**A Study of impact of Cloud computing on small businesses**

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# Abstract

Cloud computing is the procedure to deliver the IT services in which the resources can be obtained with the help of the internet with the help of web-based tools as well as applications rather than the direct connectedness to the server. In 2017, Forrester Research expected that 50 percent of worldwide organizations will trust minimum one public cloud platform till the end of year 2018. The research questions are To what extent cloud computing services are familiar with the organizations? What are the implications of using cloud computing on organizations?

# Introduction

Cloud computing is the procedure to deliver the IT services in which the resources can be obtained with the help of the internet with the help of web-based tools as well as applications rather than the direct connectedness to the server. Instead of keeping the files on the hard drive, cloud-based storage is the perfect way to save the remote database (AlBar, &Rakibul Hoque, 2019). Till the time the electronic device can use the web, it has accession to the data as well as the software programs to execute it (Kumar, Samalia, &Verma, 2017).

Cloud computing is a recent technological development in the ICT usage paradigm whose application has gained momentum in the world in the past decade. The technological development involves the utilization of a network of localized remote servers on the global Internet for the storage, management, and processing of data compared to the traditional utilization of localized servers. Users of the service rely on third-party service providers to access huge volumes of data files, programs, and other services from the Internet without having to acquire and install servers within their premises. Business organizations only pay for the computing services and resources offered by the third parties. Business organizations, including SMEs leverage the usefulness of cloud computing to enjoy its advantages in the operation of their businesses. This paper aims at examining cloud computing in the context of small and medium-sized enterprises as well as its implication on the recipient business organizations.

Most of the small businesses are using cloud computing and experience in the benefits that were never received before. In 2017, Forrester Research expected that 50 percent of worldwide organizations will trust minimum one public cloud platform till the end of year 2018. (Freeman, 2018) Various kinds of cloud computing are infrastructure as a service, software as a service, and platform as a service.

# Literature Review

The authors intended to analyse the causes that impact cloud computing (CC) selection by the Small Medium Enterprises. A quantitative investigation was done to inspect the connection among perceived advantages, top administration assistance, IT assets, outside push, and adoption of cloud computing. It was found that Information Technology assets and outside push altogether impact adoption of cloud computing. Regardless, there isn't sufficient proof to help perceived advantages and top administration assistance as huge aspects of cloud computing selection (Hassan, Nasir, Herry, Norhaiza, and Iskandar, 2017)

The research was conducted to recognize the urgent aspects that impact the constant utilization of CC services in associations. To accomplish this distinguished target, this exploration research completed a thorough review of the literature on CC services' reception at the hierarchical dimension, especially accentuating the aspects that characterize the delayed selection of CC services. The aspects recognized, filled in as a guide needed by associations for totally sheltered as well as compelling CC administration and their utilization in trades (Al-Sharafi, Arshah, & Abu-Shanab, 2017)

The purpose behind conducting the research was the ability to evaluate the correlation between the Medium Small Enterprises' (MSEs) requirements as well as the data handling abilities of Cloud Computing Services and the way this fit impacts CC selection in the Kenyan enterprises. The study recommends a solid connection between organization’s tasks and CC services and between enterprises' data collection requirements and CC services data handling capacities. Different factors recognized as affecting CCS acquisition are reasonable and the connection among the CC Service suppliers and the enterprises.

Cloud computing is rapidly becoming popular in business. It provides businesses online services on interest, (for example, Gmail, Salesforce, etc) and provides them to reduce expenditure on devices and IT support. The research states that developing companies, cloud services providers have common elucidative commitments to provide and observe the information regarding relevant issues, for example, buyer protection, unwavering quality of services, data mining and data ownership. The concept of interlucency is created as epistemological righteousness overseeing morally viable communication. It is contended that businesses utilizing cloud services (e.g., banks, law offices, medical clinics and so on putting away customer information in the cloud) should pursue rather progressively stringent regulations (Bruin &Floridi, 2017).

