INGOs as future framework.

Finally organizations must know, when deciding to adopt Cloud Computing, that all of the cloud providers do not have the same capability for their technological levels.

Chapter 4

Methodology & Data Analysis

Section 1: Methodology.

Section 2: Data Analysis and Discussion.

Section 4.1

Methodology

4.1.1 Introduction

4.1.2 Study Design

4.1.3 Data Collection Methodology

4.1.4 Population and sample size:

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4.1.6 Data Measurement

4.1.7 Test of Normality

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4.1.9 Statistical Validity of the Questionnaire

4.1.9.1 Internal Validity

4.1.9.2 Structure Validity

4.1.10 Reliability of the Study

4.1.11 Cronbach's Coefficient Alpha

4.1.1 Introduction

This chapter describes the methodology that was used in this study. The adopted methodology to accomplish this study uses the following techniques: the information about the study design, study population, questionnaire design, statistical data analysis, content validity and pilot study.

4.1.2 Study Design

a. The first phase of the study included identifying and defining the problems and establishment objective of the study and development study plan.

b. The second phase of the study included a summary of the comprehensive literature review. Literatures on claim management was reviewed.

c. The third phase of the study included a field survey which was conducted with a sample of big 20 INGOs working Gaza Strip**.**

d. The fourth phase of the study focused on the modification of the questionnaire design, through distributing the questionnaire to pilot study, The purpose of the pilot study was to test and prove that the questionnaire questions are clear to be answered in a way that help to achieve the target of the study. The questionnaire was modified based on the results of the pilot study.

e. The fifth phase of the study focused on distributing questionnaire. This questionnaire was used to collect the required data in order to achieve the study objective.

f. The sixth phase of the study was data analysis and discussion. Statistical Package for the Social Sciences, (SPSS) was used to perform the required analysis. The final phase includes the conclusions and recommendations. **160** questionnaires were distributed to the study population and a **121** questionnaires

are received. Figure (4.1) shows the methodology flowchart, which leads to achieve the study objective.

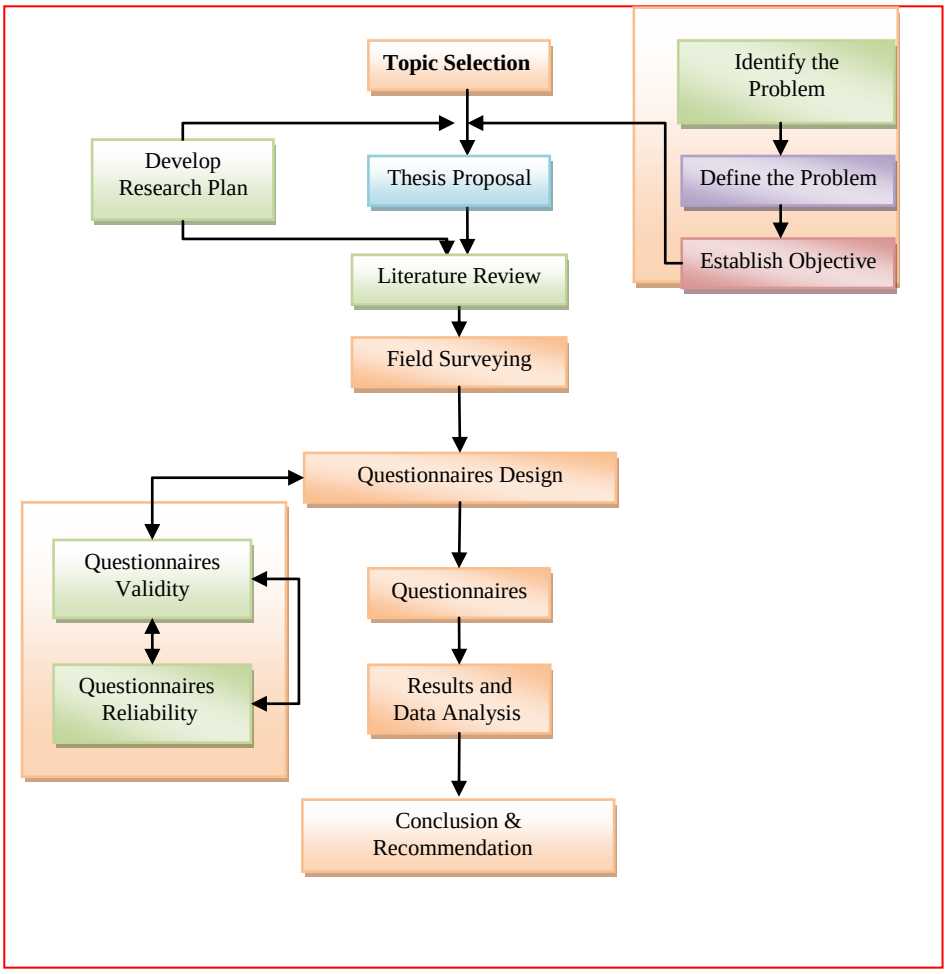

Figure (4.1) illustrates the methodology flow chart.

4.1.3 Data Collection Methodology

In order to collect the needed data for this study , the secondary resources are used in collecting data such as books, journals, statistics and web pages , in addition to preliminary resources that not available in secondary resources through distributing questionnaires on study population in order to get their opinions about implementing Cloud Computing for INGOs .

Study methodology depend on the analysis of data on the use of descriptive analysis, which depends on the poll and use the main program (SPSS).

4.1.4 Population and sample size

The population included INGOs working Gaza Strip which are 79 organizations according to the ministry of interior for the year 2014, and the sample size was top 20 largest organizations in terms of the number of employees.

4.1.5 Pilot Study

A pilot study for the questionnaire was conducted before collecting the results of the sample. It provides a trial run for the questionnaire, which involves testing the wordings of questions, identifying ambiguous questions, testing the techniques that used to collect data, and measuring the effectiveness of standard invitation to respondents.

4.1.6 Data Measurement

In order to be able to select the appropriate method of analysis, the level of measurement must be understood. For each type of measurement, there is/are an appropriate method/s that can be applied and not others. In this study, scale 1-10 is used.

4.1.7 Test of Normality

The One-Sample Kolmogorov-Smirnov Test procedure compares the observed cumulative distribution function for a variable with a specified theoretical distribution, which may be normal, uniform, Poisson, or exponential. The Kolmogorov-Smirnov Z is computed from the largest difference (in absolute value) between the observed and theoretical cumulative distribution functions. This goodness-of-fit test tests whether the observations could reasonably have come from the specified distribution. Many parametric tests require normally distributed variables. The one-sample Kolmogorov-Smirnov test can be used to

test that a variable of interest is normally distributed, (Henry, C. and Thode, Jr., 2002).

Table (4.1) shows the results for Kolmogorov-Smirnov test of normality. From Table (4.1), the p-value for each variable of P is greater than 0.05 level of significance, then the distributions for these variables are normally distributed. Consequently, parametric tests will be used to perform the statistical data analysis.

Table (4.1): Kolmogorov-Smirnov Test of Normality

No.	Variables	Kolmogorov-Smirnov	
		Test Value	P-value
1.	Cloud Computing	0.587	0.881
2.	Organization Management	0.823	0.507
3.	E-Management	0.462	0.983
4.	Organization Performance	0.820	0.512
5.	Risks and Security	0.626	0.829
6.	Costs and benefits	0.765	0.602
7.	All independent variables	0.478	0.977
8.	All paragraphs (dependent and independent variables)	0.393	0.998

4.1.8 Statistical analysis Tools

The study would use data analysis both qualitative and quantitative data analysis methods. The Data analysis will be made utilizing (SPSS 15). The study would utilize the following statistical tools:

a. Cronbach's Alpha for Reliability Statistics
b. Pearson correlation for Validity
c. Frequency and Descriptive analysis
d. Kolmogorov-Smirnov test of normality
e. Parametric Tests (T tests, Independent Samples T-test and Analysis of Variance)

T-test is used to determine if the mean of a paragraph is significantly different from a hypothesized value 6. If the P-value (Sig.) is smaller than or equal to the level of significance, $\alpha \leq 0.05$, then the mean of a paragraph is significantly different from a hypothesized value 6. The sign of the Test value indicates whether the mean is significantly greater or smaller than hypothesized value 6. On the other hand, if the P-value (Sig.) is greater than the level of significance, $\alpha \leq 0.05$, then the mean a paragraph is insignificantly different from a hypothesized value 6.

The *Independent Samples T-test* is used to examine if there is a statistical significant difference between two means among the respondents toward the (Cloud Computing as a Future Framework for INGOs Management) due to (Gender and Qualification).

The *One- Way Analysis of Variance (ANOVA)* is used to examine if there is a statistical significant difference between several means among the respondents toward the (Cloud Computing as a Future Framework for INGOs Management) due to (Field of specialization, Age, Job Title, Years of Currently Position and Adoption of the organization on information technology systems).

4.1.9 Statistical Validity of the Questionnaire

Validity refers to the degree to which an instrument measures what it is supposed to be measuring. Validity has a number of different aspects and assessment approaches. To insure the validity of the questionnaire, two statistical tests should be applied.

Internal Validity

Internal validity of the questionnaire is measured by a pilot sample, which consisted of 60 questionnaires through measuring the correlation coefficients between each paragraph in one field and the whole field.

Structure Validity of the Questionnaire

Structure validity is the second statistical test that used to test the validity of the questionnaire structure by testing the validity of each field and the validity of the whole questionnaire.

4.1.9.1 Internal Validity

Table (4.2) present the correlation coefficient for each paragraph of a field and the total of the corresponding field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of all paragraphs are significant at $\alpha \leq 0.05$, so it can be said that all paragraphs of each field are consistent and valid to be measure what it was set for.

