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Effects of Cloud Computing in SME's and Changes

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Abstract:

Using Cloud Computing to provide various IT services by SME's, it's something that is growing every day more. ICT tools can improve internal and external communication, and make it faster, subsequently improving trading relationships. Cloud computing promises to improve the reliability and scalability of IT systems, which allows SMEs to focus their limited resources on their core business and strategy. Technology adoption and usage decisions are influenced by many factors. With this research, we'll understand the effects of cloud services to small and medium enterprises (SME's).

Key words: Cloud computing, adopt, SMEs, effect, security

1. INTRODUCTION

Cloud computing does not have a single definition as this concept has changed over time with the advancement of the internet.

NIST (National Institute of Standards and Technology) defines the Cloud Computing as 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. This cloud model is composed of five essential characteristics, three service models, and four deployment models [1].

The network system used in cloud computing is self-serviced, independent of location and device. The remote servers are used to store, process and manage data which are accommodated on the internet without the involvement of personal computers or local servers.

Cloud computing attracted the most interest by companies since its ability to reduce the IT and operational costs. Also stimulates the growth of current businesses with removing the complexity of IT. Cloud service providers charge their clients in a pay-as-you-go model, where, every money spent on IT is used and converted into revenue. This model can be trivial for large enterprises because of their extreme processing needs but for small to medium enterprises, it's a tempting invitation for starting new services and businesses. Today any startup can rent some processing power and storage for creating a new business over web without the risk of buying any hardware or equipment needed before going public. Also they can be sure that their IT service provider will upsize and downsize the amount of virtual machines parallel with processing power for optimizing the cost of service. Moreover, services that have variable usage rates can benefit from this elasticity with expanding and shrinking the storage and processing power and optimize the costs faced with the growth pattern algorithms [2].

Cloud is not only important for enterprises but also have a significant importance for countries and being supported by them

1.1 Concept of cloud computing

Many organizations use cloud computing models to deliver different IT services with the help of internet or interacted IT environment. In a simple way, cloud computing can be characterized as the storing and retrieving information for business purpose over the internet rather than using hard drive of computer [3]. The term cloud is only used as a metaphor to represent internet, as it also focus on an enormous pool of operational resources, for instance, software and hardware which can be accessed by using internet [4]. Different computing services are offered by cloud computing in a commoditized way, and these services are used similar to basic utilities such as water, gas, electricity, etc. Therefore, some research studies perceived cloud computing as a basic utility which is used by organizations on a daily basis to fulfill their basic computing requirements [5].

2.0 USING CLOUD COMPUTING IN SMES

There is a major role of cloud computing in addressing the ineffectiveness and inefficiencies of SMEs. It also contributes in the fundamental competitiveness and growth of SMEs. After the adoption of cloud computing, SMEs can be able to effectively utilize modern technology along with cutting upfront cost [6]. Therefore, this chapter is going to discuss the advantages and disadvantages of cloud computing with regards to SMEs.

2.1 Cloud Computing Advantages

As cloud computing is modern technology, so these services are currently used by different types of companies. It is expected by the IT experts that the growth of cloud computing will be increased in next few years. Cloud computing is highly beneficial for mid-size and large companies but now smaller firms are also adopting and using its benefits to increase their

businesses. Companies are offered benefits through cloud computing as they implement such services and thus will result in development of IT in all types of SMEs along with industries and universities [7].

Some of the advantages are:

- Cost savings
- Reliability
- Scalability & Flexibility
- Maintenance
- No / less licensed software required
- Innovation
- Multiple users in the same time
- Save environment ECO / it's green

2.2 Cloud Computing Disadvantages

There are different potential advantages of cloud computing enterprises which are discussed above but still some factors need to be worried by the company's management. Therefore, cloud computing have some disadvantages for SMEs which are as follow:

- Lack of Control
- Risk
- Network / Internet dependency
- Migration Issue

2.3 Reasons for adopting Cloud Computing

Following are some important reasons observed in this study, which motivates small and medium enterprises to adopt cloud computing services.

