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Abstract

Purpose: The aim of the study is to examine the impact of cloud technology on performance of information Management in Small Enterprises.

Methodology: This study adopted a desktop literature review. It utilized content analysis of the reviewed literature related to cloud computing in in small enterprises.

Findings: The study revealed that the adoption of cloud computing contributes to improved performance of SME's. The small enterprises have been able to serve their customers better and have reduced operational costs and increased profits. Cloud computing also helps organizations and SME'S to offer decentralized services and give flexibility to staff as they can operate wherever they are as long as they have internet connection.

Unique Contribution to Theory, Practice and Policy: The study recommended that issues associated with connectivity and speed of access should be addressed by government bodies concerned with internet service provision regulation. The service providers should ensure that the systems are user friendly easy to use to enable better adoption access across the rest of the SME's so that the effect of cloud service can be realized.

Keywords: *Cloud Computing Technology, Small Enterprises, Adoption, Impact, Models*

INTRODUCTION

To gain access to cutting-edge IT infrastructure, data centers, and applications safeguard sensitive data, the developing world must take advantage of the benefits presented by cloud computing while limiting the hazards associated with it (Khestri, 2010). National governments, international organizations, as well as multinational and local IT firms, have paid close attention to the cloud computing market in the developing world. For instance, IBM has created cloud computing facilities in South Korea, China, Vietnam, India, and Brazil. Microsoft, VMware, Salesforce, Dell, and Parallels, among other major global cloud providers, are constantly looking for business prospects in developing nations. The fact that businesses with roots in the poor world have gone on the cloud bandwagon may be even more impressive. Venture finance for the cloud and other investments are also pouring into emerging markets. It is undoubtedly true to argue that the developing world has never garnered as much attention for a major technological achievement.

Kshetri (2011) asserts that the potential and influence of cloud computing in the developing world will make developing nations desirable consumers for cloud services. The cloud allows emerging nations access to the same IT infrastructure, data centers, and applications, so they may theoretically catch up to wealthy nations' economies. For small and medium-sized businesses, the cloud arguably lowers infrastructure costs and levels the playing field (SMEs). In comparison to client-based computing, which necessitates installing, setting, and upgrading software with each new release as well as changing other programs with each update, cloud computing would also be simpler to manage and update. Users of cloud services have the option to scale up as needed in response to rising demand. Software piracy, according to supporters of the cloud, may decline if software becomes free via Web-based applications or is made available as SaaS. The domestic and international entrepreneurial efforts of IT enterprises situated in developing nations in the cloud sector are a final but important point.

According to recent assessments, many firms are not ready for the security of their clouds. Less than 10% of respondents to a cloud computing survey by International Data Corporation (IDC) in April 2010 who were located in Australia, China, Hong Kong, India, South Korea, and Singapore expressed confidence in their security procedures, according to Shivani Anand. Poor bandwidth and a lack of forward and backward connectivity have also been criticised. The crucial distinction between what is theoretically and practically feasible is thus made.

It's crucial to state up front that cloud computing is still in its infancy in the developing world. Research have shown that even huge businesses are not aware of the cloud. Half of respondents in emerging markets in a 2009 Gartner poll of large businesses either hadn't heard of cloud computing or didn't know what it was (Baker, 2015). IT-intensive industries are avidly embracing clouds, including offshore and software development. Cloud computing is in high demand in India's outsourcing sector and IT clusters. The fastest-growing sector for cloud computing in South Africa has been the call center sector. The IBM Cloud Center in Wuxi City, China, also caters to software developers.

Veigas (2012) claims that the cloud computing business in developing nations is tiny but growing quickly. According to a report by IDC, China and India have the most mid- to long-term potential for the cloud, with Brazil, Russia, India, and China likely to be significant forces influencing the worldwide shift toward the cloud. According to the research, the Indian SaaS industry will expand

at a compound annual growth rate of 77% from 2006 to 2010. According to predictions made by the National Association of Software and Services Businesses of India and McKinsey, the Indian market for remote infrastructure management will reach US$15 billion by 2013.

