

The Concept of Cloud Accounting and its Adoption in Bangladesh

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1. INTRODUCTION

Accounting, like most other fields, is evolving continuously due to its dynamic nature and worldwide technological advancement. The invention of cloud technology has positively affected the field of accounting. Accounting, using the services of cloud computing has upgraded itself to a new era called cloud accounting. As new and advanced software are being introduced, people are gradually shifting from the traditional accounting system to the cloud accounting system. The introduction of cloud accounting has brought more pace in regular business operations. At present, cloud accounting is being adopted not only in the private sector but also in government offices, hospitals and educational institutions. The adoption rate of cloud accounting system is higher in developed countries compared to the developing ones. The developing countries need to realize the importance of adopting this system in order to survive and grow in this competitive global village. Although some of these countries are trying to shift to the cloud accounting system, most of these countries are still sticking to the traditional accounting approach.

The primary objective of this paper is to explain the need of cloud accounting in a developing country like Bangladesh and to suggest a framework that can be helpful for the adoption of this system. Some secondary objectives of this paper are to provide a detailed explanation of the cloud accounting system, its benefits and drawbacks and the current situation of cloud accounting in the world.

ABSTRACT

This paper discusses the theoretical concepts behind cloud accounting and its adoption in a developing country like Bangladesh. The field of accounting has improved significantly with the introduction of cloud computing. In cloud accounting, a client outsources the accounting services of the entity using the service of a third party vendor. There are three models of cloud accounting namely IaaS (Infrastructure as-a-Service), PaaS (Platform as-a-Service) and SaaS (Software as-a-Service). Cloud accounting is more cost effective, secure and flexible and, provides larger storage compared to traditional accounting. Although the number of clients using cloud accounting is increasing rapidly in the world, the developed countries are far ahead from developing countries in terms of using cloud services. Bangladesh, one of the N-11 countries, need to adopt the cloud accounting system for encouraging startups, generating employment and protecting the environment. This study provides a framework that can be used for the adoption of cloud accounting in the business sector of Bangladesh. In order to build a digital Bangladesh, the government should take possible steps to popularize cloud accounting system in Bangladesh.

Keywords: Cloud Accounting, Cloud Computing, Accounting Software, Cloud Accounting Framework

JEL Classification Codes: M41, O31, O33

Cloud accounting is a recent issue which makes it more lucrative for the research purpose. Most of the researches conducted in this area focused on cloud computing. There are only a handful of researches conducted on cloud accounting most of which tried to explain the theoretical issues of cloud accounting. Although there exists only one study conducted in the context of Bangladesh on cloud computing (Islam et al., 2015), there is no study on cloud accounting in the context of Bangladesh to the best knowledge of author. As a result there is a lack of research in this area. This paper will contribute to the field of research by filling up the research gap. Besides, this paper provides a theoretical explanation of the cloud accounting system that will help the readers to understand about the whole concept. This paper provides some explanation about the need of cloud accounting in a developing country like Bangladesh and suggests a framework suitable for the implementation of cloud accounting system in Bangladesh.

The rest of the paper is organized as follows: Section 2 reviews different literatures on this area. Section 3 provides a definitional analysis of cloud accounting. Section 4 describes the different models used in cloud accounting. Section 5 and 6 describes some major benefits and drawbacks of cloud accounting respectively. Section 7 examines the current situation of cloud accounting around the world. Section 8 describes the need to adopt cloud accounting in Bangladesh. Section 9 suggests a framework of adopting cloud accounting system in the context of

Bangladesh. Finally, section 10 draws an overall conclusion of this paper.

2. Literature Review

As cloud accounting is a fairly new topic, a few researches has been conducted in this area. But it is expected that, there will be more thorough research in this area with the passage of time. Besides, most of the researches are based on the overall concept of cloud accounting and examined the benefits and drawbacks of this system.

Khanom (2017) has explained the theoretical side of cloud accounting in her paper. She has discussed different aspects of cloud accounting like the models used in cloud accounting, its pros and cons, suitability of cloud accounting etc. According to this study, cloud accounting is more suitable for businesses that are small and cannot ensure security of the data.

Islam et al. (2015) have discussed about the cloud accounting system and has suggested a framework for the implementation of cloud accounting in Bangladesh. The study has suggested that to adopt cloud accounting in Bangladesh, four steps should be taken namely feasibility study, planning, implementation and renewal.

Another study conducted by Rao et al. (2018) has analyzed the impact of cloud accounting from the accounting professional's perspective. A survey was conducted in India and it was found that although most of the participants of the survey heard of cloud accounting, most of them did not apply the system in their business.