**The familiarity of Cloud Computing with Small and Medium Sized Enterprises**

According to Adam & Musah (2015), previous literature on the utilization of cloud computing by small and medium-sized enterprises has highlighted that the businesses do not fully utilize the cloud computing concept despite the development of pay per use basis of cloud computing. Despite the fact that the existence of different challenges for small and medium-sized enterprises in the adoption of cloud computing, such as high investment capital requirements for setting up and maintenance of ICT, small and medium enterprises have exhibited substantial familiarity with cloud computing (Wachanga & Ndiege, 2018). It is also imperative to highlight that SMEs have gradually adopted the services; especially, since the development of pay per use. While cloud computing is gradually gaining momentum in its applicability among the business community, small and medium-sized enterprises have become increasingly familiar with the concept due to its numerous advantages such as the low costs involved in setting up the systems (Wachanga & Ndiege, 2018). It is imperative to highlight that significantly huge financial bases do not characterize SMEs; therefore, most of them find the installation and maintenance of local servers a costly affair compared to cloud computing. As such, they are increasingly becoming familiar with cloud computing as a strategic pursuit of competitiveness through increased efficiency and cost savings.

Due to the limited financial capabilities of SMEs, their increased familiarity with cloud computing has been significantly bolstered by the introduction of on-demand services whereby they only acquire and use the services when needed. Cloud computing services are now offered on a pay per use basis (Adam & Musah, 2015). The development was arrived at after it was established that some business organizations only required cloud services on periodic terms and that others could not afford continuous use of the services. As such, SMEs gained familiarity with cloud computing services since they could acquire and use the services or resources on a need basis and depending on their affordability of financial ability to pay. Adam & Musah (2015) further argue that there has been a drastic rise in the familiarity of SMEs with cloud computing due to the numerous opportunities offered by the technology for small and medium-sized enterprises to counter the cost and resource constraints. The many costs and resource constraints facing small and medium-sized enterprises are solved by the high levels of scalability, flexibility, and business agility offered in cloud computing. Scalability has stimulated the familiarity of SMEs with cloud computing because they are able to acquire their desired sizes and specifications of the cloud computing services with ease and speed. Scalability implies that SMEs can continuously utilize cloud computing services as they expand and their work volumes increase. Therefore, the concept makes cloud computing able to accommodate business growth with reasonable convenience and affordability (Adam & Musah, 2015). SMEs’ familiarity with cloud computing is also boosted by the high flexibility of the services to be applied in different business functions at affordable rates. The flexible nature of cloud computing increases the convenience with which SMEs operate in a bid to cope with their resource constraints.

SMEs are increasingly becoming familiar with cloud computing as evidenced in a study by Wachanga & Ndiege (2018). In research conducted to examine the adoption level of cloud computing by small and medium-sized enterprises in Kenya, Wachanga & Ndiege (2018) discovered that approximately 86% of the respondents from SMEs possessed knowledge on cloud computing and that their employers (SMEs) were familiar with cloud computing services such as websites and emails. The study also confirmed the familiarity of SMEs with cloud computing as evidenced by their application in other functions such as accounting, human resources, and sales and marketing. The research also highlighted that familiarity and adoption of cloud computing services by SMEs are differentiated. It concluded that despite that SMEs are familiar with the cloud computing services; their level of adoption is minimal. As a result, the researchers identified the need for specialized training for non-ICT SMEs on cloud computing to increase their level of adoption because they were already familiar with the concept. Wachanga & Ndiege (2018) concluded that only 14% of the SMEs were not familiar with cloud computing (86% were familiar); however, despite the significantly high level of familiarity, the adoption of the services was minimal. They attributed the low rate of adoption to limited knowledge about the utilization of the services as well as lack of trained IT staff in the SMEs.

