



Effectiveness of Cloud Computing in the Context of Data Storage and Management in Organizations and SMEs

Salim Ahmad¹, Uba Yusuf Magaji², Sanjeev Kumar³ and S. P. Singh⁴

¹Department of Information Technology, Federal University Dutse - Jigawa State, Nigeria.

Research Scholar, Department of Information Technology, Nims University Rajasthan – Jaipur, India

²School of Computer Application, Lovely Professional University,

Jalandhar-Delhi G.T.Road (NH-1), Phagwara – Punjab, India.

³Department of Information Technology, Nims University Rajasthan – Jaipur, India.

⁴Department of Computer Engineering, Nims University Rajasthan – Jaipur, India.

ABSTRACT

Cloud computing is now very attractive and important technology for various organizations and SMEs due to its effectiveness with regards to Data Storage and Management. This is the reason why even the SMEs are not left out in making the advantages of this new technology. Cloud computing technology has an important effect on the organizations and SMEs business prospect. It is a tremendous alternative for organizations with low capital. Since it requires little or low investment cost that boost their business operations without having to spend much in acquiring computers and other peripheral devices. Organizations and SMEs make use of cloud technology in executing several business functions. Cloud Storage and Management is a perfect way of data storage and management in which the data is stored in logical pools and manage by appropriate personnel. The paper investigates the effectiveness of the cloud computing technology with emphasis to supporting organization's business strategy in order to stay competitive in the market and improving business performance that leads to operational excellence. Research design methodology approach is implemented in this paper as descriptive statistics is used in analyzing the data collected in investigating the effectiveness of cloud computing in the context of data storage and management in Organizations and SMEs. The instrument for data collection used in the research was a Survey method of questionnaire and Interviews.

Keywords: Cloud Computing, effectiveness of cloud, Data Storage and Management and SMEs

I. Introduction

Information and Communication Technology (ICT) is significant aspect in organizations and SMEs. ICT combines the technologies, people, data, and business processes for fostering the use of IT in order to increase organizational performance (Barbara C. McNurlin, 2009). Data were stored in local computers, which in turn courses data loss and unwanted threats to files. Therefore, organizations needed a systematized machinery working together to collect, process, stores and distribute information. Several organizations use Computer-Based System in storing and managing information and data. But, with the emergence of cloud computing organization seems to migrate to it for efficient data storage which will be access everywhere around the globe. In order for organizations to make full use of this technology in managing their stored data cloud based applications are needed. Technology developments like cloud computing, Internet of Things and Big Data are all changing the method of processing data, storing data, and data usage and management in organizations. It is therefore necessary to have an accomplished organization storage architects and management.



Cloud storage is a perfect way of data storage in which the data is stored in logical pools, the physical storage distances multiple servers and the physical location is usually owned and managed by a particular hosting company. These cloud storage providers are responsible for protecting the data, making the data accessible and manageable, and also protect the physical location as well as smooth running of cloud architecture. Organizations, SMEs and users purchase or rent storage capacity from the providers in order to store data and application.

Cloud storage services are retrieved over a co-located cloud computer service, a web service application programming interface (API) or through applications that operate the API, like the cloud desktop storage, a cloud storage gateway and Web-based content management systems.

SMEs are generally enterprises that employ not more than 250 employees; the classification of SMEs varies from country to country, and/or region (Salim et al, 2016). For instance, Asian region, European regions and African regions may have different definition regarding on what basis it may be defined.

