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Top Benefits and Hindrances to Cloud Computing Adoption in Saudi Arabia: A Brief Study

Arwa Albelaihi

Department of Information Technology, College of Computer, Qassim University, Saudi Arabia. ORCID: 0000-0001-7135-5894, E-mail: a.albelaihi@qu.edu.sa.

Nabeel Khan

Department of Information Technology, College of Computer, Qassim University, Buraydah, Saudi Arabia. ORCID: 0000-0002-0505-5604, E-mail: n.khan@qu.edu.sa.

Abstract

Cloud computing is an emerging concept of information technology that in many countries has an influence on many companies. The research was conducted to evaluate cloud computing adoption in Saudi Arabia; Benefits and hindrances for small and medium-sized enterprises (SMEs). The qualitative research approach is performed by interviews with the management of a variety of SMEs active in the information and communication technology (ICT) industry. This paper illustrates a significant positive correlation between the use of cloud computing and organizational quality performances. The paper concluded that the knowledge level of SMEs on the accessibility of cloud services is below average scale. The greatest challenges about the cloud service are privacy and security in the cloud among providers and users for the Saudi Arabian firms.

Keywords: Cloud computing, Benefit, Hindrance, Adoption of technology, SMEs, Saudi Arabia.

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Introduction

Nowadays, there is growing adoption of cloud computing among small and medium-sized enterprises (SMEs) in Saudi Arabia which is changing the way their business information systems are developed and maintained. Particularly, cloud computing enhanced the collaboration between companies and their customers, prices, and feedback from technical support in the cloud providers, business firms, unlimited data storage, and safety. Every SME in Saudi Arabia has its own reason to adopt cloud computing, but some of them can face hindrances preventing them from adopting cloud computing. Most organizations are willing to implement cloud since it reduces the expenditure and controls the cost of operation. There are still SMEs that are not sure about the advantages of cloud services. This research is therefore conducted to investigate the views of SMEs on the advantages of cloud computing services in their business operations, enabling them to embrace this technology.

Cloud computing is a 21st-century disruptive innovation and technology. cloud computing influenced the industrial world, in the same way as outsourcing, e-business, and e-learning in the 20th century. A phenomenon known as cloud computing has been generated by the scalability and extensibility characteristic of computer architectures. Cloud Computing is a technology used to offer online hosting services. The cloud computing model has been there for a while in the context of web hosting, but the only thing that makes it unique is that it provides users with infrastructure, network, technology, and other tools on a pay-per-use basis. Users do not have to worry about managing assets with this technology and they have access to all the services available through the internet cloud. Therefore, adding to business growth by making users more centric business processes rather than spending more time gaining knowledge about the tools needed to manage the different business processes. The most attractive feature of this system is that consumers do not own their physical infrastructure as such; they rent it from third parties (Khan, 2016).

The aim of this study is to find out the hindrances or obstacles in cloud computing adoption in Saudi Arabia. This study addresses the benefits of cloud computing in Saudi Arabia. In this study, interviews with a number of leaders SMEs engaged in the field of information and communication technology (ICT) are done to know benefits that encourage them to apply cloud computing to their company. There are four delivery models for cloud computing: private Cloud, Public Cloud, Community Cloud, and Hybrid Cloud. Organizations may use one model or a combination of different models to deliver applications and business services. Cloud computing, on the other hand, has some challenges to overcome. Because of these challenges, SMEs are reluctant to adopt this breakthrough technology and are therefore even more perplexed when cloud computing claims to rescue their company's declining growth (CloudComp 2009).