Table 4.2: Correlation coefficient of each paragraph of " Cloud Computing " and the total of this field

No.	Paragraph	Pearson Correlation Coefficient	P-Value (Sig.)
1.	The Cloud Computing is a new technique for the organization	0.487	0.003*
2.	The Cloud Computing maintains the organization's resources	0.667	0.000*
3.	The Cloud Computing increases the job efficiency	0.763	0.000*
4.	The Cloud Computing saves the time and efforts	0.847	0.000*
5.	The Cloud Computing contributes in reducing the job burden.	0.777	0.000*
6.	The Cloud Computing is considered as an effective technology choice for your organization	0.514	0.002*
7.	The Cloud Computing supports the data confidentiality and information security	0.455	0.007*
8.	The Cloud Computing reduces the information technology costs	0.387	0.019*

* Correlation is significant at the 0.05 level

Table 4.3: Correlation coefficient of each paragraph of " Organization Management " and the total of this field

No.	Paragraph	Pearson Correlation Coefficient	P-Value (Sig.)
1.	Organization Management working under strategical plan for the information technology systems.	0.489	0.003*
2.	Organization Management is seeking to gain the competitive advantage by applying the modern technology to serve its beneficiaries.	0.643	0.000*
3.	Organization Management is seeking to provide the necessary training and preparation for any new technology in the organization.	0.732	0.000*
4.	Organization Management has enough awareness of the importance of Cloud Computing as a framework.	0.756	0.000*
5.	Organization management is seeking to reduce the obstacles that facing the use of Cloud Computing.	0.697	0.000*
6.	Organization management has the financial support to apply Cloud Computing	0.718	0.000*
7.	Organization management supports applying Cloud Computing between its branches.	0.752	0.000*
8.	Organization management is working on the development of information technology systems to achieve the concept of quality management	0.864	0.000*

* Correlation is significant at the 0.05 level

Table 4.4: Correlation coefficient of each paragraph of " E-Management " and the total of this field

No.	Paragraph	Pearson Correlation Coefficient	P-Value (Sig.)
1.	E-Management of the organization is characterized by precision and flexibility.	0.753	0.000*
2.	E-Management provides a good environmental work to adopt any modern technology	0.773	0.000*

3.	The organization basically depends on e-Management to facilitate job tasks	0.713	0.000*
4.	The organization depends on electronic mail services in its daily work	0.430	0.009*
5.	E-Management can help in developing the electronic mail services through the use of Cloud Computing	0.481	0.004*
6.	E-Management supports new technology systems and services to apply Cloud Computing	0.723	0.000*
7.	E-Management supports the use of Cloud Computing for employees working outside the offices	0.645	0.000*
8.	E-Management helps in integrating the information technology services with the requirements of implementing Cloud Computing	0.747	0.000*

* Correlation is significant at the 0.05 level

Table 4.5: Correlation coefficient of each paragraph of "organization performance" and the total of this field

No.	Paragraph	Pearson Correlation Coefficient	P-Value (Sig.)
1.	The organization supports modern technology systems to develop the work within the subdivisions	0.852	0.000*
2.	The organization adopts the spirit of creativity and innovation of its staff to implement Cloud Computing.	0.807	0.000*
3.	Cloud Computing provides new skills to develop and improve the organization performance.	0.786	0.000*
4.	Lacking knowledge and experience in IT systems leading to poor performance of the organization	0.675	0.000*
5.	Cloud Computing helps to increase the efficiency of the stimulus plans and programs to improve the organization performance.	0.634	0.000*
6.	Employees receive a regular training to develop their skills and their technical abilities to deal with any new technology.	0.879	0.000*
7.	Employees involves in conferences and workshops for information technology in	0.766	0.000*

	order to promote the performance of the organization.		
8.	The organization helps in providing a great deal of management changes and technical support to meet the challenges of the new technology.	0.903	0.000*

* Correlation is significant at the 0.05 level

Table 4.6: Correlation coefficient of each paragraph of " Risks and Security " and the total of this field

No.	Paragraph	Pearson Correlation Coefficient	P-Value (Sig.)
1.	The data security is the biggest challenges facing the organization to adopt any new technology	0.466	0.005*
2.	The organization depends on the modern data security technology to protect the information security and confidentiality of the data	0.808	0.000*
3.	The organization has a clear policy to deal with the information security and confidentiality of the data	0.691	0.000*
4.	The employee have enough awarnance with information security risks and how to avoid them	0.726	0.000*
5.	Cloud Computing helps in data recovery through the back up operations	0.481	0.004*
6.	The organization trusts by service providers companies (e.g. Google) in the event hosted Cloud Computing services.	0.507	0.003*
7.	The organization's servers are in a safe place and pack up are made outside the organization	0.662	0.000*
8.	The organization provides an integrated licensed programs capable of protecting the security and confidentiality of computerized information.	0.567	0.001*

* Correlation is significant at the 0.05 level

Table 4.7: Correlation coefficient of each paragraph of " Costs and benefits " and the total of this field

No.	Paragraph	Pearson Correlation Coefficient	P-Value (Sig.)
1.	Cloud Computing saves the information technology costs compared to the	0.753	0.000*

	development of other services.		
2.	The Cloud Computing helps to reduce the expenses that go to buy additional storage spaces.	0.812	0.000*
3.	The Cloud Computing helps to reduce the expenses that go to buy software and its license.	0.532	0.001*
4.	Cloud computing helps employee to communicate and share data with each other.	0.402	0.014*
5.	Cloud Computing is characterized by the possibility of control costs of services provided according to the needs of the organization.	0.651	0.000*
6.	Cloud Computing is characterized by reducing unnecessary costs of the organization's servers (maintenance - place - electricity – air condition, ... etc.)	0.855	0.000*
7.	Cloud Computing supports huge amount of data processing with very high speed at the same time	0.767	0.000*
8.	Cloud Computing supports efficiently various operating systems .	0.730	0.000*

* Correlation is significant at the 0.05 level

4.1.9.2 Structure Validity

Table (4.8) clarifies the correlation coefficient for each field and the whole questionnaire. The p-values (Sig.) are less than 0.05, so the correlation coefficients of all the fields are significant at $\alpha \leq 0.05$, so it can be said that the fields are valid to be measured what it was set for to achieve the main aim of the study.

Table 4.8: Correlation coefficient of each field and the whole of questionnaire

No.	Field	Pearson Correlation Coefficient	P-Value (Sig.)
1.	Cloud Computing	0.621	0.000*
2.	Organization Management	0.835	0.000*
3.	E-Management	0.874	0.000*
4.	Organization Performance	0.890	0.000*
5.	Risks and Security	0.588	0.000*
6.	Costs and benefits	0.597	0.000*

* Correlation is significant at the 0.05 level

4.1.10 Reliability of the Study

The reliability of an instrument is the degree of consistency which measures the attribute; it is supposed to be measuring. The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability. Reliability can be equated with the stability, consistency, or dependability of a measuring tool. The test is repeated to the same sample of people on two occasions and then compares the scores obtained by computing a reliability coefficient. To insure the reliability of the questionnaire, Cronbach's Coefficient Alpha should be applied.

4.1.11 Cronbach's Coefficient Alpha

Chronback's alpha (George D. & Mallery P, 2006) is designed as a measure of internal consistency, that is, do all items within the instrument measure the same thing? The normal range of Cronbach's coefficient alpha value between 0.0 and + 1.0, and the higher values reflects a higher degree of internal consistency. The Cronbach's coefficient alpha was calculated for each field of the questionnaire.

Table (4.9) shows the values of Cronbach's Alpha for each field of the questionnaire and the entire questionnaire. For the fields, values of Cronbach's Alpha were in the range from 0.732 and 0.943. This range is considered high; the result ensures the reliability of each field of the questionnaire. Cronbach's Alpha equals 0.944 for the entire questionnaire which indicates an excellent reliability of the entire questionnaire.

Table 4.9: Cronbach's Alpha for each field of the questionnaire

No.	Field	Cronbach's Alpha
1.	Cloud Computing	0.732
2.	Organization Management	0.857
3.	E-Management	0.820
4.	Organization Performance	0.903
5.	Risks and Security	0.754
6.	Costs and benefits	0.849
7.	All independent variables	0.943
8.	**All paragraphs (dependent and independent variables)**	**0.944**

The Thereby, it can be said that the study proved that the questionnaire was valid, reliable, and ready for distribution for the population sample.

Section 4.2

Data Analysis and Discussion

4.2.1 Personal Functional Information

4.2.1.1 Gender

4.2.1.2 Qualification

4.2.1.3 Field of specialization

4.2.1.4 Age

4.2.1.5 Job Title

4.2.1.6 Years of Experience in Currently Position

4.2.1.7 Adoption of the organization on information technology systems

4.2.2 Analysis for each field

4.2.2.1 Cloud Computing

4.2.2.2 Organization Management

4.2.2.3 E-Management

4.2.2.4 Organization Performance

4.2.2.5 Risks and Security

4.2.2.6 Costs and benefits

4.2.3 Hypothesis Analysis

4.2.1 Personal Functional Information

4.2.1.1 Gender

Table (4.10): Gender

Gender	Frequency	Percent
Male	78	64.5
Female	43	35.5
Total	**121**	**100.0**

Table (4.10) shows that about two-thirds of responders are males at (64.5%) of the population and (35.5%) of the population are females. The females' contributions in the workforce are limited, and males' contributions exceed 4 times of females' contributions (Palestinian Central Bureau of Statistics: 2011). This is due to (work chances are for males, the women work fields are limited, the culture of the society is an essential reason in decreasing the women contribution in work, women's obligations and responsibilities toward their homes and families). But we notice that the participation of female in INGOs is about one-thirds of the workforce.

4.2.1.2 Qualification

Table (4.11):Qualification

Qualification	Frequency	Percent
Bachelor or less	75	62.0
Master or PhD	46	38.0
Total	**121**	**100.0**

The statistics show that the majority of population is Bachelor holders or less at (62%), and the reminder (46%) of the population is Master or PhD holders. Which is an indicator that there is a big slide of the workforces in INGOs are post graduates holders.

4.2.1.3 Field of specialization

Table (4.12):Field of specialization

Specialization	Frequency	Percent
Engineering	22	18.2
Information Technology	13	10.7
Commerce	42	34.7
Other	44	36.4
Total	**121**	**100.0**

The results in table (4.12) show that the responses are from different Field of specialization, while Engineering was (18.2%), Information technology (10.7%), Commerce (34.7%), and others specializations were (36.4%) of INGOs employees. The study makes comprehensive analysis for most INGOs staff whose fill the questionnaire and found that; about one-third of them was from other specialization (such as Accounting, English literature, Media, Public Health, Pharmacy and Nursing) refers that to INGOs doesn't concern on the specialization as much as the experience in that requested field, and most of them was working as coordinators or managers.

4.2.1.4 Age

Table (4.13):Age

Age	Frequency	Percent
Below 30 years	56	46.3
From 30 – below 40	52	43.0
From 40 years and above	13	10.7
Total	**121**	**100.0**

The statistics in table (4.13) show that (46.3%) of the population are Less than (30) years old, (43%) of the population are between (30) and (40), and (10.7%) of the population are of (40) years and above.