In Tunisia, there is a rising understanding of the potential of cloud solutions, as seen by the rise in the number of scientific conferences, workshops, exhibitions, business events, and technology-related events, claim Kamoun & Chaabouni (2013). Companies that sell software and equipment, like Microsoft and Oracle, as well as HP, are promoting their cloud solutions more and more. Courses and research in this area are now being offered by universities and other specialized institutes. IaaS services are primarily geared toward SMEs, which dominate the Tunisian economic market. SMEs frequently have limited financial resources, which restricts their capacity to buy expensive software like CRM or corporate relationship management.

Ghana has around 20 cloud service providers, several of which are regional businesses. IaaS and PaaS make up the majority of the cloud services offered, collectively accounting for 69% of the market for cloud computing. Most regional cloud service providers serve as middlemen for international cloud computing service providers. For instance, MTN offers its clients the end point and email protection suites from Averiware, Microsoft Dynamics (CRM), and MacAfee. Moreover, Net Solutions Ghana Ltd serves as a middleman for Oracle business, technical, and industrial solutions, IBM (Business Partner), IBM PureSystems, and Business Analytics (Frempong, 2013). Some service providers, including South African-based Dimension Data and Internet Solutions, are pan-African in scope. Finally, some businesses that offer hosting, managed services, and data centers, such as Internet Ghana, Ostec, Ecoband Networks Ltd, and Computer Information Systems Ghana Ltd., among others, may expand into the cloud industry (Frempong, 2013).

The process of cloud migration is managed by a number of regional, pan-African, and international aggregators and system aggregators, according to Odofuwa (2013). MTN, Glo, and Airtel, three mobile operators, have introduced mobile cloud services aimed at the SME market. The Nigerian cloud computing market is still in its early phases of development, with a focus on infrastructure as a service (IaaS), notably storage. Drug producers in Nigeria are now able to stop medicine counterfeiting in real-time thanks to technologies being implemented by IBM and Sproxil, two cloud service providers with American bases. By scratching and texting a code hidden in the box, customers can utilize the solutions to check the legitimacy of medications and prescriptions using mobile devices. Service providers claim that findings are available to customers in a couple of seconds and host the data on the cloud (Odufuwa, 2013). MTN introduced a cloud service brokerage offering in December 2012 that was aimed towards its SME customers in Ghana and Nigeria.

MTN claims that enterprises in manufacturing, hospitality, microfinance, and advertising have already embraced its cloud solution (Odufuwa, 2013).

According to Gillwald (2012), more people are becoming aware of the advantages of cloud computing for businesses of all sizes. In South Africa, major international players including AWS, Google, and Microsoft are active. In order to compete with established local carriers and big managed service providers like Internet Solutions, companies like Google and software maker Microsoft are aggressively selling cloud services (a division of South African-based Dimension

Data). Through application programming interfaces, the South African company Pamoja offers integration services between various cloud providers. Users have the freedom to choose the services from several cloud providers that meet their needs the best and are most affordable thanks to this model.

Mureithi (2013) claims that the majority of cloud services in Kenya are driven by the supply side, and that there is growing rivalry between domestic and foreign businesses. With a strong data center market, rack services, redundant power, and security services, Kenya Data Network is well-established. The fact that Seven Seas Technology has a well-established reputation is a benefit of the cooperation. Because of the company's large market entry, potential customers are now more likely to consider local clouds as a viable substitute for foreign clouds. Being a multivendor provider is one of the finest tactics on the Kenyan market for gaining market share. Due to the decrease in outages, which is currently a common occurrence in the industry, Safaricom has chosen to provide the M-PESA platform to Kenya. Its position in the cloud computing business has improved as a result of this move (Muraithi, 2013). A number of services are offered by Kenyan Cloud Ltd., including storage, data recovery, and mail. Xtranet Communications Ltd. is one of the service integrators that sells the majority of the services.