Background

Growth of SMEs in Saudi Arabia

Saudi Arabia ranks among the world's top 20 largest economies and is regarded as a rapidly developing country (World Bank). Saudi Arabia is rich in petroleum, natural gas, gold, copper, and iron resources. Saudi Arabia's economy is largely dependent on four main sectors: petroleum, finance, telecommunications, and retail. The oil sector in the country is one of the largest export markets in the world (Al-Somali, Gholami & Clegg, 2015). Revenue from oil exports has put the country in a stable financial position to invest heavily in its IT infrastructure. Even though the Kingdom of Saudi Arabia has been one of the world's richest countries, it remains into the category of the developing countries. The biggest reason why it is not included in the category of developed countries is the slow advancement in the industrial sector, particularly SMEs. Petroleum exports have made a significant contribution to economic growth, which has won the Kingdom a G20 member, an alliance of countries whose economies are highly influential in the world. More than three-fourths of the world trade in the G20 countries (G20 members). Hence, having any statistics saying that Saudi Arabia is one of the developing counties would seem unfair. Some other sources, however, such as the International Statistical Institute (ISI, Developing Country), eliminate Saudi from the list of developing countries. Likewise, a former US diplomat (Burgess, Quora) claims Saudi Arabia is a semi-developed country. SMEs account for more than 93% of Saudi Arabia's overall business establishments and approximately 24.7% of total employment, which is relatively low compared to many developed countries (Regeringen, 2019) . In comparison, Saudi Arabia's companies contribute about 33% of the national GDP, while some developed countries have the following: US (50%), Spain (57%), France (56%), and Japan (64%), see (UNU World Institute) for more information. As can be seen, Saudi Arabia's GDP share is much lower than the G20 countries. Realizing the significance of SMEs enterprises, the Government of Saudi Arabia has supported several attractive ways of financing SMEs, it is possible to find details of these ways (Zawya) and (The Centennial Fund). Such initiatives are expected to reduce the Kingdom's unemployment rate and provide much-needed support for local economic development. When this happens, Saudi Arabia's Kingdom may be a step closer to being classified as a developed country (Yamin & Al Makram, 2015).

Cloud Computing Within SMEs in Saudi Arabia

Saudi Arabia has many SMEs that are still looking for ways to reduce the cost of running and operating a business effectively. Cloud computing is affordable and easy to acquire. Saudi Arabia, therefore, needs to strengthen its cloud computing industry so that SMEs can benefit from this technology. This would have been a step closer to the ambition of the Kingdom to be on the list of developed countries. It is fair to say that the Saudi Arabian government has

been trying to make the latest technology available to the business community of the country. The effect of cloud computing must not be overlooked, especially in SMEs, otherwise, it is difficult for the industry to keep up with developed countries. Saudi Arabia is a candidate for innovation in cloud computing technology, with a strong technical base. Cloud computing here and it's going to reach private SMEs (Yamin & Al Makram, 2015).

Related Work and Contribution

Several studies have been conducted on cloud computing adoption in Saudi Arabia. However, none of them has studied the benefits and hindrances for cloud adoption for SME of an organization. This research is a brief study to investigate the top benefits and hindrances of cloud computing adoption in Saudi Arabia is only for SMEs in particular. Some of these studies investigated: the factors which influence cloud adoption in Saudi Arabia in general (Alhammadi, Clare, & Alan, 2015) and (Al-Ruithe, Benkhelifa, & Hameed, 2018), examine the cloud computing concerns in the public sectors organisations of Saudi Arabia (Alharbi, Atkins, & Stanier, 2016), factors that will influence the adoption of cloud computing in Saudi healthcare organisations(Noor, 2016), factors that affect the cloud adoption by higher education institutions(Tashkandi & Al-Jabri 2015) and (Alkhater, Wills, & Walters, 2014), the factors that may influence private sector decision regarding adopting cloud computing(Singleton, & Straits, 2009), etc.

This study makes significant contributions to the research body on the adoption of cloud computing for academia. There are a few researches about the factors that have an impact on the adoption of Cloud Computing in Saudi Arabia and especially none in the scope of Saudi SMEs. Therefore, this research's contribution is to study the factors that will hinder the adoption of cloud computing in Saudi SMEs. Furthermore, as they adopt this technology, this research determines the major advantages that these companies achieve. This study is one of Saudi Arabia's first exploratory studies dealing with cloud computing in SMEs.

Research Methodology

This study uses qualitative methods through interviews of SMEs in Saudi Arabia. The interview was the instrument for this study. Some common methods included group discussions, individual interviews, and participation/observations. The major purpose of this study is to determine the common hindrances to cloud computing adoption SMEs in Saudi Arabia. The questionnaire has been conducted in Saudi Arabia on different technology companies in terms of size and geographical location. The researcher faced the problem of obtaining sufficient information through the questionnaire. Resulting in forcing the researcher to perform interviews with Saudi SMEs by telephone. Several SMEs were selected to discuss the hindrances of using this service, which then discussed and encouraged them to adopt it.

The main hindrances often cited for the slow growth include privacy issues, security issue and loss of control.

Cloud Computing Services

Cloud computing offers four categories service models based of delivery models (These are sometimes the cloud computing stack, grounds that they expand over each other): infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS) and FaaS (functions as a service).