The study conclude from the table (4.13) that there are more than (89.3)% are below than 40 years old, half of this total percentage has below (30) years old

and the other half is between (30) years and below (40) years old, which mean that most of INGOs employees are in youth age which are able to give more efforts and best performance, value perceptions enrich the study.

4.2.1.5 Job Title

Table (4.14):Job Title

Job Title	Frequency	Percent
IT employee	10	8.3
Coordinator / Administrative	51	42.1
Director	16	13.2
Others	44	36.4
Total	**121**	**100.0**

The results in table (4.14) show that the responses are from different categories of INGOs employees. A comprehensive study of all staff whose qualifications relate to computer and IT fields in INGOs has been made. So the researcher's distributed (160), and retrieved (121) questionnaires were filled with percent (75.6%). This is due to some of employees who are so busy because of their duties and heavy works so not all of them filled the questionnaire, and some apologized because they do not have enough knowledge to fill the questionnaire. In addition, some of INGOs refused to receive the questionnaire because of their internal policy as they told us.

The retrieved questionnaires are distributed as following:

(8.3%) of the population IT employees, (42.1%) of the populations are coordinators or administrators, (13.2%) of the population are directors, (36.4%) are others may be it is a big rate but that because INGOs do not look for specialty care as much as practical experience.

4.2.1.6 Years of Experience in Currently Position

Table (4.15):Years of Experience

Years of Currently Position	Frequency	Percent
Less than 5	44	36.4

From 5 – less than 10	54	44.6
10 years and Above	23	19.0
Total	**121**	**100.0**

The statistics in table (4.15) show that (36.4%) of the population are Less than (5) years old, (44.6%) of the population are between (5) and (10), and (19%) of the population are of (10) years and above.

We conclude from the table that there are more than (63.7%) have more than 5 years experience, The majority this percentage has years in their Experience between (5) and (10) years and followed by the category the years of experience more than (10) years, which means that most of INGOs employees has a long experience in their current positions and were able to give a value perceptions enrich the study.

4.2.1.7 Adoption of the organization on information technology systems

Table (4.16):Adoption of the organization on information technology systems

Adoption of the organization on information technology systems	Frequency	Percent
Medium or less	24	19.8
High	70	57.9
Very high	27	22.3
Total	**121**	**100.0**

The statistics in table (4.16) show that (19.8%) of population are medium or less adoption of the organization on information technology systems, (57.9%) are high, (22.3%) are very high depending on information technology systems.

The majority of population (80.2%) are high and more adoption of the organization on information technology systems.

Which is an indicator that most of INGOs in Gaza strip are highly depending on information technology systems.

4.2.2 Analysis for each field

4.2.2.1 Cloud Computing

Table (4.17) shows the following results:

The mean of paragraph #4 “The Cloud Computing saves the time and efforts” equals 8.45 (84.5%), Test-value =16.91, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 We conclude that the respondents agree to this paragraph.

The mean of paragraph #1 “The Cloud Computing is a new technique for the organization” equals 6.74 (67.4%), Test-value =3.17, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of the field “Cloud Computing” equals 7.70 (77.%), Test-value =13.54, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 6. We conclude that the respondents agreed to field of “Cloud Computing ".

In general, the analysis result shows (77%) of the population agree in general about the idea of the implementing Cloud Computing in INGOs. The study explains that the population knows the great benefits which will return to the organizations and their employees by implementing Cloud Computing such as saving time and effort, increasing job efficiency and reducing costs for the organizations and workloads for the employees.

Table (4.17): Means and Test values for "Cloud Computing"

No.	Paragraph	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)	Rank
1.	The Cloud Computing is a new technique for the organization	6.74	67.4	2.56	3.17	0.001*	8
2.	The Cloud Computing maintains the organization's resources	7.79	77.9	1.76	11.16	0.000*	4
3.	The Cloud Computing increases the job efficiency	8.08	80.8	1.80	12.75	0.000*	2
4.	The Cloud Computing saves the time and efforts	8.45	84.5	1.59	16.91	0.000*	1
5.	The Cloud Computing contributes in reducing the job burden.	7.61	76.1	1.86	9.51	0.000*	5
6.	The Cloud Computing is considered as an effective technology choice for your organization	8.03	80.3	1.82	12.31	0.000*	3
7.	The Cloud Computing supports the data confidentiality and information security	7.42	74.2	2.03	7.63	0.000*	7
8.	The Cloud Computing reduces the information technology costs	7.52	75.2	1.98	8.40	0.000*	6
	All paragraphs of the field "Cloud Computing"	**7.70**	**77.0**	**1.38**	**13.54**	**0.000***	

* The mean is significantly different from 6

4.2.2.2 Organization Management

Table (4.18) shows the following results:

The mean of paragraph #1 “Organization Management working under strategically plan for the information technology systems” equals 7.04 (70.4%), Test-value =6.04, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of paragraph #6 “Organization management has the financial support to apply Cloud Computing” equals 6.07 (60.7%), Test-value =2.33, and P-value =0.377 which is greater than the level of significance $\alpha \leq 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 6. We conclude that the respondents "neutral" to this paragraph.

The mean of the field “Organization Management” equals 6.63 (66.3%), Test-value =4.43, and P-value =0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 6. We conclude that the respondents agreed to field of “Organization Management ".

The analysis result shows that (66.3%) about two-third of the population members in INGOs agreed, about the Organization management support to implement Cloud Computing technology in INGOs daily operations. This reveals that the organization management are not completely aware of the benefits of Cloud Computing in their organization, that shows that there is no strategic plans to adopt Cloud Computing, however almost all of International organizations depend basically in Cloud Computing in their operations. So the

implementation of Cloud Computing comes by top management support and encouragements, through financial support and provision of necessary requirements for it. This study is consistent with the findings of other studies (Mansour, 2013; Lin and Lee, 2005; Wang et al.,2010) Which concluded that the top management support is critical for creating a supportive climate and for providing adequate resources for the adoption of new technologies.

Table (4.18): Means and Test values for "Organization Management"

No.	Paragraph	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)	Rank
1.	Organization Management working under strategically plan for the information technology systems.	7.04	70.4	1.89	6.04	0.000*	1
2.	Organization Management is seeking to gain the competitive advantage by applying the modern technology to serve its beneficiaries.	6.88	68.8	1.87	5.14	0.000*	3
3.	Organization Management is seeking to provide the necessary training and preparation for any new technology in the organization.	6.68	66.8	1.92	3.85	0.000*	5
4.	Organization Management has enough awareness of the importance of Cloud Computing as a framework.	6.74	67.4	2.08	3.93	0.000*	4
5.	Organization management is seeking to reduce the obstacles that facing the use of Cloud Computing.	6.17	61.7	2.17	0.84	0.202	7
6.	Organization management has the financial support to apply Cloud Computing	6.07	60.7	2.33	0.32	0.377	8
7.	Organization management supports applying Cloud Computing between its branches.	6.42	64.2	2.31	1.97	0.025*	6
8.	Organization management is working on the development of information technology systems to achieve the concept of quality management	7.04	70.4	2.00	5.70	0.000*	1
	All paragraphs of the field " Organization Management"	**6.63**	**66.3**	**1.56**	**4.43**	**0.000***	

* The mean is significantly different from 6

4.2.2.3 E-Management

Table (4.19) shows the following results:

The mean of paragraph #4 "The organization depends on electronic mail services in its daily work" equals 8.87 (88.7%), Test-value =22.04, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of paragraph #7 "E-Management supports the use of Cloud Computing for employees working outside the offices" equals 6.73 (67.3%), Test-value =3.63, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of the field "E-Management" equals 7.56 (75.6%), Test-value =14.89, and P-value =0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 6. We conclude that the respondents agreed to field of "E-Management ".

In general, the analysis result shows (75.6%) of the population agree that e-Management facilitates the Implementing of Cloud Computing in INGOs. That because of the great benefits of e-Management which increases the effectiveness of work, save time and efforts, give an indicator about the technology culture of population and their understanding the advantages of e-Management which actually supports the implementing Cloud Computing in INGOs.

This study is consistent with the findings of the study (Saleem, 2011), Which concluded that the e-Management facilitates implementing Cloud Computing in enterprises.

Table (4.19): Means and Test values for "E-Management"

No.	Paragraph	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)	Rank
1.	E-Management of the organization is characterized by precision and flexibility.	7.27	72.7	1.75	8.02	0.000*	6
2.	E-Management provides a good environmental work to adopt any modern technology	7.33	73.3	1.60	9.12	0.000*	5
3.	The organization basically depends on e-Management to facilitate job tasks	7.37	73.7	1.76	8.57	0.000*	4
4.	The organization depends on electronic mail services in its daily work	8.87	88.7	1.43	22.04	0.000*	1
5.	E-Management can help in developing the electronic mail services through the use of Cloud Computing	8.18	81.8	1.50	15.94	0.000*	2
6.	E-Management supports new technology systems and services to apply Cloud Computing	7.55	75.5	1.70	9.91	0.000*	3
7.	E-Management supports the use of Cloud Computing for employees working outside the offices	6.73	67.3	2.19	3.63	0.000*	8
8.	E-Management helps in integrating the information technology services with the requirements of implementing Cloud Computing	7.14	71.4	1.85	6.66	0.000*	7
	All paragraphs of the field " E-Management"	**7.56**	**75.6**	**1.15**	**14.89**	**0.000***	

* The mean is significantly different from 6

4.2.2.4 Organization Performance

Table (4.20) shows the following results:

The mean of paragraph #4 “Lacking knowledge and experience in IT systems leading to poor performance of the organization” equals 7.98 (79.8%), Test-value =12.82, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of paragraph #7 “Employees involves in conferences and workshops for information technology in order to promote the performance of the organization” equals 5.73 (57.3%), Test-value =-1.23, and P-value =0.111 which is greater than the level of significance $\alpha \leq 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 6. We conclude that the respondents "neutral" to this paragraph.

The mean of the field “Organization Performance” equals 6.89 (68.%), Test-value =6.86, and P-value =0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 6. We conclude that the respondents agreed to field of “Organization Performance".

The analysis result shows that (68.9%) of the population members at INGOs agreed about Increasing organization performance when Implementing Cloud Computing in INGOs. The analysis results reveal that there are agreement about Cloud Computing will increase the performance of the employees thus the performance of services provided to beneficiaries and the end the organization performance will be increased actually.