Flexibility and scalability in resource utilization and unmatched flexibility is offered to SMEs by cloud computing which allows them to manage their versatility and usage policies. One of the most important benefits of cloud computing is the provision of data storage facilities which motivates SMEs to move on to clouds. In fact, more than half of the population

adopted cloud computing because of this factor. Data storage facilities are flexible on clouds, as SMEs have to pay only for that volume of space which they consume. In this way, they can increase or decrease storage space whenever required to meet the business requirement. Therefore, cloud computing provides a relative advantage to IT business which requires the availability of resources on demand to experience rapid growth. In the case of any maintenance requirement, SMEs do not have to pay any expenses because it is a responsibility of the vendors to update, upgrade and maintain a cloud. Moreover, it enables them to compete in the market by offering a cost reduction structure and advance IT solutions. Most of the SMEs saved a significant amount of their IT expenses after the adoption of cloud computing in very less time. Major cloud providers in the industry offer guarantee for their clouds and risk of data unavailability is also minimized because of cloud computing. In this way, the SMEs have more trust on cloud providers which allows them to use their storage.

SMEs can get effective support anytime because cloud computing enables their service providers to work from devices. Highly specialized IT personnel can offer their services to SMEs from anywhere in the world at reasonable cost. SMEs can spend more on the training of their human resources when other costs are reduced because of cloud computing. In this way, organization performance can be highly improved by following some effective strategies.

These days organizations are trying to reduce paperwork, so it increase the level of IT utilization in all parts of the organization. Therefore, it is important for them to have highly skilled IT specialist with effective knowledge of computing who can help them to maintain and update their work online. The implementation of IT applications associated with cloud computing can help SMEs to choose a better way to increase technical efficiency, which further enable them to compete in the market.

2.3.1 Cloud Computing Security Issues

According security concerns, the level of risk in cloud computing is not much higher. Cloud computing can offer the best solution to small enterprises and ensure a high level of output from cloud investments when a right organization is selected as cloud partners. In last few years, a rapid change in IT environment has increased the trend of cloud adoption in SMEs which can be more efficient with the help of clear understanding in this regard.

Gartner identified seven issues that need to be addressed before enterprises consider switching to the cloud computing model. They are as follows [13]:

- Privileged user access - information transmitted from the client through the Internet poses a certain degree of risk, because of issues of data ownership; enterprises should spend time getting to know their providers and their regulations as much as possible before assigning some trivial applications first to test the water.

- Regulatory compliance - clients are accountable for the security of their solution, as they can choose between providers that allow being audited by 3rd party organizations that check levels of security and providers that don't.

- Data location - depending on contracts, some clients might never know what country or what jurisdiction their data is located

- Data segregation - encrypted information from multiple companies may be stored on the same hard disk, so a mechanism to separate data should be deployed by the provider.

- Recovery - every provider should have a disaster recovery protocol to protect user data.

- Investigative support - if a client suspects faulty activity from the provider, it may not have many legal ways pursue an investigation.

- Long-term viability - refers to the ability to retract a contract and all data if the current provider is bought out by another firm.

Given that not all of the above need to be improved depending on the application at hand, it is still paramount that consensus is reached on the issues regarding standardization.

At the beginning, SMEs have many concerns about security breaches and data losses on a cloud. However, after evolvement of cloud computing and some advanced changes in this technology security concerns have been reduced. Recently, cloud computing is used at a secure network because it offers a high level of security and integrity of user data.

3.0 EFFECT OF CLOUD COMPUTING IN BUSINESS

There are important organizational factors in Cloud Computing adoption that raise concerns to the organizations. They are not only concerned with the value but also with the migration of applications/systems to the Cloud in order to satisfy and meet organizations requirements, legal and compliance issues, SLAs and other costs that organizations faces in making decisions towards Cloud Computing [8].

Cloud Computing has been used in many contexts and has been defined in several different ways. Cloud Computing is more than an advance in technology. It represents transformation that if it's aligned with the corporate strategy it impacts all areas within the entire organization, processes and systems [9].

The IT department is the one who is going to be significantly affected by the adoption of Cloud Computing, they are used to having control over different aspects of organization IT infrastructure operations and management. This department normal also controls such things as IT procurement, IT asset management, security control and billing [10]. Cloud Computing is changing this and redefining the IT

department in the organizations. This is possible through Cloud Computing provision of facilities such as computational power, storage capacities and offers these as utility services.