Infrastructure-as-a-service (IaaS) Is a basic category of cloud computing services. IaaS is the most basic category of cloud computing services that allows you to rent IT infrastructure (servers or VM's) from a cloud provider on a pay-as-you-go basis. The cloud client doesn't oversee or control the hidden framework yet has power over working frameworks, storage and deployed applications, and may have constrained control of select systems administration segments (for instance, host firewalls). Utilizing the flexibility of IaaS for data storage and processing capacity allows an organization or venture to access figuring foundation in an adaptable and opportune way.

Platform-as-a-service (PaaS) Refers to the supply of an on-request condition for creating, testing, conveying and overseeing programming applications. It is intended to rapidly make web or mobile applications, without worrying over setting up or dealing with the basic framework of servers, stockpiling, system and databases required for advancement. In this category, the cloud clients send their applications and information on stage instruments, including programming tools, having a place with and overseen by the cloud supplier. Application developers working on mobile applications commonly use cloud-based stages to create and dispatch their administrations. The cloud client does not oversee or control the basic cloud foundation, for example, arrange, servers, working frameworks, or capacity, yet has power over the sent applications and maybe over design settings for the application-facilitating condition.

Software as a service (SaaS) Provides on-demand pay per use of application software and is platform-independent is a technique for conveying programming applications over the Internet according to the interest and on a membership basis. SaaS causes you to have and deal with the product application and hidden framework and handle any support (programming redesigns and security fixing). Functions as a service (FaaS) Adds another layer of reflection to PaaS, with the goal that developers are protected from everything in the stack underneath their code. Rather than taking care of the issues of virtual servers, holders, and application runtimes, they upload narrowly functional blocks of code and set them to be activated by a specific occasion. FaaS applications consume no IaaS assets until an occasion happens, reducing pay-per-use fees.

Benefits of Cloud Computing Adoption

To discover and discuss the hindrance to Saudi SMEs using cloud computing in Saudi Arabia, we need to address cloud computing features. Here are the Saudi companies' reasons to adopt cloud computing figure 1.

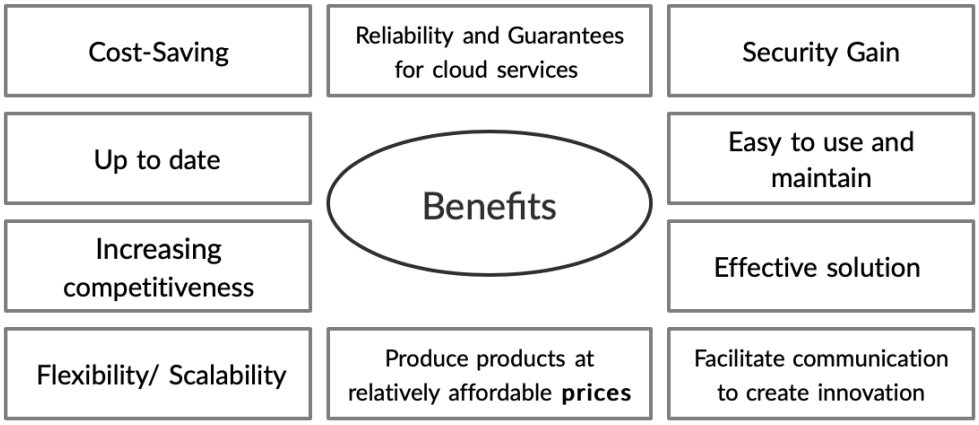

Figure 1. Benefits of Cloud Computing Adoption

Cost-saving

The utilization of cloud computing lessens the cost of capital expenditures, particularly in the early arrangement of business with the goal that this has a significant effect on the Saudi organization. It's an on-demand service that can be gotten to at whatever point the client needs. The utilization of cloud computing drives Saudi Arabian SMEs running without having to pour high funds by utilizing applications that offer services like those utilized in large organizations. Normal computing additionally permits Saudi SMEs to utilize rental services for administrations gave by cloud computing providers. In other cases, cloud computing minimizes the purchase of new software licenses. The utilization of software can be done because Saudi SMEs have been hiring cloud services at a substantially more affordable expense. Also, SMEs in the kingdom of Saudi Arabia benefit from trial or trial facilities, one of which is done through initial promotion. This facility permits Saudi Arabian SMEs to utilize the service without paying ahead of time. This majorly affects their decision to adopt a specific service, however it is likewise valuable as it offers them the chance to pick the most suitable service provider (Mikkonen, Khan, 2016).