This study is consistent with the findings of the study (Bakker, 2011), Which concluded that the organization performance will be increased by implementing Cloud Computing.

Table (4.20): Means and Test values for "organization performance"

No.	Paragraph	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)	Rank
1.	The organization supports modern technology systems to develop the work within the subdivisions	7.30	73.0	1.63	8.78	0.000*	4
2.	The organization adopts the spirit of creativity and innovation of its staff to implement Cloud Computing.	6.76	67.6	1.97	4.21	0.000*	5
3.	Cloud Computing provides new skills to develop and improve the organization performance.	7.43	74.3	1.70	9.24	0.000*	3
4.	Lacking knowledge and experience in IT systems leading to poor performance of the organization	7.98	79.8	1.69	12.82	0.000*	1
5.	Cloud Computing helps to increase the efficiency of the stimulus plans and programs to improve the organization performance.	7.55	75.5	1.81	9.38	0.000*	2
6.	Employees receive a regular training to develop their skills and their technical abilities to deal with any new technology.	6.18	61.8	2.14	0.94	0.176	7
7.	Employees involves in conferences and workshops for information technology in order to promote the performance of the organization.	5.73	57.3	2.46	-1.23	0.111	8
8.	The organization helps in providing a **great deal** of management changes and technical support to meet the challenges of the new technology.	6.21	62.1	2.22	1.07	0.144	6
	All paragraphs of the field "organization performance"	**6.89**	**68.9**	**1.43**	**6.86**	**0.000***	

* The mean is significantly different from 6

4.2.2.5 Risks and Security

Table (4.21) shows the following results:

The mean of paragraph #7 “The organization’s servers are in a safe place and pack up are made outside the organization ” equals 8.08 (80.8%), Test-value =10.70, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of paragraph #6 “The organization trusts by service providers companies (e.g. Google) in the event hosted Cloud Computing services” equals 6.71 (67.1%), Test-value =3.66, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of the field “Risks and Security” equals 7.61 (76.1%), Test-value =13.89, and P-value =0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 6. We conclude that the respondents agreed to field of “Risks and Security ".

The analysis result shows that (76.1%) of the population members at INGOs agreed about risks and security of Implementing Cloud Computing in INGOs. The analysis results reveal that there are agreements about the most important risks but also there is a great concerns in the security side such as the backup of data and the permissions for every user when implementing Cloud Computing.

This study is consistent with the findings of the study (Ali and Ayub, 2012; Saleem, 2011) Which concluded that the risks and security of information have a very important role when we decide to implement Cloud Computing in organizations

Table (4.21): Means and Test values for "Risks and Security"

No.	Paragraph	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)	Rank
1.	The data security is the biggest challenges facing the organization to adopt any new technology	7.88	78.8	1.67	12.35	**0.000***	4
2.	The organization depends on the modern data security technology to protect the information security and confidentiality of the data	7.66	76.6	1.69	10.84	**0.000***	6
3.	The organization has a clear policy to deal with the information security and confidentiality of the data	7.81	78.1	1.58	12.58	**0.000***	5
4.	The employee have enough awarnance with information security risks and how to avoid them	6.82	68.2	2.05	4.40	**0.000***	7
5.	Cloud Computing helps in data recovery through the back up operations	7.98	79.8	1.53	14.16	**0.000***	2
6.	The organization trusts by service providers companies (e.g. Google) in the event hosted Cloud Computing services.	6.71	67.1	2.09	3.66	**0.000***	8
7.	The organization's servers are in a safe place and pack up are made outside the organization	8.08	80.8	2.13	10.70	**0.000***	1
8.	The organization provides an integrated licensed programs capable of protecting the security and confidentiality of computerized information.	7.90	79.0	1.99	10.46	**0.000***	3
	All paragraphs of the field " Risks and Security"	**7.61**	**76.1**	**1.27**	**13.89**	**0.000***	

* The mean is significantly different from 6

4.2.2.6 Costs and benefits

Table (4.22) shows the following results:

The mean of paragraph #4 “Cloud computing helps employee to communicate and share data with each other” equals 8.31 (83.1%), Test-value =18.10, and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of paragraph #7 “Cloud Computing supports huge amount of data processing with very high speed at the same time” equals 7.38 (73.8%), Test-value =,8.61 and P-value = 0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 6 . We conclude that the respondents agree to this paragraph.

The mean of the field “Costs and benefits” equals 7.67 (76.7%), Test-value =14.80, and P-value =0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 6. We conclude that the respondents agreed to field of “Costs and benefits ".

The analysis result shows that (76.7%) of the population members at INGOs agreed about cost reduction and benefits increasing through Implementing Cloud Computing in INGOs. The analysis results reveal that there are agreement about the most important feature of Cloud Computing which is getting rid of unnecessary costs (place - electricity - air conditioning ... etc.), and reducing the expenses that go to buy hardware, servers, software or maintenance, in the other

hands increasing the speed of processing data and the spaces of data storage when implementing Cloud Computing.

This study is consistent with the findings of most previous studies, because cost and benefits play a main role when implementing Cloud Computing, (Mansour, 2013; Angela, 2012 ; bakker, 2011 ;Virginia, 2010) agree with the study result in term of costs and benefits of Cloud Computing.

Table (4.22): Means and Test values for "Costs and benefits"

No.	Paragraph	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)	Rank
1.	Cloud Computing saves the information technology costs compared to the development of other services.	7.62	76.2	1.57	11.26	0.000*	3
2.	The Cloud Computing helps to reduce the expenses that go to buy additional storage spaces.	7.92	79.2	1.55	13.56	0.000*	2
3.	The Cloud Computing helps to reduce the expenses that go to buy software and its license.	7.61	76.1	1.61	10.98	0.000*	4
4.	Cloud computing helps employee to communicate and share data with each other.	8.31	83.1	1.40	18.10	0.000*	1
5.	Cloud Computing is characterized by the possibility of control costs of services provided according to the needs of the organization.	7.58	75.8	1.56	11.03	0.000*	5
6.	Cloud Computing is characterized by reducing unnecessary costs of the organization's servers (maintenance - place - electricity – air condition, ... etc.)	7.53	75.3	1.75	9.55	0.000*	7
7.	Cloud Computing supports huge amount of data processing with very high speed at the same time	7.38	73.8	1.75	8.61	0.000*	8
8.	Cloud Computing supports efficiently various operating systems .	7.56	75.6	1.74	9.79	0.000*	6
	All paragraphs of the field " Costs and benefits"	**7.67**	**76.7**	**1.24**	**14.80**	**0.000***	

* The mean is significantly different from 6

4.2.2.7 In General " All independent variables ":

Table (4.23) shows the mean of all paragraphs equals 7.27 (72.7%), Test-value =13.01, and P-value =0.000 which is smaller than the level of significance $\alpha \leq 0.05$. The mean of all paragraphs is significantly different from the hypothesized value 6. We conclude that the respondents agreed to all paragraphs of the independent variables together**.**

Table (4.23): Means and Test values for " All Paragraphs "

Item	Mean	Proportional mean (%)	Standard Deviation	Test value	P-value (Sig.)
All independent variables	7.27	72.7	1.07	13.01	0.000*

*The mean is significantly different from 6

The analysis result shows that (72.7%) of the population members at INGOs agreed about all paragraph (Organization Management – E-Management – Organization Performance – Risks and security – Costs and benefits) of Implementing Cloud Computing in INGOs. The analysis results reveal that there are agreements about the important of Cloud Computing as a new technology because its great benefits for the employees, beneficiaries, and whole the organization.

4.2.3 Hypothesis Analysis

There is a statistical significant differences at ($\alpha \leq 0.05$) among respondents toward Cloud Computing as Future Framework for INGOs Management due to personal traits (Gender, Scientific qualification, Scientific specialization, Age, Job title, Experience years in job title, and Extent of organization dependency on Information Technology systems).

This hypothesis can be divided into the following sub-hypotheses:

a- There is a significant difference among the respondents Cloud Computing as Future Framework for INGOs Management due to Gender.

Table (4.24) shows that the p-value (Sig.) is greater than the level of significance $\alpha \leq 0.05$ for each field, then there is insignificant difference among the respondents toward these fields due to Gender. The study conclude that the personal characteristics' Gender has no effect on this field.

The results indicate the absence of the effect of gender on the study's hypotheses; It seems logical from the questionnaire analysis that INGOs employees which are the study samples almost have the same opinion about the relationship between the study hypotheses, then its normally that gender has no affect on implementing Cloud Computing as future framework for INGOs management.

Table (4.24): Independent Samples T-test test of the fields and their p-values for Gender

No.	Field	Means		Test Value	Sig.
		Male	Female		
1.	Cloud Computing	7.60	7.89	-1.077	0.142
2.	Organization Management	6.66	6.57	0.285	0.388
3.	E-Management	7.58	7.50	0.368	0.357
4.	Organization Performance	6.93	6.82	0.421	0.337
5.	Risks and Security	7.51	7.79	-1.163	0.124
6.	Costs and benefits	7.60	7.78	-0.773	0.220
	All independent variables together	**7.26**	**7.30**	**-0.186**	**0.426**

b- There is a significant difference among the respondents Cloud Computing as Future Framework for INGOs Management due to Scientific Qualification.

Table (4.25) shows that the p-value (Sig.) is smaller than the level of significance $\alpha \leq 0.05$ for the fields "Organization Management, Organization Performance, and all independent variables together", then there is significant difference among the respondents toward these fields due to Scientific Qualification. The study conclude that the personal characteristics' Scientific Qualification has an effect on the fields "Organization Management, Organization Performance, and all independent variables together"

For the fields "Organization Management, Organization Performance, and all independent variables together", the mean for the category " Bachelor or less " respondents have the highest among the other Scientific Qualification categories, then we conclude that category " Bachelor or less " respondents is agreed for the fields "Organization Management, Organization Performance of the organization, and All independent variables together" much more than the other Scientific Qualification categories.

For the other fields, the p-value (Sig.) is greater than the level of significance $\alpha = 0.05$, then there is insignificant difference among the respondents toward these fields due to Scientific Qualification. The study conclude that the personal characteristics' Scientific Qualification has no effect on the other fields.