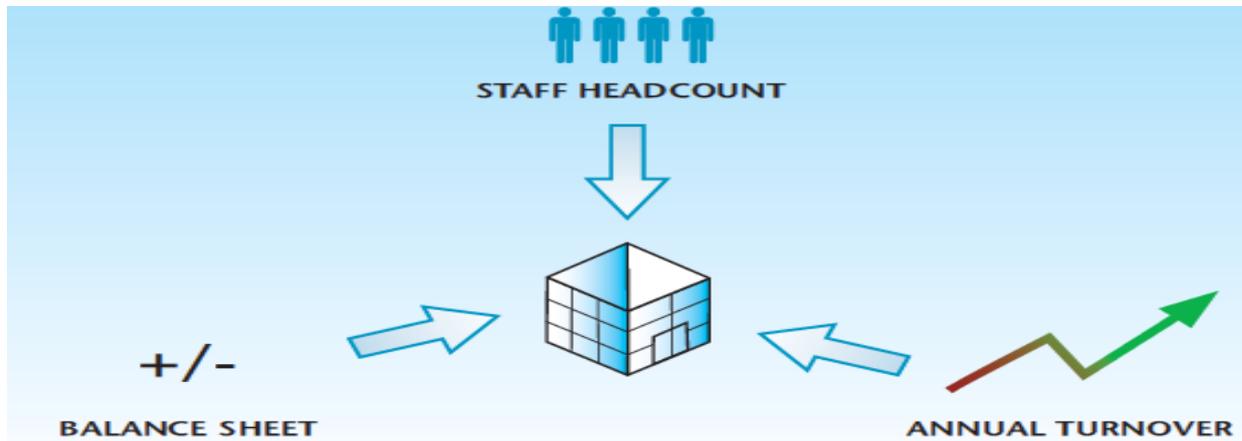
II. Related Literature Review

Cloud storage is one of the most significant services of cloud computing that supports cloud user's opportunity to have an access of restricted resources and increase data storage without advancing the computing devices. In order to ensure the security and privacy of cloud users, data are continually outsourced in an encoded form. (Amar Ramesh and Rajesh Ingle, 2015), Cloud computing model is being used for its low investment cost. Currently, even mobile/smart phone users store data in the Cloud. User's data stored at Cloud necessities to be secure against possible intruders as well as cloud service provider. There is risk to the data in transit and data at cloud due to diverse probable attacks. Organizations and SMEs are moving important information and data to the Cloud that raises disquiet over security of data been stored.

SME are considered as most important element in many countries' economy, because the businesses are quickly responding to the dynamic business environment and easily regulated to Information System. Thus, IS also play an important role in supporting the functions of enterprises? In most cases, SMEs are defined based on the employment, assets, or a combination of both (VadimKotelnikov, 2007). Others specify it by total investment, annual turnover and/ or number of employees (staff head count) and annual balanced sheet. Therefore, the most common basis for definition is employment, which many sources define an SME to have a cut-off range of 0-250 employees (MeghanaAyyagari, 2005). In order to fully understand the definition of SMEs the figure below shows the staff headcount (Number of employee), Balance sheet total and the annual turnover.



Figure 1: SME Definition.



Source: Adopted From, (Salim et al, 2016)

Cloud computing is an innovative technology that changes the way enterprise hardware and software are designed and procured (NareshVurukonda, B. ThirumalaRao, 2016). Due to cloud ease of services organizations is moving data and application software to cloud data centers. The cloud storage is the advancement of the cloud computing system, which is mainly established on data storage and management (CaiZehua et al, 2013) The Cloud Storage signifies the development of networking storage in the near future. In the cloud computing method, the technology of virtualization extends the IT architecture, creating all the system virtualized, comprising servers, storages, networks, applications etc. It comprehended the unified management, as well as monitoring and controlling of all the resources, which increase the flexibility of the overall system and take full advantage of its efficiency. However, virtualization is a main technology to resolve the issue of unified management of devices and to comprehend the flexibility of resource scheduling. In the storage management level, the cloud storage model can incorporate all types of storage devices by the virtualized storage pool, and offer the user of the storage space with a unified, transparent, well compressed interface.

According to IBM Software Thought Leadership White Paper, Cloud-based methods bring about different, scalable application delivery service model to the market (KalyaniKadam et al, 2013). Cloud is a current era of computing technology which has prospectively brought an abundant benefits and effectiveness to information and Communication Technology (ICT) and ICT supported business.

III. Benefits Associated with the Cloud Computing in Data Storage

- ✓ Organizations need to only pay for the storage they actually use, usually an average of usage. This does not mean that cloud storage is less expensive, only that it incurs operating expenses rather than capital expenses.
- ✓ Businesses using cloud storage can cut their energy consumption by up to 70% making them a more affordable business
- ✓ Organizations can choose between off-premises and on-premises cloud storage options, or a combination of the both options, depending on relevant decision standards that is complementary to initial direct cost savings potential.



- ✓ Storage availability and data protection is basic to object storage architecture, so depending on the application, the additional technology, and effort and cost to add availability and protection can be eliminated.
- ✓ Storage maintenance responsibilities, such as purchasing additional storage capacity, are mostly the responsibility of a service provider not the organization.
- ✓ Cloud storage provides users with immediate access to a broad range of resources and applications hosted in the infrastructure of another organization via a web service interface.
- ✓ Cloud storage can be used as natural disaster proof backup, as normally there are 2 or 3 different backup servers located in different places around the globe.
- ✓ Cloud storage can be mapped as a local drive with the WebDAV protocol. It can function as a central file server for organizations with multiple office locations.