A study conducted by Salunkhe and Kelkar (2016) analyzed the scope of cloud computing in the education system. The authors conducted a survey and found that almost 74% of the surveyed students were somewhat aware of the cloud computing concept and 45% think that staff motivation is a major factor that may affect the adoption of cloud computing.

Another study conducted by Prichici and Ionescu (2015) examined the implications of adopting the cloud accounting system on financial reporting process. The study has found that adoption of cloud accounting in the business provides more scalability, flexibility and visibility in the inventory management process.

Ebenezer et al. (2014) has conducted a study emphasizing the importance of cloud accounting in the business sector of Ghana. A survey was performed where it was found that 64% of the participants consisting of accountants have some idea about cloud accounting and all of them believe that it can improve the current business situation. However 91% believes that cloud accounting can also pose some risks as well.

A study was conducted by Waga et al. (2014) on the implementation of cloud computing in the educational sector of Kenya. This paper explained the importance of cloud accounting in the improvement of the academic settings of Kenya and suggests that every institution should adopt cloud computing to provide e-education to the students to achieve Millennium Development Goals.

Besides, studies conducted by Dimitriu and Matei (2014), Mohanty and Mishra (2017), Mohammadi and Mohammadi

(2014) etc. focused mainly on the definitional analysis, overall models, benefits and disadvantages of cloud computing.

3. Definition of cloud accounting

Before going for the definition of cloud accounting, one needs to have a clear understanding of the cloud system. Cloud system or cloud computing is the on demand delivery of computing services that do not need the active management by the users of the service. It offers services consisting of hardware and software using the internet. In cloud system, services like data and software can be accessed from anywhere and anytime using the internet or other networking devices via the service provider of the cloud application. According to Buyya et al. (2008), "cloud computing is a type of parallel and distributed system consisting of a collection of interconnected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements". According to NIST, "It is a model for enabling ubiquitous, 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." (Mell & Grance, 2011).

The development of cloud computing has led to the invention of cloud accounting. Cloud computing acts as the basis of cloud accounting. Unfortunately, there is no official definition of cloud accounting. It is also known as 'online accounting'. It includes all the functionalities and services provided by accounting software installed on the computer of the client but it runs on the servers of the Common Service Provider (CSP). A client does not need to install a software in her computer but rather can use the cloud services for the same purpose. According to Ping and Xuefeng (2011), "Cloud accounting is the use of cloud computing in internet to build a virtual accounting information system. That is to say cloud computing plus accounting equals cloud accounting". In the corporate sector, the development of cloud accounting took place by the introduction of NetSuite, the first web-hosted accounting software system. Some of the most famous cloud accounting software are QuickBooks, FreshBooks, Wave, Xero, Zoho etc.

4. The model of cloud service

Development models of the cloud technology can be divided into four types - private cloud, public cloud, community cloud and hybrid cloud. The private cloud is operated and managed by only one organization for ensuring security and privacy. It is also known as the on-premises cloud or the internal cloud. The public cloud, as opposed to private cloud, can be operated by general public or a whole industry. The community cloud is more complex that creates a specialized environment for a set of related companies engaged in a vertical market or share a common domain. Finally, the hybrid cloud is composed of a combination of two or three cloud models running under a standardized technology and provides a wide range of services.

The whole cloud service can be divided into three types based on the services it offers. These are IaaS (Infrastructure as-a-Service), PaaS (Platform as-a-service) and SaaS (Software as-a-Service). These can be shown in the figure below:

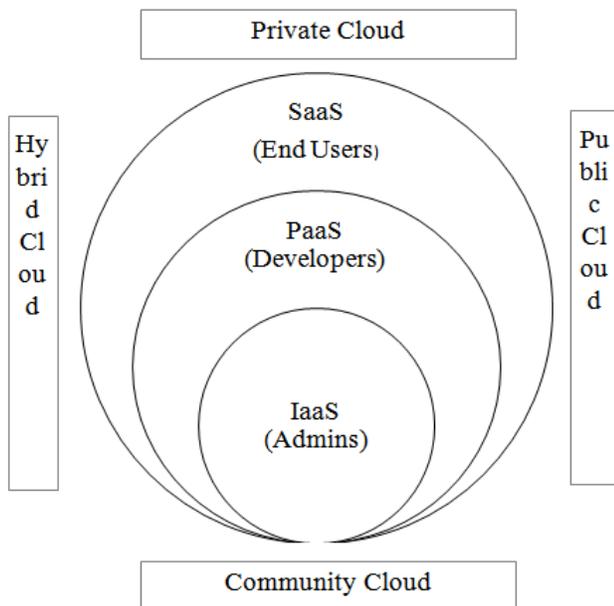


Figure 1: Different models of cloud services

4.1. IaaS (Infrastructure as-a-Service)

IaaS is the most primary set of services provided by the cloud computing system. As it can be seen from figure-1, IaaS is the first layer of the whole system. In IaaS, the service provider provides the basic computing infrastructure for software, network equipment and server based on which clients can develop the platform and execute the applications by themselves. It is completely a self-service in order to access and monitor things like networking, computing, storing and other services. Businesses, instead of buying hardware outright, can buy the resources on-demand and as-needed. Some of the popular examples of IaaS are Amazon Web Services, Microsoft Azure, and Google Compute Engine (GCE).

4.2. PaaS (Platform as-a-service)

PaaS is the second layer of services provided by the cloud system. In PaaS, the infrastructure and the platform is pre-established by the service provider based on which the clients can customize their operation. In PaaS, the applications, data, operating system and runtime are managed by the clients whereas the vendor manages the servers, storage, virtualization and networking. It is less customizable than IaaS but more customizable compared to SaaS. It benefits the client by letting her focus on developing the software and not worrying about other stuffs like storing, software updates or infrastructure. Some of the popular examples of PaaS are Windows Azure, Google App Engine (GAE), and Salesforce.

4.3. SaaS (Software as-a-Service)

SaaS is the last and topmost layer of the cloud system. In SaaS, a client can have access to the pre-installed applications in the infrastructure of the server of the vendor. It is a pay-per-use system where the client do not have to maintain or install the software but can use it and pay for its usage. It is the least customizable and the cheapest option among the all three. It can be a great option for the new businesses but due to its lack of flexibility, it cannot be widely used in a business with a more complex structure. Some of the popular examples of SaaS are Gmail, Google Apps, Google Doc and Microsoft office365.

5. Benefits of cloud accounting

Cloud accounting has taken the accounting profession into a whole new dimension. Clients can be benefited in many ways by using the cloud accounting system. Some of the major benefits of cloud accounting are given below:

5.1. Lower Cost

Traditional accounting is outscored by the cloud accounting in terms of cost (Khanom, 2017). In a cloud accounting system, a client firm does not need to invest in capital expenditures like installment of equipment or software licenses. Besides, there is no need to deploy additional staffs for maintaining and monitoring the equipment and software. Another reason why cloud accounting is cheaper than traditional accounting is that the client can use the 'pay per use' service and need not pay any fee in excess of the usage amount. This benefit is particularly important for the new and small businesses where being cost effective is very important.

5.2. Easy Access to All Information

Another benefit of cloud accounting is that it can be easily accessed and the client can use all the available accounting information. Unlike traditional accounting, the user does not have to rely on financial statements or on spot checking of company records in order to have updated information of her business. The user can easily collect and monitor the financial information sitting at home with the help of a mobile or a computer. Besides cloud accounting provides users with a 24/7 access to the services provided by the server of the vendor.

5.3. Increased Security

An important benefit of cloud accounting is that it ensures better security of the financial data of a company. Data stored at the client's company is always at a risk of being attacked by different viruses or stolen by employees having low morale. But cloud accounting provides better security by including multiple layer of protections like passwords and other security checks for getting access to the data.

5.4. Large Storage and Automatic Backups

In a large organization with huge amount of daily transactions, it is very difficult to store and maintain all the data. Besides, there is always a risk of losing the important data due to employee error or accident. But cloud accounting offers a huge amount of storage capacity to store all the data of the client firm. Besides, its auto backup feature makes it more reliable and a safe source for storing data.

5.5. Flexibility

Another important benefit of cloud accounting is its flexibility (Mohanty and Mishra, 2017). It is compatible to different types of web browsing software and operating systems. It can be accessed through Windows, Mac or Linux. It can be also run through the Chrome, Firefox, Internet Explorer or other browsing software. Besides, the IaaS and PaaS enables the client to customize the software based on their own need. As a result it is becoming very popular in the business sector.

6. Drawbacks of cloud accounting

Although cloud accounting has added so many benefits in the field of accounting, it has some drawbacks also. Some of the major drawbacks of cloud accounting are given below:

6.1. Constant Internet Access

One of the major drawbacks of cloud accounting is that it requires a constant internet access for operation. It may not be possible for all the time. Sometimes, the internet may not be available due to maintenance by the ISP, restriction from government, network problem etc. Besides, cloud accounting may not be the best option in areas with high internet costs.