Statement of the Problem

Global adoption of cloud computing technology requires the developing world to take advantage of these benefits while reducing the hazards involved in order to gain access to cutting-edge IT infrastructure, data centers, and applications and safeguard sensitive data (Saini, 2011). Kenya strives to raise the nation's economic standing (Vision 2030). By enabling SMEs through digitization, SME's play a significant role in fostering growth and employment prospects. Small and medium-sized businesses are implementing cloud computing to improve performance. Prior studies have covered the topic of lower infrastructure costs and level playing fields (Kituku, 2012). So, the purpose of this study is to examine how knowledge of cloud computing services affects the performance of small and medium-sized businesses, particularly in Kenya.

LITERATURE REVIEW

Theoretical Review

Diffusion of Innovation (DOI) Theory

Rogers is the creator of this hypothesis. Technology qualities and users' perceptions of the invention are the main factors that influence how quickly innovations spread. Contrarily, an organization is a more complicated entity than a person. Here, Rogers puts out the idea that innovation is a process of communication that makes use of the various social system channels. The acceptance of innovation in businesses is influenced by three elements. They include internal organizational structure features (centralization, complexity, interconnectivity, number of employees, and organizational slack), individual characteristics (leadership attitude toward change), and external organizational structure characteristics (system openness).

According to Rogers (2017), each innovation has unique characteristics that affect how quickly it spreads through society. The five main characteristics of each innovation are relative advantage, compatibility, complexity, try ability, and observe ability. The pace of adoption in a society is

positively impacted by an innovation's compatibility. Compared to innovations that are incompatible with social norms or individual norms, innovations that are compatible proliferate more quickly. "The degree to which an innovation is seen as comparatively difficult to understand and use" is the definition of complexity. Diffusion is typically negatively impacted by complexity. So, a more complicated innovation has a lower likelihood of successfully permeating society. The definition of trial ability is "the extent to which an innovation may be tried with on a restricted basis." Observe ability is the last but not least and is defined as "the extent to which the results of an innovation are evident to others." Alpaci (2012) found that out of all five qualities, relative benefit, compatibility, and complexity have the biggest effects on how quickly various ideas are adopted.

Transaction Cost Theory

By looking at production and transaction costs—where transaction costs are the expenses connected with monitoring, controlling, and managing transactions—Transaction Cost Theory can be used to define the boundaries of organizations. The degree of governance in an organization was Williamson's initial dependent construct that he explored (Alaghehband, 2011). According to Williamson, outsourcing may occasionally result in lower manufacturing costs because of provider-side economies of scale. Nevertheless, the expenses involved with the transaction—such as those for negotiating contracts, maintaining the outsourcing relationship and any potential outcomes—would increase and would reduce the appeal of the outsourcing decision. On the other side, "insourcing" might give lower coordination costs because corporations presumably have more control over their own departments and as a result cut transaction costs, but it might raise production costs because there aren't any economies of scale. Consequently, the trade-off between production cost and transaction cost would determine whether or not to outsource. The impact of cloud technology on small businesses, which influences whether or not small businesses should continue embracing cloud computing (outsourcing in the original Transaction Cost Theory model), will be the dependent construct to be researched for the purposes of this study.

Transaction Cost Theory takes into account three additional constructs that could affect how likely something is to be adopted. One of these is Asset Specificity (AS), which has to do with how customized versus standard a transaction is for both parties. Asset Specificity refers to the provider's capacity to transfer an asset invested in one business relationship to another and, conversely, the firm's capacity to transition smoothly to a different provider. A transaction that is asset-specific may increase the risk of lock-in, which can be problematic for providers if the relationship ends after investing in this particular relationship because they would not be able to use the investment in other relationships or from the client's (firm) perspective because switching providers would be challenging. The asset specificity can be used in the context of cloud adoption to denote the need for a high degree of customization for an organization's IT services. It can be predicted that small businesses needing a high level of customization will be less eager to use cloud computing due to lock-in concerns since providers often offer uniform offers to customers or offerings that are only partially customizable. Adoption of cloud computing may have a comparable impact to asset specificity on the customer's end due to concerns about data lock-in caused by the difficulty of switching to other providers, which may occur when different cloud providers don't have common standards. As a result, AS will be investigated as a factor that could

influence the adoption of cloud computing. According to the literature review, other researchers have also raised the lock-in risk (Gunupudi 2013) The TCT theory contends that AS raises transaction costs, which have a negative impact on the choice to outsource a service due to the worry of lock-in.