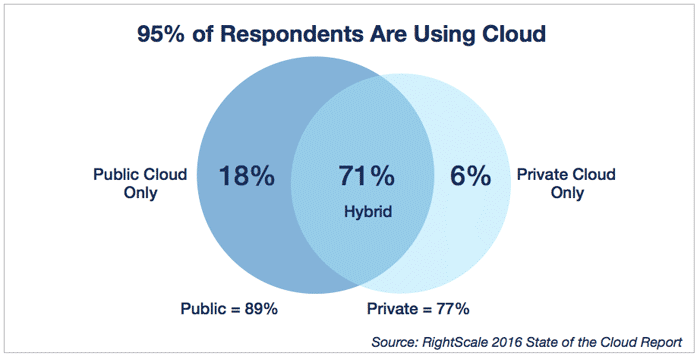
**Construct**

The construct is to measure how much organizations need cloud computing and for what purpose. Specifically, I intend to measure the impact on small businesses such as hospitals. Cloud computing is being increasingly adopted by medical institutions due to the experience it offers for both clients and medical practitioners. Without cloud computing, most operations are repetitive in nature and this often leads to a lot of time consumption to operations that would otherwise not be required through the use of cloud computing. The use of cloud computing also brings about enhanced agility by medical institutions. When agility is improved, these institutions become more responsive to various changes that take place within the market (Etching, 2016). Ability to react faster to changes in the market means that the healthcare outcomes of both the healthcare system and the clients are more likely to be realized. These attributes also allow the institutions to accommodate various and changing business needs with ease. Cloud computing also leads to huge cost savings for the hospital administrators. Through effective cost management, medical institutions become more profitable and this decreases the cost of medical services for the various populations. These drivers have thereby played a huge role towards increased adoption of cloud computing across various institutions.

For any healthcare institution to develop could computing adoption efforts, there must be strategic reasons behind such efforts. It does not make any business sense to develop such technology whereas there is no gain that the business aims to achieve in the future. One of the major reasons behind the adoption of cloud computing efforts is based on the need to increase the efficiency of various operations and activities. Increasing efficiency is often associated with providing better services for the people who receive medical services from the healthcare institution. Such adoption could also be motivated by a desire to comply with various laws and regulations that require the adoption of cloud computing efforts. Compliance with these laws ensures that the company does not suffer penalties and other forms of disciplinary actions that may be applied by the relevant bodies within the healthcare system.

There are several keys to success when developing and executing a cloud strategy. The first key to success is that the technology to be adopted must be appropriate for the medical institution. When it comes to adoption of cloud computing, it is imperative that the technology to be adopted suits the needs of the institution. Whenever the technology does not suit the institution, the technology is bound to fail (Maxwell, 2014). The management can guarantee this through hiring or outsourcing these services from the relevant providers. The second key to success is proper training for the members of staff within the institution. Proper training ensures that the medical practitioners understand the system and are able to use it to accomplish various duties and responsibilities. Without such training from the designers or providers of the technology, the healthcare institution cannot put this technology into optimum use across the institution.

Below is a graph showing the responses received;



# Research Methodology

## Research questions

RQ 1: To what extent cloud computing services are familiar with the organizations? the research question will help to identify the level to which the CC services are being used in the organization. It is essential to know if the organizations have been actually using it and if they are using then how frequently the services are utilized by all the members of the organization.

RQ 2: What are the implications of using cloud computing on organizations?

RQ 3: Is it profitable to use cloud computing for organizations or not?

RQ 4: What factors should an organization check before settling for a cloud network?

## Research impact

The research question will help to identify the impact of using cloud computing on the organization. This can include positive or negative implications.

## Data Collection

To proceed with the research, both secondary and primary data will be assembled. Primary data will be gathered from the employees or owners of small business organizations. The responses generated will be statistically analysed to see how frequently they have been using cloud computing services and the likely impact on their organizations. Secondary data will be collected from scholarly articles, journals, books, etc. (Habjan&Puchihar, 2017). This will give an idea regarding the previous research conducted in the same or similar area. It will also help to draw the conclusions.