The organizational changes are imminent with the adoption of Cloud Computing solutions, governance and risk management of IT resources in the Cloud environment is another challenge facing organizations. For Cloud Computing, the main concerns to organizations in relation to governance and enterprise risk management is how the organization can identify and implement appropriate organizational structures, processes, and controls to ensure that there are effective information security governance, risk management, and compliance. This requires organizations need to ensure that there is proper mechanisms and processes across the information supply chain that cover Cloud providers, customers, and other stakeholders, and supporting third parties to vendors.

At its highest level of impact, Cloud Computing is conducting to a new era where enterprises will become virtual. Organizations will manage complex ecosystems of Cloud providers, IT suppliers, and business process outsourcers as well as a host of other parties, both internal and external. The cost benefits are the main key for executives but executives today are also seeing the Cloud as a way to gain access to innovative, with the potential to transform the business [11]. Cloud solutions can enhance the importance of delivering effective customer service, and the quality of the customer experience as a differentiator and competitive advantage.

For new organizations migration of applications is not a challenge as the organization starts by using Cloud Computing from the start, but is not the same, with businesses which are already established. For these companies, they have been developed and depend on a number of different technologies, owned by different departments with complex dependencies

between the systems [12]. For organizations, migrating systems and applications to Cloud Computing represent a challenge.

Major positive effect of the cloud to enterprises is allowing them to grow their IT department with the size of their businesses and removing the need for creating or enlarging IT department for creating a service. Also, this reduces the importance of predicting the usage scenarios at the launch of products.

Currently, cloud computing market is dominated by a few big players like Amazon, Google, Microsoft and Rackspace. In near future, many companies are planning to open their public cloud computing centers. Currently whole over the world, massive amounts of data centers from many different companies are under construction and in near future, these data centers will provide service to millions of users. This is another reason to be positive about the cost of cloud computing thus it's a well-known fact that more mean better prices and service.

In resume, Cloud Computing means a change for organizations in special for companies that are already established, these means changes to the organization culture, politics and organization structure. It also includes changes in work procedures and process that have developed over time. It also impacts governance and risk management, organization politics, ownership and dependencies.

3.1 Weighing the Benefits of Private Cloud against the Costs

In figure 1 is mapped a view of how public and private clouds measure up. The vertical axis measures the public cloud cost advantage. From the prior analysis we know public cloud has inherent economic advantages that will partially depend on customer size, so the bubbles vertical position is dependent on the size of the server installed base. The horizontal axis represents the organization's preference for private cloud. The

size of the circles reflects the total server installed base of companies of each type. The bottom-right quadrant thus represents the most attractive areas for private clouds (relatively low cost premium, high preference) [14].

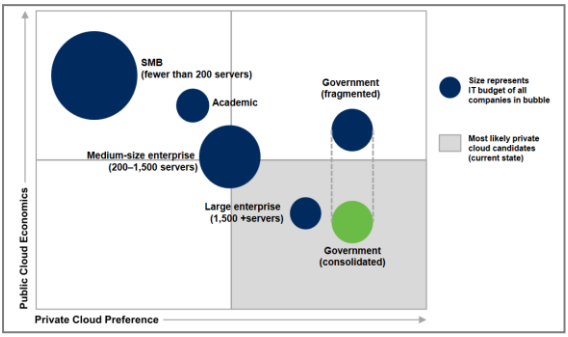

Figure 1. Private cloud – Benefits and costs [14]

3.2 How cloud is changing small and medium businesses

Cloud computing is growing rapidly and adoption is global. Results from the recent Amdocs SMB survey, conducted by Coleman Parkes Research – a business to business market research company – found on average 57 percent of SMBs around the world are subscribing to cloud-based services [15]. On a macro level it appears as though some countries have higher consumption than others, which is the case. A closer look reveals that high consumption is mainly being driven by entry level cloud services, such as storage and backup services (e.g. OneDrive and DropBox).

Cloud service providers need to start talking to their clients and offer consultancy services about cloud and expanding their subscriptions. SMEs that don't use cloud need education on the benefits that cloud provide and on the positive impact cloud services could have on their business. According to Amdocs SMB survey [15], cloud computing is growing rapidly and adoption is global. Based on the results from this research with more than 1300 interviews including SMB, manufacturing, communications, media, gas sector etc. around

the world, in the question: if their business use any cloud services, we see quite surprising markets. However, highest is in Brasil (77%), Indonesia (68%) and the USA (64%) were Germany and Russia are the lowest from mature markets (see Figure 2). But usage is not driven by any particular industry; the highest consuming is found in media and professional services sector but not far behind engineering, energy & oil gas. This immediately signals that service providers need sales and communication strategy focusing on individual countries rather than whole areas; as the uptake rates change and the approaches will need to be different.