IV. Methodology

The methodology and approach that is implemented in this paper is descriptive statistics that is used in answering the research questions. In order to understand the purpose of the research study, some research questions are formulated as follows: To determine the level of cloud computing effectiveness in organization and SMEs, what are the benefits associated with the cloud computing in the context of data storage and management in SMEs?, how does cloud storage help in improving business performance by organizations and SMEs.

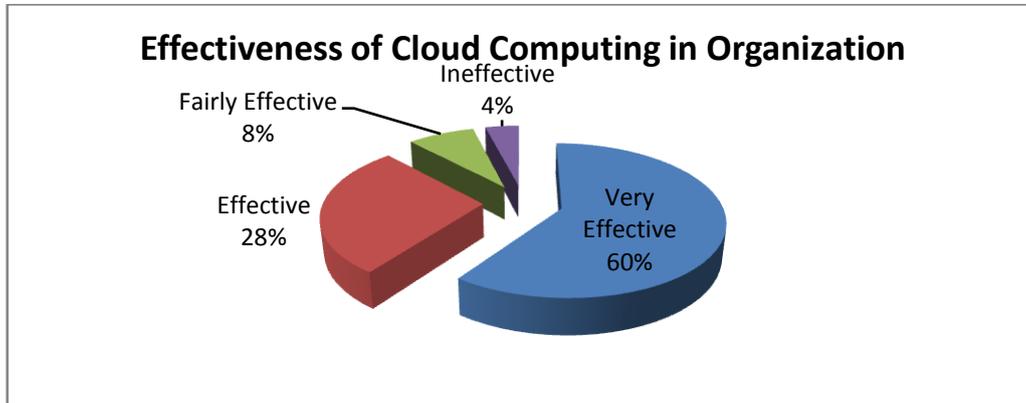
V. Data Presentation

This research study is an empirical research which investigates the effectiveness of cloud computing in the context of data storage and management in Organizations and SMEs. The instrument for data collection used in the research was a Survey Questionnaire and Interviews. The questionnaires were administered to organizations and SMEs that are using cloud computing technologies in storing and managing their data. Microsoft Excel was used for data entry and analysis of the data obtained from the responses received, while frequency, mean and percentage distributions were the descriptive techniques used.

VI. Findings and Results

The findings and results of the research are discussed. The figure below shows the effectiveness of cloud computing in organizations based on the response from the survey and it shows that its usage is very effective in storing and managing data.

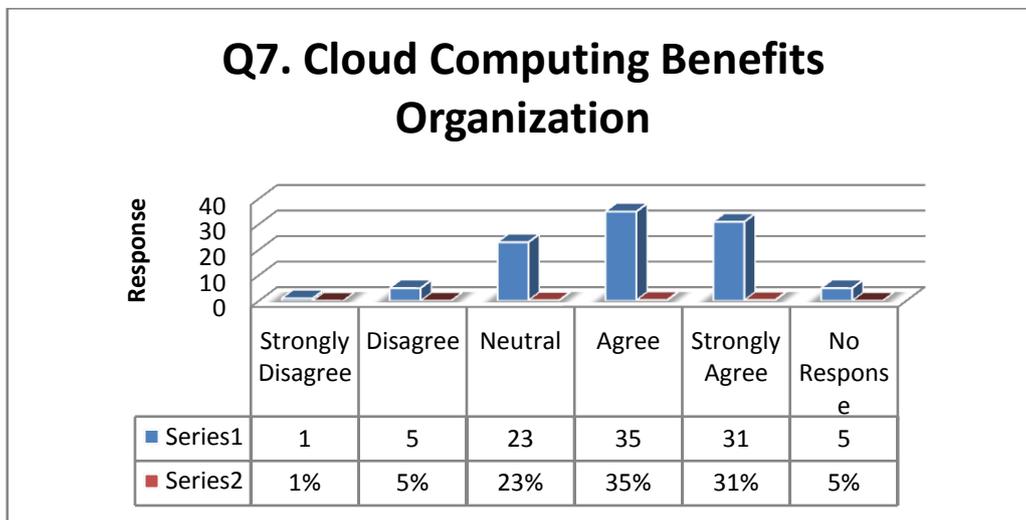
Figure 2: Response on Effectiveness of Cloud Computing



Source: Questionnaire Survey Result Sheet

Results from the Q7 response below shows that, there were 35% of the respondents who had agree that cloud computing benefits their organization and 31% of the respondents strongly agreed with the claim according study and also 23% of the respondents are Neutral, 1% strongly disagree while only 5% disagrees. With these findings, the researcher may conclude the findings by saying cloud to benefits because of the 35% and 31% of those who Agrees and Strongly Agree.