## Population

Purpose behind conducting the research was the ability to evaluate the correlation between the Medium Small Enterprises' (MSEs) requirements as well as the data handling abilities of Cloud Computing Services and the way this fit impacts CC selection in the Kenyan enterprises. The study recommends a solid connection between organization’s tasks and CC services and between enterprises' data collection requirements and CC services data handling capacities. Different factors recognized as affecting CCS acquisition are reasonable and the connection among the CC Service suppliers and the enterprises

## Identifying Sample

The idea behind the study was to analyse the causes that impact cloud computing (CC) selection by the Small Medium Enterprises. To do this effectively, the people working on these organizations were considered as the ideal sample of the population, namely the IT manager, few junior staff members who use the systems and people in charge of communication. A quantitative investigation was done to inspect the connection among perceived advantages, top administration assistance, IT assets, outside push, and adoption of cloud computing. It was found that Information Technology assets and outside push altogether impact adoption of cloud computing.

## Contacting research subjects

To keep in contact with the chosen subjects, I will make use of informal interviews as well as observation. Through observation, I will be able to monitor the participants in their natural working environment, and see how they interact with cloud computing technology. Observation is good because I will get first-hand information regarding the challenges that the participants go through in the process, as well as see the advantages that they enjoy when doing their tasks with the help of cloud computing.

With the case of the interviews, I will ensure that they are done in an informal setup. This provides a relaxed environment where the participants are able to speak and air out their opinions without feeling that they are being cornered. This is important because it will give them the freedom to speak about the challenges and any other opinions they might have on the use of cloud computing technology freely.

## Consent to participate in research

To get consent, I need to make the participants understand the importance of my research, and what I aim to achieve in the long run. This means that I will be transparent with them, and this will make them trust me and hence provide me with the needed information.

## Ethical issues in research

There are a number of aspects that I will take into consideration to ensure that mutual respect and fairness is met in the research process. First is to ensure honesty and integrity, by sticking to the results obtained and not making up any data. Secondly, I will be open to the sample group and let them know the purpose of the research and what methods will be used. Third, I will ensure utmost respect for anonymity and confidentiality when posting the results obtained. Finally, I will ensure informed consent during the entire research period.

# Results

## Implications of Using Cloud Computing on Organizations

The utilization of cloud computing by business organizations results in a wide range of implications on the operations and overall organizational performance. On the one hand, business organizations are positively impacted by cloud computing in some ways, including saving on different costs (Kim, 2009). In the case of saving on costs, it is important to highlight the fact that business organizations using cloud computing depend on computing services offered by third parties at a reasonable cost. Imperatively, business organizations are saved from the burden of acquiring, installing, and maintaining different computer infrastructures such as servers, hardware, software, and networking for their organizations. Through the Internet, business organizations are only required to plug in or log into the cloud to perform a wide range of functions (Kim, 2009). Moreover, business organizations recognize substantial cost savings from the utilization of cloud services because they are not required to hire or buy additional space to accommodate computer hardware and servers. They also save on the costs that could be incurred to hire ICT experts to maintain and administer the computer systems in the absence of cloud computing. As such, business organizations can leverage such cost savings to pacify their operations through diversification and investment in other opportunities.

The fact that cloud computing services are provided by third parties eliminates the need for a business organization to focus on internal ICT requirements. Therefore, cloud computing contributes positively to the business ability to develop sustainable competitiveness due to its ability to concentrate on its core business at the expense of ICT (Kim, 2009). Business organizations can also improve their productivity by diverting the resources that could be consumed by an in-house ICT department to other critical aspects of the business such as research and development. Organizations can also leverage reduced risks posed by the operation of local computing systems in the event of a disaster that affects the organization's computer network systems (Kim, 2009). Some events such as natural and artificial disasters like fire and floods could lead to the destruction of local computers and servers within an organization; thus, leading to the loss of critical information. Such events could adversely affect the organization to the extent of closure. However, cloud computing averts such risks because the servers are not located within the business or in its proximity. In case of an accident, the organization’s data remains safe in the cloud and does not pose any significant threat to the continuity of the business. Moreover, cloud computing increases the level of data and information safety for organizations. Local computer systems are extremely vulnerable to unprecedented security threats such as hacking and DOS attacks which may lead to the loss, theft, or alteration of sensitive organizational information. Cloud computing offers substantially advanced security mechanisms for stored data and that in transit, such as encryption and the incorporation of firewalls. All these make it for malicious actors to access organizational information.