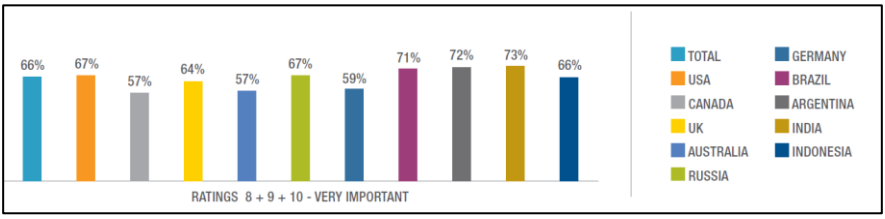

Figure 2. Does Your Business currently use any cloud-based services? [15]

Looking closer and deeply on SMEs with highest consumption like Brazil and comparing with the lowest consumer like Germany or Russia, find out that may not necessarily mean SMEs are wittier with cloud services or great investors. In Brazil, SMEs mostly use to subscribe entry level cloud services like storage and backup (OneDrive, Dropbox etc.) when compared to Germany as lowest overall consumer, SMBs that invest in cloud services are in a wider range of paid service like Office software, communications, computer networks etc.

In big markets cloud adoption seems to be a strategic decision and in a downward economy strategy is key to looking forward.

SMEs that currently subscribe to cloud computing, are achieving the benefits the cloud has brought to their business. Most of SMEs in US, Russia, India and Indonesia rated the importance to their business [15].

This clearly highlights that cloud based services are seen as important therefore why the investment has been made, even if only on smallest possible entry level applications, such as in Brazil. This is the same case across all areas except for professional services, retail & distribution, and energy, oil, gas & utilities.

In the end and that is much important, the cloud is ideal for breaking down barriers, both internally between departments or individual staff members or externally, between customers and customer service employees, for example. When obstacles are removed, companies lose the friction points that used to slow them down. Automated supply chains and dashboards that display real-time data are just two examples of cloud-enabled tools that are on the rise and helping to make companies increasingly frictionless.

3.3 Adoption of cloud computing will continue to grow rapidly

It's clear that cloud computing is anything but a flash in the pan. In fact, cloud computing is poised for dramatic growth even on top of the incredible gains it has experienced over the past few years.

Today, almost a quarter of companies already use cloud-based applications, and more than 10 percent plan to expand their use of cloud computing. When measured in dollars, the growth is even more striking: In 2008, revenue from worldwide cloud services was $46.4 billion; in 2013 was around $150 billion but Gartner analysts predict that cloud services will grow to $244 billion by 2017, representing a compound annual growth rate of 17.1% from 2013 [16].

Cloud computing is well on its way to becoming the preferred technology deployment model for companies around the globe.

In many ways, the cloud is already global—after all, companies all over the world are using cloud-based tools every

day. However, as cloud services continue to evolve, they will allow an ever-greater degree of communication and collaboration across organizations of all sizes. In practice, this will mean more systems will be able to operate seamlessly across multiple locations by providing local capabilities like multi-currency financial tools and multi-language interfaces, among many others.

CONCLUSION

Cloud computing is considered as an important and interesting technology in SMEs. Most of SMEs are attracted towards use of cloud services to run their business operation, and trying to reduce some minor drawbacks of clouds by implementing adequate plans. SMEs can enjoy a lot of benefits when they shift to the clouds. One of such benefits is that they can save on costs. Cloud computing also allows SMEs to use high quality software which they cannot buy themselves.

However, there was lack of awareness among SMEs about cloud computing which became major reason for the late adoption of this technology. SMEs current users of cloud computing are well aware of its benefits as it has made them more competent and successful in market. Such as, SMEs have more control over their IT operation and expenditure because of cloud mobility and scalability. The major reason behind the adoption was that the SMEs were not satisfied with their existing infrastructure as it does not meet their business expectation. Implementation of cloud computing can be more easy for them after conducting a brief analysis of its advantage.

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