Up to date

The companies in the Kingdom of Saudi Arabia are bound to up-to-date services since the provider always update their software offering, including new features as they become accessible. This suggests Saudi Arabian organizations profit by software update free without need to buy them.

Increasing competitiveness

Several SMEs who uncover the nature of the item expanded because of the utilization of cloud computing that has the greatest quality. This effects on expanding the competitiveness of Saudi's organization. Then again, the competitiveness of the organization additionally increments as cloud offers the speed and cost productivity of the organization with the goal that the administration can concentrate on different things that have a major effect on the Saudi organization.

Flexibility/ Scalability

A cloud service is a business that helps SMEs because it provides flexibility, Data and the applications that employees going to need are available everywhere no matter where they are and no matter what device they are using. Saudi SMEs which adopt cloud computing can access their IT services anywhere in the world. The system gives flexibility in executing changes and new advancements without high risk and cost. Further creation and arranging new virtual server cases is quick and simple in the cloud. This implies SMEs in Saudi Arabia stand the upside of profiting by the present and quick changing innovation which is quick assumed control over the world. While clouds likewise rapidly handle the extra weight managed by the organization through the superiority of scalability. This should be possible without managing the reliability of the system being developed by the organization. Contingent upon business development, SMEs in Saudi Arabia can develop as cloud systems are created to suit the sharp increments and decreases in workload.

Reliability and Guarantees for cloud services

Without the adoption of cloud computing, Saudi companies need to break operations and hire technicians when equipment breaks. But with the adoption of cloud computing, they are operating 24 hours in 7 days a week technical support offered from highly trained and experienced infrastructure support workers do their finest, and benefits can reach all of their clients. The company would then be able to work continually and easily, fulfilling its clients and expanding its net revenue. At any rate, this reliability ought to be recognizable through a series of measurable parameters. Also, guarantees for cloud services let Saudi SMEs are more confident in cloud providers, allowing them to use their storage. The presence of cloud can supplant the role of hardware utilized by SMEs business, such as the procurement server itself. While management is done by a provider of cloud services that have reliability so, the course causes the risk of damage to technological infrastructure below. Before finally entrusting their data storage on a particular server, the reliability of cloud services is usually reviewed in advance by SME management in Saudi Arabia. Similar outcomes are introduced by (Mikkonen, Khan, 2016) Because of cloud computing, cloud providers offer guarantees for cloud services and the risk of data unavailability is also limited.

Security Gain

Cloud provides a high level of security, although several services offered, free as in Saas service, so Saudi SMEs assess cloud computing data placement to be attractive. Management acknowledges, at first read carefully the cooperative agreement for the utilization of Iaas service servers, to guarantee the security of corporate data (and including consumers) well. Companies adoption of cloud computing in Saudi Arabia are provided with hardware and knowledge with the current security measures. Cloud computing can be factors that help Saudi companies implementing a new data system with serious risks especially well.

Easy to use and maintain

The ease of using and managing cloud services is the reason for choosing and maintaining cloud users. The implementation of cloud computing companies in Saudi Arabia contributes significantly to maintaining better and faster and easier use. This part, as detailed in the research (Vrsajkovic, 2016) which is one of the most significant determinants of cloud computing acceptance is the usability of this technology for others in association and management.

Effective solution for competence technical skills for supporting ICT facilities

There is a cloud service that assumes a job in giving the ability to follow the status of work that must be done in line with consumers, to the utilization of servers managed by cloud service providers. The support of the cloud as a supporter of ICT facilities on Saudi Arabian’s SMEs varies based on interviews with resource persons. Beginning from as an application to communicate with one another in the internal organization all the more viably, because it can connect messages from different staff that work and yet not all are in the office. Supporting the business needs of SMEs involved in the ICT industry by cloud computing. Moreover, previous research (Widyastuti & Irwansyah, 2018) lined up with adopting the cloud for operations at the beginning is not too difficult for their business runs. Computing helps to provide simple and effective solutions implementing for this technology (Mikkonen, Khan, 2016). Organizational competence can help encourage the usage of ICT applications and resource along the enterprise value chain to implement cloud computing. Inside of technical skills support, infrastructure development for SMEs does not use cloud yet could add to the budgetary need to bring additional experts in the field of development and maintenance. Similar findings are also presented in a study (Mikkonen, Khan, 2016) Cloud computing allows their service providers to work from the device so, Saudi Arabian's SMEs can get effective support. Presenting experts need special fees but companies can avoid that by spending money on training their human resources.