Business organizations can also leverage the increased convenience derived from cloud computing. The argument is based on the premise that cloud computing is an Internet-based initiative. Therefore, business executives only need Internet access to access to different sets of information and perform their duties. Businesses with various offices in different locations can leverage the convenience of working concurrently on the same set of data because cloud computing can support multiple users in accessing certain data (Kim, 2009). Employees do not have to waste time waiting to access same data sets because they can access the same with their colleagues in different locations. Therefore, operational efficiency and productivity of the organization can be significantly boosted by the adoption of cloud computing in organizations. Moreover, the convenience associated with cloud computing is driven by the fact that all business functions and information are managed from a central database where inter-functional information can be easily shared and compared (Kim, 2009). For example, data from sales can be easily accessed by accountants in the finance department when compiling the financial statements at the end of the period. Cloud computing, therefore, eliminates the cumbersome transfer of information from different databases as evidenced in traditional computing systems. The storage and management of data in a single database increase operational convenience, efficiency, and contributes to time-saving.

According to Kim (2009), business organizations that utilize cloud computing can also save significantly on financial costs by leveraging the pay per use opportunity offered by cloud computing. The opportunity enables organizations to pay for the services they need and avoid maintaining on-premise computing facilities which may become redundant during low or seasonal periods. Organizations, therefore, may enjoy scalable planning because they have a proper understanding of their computing needs depending on the prevailing business conditions. Planning in businesses is also simplified by the application of cloud computing in its operations. Cloud computing is characterized by high levels of scalability and flexibility. The two features of cloud computing imply that cloud computing services can be easily adjusted to accommodate changing business situations as well as changing volumes of work (Kim, 2009). This is unlike traditional computing where an expansion in the scope of the business operation would require long planning to acquire more computers or expand the capacity of the existing servers to accommodate additional work volumes. Significant levels of rigidity characterize traditional computing systems compared to cloud computing which allows high levels of flexibility. As such, organizations do not need to concentrate on system expansion needs because it is guaranteed in cloud computing.

# Conclusion

In conclusion, cloud computing is a modern technological milestone characterized by the utilization of a network of localized remote servers on the global Internet for the storage, management, and processing of data compared to the traditional utilization of localized servers. Business organizations, including SMEs, are increasingly becoming familiar with the concept due to the massive benefits associated with its application in business. However, the level of adoption among SMEs is relatively low compared to large commercial enterprises due to the lack of sufficient training on the use of cloud computing. Business organizations can leverage the numerous benefits of cloud computing, ranging from flexibility, on-demand applicability, cost-effectiveness, scalability, and safety of data and information. It is also worth to note that cloud computing enables business organizations to concentrate on their core business activities other than computerization needs. Hence, cloud computing services have divided numerous benefits not only to the small organizations but also for the big organization. The extent of usage depends upon the level of awareness and the resources being used or provided by the organization. Based on the review, it is found that most of the organizations have been quickly adopting the cloud computing services and the other organizations across the world are also assisted to plan and take up cloud computing services. A cloud platform has different servers, so clients have the advantage of having boundless storage, most extreme transfer speed, oversaw load adjusting services. Cloud computing services can play a tremendous effect on a private venture. Thus cloud facilitating administrations ought to be picked carefully and with the best of the knowledge.

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