The analysis shows that the scientific qualification effects on organization management, organization performance, and all independent variables together, specially in the categories "Bachelor or less" because they are related with the scientific qualification, while scientific qualification has no effect on other fields (E-Management – Risks and Security – Costs and Benefits) because they are not related or affected by the scientific qualification.

Table (4.25): Independent Samples T-test test of the fields and their p-values for Scientific Qualification

No.	Field	Means		Test Value	Sig.
		Bachelor or less	Master or PhD		
1.	Cloud Computing	7.74	7.65	0.343	0.366
2.	Organization Management	6.88	6.22	2.167	0.012*
3.	E-Management	7.67	7.37	1.386	0.084
4.	Organization Performance	7.08	6.58	1.865	0.032*
5.	Risks and Security	7.66	7.52	0.609	0.272
6.	Costs and Benefits	7.74	7.56	0.765	0.223
	All independent variables together	**7.40**	**7.05**	**1.678**	**0.041***

* The mean difference is significant a 0.05 level

c- There is a significant difference among the respondents toward the Cloud Computing as future framework for INGOs management due to scientific specialization.

Table (4.26) shows that the p-value (Sig.) is smaller than the level of significance $\alpha \leq 0.05$ for the field "Costs and benefits", then there is significant difference among the respondents toward these fields due to Scientific specialization. We conclude that the personal characteristics' Scientific specialization has an effect on this field.

For the field "Costs and benefits", The mean for the category " Engineering " respondents have the highest among the other Scientific specialization categories, then we conclude that the category " Engineering " respondents is agreed for the field "Costs and benefits" much more than the other Scientific specialization categories.

For the other fields, the p-value (Sig.) is greater than the level of significance $\alpha \leq 0.05$, then there is insignificant difference among the respondents toward these fields due to Scientific specialization. We conclude that the personal characteristics' Scientific specialization has no effect on the other fields.

The analysis shows that the scientific specialization effects on cost and benefits, specially Engineering which has the most effect on this variable because it is the

related specialization. While scientific specialization has no effects on other fields (Organization management - E-Management - Organization Performance - Risks and security - Costs and benefits).

Table (4.26): ANOVA test of the fields and their p-values for Scientific specialization

No.	Field	Means				Test Value	Sig.
		Engineering	Information Technology	Commerce	Other		
1.	Cloud Computing	8.30	7.63	7.46	7.75	0.836	0.477
2.	Organization Management	7.55	6.80	6.15	6.69	1.966	0.123
3.	E-Management	8.17	7.82	7.29	7.55	1.525	0.212
4.	Organization Performance	7.16	7.13	6.65	6.92	0.504	0.680
5.	Risks and Security	8.03	7.78	7.55	7.55	0.432	0.731
6.	Costs and benefits	8.45	8.15	7.30	7.64	2.705	0.049*
	All independent variables together	**7.88**	**7.54**	**6.99**	**7.27**	**1.832**	**0.145**

* The mean difference is significant a 0.05 level

d- There is a significant difference among the respondents toward the Cloud Computing as Future Framework for INGOs Management due to Age.

Table (4.27) shows that the p-value (Sig.) is greater than the level of significance $\alpha \leq 0.05$ for each field, then there is significant difference among the respondents toward each field due to Age. We conclude that the personal characteristics' Age has no effect on each field.

The results indicate the absence of the effect of age on the study's hypotheses; It seems logical from the study's point of view that the Cloud Computing is new technology, which is targeting all different age categories, so it is not a condition the age must be older or younger to affect on concerns and challenges of the adoption of Cloud Computing technology.

Table (4.27): ANOVA test of the fields and their p-values for Age

No.	Field	Means			Test Value	Sig.
		Below 30 years	From 30 – below 40	From 40 years and above		
1.	Cloud Computing	7.77	7.68	7.51	0.200	0.819
2.	Organization Management	6.72	6.59	6.39	0.268	0.765
3.	E-Management	7.76	7.41	7.26	1.717	0.184
4.	Organization Performance	7.14	6.72	6.52	1.688	0.189
5.	Risks and Security	7.75	7.40	7.80	1.180	0.311
6.	Costs and benefits	7.88	7.46	7.59	1.563	0.214
	All independent variables together	**7.45**	**7.12**	**7.11**	**1.464**	**0.235**

e- There is a significant difference among the respondents toward the Cloud Computing as Future Framework for INGOs Management due to Job title.

Table (4.28) shows that the p-value (Sig.) is greater than the level of significance $\alpha \leq 0.05$ for each field, then there is significant difference among the respondents toward each field due to Job title. We conclude that the personal characteristics' Job title has no effect on each field.

The results indicate the absence of the effect of job title on the study's hypotheses; so the existence of this result because the implementation of Cloud Computing will be on whole the organization and its employees which have different job titles. So Cloud Computing will target all different types of positions (IT employees, coordinators, directors and others), for there the job title does not affect the implementation of Cloud Computing technology.

Table (4.28): ANOVA test of the fields and their p-values for Job title

No.	Field	Means				Test Value	Sig.
		IT employee	Coordinator / Administrative	Director	Others		
1.	Cloud Computing	7.46	7.78	6.93	7.95	2.363	0.075
2.	Organization Management	6.86	6.53	6.17	6.86	0.905	0.441
3.	E-Management	7.74	7.59	7.22	7.60	0.565	0.639
4.	Organization Performance	7.28	6.94	6.62	6.85	0.461	0.710
5.	Risks and Security	7.39	7.60	7.15	7.83	1.273	0.287
6.	Costs and benefits	8.08	7.57	7.20	7.86	1.592	0.195
	All independent variables together	**7.47**	**7.25**	**6.87**	**7.40**	**1.054**	**0.372**

f- There is a significant difference among the respondents toward the Cloud Computing as Future Framework for INGOs Management due to Experience years in job title.

Table (4.29) shows that the p-value (Sig.) is greater than the level of significance $\alpha \leq 0.05$ for each field, then there is significant difference among the respondents toward each field due to Experience years in job title. We conclude that the personal characteristics' Experience years in job title has no effect on each field.

The results indicate the absence of the effect of experience years in job title on the study's hypotheses; so the existence of this result is because the Cloud Computing is new technology. That's targeting all different categories of experience years (less than 5 years – from 5 to less than 10 years - 10 years and above), so that experiences years in job title does not affect the implementation of Cloud Computing technology.

Table (4.29): ANOVA test of the fields and their p-values for Experience years in job title

No.	Field	Means			Test Value	Sig.
		Less than 5	From 5 – less than 10	10 years and Above		
1.	Cloud Computing	7.68	7.72	7.72	0.012	0.988
2.	Organization Management	6.69	6.76	6.20	1.093	0.339
3.	E-Management	7.64	7.67	7.12	2.130	0.123
4.	Organization Performance	6.95	6.97	6.59	0.640	0.529
5.	Risks and Security	7.52	7.75	7.46	0.581	0.561
6.	Costs and benefits	7.57	7.72	7.74	0.233	0.792
	All independent variables together	**7.27**	**7.38**	**7.02**	**0.903**	**0.408**

* The mean difference is significant a 0.05 level

j- There is a significant difference among the respondents toward the Cloud Computing as Future Framework for INGOs Management due to Extent of organization dependency on Information Technology systems.

Table (4.30) shows that the p-value (Sig.) is smaller than the level of significance $\alpha \leq 0.05$ for the fields “Organization Management, E-Management, Risks and Security, Costs and benefits, All independent variables together”, then there is significant difference among the respondents toward these fields due to Extent of organization dependency on Information Technology systems. We conclude that the personal characteristics’ Extent of organization dependency on Information Technology systems has an effect on these field.

For the fields “Organization Management**,** Risks and Security**,** All independent variables together”, The mean for the category "very high" respondents have the highest among the other Extent of organization dependency on Information Technology systems categories, then we conclude that the category " very high " respondents is agreed for these fields much more than the other Extent of organization dependency on Information Technology systems categories.

For the fields “E-Management, Costs and benefits”, The mean for the category "High" respondents have the highest among the other Extent of organization dependency on Information Technology systems categories, then we conclude that the category "high" respondents is agreed for these fields much more than the other Extent of organization dependency on Information Technology systems categories.

For the other fields " Cloud Computing and The organization performance of the organization", the p-value (Sig.) is greater than the level of significance $\alpha \leq 0.05$, then there is insignificant difference among the respondents toward these fields due to Extent of organization dependency on Information Technology systems. We conclude that the personal characteristics’ Extent of organization dependency on Information Technology systems has no effect on the other fields.

The analysis shows that the Extent of organization dependency on Information Technology systems affects on organization management and E-Management, Risks and security, costs and benefits and all independent variables together, specially in "high" category because they are related with the dependency on Information Technology systems, while this dependency has no effects on other fields.

Table (4.30): ANOVA test of the fields and their p-values for Extent of organization dependency on Information Technology systems

No.	Field	Means			Test Value	Sig.
		Medium or less	High	Very high		
1.	Cloud Computing	7.09	7.86	7.84	3.032	0.052
2.	Organization Management	5.63	6.78	7.13	7.251	0.001*
3.	E-Management	6.81	7.75	7.71	6.873	0.002*
4.	Organization Performance	6.43	6.99	7.04	1.606	0.205
5.	Risks and Security	6.94	7.67	8.03	5.193	0.007*
6.	Costs and benefits	7.04	7.83	7.81	4.012	0.021*
	All independent variables together	**6.57**	**7.41**	**7.54**	**7.147**	**0.001***

* The mean difference is significant a 0.05 level

Chapter 5

Findings & Recommendations

5.1 Research Results.

5.2 Recommendations.

5.3 Future Studies.

Introduction:

The objectives of this study are to explore to which extent could Cloud Computing used as future framework for INGOs management, and to measure the effects of the organization management, e-Management, organization performance, risks and security, and costs and benefits. As well as to measure the effects of the demographic factors such as gender, age, qualifications, job title, position, years of experience in current position.

The study aimed to enrich the Palestinian content of such needed studies, also it aimed to explore the variation in Cloud Computing implementation in relation to cost and benefits for INGOs.

After revising the objectives and comparing them with the results of this study, which could conclude that almost all of this objectives have been achieved and summarized in the findings of this study.

The findings of applied and field study were obtained through collected questionnaires field study, unloading operations, conduct appropriate statistical hypothesis testing, and extraction and presentation of results. Then make the most important recommendations and suggestions that would help INGOs to implement Cloud Computing Technology to improve and develop their organizations workflows. Finally, setting of suggestions for future studies that could be conducted to help researchers to launch from the point where we have been reached.