Facilitate communication to create innovation

The communication between company employees, between companies and consumers, even between companies and suppliers can be able to overcome barriers by using cloud computing. As a result of that, encouraging the creation of innovation through the interaction of ideas submitted. Also, the use of clouds in Saudi Arabia helped expedite corporate decision making because many corporate actions come from consumer response. Organizations can get gigantic business opportunities, which can enable them to assemble continuous collaboration and innovation to prosper.

Produce products at relatively affordable prices

SMEs recognize the advantages of cloud computing in their business processes that enable them to offer consumers more affordable products. So, consumers can easily compare product prices in the market (in the current Internet-of-things era). The approach to attract markets with affordable pricing strategies for SMEs is to help Saudi SMEs to produce products at relatively affordable prices by efficient and effective enterprise operations through the use of clouds.

Hindrances of Adoption Cloud Computing

In recent years, technological advancements have presented new tools and systems that have improved how businesses operate. Cloud computing is among one of the technological developments that have affected how companies store information and data. As a result, the adoption of cloud computing services has been widespread across all sectors, from education, healthcare, to business. However, SMEs have been facing numerous challenging in adopting cloud network services and systems. Identifying and combating the barriers to cloud adoption among SMEs in Saudi Arabia can present the businesses with a chance to tap into the opportunities presented by the technology. Although the researcher supports the adoption of this technology in Saudi Arabia, the aim of this study to discuss the top hindrances of adopting cloud computing in Saudi Arabia. SMEs face several internal and external determinants cloud adoption within small businesses by adopting new IT technology. However, the decision-makers in SMEs are influenced by several hindrances when deciding whether or not to adopt cloud computing figure 2.

Privacy Concerns

In Saudi Arabia there have been primary concerns regarding the adoption of cloud computing based on how it phrases its privacy statement. As such, businesses are apprehensive about taking up the technology. The storage of information in cloud systems raises concerns among SMEs owners regarding the data's safety as well as trust concerns. Cyber-attacks and hacking attempts of cloud computing services deter potential clients from embracing cloud

technology. Based on interviews, privacy is the main obstacle to adopting cloud computing technology. Similar outcomes were ranking as a first concern for adopting cloud computing in Saudi public sectors in a previous study (Al-Ruithe, Benkhelifa, & Hameed, 2018).

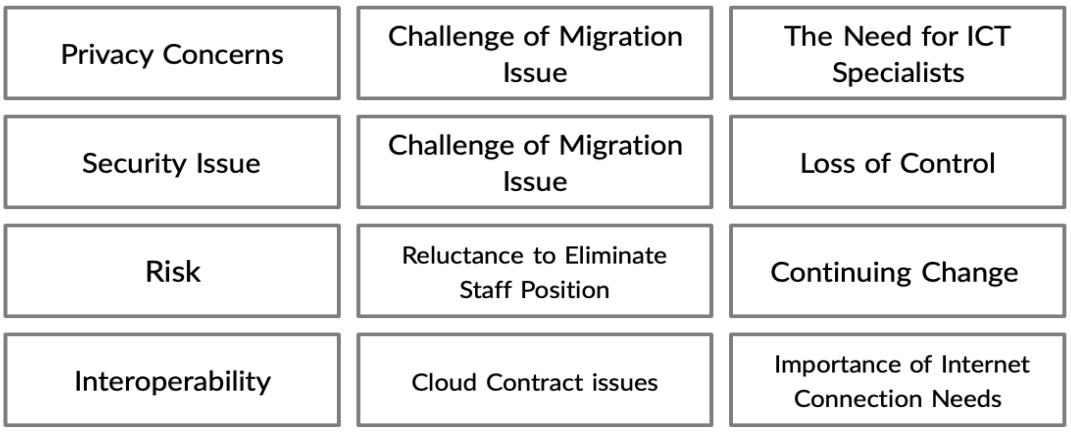

Figure 2. Hindrances of Cloud Computing Adoption

Security Issue

The effective deployment and adoption of cloud computing services for SMEs in the Kingdom of Saudi Arabia hinge on its security. Users do not have autonomous control over the services they use, making them susceptible to hacking attempts and security breaches.