Empirical Review

Munene (2017) conducted research on the association between cloud computing and organizational effectiveness in Nairobi-based small and medium-sized businesses (SMEs). A descriptive survey was used in the investigation. Questionnaires were used to gather the main data. The study used 35 SME businesses in Nairobi as its sample. The study also demonstrates that embracing cloud computing has more advantages than disadvantages. According to the study's findings, higher organizational performance is related. The study focuses on the connection between cloud computing and organizational performance, whereas the current study focuses on the total influence of cloud services and the performance of SME's, creating a conceptual difference.

Usman (2018) conducted a study to assess the librarians' acceptance and use of cloud computing for library services in academic libraries in Nigeria, to investigate librarians' perceptions of cloud computing in the academic libraries of Kaduna State, to assess the degree of use of cloud computing in academic libraries, and to assess the difficulties associated with the adoption of cloud computing in academic libraries of Kaduna State. The research used descriptive methods. Both quantitative and qualitative methods were used in the investigation. Data gathering methods included an interview schedule and a questionnaire. There were 130 librarians in the target demographic. The methodologies for data analysis and result presentation will be descriptive and inferential statistics. According to the report, there are advantages to adopting the technology, and academic libraries believe it can address a number of issues they are now facing. The study also found that there are significant barriers to cloud implementation, including concerns about data privacy, ownership, and integrity, as well as the lack of regulations to control these issues. Since the current study focuses on SME's while the previous study focused on libraries, there is a conceptual mismatch.

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Rashid (2012) conducted a study on cloud computing in Kenya's banking sector was conducted by Rashid in 2012. The goal of the study was to determine the degree of cloud computing adoption in the Kenyan banking sector, as well as its advantages, hazards, and risk-mitigation techniques. 44 Kenyan commercial banks were the intended audience. A questionnaire was used to collect primary information. Means, percentages, and frequencies were used to assess the quantitative data that was gathered. The study found that it has advantages like lowering IT expenditures, including both initial costs and continuing maintenance costs. Despite these advantages, banks were hesitant to use cloud computing due to risks like security, vendor lock-in, loss of governance, and compliance issues. Examining Cloud service providers and developing standardized procedures for securing the technology for use by banks.

Munya (2017) conducted research to evaluate the impact of cloud computing adoption on Nairobi's microfinance organizations. Surveys were given to the chosen demographic, and multiple regression was utilized to examine whether the independent variable had any impact on MFI operations, where there was a positive association. The study found that the use of the cloud and user happiness have a favorable impact on MFI operations. According to this report, 92% of MFIs are using the cloud, and most of them are using the SaaS model. Most Companies cited security and data loss as their top concerns.

Mukathimwo (2016) identified the level of adoption of cloud-based ERP functions, the factors that influence adoption, and the relationship between cloud-based ERPs and organizational performance of SMEs in Nairobi, Kenya. A descriptive survey was used in the investigation. A questionnaire was used to obtain the main information. 40 Businesses in Nairobi adopting cloud-based ERPs made up the sample size. According to the report, the functionalities of cloud-based ERPs that were most frequently used were financial management, human resource management, and jobs and resource management. The study also demonstrates that service efficiency, connectivity loss, and access speed are important adoption-related aspects. The study comes to the conclusion that there is a connection between increased organizational performance, particularly in terms of accurate data processing, prompt reporting, and general increases in organizational efficiency.

Kituku (2012) studied the usage of cloud computing in Kenya by companies listed on the Nairobi Stock Exchange. The study aims to ascertain managers' attitudes regarding cloud computing adoption, identify which business processes have been migrated to the cloud, and identify difficulties or issues related to managers of firms listed on the NSE adopting cloud computing. In the study, a descriptive study was used, The study used questionnaires to gather primary data.

Descriptive statistics and regression analysis were used to analyze the data. Tables were used to present the results. According to the study, cloud computing is simpler to use, safer, problem-solving, and easier to understand. Also, the businesses have moderately migrated their human resources, payroll, and HR departments, as well as their CRM/sales management, accounting, and finance departments, project management, and application development departments, to the cloud. The study also discovered that security, privacy, and reliability were the main issues with cloud computing adoption.