6.2. Risk of Losing Data

Although cloud accounting provides better security than traditional accounting, there is still a possibility of security breach. In modern days, with the development of technologies, the hackers are also becoming more advanced and are using more sophisticated tools for hacking. Besides there always remains a risk of service disruptions that can make the confidential data of a company viral.

6.3. Vendor Lock-in

Another drawback of cloud accounting is the vendor lock-in. It is very difficult for a client to move from one vendor to another as this systems has not completely evolved yet. Besides, different vendors provide different platforms that makes it tougher for a client to migrate.

7. Situation of Cloud accounting in the World

Cloud accounting has brought a revolutionary change in the field of accounting. With the development of technology, countries around the world have started to reap the benefits of cloud services. According to Statista, the number of cloud-based service users around the world has increased from 2.4 billion in 2013 to 3.6 billion in 2018. This staggering growth of cloud service users indicate the importance of cloud services in today's life. Besides, according to Accounting Today, cloud accounting is used by 58% of the large companies around the world. It is expected that the number will increase to 78% within 2020. There are plenty of reasons behind the increasing dependence on cloud accounting. A recent survey conducted by Xero, one of the leading cloud accounting software companies, has found that the companies that use cloud accounting services add five times the number of clients compared to companies that do not use cloud accounting services. The study has also found that companies using 100% cloud-based accounting services have experienced 15% growth in revenue year-to-year.

However, the usage of cloud services is not same around the world. The developed countries are far ahead from developing countries in terms of using cloud services. One of the reasons behind this is the number of internet users is much higher in developed countries. The percentage of population having access to internet in developing countries is 41.3% compared to 81% in the developed countries in 2017. Besides, most of the cloud accounting services are used by businesses situated in developed countries. Developing countries are facing some external and internal barriers in adopting cloud accounting services. Some of the internal barriers are employees' attitude towards cloud accounting, managerial concerns regarding security, reliability of services, location of data, concerns regarding data migration, lack of knowledge and skills etc. Some of the external barriers are infrastructural inadequacy, lack of adequate regulatory and legal framework regarding cybersecurity lack of knowledge and skills for effectively using the ICT etc.

8. The Need to Adopt Cloud Accounting System in Bangladesh

Bangladesh is a developing country with a bright future ahead. It is one of the Next-11 countries and is expected to be a part of 'the next BRIC economies' in the world. It has a GDP growth rate of 7.3% and is expected to reach 8% in future. The current government is more focus on the ICT sector in order to build a Digital Bangladesh. Besides, recently, Russia has agreed to invest USD 100 million in the ICT sector of Bangladesh. Considering its rapid growth and emphasis on ICT, cloud accounting can play a vital role in this regard. The reasons for which Bangladesh needs to adopt the cloud accounting system are given below:

8.1. Entrepreneurial Application

In Bangladesh, like most other countries, it is very difficult for the young entrepreneurs to establish their business due to the need for excess capital. Cloud accounting or cloud computing can help them to remove the barriers to entry by providing accounting, storage and development solutions without the need for excess capital. Besides, the 'pay per use' skim makes the cloud accounting service a cheaper option for the startups and the owners can invest the excess money in other important areas.

8.2. Fostering Innovation

Cloud accounting can help in fostering innovation for an organization. By using the cloud accounting system, an entity hires a third party to conduct the accounting activities. With the help of streamlining activities, employees can have sphere time that they can use for creativity and innovation. Besides, the lower cost of cloud accounting allows the entity to invest in research and development department.

8.3. Keeping pace with the dynamic world of accounting

Like most other professions, accounting is also experiencing a gradual change with the development of technology. Accountants are moving from hourly pricing to value-based pricing. Besides, a report conducted by ACCA has found that accountants are expected to use more sophisticated technologies that will replace the traditional accounting system in near future. Besides increased regulation will make it more complicated for the traditional accounting system to maintain compliance. As a result, the need for cloud accounting system will be higher than ever.

8.4. Employment Generation

Bangladesh is an overpopulated country. It generates thousands of business graduates every year. But due to limited number of job opportunities compared to the graduates, there exists an ever-increasing unemployment problem. However, in recent years, the demand for accounting and bookkeeping services is increasing. With the knowledge of cloud accounting, a graduate can easily provide accounting services to other companies by simply sitting at home. As a result, accounting will not be limited within the office walls or even within countries. This can help to resolve the unemployment problem to an extent.