Risk

Using the wrong server infrastructure exposes Saudi individuals and companies to cyber-attacks. Additionally, using cloud computing services also exposes clients to potential hacking attempts (Mikkonen, Khan, 2016). However, it is possible to mitigate attacks by backing up data in foreign servers and using high-level data encryption services. These risks have been adequately discussed in several peer-reviewed articles (Yang and Tate, 2012). Using cloud computing services is over-reliance on the internet. The internet remains an unsafe platform when accessing cloud services and gives ICT teams in different companies a hard time when dealing with security attacks or fingerprint issues. According to (Willcocks, Venters, & Edgar, 2012), the lack of internet connectivity also limits access to data stored in cloud services. Tasks may be delayed due to interruptions when transferring files from the cloud to computers (Shimba, 2010).

Interoperability

One of the main concerns that SMEs in Saudi Arabia have in embracing cloud computing technology is interoperability. The migration to cloud networking services is not a process that happens overnight. It is a lengthy procedure and complications can emerge when existing

data, applications, and infrastructure need to connect with cloud services. Cloud computing providers often battle with understanding what fits the cloud technology criteria and what does not in SMEs. The provision of cloud services through different platforms and models such as Paas and Iaas or private and the public can confuse. Other related challenges that might present interoperability include connectivity, cost, and availability, which are rampant in Saudi Arabia.

Reluctance to Eliminate Staff Positions

During the interview, the researcher found some IT company's managers reason why SMEs might encounter challenges in adopting cloud computing services and systems is the reluctance to eliminate staff positions. The adoption of technology means that SMEs have to make structural changes, which would necessitate the elimination of some employees and their positions. Some SMEs are reluctant to go ahead with the decision due to being skeptical whether the technology is equitable to the loss of employees, in terms of performance. Such businesses choose to remain with their original structures and positions without having to make adjustments.

The Need for ICT Specialists

Saudi Arabian's SMEs posits that the use of cloud computing services requires an individual or company to have access to ICT specialists with in-depth knowledge on ICT matters, as illustrated by IaaS and PaaS services, which are complex. Any slight mistake in the cloud computing system translates losses on the company's end as well as the customer. As such, cloud computing has a potentially adverse effect on business continuity (Mikkonen, Khan, 2016).

Loss of Control

Cloud computing facilities are run by the services providers meaning that Saudi Arabian SMEs do not have control of their data. According to the research results, the management of cloud services admitted to experiencing issues during routine maintenance periods hampering their clients' business operations. For some reason, customers cannot do anything but wait for the issue to be resolved. Thus, it is imperative to use different servers, ensuring that SMEs access their data 24/7 and avoid inconvenience caused by maintenance. These enterprises also suffer from 'lock-in' systems, which make it hard for them to transfer their data from one service provider to another (Stieninger & Nedbal, 2014). However, the system is losing its popularity as more service providers opt to provide open cloud services (Mikkonen, Khan, 2016). 'Lock-in' services prevent a customer from using another service provider without incurring high switching costs. Thus, the 'lock-in' system increases the costs of cloud computing services and acts as a deterrent to potential clients.

Continuing Change

The ICT industry experiences rapid change every day. As such, service providers must adapt to the changes and upgrade the quality of their services. Saudi Arabian SMEs have the role of evaluating different cloud computing services and plan to avert any negative impact that cloud providers can have on their businesses.

Challenge of Migration Issue

Migration to cloud computing services presents several challenges to Saudi Arabian SMEs. The immediate challenge is switching from their current technology to cloud computing services. Saudi's organizations with a large clientele fear to migrate to cloud services could potentially disrupt company activities and potentially cost them, clients. The use of cloud services leads to automation and possibly making some employees redundant. As such, labor issues are likely to arise. Further research posits the lack of effective cloud management systems, costs of new Information and communication technology (ICT) hardware, proper vendor identification hinder the adoption of cloud services (Mikkonen, Khan, 2016).

The Importance of Internet Connection Needs

Cloud services are reliant on the internet. As such, it is a prerequisite when investing in such a system. Internet penetration in Saudi Arabia is low, making the adoption of cloud computing services for SMEs a challenge. Despite the challenges associated with connectivity, the role of broadband infrastructure in cloud computing services cannot be overstated. If more SMEs adopt cloud computing services, the demand for bandwidth is likely to increase, leading to possible bottlenecks as data is transferred to and from the providers' servers. As such, service providers will be required to invest more in symmetrical broadband, which increases with demand. The internet facilitates flexibility at the workplace as an exchange of information, and updating data is made accessible on cloud computing services.