Figure 3: Response on Cloud Computing Benefits

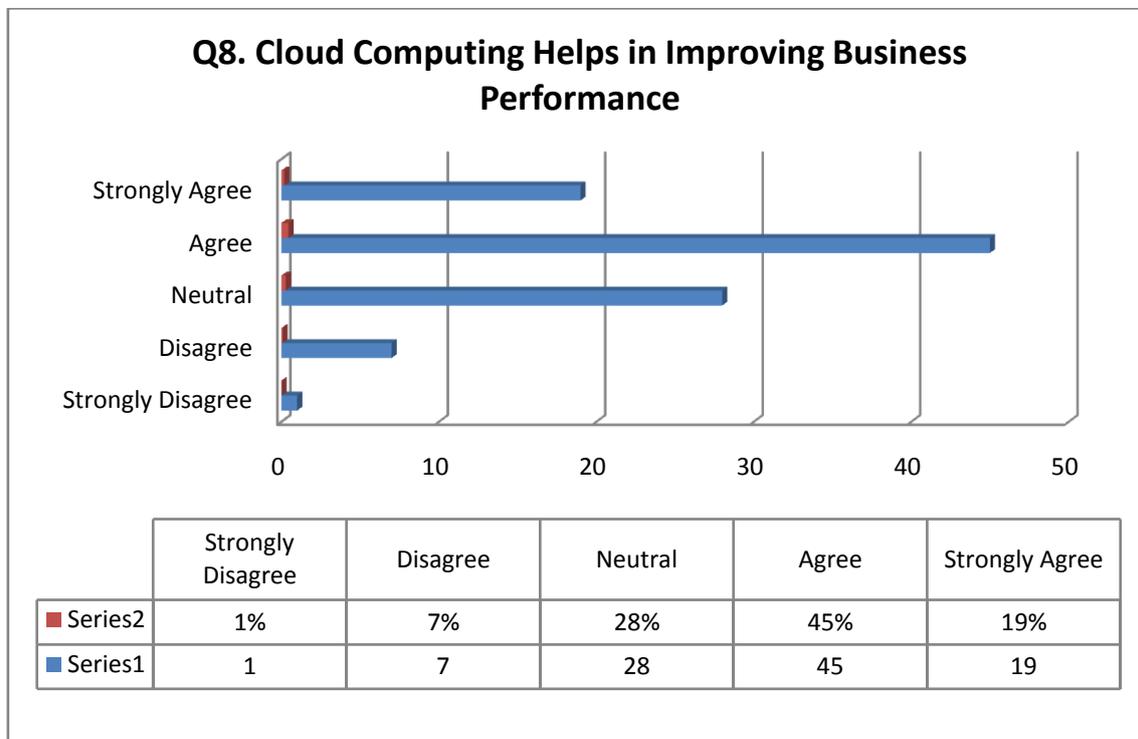


Source: Questionnaire Survey Result Sheet

Also, with the below findings, the researcher concluded that cloud storage helps in improving business performance in organizations and SMEs due to the fact that 45% and 19% of respondents agree and Strongly Agree.



Figure 4: Improving Business Performance



Source: Questionnaire Survey Result Sheet

VII. CONCLUSION

In conclusion, there is absolutely no doubt about the benefits provided by the use of cloud computing as a very effective tool to organizations and SMEs in gaining competitive advantage, based on the findings it shows that organization uses cloud computing to save capital as well as operational costs, move capital expenditures to operational expenditures and improved flexibility. In the context of Data Storage and Management with regards to organization and SMEs, cloud storage is in fact a representation that define web as an internet where computing has been preinstalled and exist as a service; like information, infrastructure, applications, storage and processing power exist on the web that is prepared to be shared to the users, cloud computing also uses Pay-per-Use-On-Demand approach that can simply access shared IT resources through the Internet.

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