5.1 Research Results

Through the results of the statistical analysis of the respondents views, the most important findings of this study could be summarized as following:

5.1.1 Study Variables

A. With regard to "Implementation Cloud Computing in INGOs"

According to statistical analysis, the study is reached to the following conclusions:

- There is (84.5%) of the respondents see that the Cloud Computing saves the time and efforts, which is the most important advantage of implementing Cloud Computing.
- The Cloud Computing increases the job efficiency, where there is an approval by (80.8%). therefore, there is (80.3%) of respondents expressed that Cloud Computing is considered as an effective technology choice for the INGOs. And (77.9%) of respondents said that Cloud Computing maintains the organization's resources.
- There is (76.1%) of the respondents see that the Cloud Computing contributes in reducing the job burden, while (75.2%) of them think that Cloud Computing reduces the information technology costs.
- while (74.2%) of respondents assure that the Cloud Computing supports the data confidentiality and information security. In addition, there is just (67.4%) of the respondents see that the Cloud Computing is a new technique for the organization.
- In general, there is (77.0%) of respondents see that INGOs should implement Cloud Computing

B. With regard to "Organization Management"

According to statistical analysis, the study is reached to the following conclusions:

- There is an approval between (70.4%) of respondents that organization management is working under strategically plan for the information technology systems to achieve the concept of total quality management .
- In the same time about (68.8%) of respondents see that Organization Management is seeking to gain the competitive advantage by applying the modern technology to serve its beneficiaries, where (67.4%) agree that Organization Management has enough awareness of the importance of Cloud Computing as a framework.
- There is (66.8%) of the respondents see that Organization Management is seeking to provide the necessary training and preparation for any new technology in the organization, also about (64.2%) see that Organization management supports applying Cloud Computing between its branches.
- From another side (60.17%) of respondents agree that Organization management is seeking to reduce the obstacles that facing the use of Cloud Computing. While (60.7%) of respondents see that Organization management has the financial support to apply Cloud Computing.
- In general, there is (66.3%) of respondents see that Organization Management plays the main role in implementing Cloud Computing decision.

C. With regard to "E-Management"

According to statistical analysis, the study is reached to the following conclusions:

- There is (88.7%) of the respondents see that the organization depends on e-mail services in its daily work, where (81.8%) agree that e-Management can help in developing the e-mail services through the use of Cloud Computing.

- As voiced, (75.5%) see that e-Management supports new technology systems and services to apply Cloud Computing, on the other hand there is (73.7%) the organization basically depends on e-Management to facilitate job tasks.
- There is (73.3%) of the respondents see that e-Management provides a good environmental work to adopt any modern technology. Also (72.7%) of them agree that the e-Management of their organizations are characterized by precision and flexibility.
- An the same time about (71.14%) of respondents see that e-Management helps in integrating the information technology services with the requirements of implementing Cloud Computing, where (67.3%) agree that e-Management supports the use of Cloud Computing for employees working outside the offices.
- In general, there is (75.6%) of respondents see that e-Management is an infrastructure for implementing Cloud Computing decision.

D. With regard to "Organization Performance"

According to statistical analysis, the study is reached to the following conclusions:

- There is (79.8%) of the respondents see that the lacking knowledge and experience in IT systems leading to poor performance of the organization, where (75.5%) agree that Cloud Computing helps to increase the efficiency of the stimulus plans and programs to improve the organization performance.
- As voiced, (74.3%) see that Cloud Computing provides new skills to develop and improve the organization performance, on the other hand there is (73%) see that The organization supports modern technology systems to develop the work within the subdivisions.

- There is (67.6%) of the respondents see that The organization adopts the spirit of creativity and innovation of its staff to implement Cloud Computing. Also (62.1%) of them agree that The organization helps in providing a great deal of management changes and technical support to meet the challenges of the new technology.
- At the same time about (61.8%) of respondents see that Employees receive a regular training to develop their skills and their technical abilities to deal with any new technology, where (57.3%) agree that Employees involve in conferences and workshops for information technology in order to promote the performance of the organization.
- In general, there is (75.6%) of respondents see that Cloud Computing will improve the organization performance.

E. With regard to "Risks and Security"

According to statistical analysis, the study is reached to the following conclusions:

- There is (80.8%) of the respondents see that the organization's servers are in a safe place and pack up are made outside the organization, where (79.8%) agree that Cloud Computing helps in data recovery through the back up operations.
- As voiced, (79%) see that The organization provides an integrated licensed programs capable of protecting the security and confidentiality of computerized information, on the other hand there is (78.8%) see that The data security is the biggest challenges facing the organization to adopt any new technology.
- There is (78.1%) of the respondents see that The organization has a clear policy to deal with the information security and confidentiality of the data.

Also (76.6%) of them agree that The organization depends on the modern data security technology to protect the information security and confidentiality of the data.

- At the same time about (68.2%) of respondents see that the employees have enough awareness with information security risks and how to avoid them, where (67.1%) agree that the organization trusts by service providers companies (e.g. Google) in the event hosted Cloud Computing services.
- In general, there is (76.1%) of respondents see that implementation Cloud Computing may be risky but there is many security actions could be taken.

F. With regard to "Costs and Benefits"

According to statistical analysis, the study is reached to the following conclusions:

- There is (83.1%) of the respondents see that Cloud computing helps employee to communicate and share data with each other, where (79.2%) agree that the Cloud Computing helps to reduce the expenses that go to buy additional storage spaces.
- As voiced, (76.2%) see that Cloud Computing saves the information technology costs compared to the development of other services, on the other hand there is (76.1%) see that Cloud Computing helps to reduce the expenses that go to buy software and its license.
- There is (75.8%) of the respondents see that Cloud Computing is characterized by the possibility of control costs of services provided according to the needs of the organization. Also (75.6%) of them agree that Cloud Computing supports efficiently various operating systems .
- At the same time about (75.3%) of respondents see that Cloud Computing is characterized by reducing unnecessary costs of the organization’s servers

(maintenance - place - electricity – air condition, ... etc.), where (73.8%) agree that Cloud Computing supports huge amount of data processing with very high speed at the same time.

- In general, there is (76.7%) of respondents see that implementation Cloud Computing could reduce the costs in addition of great benefits returned to the organizations by Implementing Cloud Computing.

5.1.2 Relation of Study Variables

A. There is a statistical significant relationship at ($\alpha \leq 0.05$) between independent variables (Organization Management – E-Management – Organization Performance – Risks and Security – Costs and Benefits) and Cloud Computing in INGOs.

According to statistical analysis, the study reached to the following conclusions:

- There is a statistical relationship between Management Support and Cloud Computing.
- There is a statistical relationship between E-Management and Cloud Computing.
- There is a statistical relationship between Organization Performance of the and Cloud Computing.
- There is a statistical relationship between Risks and Security and Cloud Computing.
- There is a statistical relationship between Cost and benefits and Cloud Computing.

B. There is a statistical significant differences at ($\alpha \leq 0.05$) among respondents toward Cloud Computing as Future Framework for INGOs Management due to personal traits (Gender, Scientific qualification, Scientific specialization, Age, Job title, Experience years in job title, and Extent of organization dependency on Information Technology systems).

According to statistical analysis, the study reached to the following conclusions:

- There are insignificant differences among respondents at ($\alpha \leq 0.05$) towards Cloud Computing as Future Framework for INGOs Management due to Gender.
- There are significant differences among respondents at ($\alpha \leq 0.05$) towards the Cloud Computing as Future Framework for INGOs Management due to scientific qualification.
- There are insignificant differences among respondents at ($\alpha \leq 0.05$) towards Cloud Computing as Future Framework for INGOs Management due to Scientific specialization.
- There are insignificant differences among respondents at ($\alpha \leq 0.05$) towards Cloud Computing as Future Framework for INGOs Management due to Age.
- There are insignificant differences among respondents at ($\alpha \leq 0.05$) towards the Cloud Computing as Future Framework for INGOs Management due to Job Title.
- There are insignificant differences among respondents at ($\alpha \leq 0.05$) towards the Cloud Computing as Future Framework for INGOs Management due to Experiences years in job title.
- There are significant differences among respondents at ($\alpha \leq 0.05$) towards the Cloud Computing as Future Framework for INGOs Management due to Extent of organization dependency on Information Technology systems.

5.2 Recommendations:

The INGOs field is very comprehensive for study, where investigating their role in achieving development and achieving the required growth especially at the Palestinian context. Therefore it is believed that this study sheds considerable light on Cloud Computing as future framework for INGOs management. However, the researcher recognizes that this study is just a starting, and strongly recommended to implement Cloud Computing as a framework for INGOs which has great benefits returned for their organizations.

The research advises INGOs to set a strategically plan that covers all possible development for Information Technology systems to keep them up to date with latest technology.

The organization management should support the efforts of IT department in implementing any new techniques may help in the development of the organizations.

The organization management should facilitates all capabilities to implement Cloud Computing in INGOs.

It is advisable for INGOs to hold training courses on Cloud Computing concept and its applications for their staff to develop an understanding for it.

Measure the benefits of implementing Cloud Computing for INGOs and evaluate its risks and costs on the organization in terms of competitive advantage point and recommends the following:

a. Organizations must have a clear policy to treat with any new technology special1ly from information security side.
b. Organizations have to decide if they need to implement Cloud Computing or they could be hosted this technology by service provider.

c. Organizations management should adopt the soul of creativity and innovation through its employees to implement Cloud Computing.
d. Organizations have to depend basically on e-Management and Information technology system to accommodate any new techniques.

5.3 Future Studies:

This study would like to point out that more studies are needed in the area of the Cloud Computing due to the limited studies efforts that had been devoted to this topic in the Arab World in general and in Palestine in particular, As highlighted by this work and the several studies mentioned in the Literature Review, Cloud Computing is without a shred of doubt, one of the next big technological trends for the following years. Therefore, there is room for several other studies and researches on this paradigm. Future studies could focus also on the relation between the INGOs and the utilization of Cloud Computing but this time focusing in specific economic sectors.

Moreover and bearing in mind one of the limitations of this work it would create important value added if future works focus their study model on the feedback and points of views of more than one manager organization.

This way, it would be possible to have different perspectives of the paradigm of Cloud Computing within each organization Furthermore, it would be interesting to repeat this study and the questionnaire to evaluate the evolution of the data and the results. Finally and taking into account the results from this work, future studies could be also interesting focusing on the privacy legislation of Cloud Computing in different countries also the legal issues of implementing it safely way to increase the use of Cloud Computing services by organizations.