Investor Unawareness of Cloud Computing

Most Saudi investors lack information on how cloud computing services operate. According to the interview done during the research, most SME owners see no need to invest in cloud computing services. Most of the information investors have regarding cloud computing centers on its limitations and challenges. They are made to believe that privacy concerns emanating from government intrusion and third-party access to data could put their businesses at risk. As such, the fears and lack of knowledge investors have watered down the potential gains they believe they can obtain from cloud computing services.

Cloud Contracts

Despite the increased use of cloud computing services and systems across all sectors, the market is still quite immature. As a result, the cloud contracts mostly favor the providers, while the users only gain little benefits. The majority of the users face issues such as invalidation, non-compliance and breach of terms of the cloud contracts. Hence, leading the perceptions that cloud service providers fail to prioritize fairness in the terms and conditions offered during signing cloud contracts. For example, when a user desire to make adjustments to some services and features, the service providers fail to consider some of the needs. Most cloud contracts between service providers and users involve the negotiation of six elements (Khan, 2016).

- ***Provider Liability***

The liability discussion seeks to determine who is accountable between the provider and the user when the cloud computing systems encounter issues. For example, if a power outage results in the loss of data, where does the liability lie? In the past, service providers have made it very clear that accountability is non-negotiable and it falls in the hands of the users. As a result, SMEs have considered this quite unfair since most providers fail to take any responsibility for accidents or issues. However, the liability issue only seems to be prevalent in Saudi Arabia, as in the US, some service providers are liable for breaches of privacy or confidentiality, and data loss. Hence, this leaves SMEs in Saudi Arabia at a disadvantage if they want to adopt cloud computing services.

- ***Service Level Agreements and Availability***

One of the main discussions involving cloud contracts is the ability to facilitate the availability and integrity of applications and data in cloud computing networks and systems. Initially, service providers perceived that cloud data failed to experience any issues, was redundant, and hence needed no disaster recovery. However, new information from interviews has revealed that cloud service providers apply data replication to promote business availability and continuity. The strategy ensures that businesses have two or three backups, which can be useful when one fails. The Service Level Agreements' (SLA) language is considered as vague and an ambiguous process in-cloud mitigation. SLA has been termed as a key barrier to the adoption of cloud computing systems in SMEs in Saudi Arabia. Other related challenges that SMEs need to deal with include doubtful abilities, lack of trust and disaster recovery, and liability cost of breaching terms.

- ***Regulatory Issues***

The regulatory issues emerge from the lack of proper definitions by the majority of cloud providers. Data export and protection are key concerns in the European Union, despite the technology being well developed and defined in the region. Hence, in Saudi Arabia, SMEs

face numerous regulatory complications, which make the adoption process quite hectic and uncertain. Termination of contracts, data confidentiality, and return of data on exit are other problems that cause issues with cloud contracts, which further inhibit the ability of SMEs adopting cloud computing services and systems in Saudi Arabia.

Conclusion

The results found that the most perceived benefits of cloud computing in Saudi Arabia are cost-saving because it reduces expenditures. Furthermore, the adoption of this technology in Saudi SMEs enhances companies' innovations, accelerate decision-making and customer communication. However, the decision-makers in SMEs are influenced by several hindrances when deciding whether or not to adopt cloud computing. SMEs still faced hindrances for the adoption of cloud computing, security concerns, and privacy issues are the most Saudi challenge. In addition, Saudi culture's privacy plays a role in avoiding cloud computing technology. Saudi investors avoid adopting cloud computing services because the most information investors have regarding cloud computing centers on its limitations and challenges. So far, SMEs' successful approaches and projects for developing countries are still addressed so that the negative impacts of these threats can be reduced. Overall, the elimination of the barriers that affected the implementation of cloud computing services in SMEs in Saudi Arabia is necessary. The growth and success of SMEs is a crucial aspect of any economy and it can help Saudi Arabia economy continues its great streak of growth. The adoption of cloud computing amongst SMEs can provide opportunities to tap into the benefits presented by the technology. Based on this research experience, Saudis tended to be concerned with privacy and therefore preferred to use well-known local cloud providers. In future work on cloud computing in Saudi Arabia, privacy issues may need further investigation.

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