Wanjiku (2014) examined the prevalence of cloud computing adoption among medium- and high-tech industries in Kenya, as well as the factors that influence those decisions, as well as the results of that adoption, and the obstacles that stand in the way of that adoption. The research design for the study was a descriptive survey. Both quantitative and qualitative research methodologies were used in the study. Questionnaires were used to gather the data. To present and interpret the findings, frequency tables, charts, and mean scores were used. According to the survey, cloud computing has been utilized as a technical strategy by 70% of medium- and high-tech industries to streamline service delivery. Cloud computing is a force that is altering ICT and fostering innovation, as acknowledged by users and suppliers. According to the report, there are many important aspects impacting the adoption of cloud computing, including cost, performance, and reliability of cloud applications. People think it would be much better if they knew which adoption model for cloud computing was best.

Simba (2014) conducted research on Kenya's small and medium businesses' use of cloud computing. The reasons why SME's should adopt cloud computing, the hazards associated with Safaricom hosting cloud computing, risk mitigation techniques, and how adopting cloud computing would affect SME performance. The study was descriptive in nature. 35 SMEs that had implemented cloud computing were the target group. The study used questionnaires to gather primary data. Descriptive statistics and regression analysis were used to analyze the data. Tables were used to present the results. The adoption of cloud computing is influenced by the technical proficiency of the IT staff, firm size, and profit objectives of the firm. According to the study, the main concerns for cloud computing adoption were security, privacy, and reliability, and it had a positive impact on organizational performance. Due to its perceived affordability, medium-sized businesses with skilled IT workers and cost-cutting goals are more inclined to use cloud computing.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Author	Focus of the study	Key findings	Research gaps
Aliyu (2018)	to evaluate the librarians' acceptability and use of cloud computing for library service in academic libraries in Nigeria	there are benefits derived that prompted the need to accept the technology	There is geographical gap as the study was carried out in Nigeria while the current study will be carried out in Kenya.
Munene (2017)	the relationship between Cloud Computing and Organization performance in the Small and Medium Enterprises (SMEs) in Nairobi	benefits of adopting Cloud Computing outweighs its cost, there is a relationship in improved organizational performance	There is a conceptual gap as the study focusses on the relationship between cloud computing and organization performance but the current study focusses on the overall impact of cloud services and performance of SME's.
Muthee (2016)	The types of cloud implemented, analyse challenges and techniques used to overcome and finally design a data security implementation model for cloud computing in government parastatals.	Government parastatals can now regain their trust in this paradigm and consider implementing more system in the cloud.	There is a conceptual gap as study focusses on government parastatals while the study focuses on Small enterprises.
Rashid (2012)	The extent of Cloud Computing adoption in the Kenyan banking industry, its benefits, risks and mitigation strategies for the risks.	The benefits it offers such as minimizing IT costs both upfront costs as well as ongoing maintenance costs.	There is contextual as the study focusses on the benefits and risks of cloud computing while the current study focusses on the bigger picture(impact)
Mukathimwo(2016)	the extent of adoption of cloud-based ERP functions	The most commonly adopted functions of cloud-based ERPs were the Financial Management, Human Resource Management and Jobs and Resources management.	The study focusses on adopted functions of cloud based ERP while the current study focusses on the impact

Conclusions

The study comes to the conclusion that SME performance is enhanced by the adoption of cloud computing. Small businesses have improved customer service, decreased operating expenses, and boosted earnings. Moreover, decentralized services and staff flexibility are made possible by cloud computing, which allows businesses and SME's to work anywhere there is an internet connection. Also, because employees won't be constrained to the working hours of their time zones, this creates opportunities for cross-border trade.

Recommendations

The report suggests that consumers of cloud services should address the issues they are having. Government agencies responsible for regulating internet service provision should address issues with connectivity and access speed. The systems' ease of use and user-friendliness should be prioritized by service providers in order to promote wider SME adoption and maximize the benefits of cloud computing.

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