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Appendices

Appendix A

Questionnaire

Islamic University of Gaza

Dean of Postgraduate Studies

Faculty of Commerce

Department of Business Administration

Dear Sirs,

The researcher puts in your hands this questionnaire prepared for the collection of data about a study entitled:

"**Cloud Computing as a Future Framework for INGOs Management"**

(Case Study on INGOs in Gaza Strip)

This study is submitted for acquiring the master's degree in Business Administration (MBA) from the Islamic University. The aim of this study is to identify opinions with regard to the subject of study, to illustrate the basic role of adoption of Cloud Computing techniques as a future work for the management of international NGOs.

Cooperation and providing information accurately and objectively will help to achieve the best results for the subject of the study. Please note that the data obtained will be treated confidentially and will be used for the research purposes only.

About the researcher: Omar Khalil Sammour is working as a Computer Engineer in the Islamic Relief Worldwide - Palestine Office.

He's earned a Bachelor degree in a Computer Engineering from the Islamic University in 2008 and has enrolled now in an MBA program in the same University. The researcher prepares this thesis in the management of information systems in general and Cloud Computing in particular as a part of the master's study requirements.

Please accept our best regards

Researcher

Omar K. Sammour

☒ **Definition of Cloud Computing:**

Cloud Computing is a term that refers to sources and computer systems available on demand through the internet, which can provide a number of integrated computer services without being bound by local resources in order to make it easier for the user. Those resources include storage space, data backup, and self-synchronization. Also it includes processing capabilities, software, scheduling of tasks, push e-mail, and remote printing. And, since the user can control when it is connected to the network in these resources through a simple software interface, its usage simplifies and ignores a lot of details and internal operations.

First: Personal Functional Information

Please put a tick (√) beside the appropriate answer:

1. Gender

☐ Male ☐ Female

2. Qualification

☐ Diploma or less ☐ Bachelor ☐ Master ☐ PhD

3. Field of Specialization

☐ Computer Engineer ☐ Information Technology ☐ Business Administration ☐ Other ……

4. Age

☐ Below 30 years ☐ From 30 – below 40 ☐ From 40 – below 50 ☐ Above 50 years

5. Job Title

☐ IT Employee ☐ Coordinator/Administrative ☐ Director ☐ Other ……

6. Experiences years in current position

☐ Less than 5 ☐ From 5 – less than 10 ☐ From 5–less than 15 ☐ Above 15 years

7. Adoption of the organization on information technology systems

☐ Small ☐ Medium ☐ High ☐ Very High

Second: The Questionnaire

Please put the appropriate degree of approval (from 1 to 10) in the right common of the table:

	Items	Degree From 1 to 10
Cloud Computing Sections		
First Section: Cloud Computing		
1	Cloud Computing is a new technique for the organization	
2	Cloud Computing maintains the organization's resources	
3	Cloud Computing increases the job efficiency	
4	Cloud Computing saves the time and efforts	
5	Cloud Computing contributes in reducing the job burden	

	Items	Degree From 1 to 10
6	Cloud Computing is considered as an effective technology choice for your organization	
7	Cloud Computing supports the data confidentiality and information security	
8	Cloud Computing reduces the information technology costs	
Second Section: Organization Management		
1	Organization Management working within a deliberate strategic plan for the information technology systems that seeks to achieve	
2	Organization Management is seeking to gain the competitive advantage by applying the modern technology to serve its beneficiaries.	
3	Organization Management is seeking to provide the necessary training and preparation for any new technology in the organization	
4	Organization Management has enough awareness of the importance of Cloud Computing as a framework.	
5	Organization management is seeking to reduce the obstacles that face the use of Cloud Computing.	
6	Organization management has the financial support to apply Cloud Computing	
7	Organization management supports applying Cloud Computing between its branches.	
8	Organization management is working on the development of information technology systems to achieve the concept of quality management	
Third Section: E-Management		
1	E-Management of the organization is characterized by precision and flexibility.	
2	E-Management provides a good environment for the adoption of any modern technology	
3	The organization basically depends on e-Management to facilitate job tasks	
4	The organization depends on electronic mail services in its daily work	
5	E-Management can help in developing the electronic mail services through the use of Cloud Computing	
6	E-Management supports new technology systems and services to apply Cloud Computing	
7	E-Management supports the use of Cloud Computing for employees working outside the offices	
8	E-Management helps in integrating the information technology services with the requirements of implementing Cloud Computing	
Fourth Section: Organization Performance		
1	The organization supports modern technology systems to develop the work within the subdivisions	
2	The organization adopts the spirit of creativity and innovation of its staff to implement Cloud Computing.	
3	Cloud Computing provides new skills to develop and improve organization performance.	

	Items	Degree From 1 to 10
4	Lacking knowledge and experience in IT systems leads to poor performance of the organization	
5	Cloud Computing helps to increase the efficiency of the stimulus plans and programs to improve the organization performance.	
6	Employees receive regular training to develop their skills and their technical abilities to deal with any new technology.	
7	Employees are involved in conferences and workshops for information technology in order to promote the performance of the organization.	
8	The organization helps in providing a great deal of management changes and technical support to meet the challenges of the new technology.	
Fifth Section: Risks and Security		
1	Data security is the biggest challenge facing the organization to adopt any new technology	
2	The organization depends on modern data security technology to protect the information security and confidentiality of the data	
3	The organization has a clear policy to deal with the information security and confidentiality of the data	
4	Employees have enough awareness of information security risks and how to avoid them	
5	Cloud Computing helps in data recovery through back-up operations	
6	The organization trusts service provider companies (e.g. Google) which provide host Cloud Computing services.	
7	The organization's servers are in a safe place and pack up are made outside the organization.	
8	The organization provides integrated licensed programs capable of protecting the security and confidentiality of computerized information.	
Sixth Section: Costs and Benefits		
1	Cloud Computing saves the information technology costs compared to the development of other services.	
2	Cloud Computing helps to reduce the expenses that go to buy additional storage spaces.	
3	Cloud Computing helps to reduce the expenses on software and its license.	
4	Cloud Computing helps employees to communicate and share data with each other.	
5	Cloud Computing is characterized by the possibility of control costs of services provided according to the needs of the organization.	
6	Cloud Computing is characterized by reducing unnecessary costs of the organization's servers (maintenance - place - electricity – air condition, …etc.)	
7	Cloud Computing supports huge amount of data processing with very high speed at the same time	
8	Cloud Computing supports efficiently various operating systems	

Thank you for your cooperation,

The researcher

Appendix B

List of Referees

List of Referees

1	**Dr. Samir Safi**	Associate Professor & Head of Economic Department at Commerce College - IUG
2	**Dr. Nafez Barakat**	Professor Assistant in Statistics Department at Commerce College - IUG
3	**Dr. Akram Sammour**	Professor Assistant in Bussiness Administration Department at Commerce College - IUG
4	**Dr. Sami Abu Aross**	Associate Professor in Bussiness Administration Department at Commerce College - IUG
5	**Dr. Yasser Alshourafa**	Professor Assistant in Economic Department at Commerce College - IUG
6	**Dr. Fares Abumoamar**	Professor of finance at Commerce College - IUG
7	**Dr. Ayman Abu Samra**	Assistant of vice president for Information Technology, and Associate Professor in Computer Engineering Department, Engineer College - IUG
8	**Dr. Wisam Ashour**	Head of Computer Engineering Department - IUG
9	**Dr. Ammar Abu Hadrous**	Head of Electrical Engineering Department - IUG
10	**Dr. Abdelhakeem Hussein**	Professor Assistant in Physics Department at Sciences College – Alaqsa university
11	**Mr. Arafat Alaf**	Lecture in Bussiness Administration Department at Commerce College - IUG
12	**Eng. Ahmed Mansour**	MBA in Cloud Computing, Networks Engineer at Ministry of Health
13	**Eng. Rami Jnena**	Msc. In Computer Engineering, Director of Information Technology Department at Islamic Relief - Palestine Office

Appendix C

Arabic Questionnaire

الجامعة الإسلامية – غـــــــزة
الدراســــــات العليـــــــــا
كليـــــــــة التجـــــــــارة
قســـــم إدارة الأعمـــــــال

السادة المحترمون
تحية طيبة وبعد،،،

يقوم الباحث بإعداد دراسة بعنوان:

"**الحوسبة السحابية كإطار عمل مستقبلي لإدارة المنظمات الدولية غير الحكومية**"

(دراسة حالة على المنظمات الدولية غير الحكومية في قطاع غزة)

"Cloud Computing as a Future Framework for INGOs Management"
(Case Study on INGOs in Gaza Strip)

وذلك استكمالاً لنيل درجة الماجستير في إدارة الأعمال من الجامعة الإسلامية، تهدف هذه الدراسة إلى التعرف على آرائكم فيما يتعلق بموضوع الدراسة لتوضيح الدور الأساسي لتقنية الحوسبة السحابية (Cloud Computing) كإطار عمل مستقبلي لإدارة المنظمات الدولية غير الحكومية، مما يدعم هذه المنظمات لترقى إلى المستوى الإداري والتكنولوجي المتميز نظراً لطبيعة عمل هذه المنظمات.

إن حرصكم على تقديم المعلومات الكافية بدقة وموضوعية سيساهم في الوصول إلى أفضل النتائج لموضوع الدراسة، علماً بأن البيانات التي يتم الحصول عليها سيتم التعامل معها بسرية تامة وستستخدم لأغراض البحث العلمي فقط.

نبذة عن الباحث: عمر خليل سمور يعمل مهندس حاسوب في الإغاثة الإسلامية عبر العالم – مكتب فلسطين، حصل على بكالوريس في هندسة الحاسوب من الجامعة الإسلامية عام 2008، ويدرس ماجستير إدارة أعمال بالجامعة الإسلامية وكجزء من متطلبات دراسة الماجستير يعد الباحث هذه الرسالة في نظم المعلومات الإدارية والحوسبة السحابية بشكل خاص.