8.5. Government Application

Government organizations of Bangladesh are not as effective as the non-government ones. Lack of responsibility, procrastination, corruption, mishandling of accounts, political conflicts etc. are the main reasons behind this. Cloud

accounting can bring a huge change in the government sector of Bangladesh. The use of advanced cloud accounting services will ensure transparency and reliability in the government organizations. It will ease the record keeping system and will significantly reduce the bureaucratic procrastination.

8.6. Environmental Protection

Environment pollution is a major problem in Bangladesh. Bangladesh has been ranked as the 2nd worst country in terms of curbing pollution. Adopting cloud accounting system can reduce the level of emission to an extent. A research conducted by Greener Ideal has found that switching from traditional accounting to cloud accounting can save 30000 metric tons of CO2 emission in five years. This is almost equal to emission by 6000 cars off the road. Cloud accounting reduces the need for natural resources, reduces energy consumption and also limits resource redundancy. In cloud accounting, a server is shared by

multiple client. As a result full utilization of the server is possible. It is very much needed for a country like Bangladesh with a high CO2 emission per capita.

9. How Can Bangladesh Adopt Cloud Accounting System?

Based on the discussion in Section 8, it can be realized that the adoption of cloud accounting will positively affect the accounting system in Bangladesh in different ways. As a result, Bangladesh needs to adopt the cloud accounting system as soon as possible. Although there is no established framework of cloud accounting, this study provides a suggested framework that can be used in adopting cloud accounting system in the business sector of Bangladesh. The framework is basically established based on the study conducted by Kassim and Aziati (2011). The framework describes four critical factors that are needed to be considered for the adoption of cloud accounting system in Bangladesh. The framework is presented in Figure 2 below:

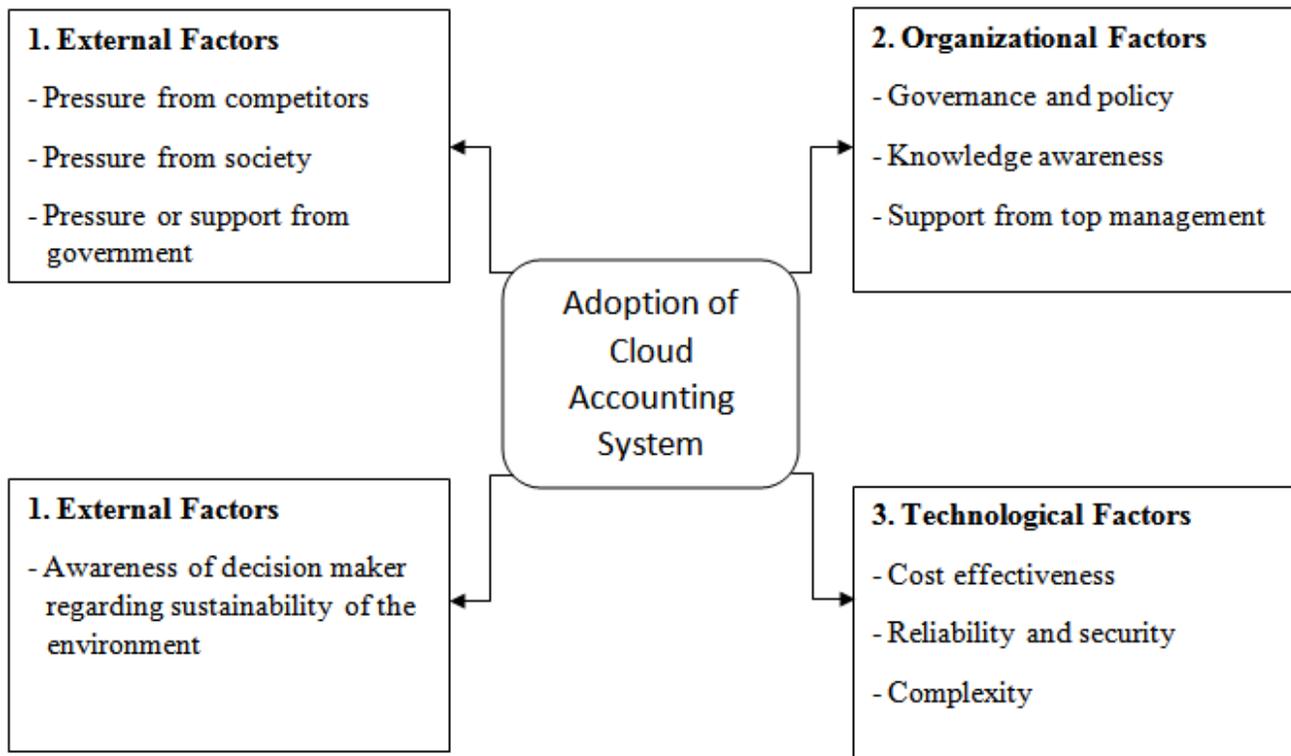


Figure 2: Cloud Accounting Framework

9.1. External Factors

The external environment plays an important role by influencing the decision about the adoption of cloud accounting in a business. The external context includes pressure from competitors, pressure from society, pressure or support from government and support from vendors. A study conducted by Oliveira and Martins (2011) has found that increased competition has a positive relationship with IT implementation in a company. The society can also put pressure on an organization as cloud accounting will result in job loss as the organization will outsource its accounting operations to the third party vendors. The government can also pressurize the organization or the industry to adopt cloud accounting or can support the adoption by providing different incentives. Finally the support from vendors of cloud services is also needed for proper utilization of the service.

9.2. Organizational Factors

From the organizational or internal environmental point of view, the adoption of cloud accounting system may vary from one organization to another. Every organization holds unique characteristics and need to assess the implementation of cloud accounting system based on its internal factors. Some of these factors include governance and policy, knowledge awareness and support from top management. An organization should implement a cloud accounting system that supports the governance system and the regulatory policy of the company. All the employees and related people should be provided with proper knowledge for the comprehension and adoption of the technology of cloud accounting. The willingness and support from top management is the most important factor here as the commitment by top management is a key factor in the failure of IS development in a company.

9.3. Technological Factors

The technological factor mainly deals with the physical appearance of cloud accounting technology. It is one of the major concepts behind the adoption of cloud accounting technology. This includes cost effectiveness, reliability, security and complexity. The cost is perhaps the most important factor that an organization needs to consider. Companies with more complex and expensive traditional accounting system should prefer the cloud accounting system. Reliability of the cloud service can be assessed by minimum downtime and the capability of the vendor. According to Britto (2011), Bedward and Fokum (2014) and, Sultan (2010), security is the most important factor considered by management in adopting cloud accounting. Finally, the organization also needs to consider the complexity of cloud accounting system and whether the employees are knowledgeable and skilled enough to face the complexity.

9.4. Environmental Factor

Finally the awareness of decision maker regarding sustainability of the environment is an important factor in adopting cloud accounting in an organization. Traditional accounting system releases huge amount of heat and CO₂, creates electric wastes and consumes a lot of energy. By adopting the cloud accounting system, an organization can not only reduce environmental pollution but also utilize the saved energy in other business operations.

10. Conclusion

With the technological advancement, the field of accounting is being improved and updated gradually. One of the newest paradigm of accounting is the cloud accounting system. In this system, clients can utilize the software and networking platform provided by a third party vendor for the accounting purpose. Cloud accounting services can be private, public, community or hybrid depending on the need of the client. There are three basic models of cloud accounting namely IaaS (Infrastructure as-a-Service), PaaS (Platform as-a-Service) and SaaS (Software as-a-Service). Although IaaS and PaaS provides more flexibility, SaaS is a cheaper option among these models. Cloud accounting has several benefits over traditional accounting system. It is much cheaper, can be easily accessed, increased data security and is very flexibility. However it also has some drawbacks like requirement of constant internet access, risk of losing data and problem of vendor lock-in.

The adoption rate of cloud accounting system is increasing day by day around the world. Although the adoption rate is better in developed countries, the developing and least developed countries (LDCs) are lagging behind. Bangladesh, a developing country with a satisfactory growth rate, is trying to adopt the cloud accounting system in every sector. The adoption of cloud accounting will encourage startups, foster innovation, generate employment and boost the bureaucratic system of Bangladesh. To adopt the cloud accounting system in a country like Bangladesh, concerned authority needs to change the perception of people on cloud accounting, educate student in this field and conduct training programs.

There are some limitations of this paper. As there is a lack of research in this relatively new area, sufficient review of the literature could not been done. Besides, the suggestions provided for adopting the cloud accounting system in

Bangladesh, cannot be applied uniformly and may vary from country to country. However, this paper will provide a clear understanding of cloud accounting system and the suggested cloud accounting framework will aid to the adoption of cloud accounting system in Bangladesh.

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