وتفضلوا بقبول وافر الاحترام والتقدير،،،

الباحث
م. عمر خليل سمور

☒ **تعريف الحوسبة السحابية (Cloud Computing)**

الحوسبة السحابية مصطلح يشير إلي المصادر والأنظمة الحاسوبية المتوفرة تحت الطلب عبر شبكة الإنترنت والتي تستطيع توفير عدد من الخدمات الحاسوبية المتكاملة دون التقيد بالموارد المحلية بهدف التيسير على المستخدم، وتشمل تلك الموارد مساحة تخزين البيانات، النسخ الاحتياطي، تبادل الملفات والمزامنة الذاتية كما تشمل قدرات معالجة برمجية، جدولة للمهام، خدمة البريد الإلكتروني والعمل عن بعد، ويستطيع المستخدم عند اتصاله بالشبكة التحكم في هذه الموارد عن طريق واجهة برمجية بسيطة سهلة الاستخدام تُبَسِّطُ وتتجاهل التفاصيل والعمليات الداخلية.

أولاً/ البيانات الشخصية والوظيفية: يرجى التكرم بوضع إشارة (√) أمام الإجابة المناسبة:

8. الجنس

☐ ذكر ☐ أنثى

2. المؤهل العلمي

☐ دبلوم فأقل ☐ بكالوريوس ☐ ماجستير ☐ دكتوراه

3. التخصص العلمي

☐ هندسة حاسوب ☐ تكنولوجيا معلومات ☐ إدارة أعمال ☐ أخرى.....

3. العمر

☐ أقل من 30 سنة ☐ من 30 - أقل من 40 ☐ من 40 - أقل من 50 ☐ 50 سنة فأكثر

4. المسمى الوظيفي

☐ موظف IT ☐ منسق / إداري ☐ مدير ☐ أخرى.....

5. سنوات الخبرة في المسمى الوظيفي

☐ أقل من 5 سنوات ☐ من5 - أقل من 10 سنوات ☐ 10 سنوات فأكثر

6. مدى اعتماد المنظمة على أنظمة تكنولوجيا المعلومات

☐ قليل ☐ متوسط ☐ كبير ☐ كبير جداً

ثانياً/ الاستبيان: يرجى التكرم بوضع درجة الموافقة التي تراها مناسبة من 1 إلى 10 في العمود الفارغ أيسر الجدول التالي:

	الفقرات	درجة الموافقة من 1 إلى 10
محاور الحوسبة السحابية		
المحور الأول/ الحوسبة السحابية		
1	تعد الحوسبة السحابية تقنية جديدة للمنظمة.	
2	تحافظ الحوسبة السحابية على موارد المنظمة.	
3	تزيد الحوسبة السحابية من فعالية الأداء الوظيفي.	
4	تعمل الحوسبة السحابية على توفير الوقت والجهد.	
5	تساهم الحوسبة السحابية في تقليل العبء الوظيفي.	
6	تعتبر الحوسبة السحابية خيارا تكنولوجيًا فعّالاً للمنظمة.	
7	تدعم الحوسبة السحابية خصوصية البيانات وأمن المعلومات.	
8	تساهم الحوسبة السحابية في خفض تكاليف تكنولوجيا المعلومات.	

	الفقرات	درجة الموافقة من 1 إلى 10
المحور الثاني/ دعم إدارة المنظمة		
1	تعمل إدارة المنظمة ضمن خطة مدروسة لأنظمة تكنولوجيا المعلومات تسعى إلى تحقيقها.	
2	تسعى إدارة المنظمة للوصول إلى الميزة التنافسية بتطبيق التقنيات الحديثة وتوظيفها لخدمة المستفيدين.	
3	تسعى إدارة المنظمة لتوفير التدريب والإعداد اللازم لأي تقنية جديدة في المنظمة.	
4	يوجد لدى إدارة المنظمة وعي كافي بأهمية الحوسبة السحابية كإطار عمل.	
5	تسعى إدارة المنظمة للحد من المعوقات التي تواجه استخدام الحوسبة السحابية.	
6	يتوفر لدى إدارة المنظمة الدعم المالي لتطبيق الحوسبة السحابية.	
7	تدعم إدارة المنظمة تطبيق الحوسبة السحابية بين فروعها المنتشرة.	
8	تعمل إدارة المنظمة على تطوير نظم تكنولوجيا المعلومات لتحقيق مفهوم إدارة الجودة الشاملة.	
المحور الثالث/ الإدارة الإلكترونية		
1	تتسم الإدارة الإلكترونية في المنظمة بالدقة والمرونة المناسبة.	
2	توفر الإدارة الإلكترونية بيئة عمل خصبة لاستيعاب أي تكنولوجيا حديثة.	
3	تعتمد المنظمة بشكل أساسي على الإدارة الإلكترونية لتسهيل المهام الوظيفية.	
4	تعتمد المنظمة بشكل أساسي على خدمة البريد الإلكتروني في عملياتها اليومية.	
5	يمكن الاستفادة من الإدارة الإلكترونية في تطوير خدمة البريد الإلكتروني من خلال الحوسبة السحابية.	
6	تدعم الإدارة الإلكترونية أحدث النظم والخدمات التكنولوجية لتطبيق الحوسبة السحابية.	
7	تدعم الإدارة الإلكترونية استخدام الحوسبة السحابية للموظفين العاملين خارج أروقة المكتب.	
8	تساهم الإدارة الإلكترونية في تكامل خدمات تكنولوجيا المعلومات مع متطلبات تطبيق الحوسبة السحابية.	
المحور الرابع/ الأداء العام للمنظمة		
1	تدعم المنظمة أحدث النظم التكنولوجية لتطوير مسارات العمل داخل أقسامها.	
2	تتبنى المنظمة روح الإبداع والابتكار لدى موظفيها لتطبيق الحوسبة السحابية.	
3	تُكسب الحوسبة السحابية مهارات جديدة لتطوير وتحسين الأداء العام للمنظمة.	
4	نقص المعرفة والخبرة بنظم تكنولوجيا المعلومات يؤدي إلى ضعف الأداء العام للمنظمة.	
5	تساهم الحوسبة السحابية في زيادة كفاءة الخطط والبرامج التحفيزية لتحسين الأداء العام للمنظمة.	
6	يتلقى الموظفون التدريب بشكل دوري لتطوير مهاراتهم وقدراتهم التقنية للتعامل مع أي تكنولوجيا حديثة.	

	الفقرات	درجة الموافقة من 1 إلى 10
7	يتم إشراك الموظفين في مؤتمرات وورش عمل لتكنولوجيا المعلومات من أجل الرقي بأداء المنظمة.	
8	تساهم المنظمة في توفير قدر كبير من التغيير الإداري والفني لمواجهة التحديات التقنية الجديدة.	
المحور الخامس/ الأمان والمخاطر		
1	يعد أمن المعلومات في المنظمة من أكبر التحديات التي تواجه تطبيق أي تقنية جديدة.	
2	تعتمد المنظمة على أحدث تكنولوجيا أمن المعلومات للمحافظة على أمن وخصوصية بياناتها.	
3	يوجد لدى المنظمة سياسة واضحة للتعامل مع أمن المعلومات وسرية البيانات.	
4	يتوفر لدى الموظفين وعي كافي بمخاطر أمن المعلومات وسبل الوقاية منها.	
5	تساهم الحوسبة السحابية في استرجاع البيانات من خلال عمليات النسخ الاحتياطي.	
6	تثق المنظمة بالشركات المعتمدة (مثل جوجل) في حال استضافتها للحوسبة السحابية الخاصة بالمنظمة.	
7	توجد Servers المنظمة في مكان آمن ويتم عمل نسخ احتياطي للبيانات بشكل دوري خارج المنظمة.	
8	يتوفر لدى المنظمة برامج متكاملة مرخصة كفيلة بحماية أمن وسرية المعلومات المحوسبة.	
المحور السادس/ التكاليف والمنافع		
1	توفر الحوسبة السحابية من تكاليف تكنولوجيا المعلومات مقابل استحداث خدمات أخرى.	
2	تدعم الحوسبة السحابية مساحات تخزين واسعة مما يوفر نفقات شراء أجهزة تخزين إضافية.	
3	تساهم الحوسبة السحابية في تخفيض مصاريف البرمجيات وتراخيصها الخاصة.	
4	تساعد الحوسبة السحابية الموظفين في التواصل ومشاركة البيانات فيما بينهم.	
5	تتميز الحوسبة السحابية عن غيرها بإمكانية التحكم بتكاليف الخدمات المقدمة حسب حاجة المنظمة.	
6	تتميز الحوسبة السحابية بتقليل النفقات الجارية لـ Servers المنظمة (كهرباء - تكييف - صيانة).	
7	تدعم الحوسبة السحابية معالجة بيانات ضخمة بسرعة فائقة في آن واحد.	
8	تدعم الحوسبة الحسابية أنظمة التشغيل المختلفة بكفاءة عالية.	

شاكرين حسن تعاونكم معنا ،،

الباحث

Appendix D

List of Referees

(Arabic)

قائمة المحكمين

1	**د. سمير صافي**	أستاذ مشارك في الإحصاء بكلية التجارة في الجامعة الإسلامية
2	**د. نافذ بركات**	أستاذ مساعد في الإحصاء بكلية التجارة في الجامعة الإسلامية
3	**د. أكرم سمور**	أستاذ مساعد بكلية التجارة في الجامعة الإسلامية
4	**د. سامي ابو الروس**	أستاذ مشارك بكلية التجارة في الجامعة الإسلامية
5	**د. ياسر الشرفا**	أستاذ مساعد بكلية التجارة في الجامعة الإسلامية
6	**أ.د. فارس أبو معمر**	أستاذ بكلية التجارة في الجامعة الإسلامية
7	**د. أيمن أبو سمرة**	مساعد نائب الرئيس لشئون تكنولوجيا المعلومات بالجامعة الإسلامية، ومحاضر في كلية الهندسة
8	**د. وسام عاشور**	رئيس قسم هندسة الحاسوب في الجامعة الإسلامية
9	**د. عمار ابو هدروس**	رئيس قسم هندسة الاتصالات في الجامعة الإسلامية
10	**د.عبد الحكيم حسين**	أستاذ مساعد بكلية العلوم في جامعة الأقصى
11	**أ. عرفات العف**	محاضر بكلية التجارة في الجامعة الإسلامية
12	**م. أحمد منصور**	ماجستير إدارة أعمال في الحوسبة السحابية، ومهندس شبكات في وزارة الصحة
13	**م. رامي جنينة**	ماجستير هندسة حاسوب، رئيس قسم تكنولوجيا المعلومات في الإغاثة الإسلامية