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# A Review of the Scope of Cloud Computing In Education

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**ABSTRACT:** With the capability of using virtualized resources as a service, over the Internet, and having dynamic scalability, cloud computing has started to gain momentum across many types of enterprises. It is probably going to have a big effect on the future of schooling. Cloud computing, hence, offers a great opportunity for learning institutions, especially the less privileged ones, to efficiently manage their information system without having to spend additional money purchasing more computers and networking equipment. The universities make use of the cloud-based software provided by the service providers to help the completion of commercial duties as well as academic duties by their users and students respectively. The essay below will discuss some of the benefits that will accrue from cloud computing infrastructure in the educational sector, and more specifically in colleges where the usage of computers is greater.

**KEYWORDS:** Cloud Computing, Cloud Service, Education.

## I. INTRODUCTION

Cloud computing is a technology innovation that describes the sharing of information, consolidation of hardware, and software concepts, and standardizing infrastructure resources in a single location. There are numerous benefits to this idea for society, technology, and the economy. Cloud computing has been widely adopted by both government and industry sectors. The information system success model shows that the adoption of cloud computing can profit greatly from IT innovation, which can also benefit an individual or even an organization.

Nowadays, "cloud"-based platforms, like Microsoft and Google, offer educational institutions free services such as email, contact lists, calendars, document storage, document creation with sharing capabilities, website creation for faculty and staff, and many others. (Sclater, 2009). He conducted a study of various businesses from various industries that had developed custom cloud applications, and he examined the three key areas of security, integration, and time-to-value where cloud computing had an impact on their operations. The kind and volume of resources that users access and manage varies throughout these approaches. This allows for things like data security, storage, and backup copies; great scalability of applications; and service availability everywhere, anytime, by connecting to the cloud and making use of "hidden" resources. "The financial savings and resource management perspectives can both be used to evaluate the potential benefits of adopting cloud computing."

Nearly every industry has seen significant change because of technological advancement, and with the advent of Industry 4.0, industries are now moving more quickly to meet their aims and objectives. Although cloud computing is a new form of computing, per se, it is not new technology on the Internet. They are utilizing cloud computing whether they are using Picasa for photo organization, It could be Bing for web searches, or Google for email. Cloud computing is a model of delivering computing services in which resources and services are provided over the internet, 'in the cloud,' instead of on a local server, node, or personal device. The term 'cloud' refers to the internet-based network of interconnected servers, networks, connections, applications, and storage. The use of cloud computing is resource-based.

## II. PREVIOUS STUDIES

To this end, much of the previous research work related to cloud computing has been centered on new technologies, overall discussions on cloud technology, differentiation between closely related technologies, needs, and expectations from these evolving environments soon, and security-related issues. A cloud-scale intelligent infrastructure and technological research conducted in HP labs are highlighted by Banerjee (2009), but, facets of our everyday lives are



already touched by smart environments in the form of utility computing, smart data centers, pervasive computing, automation, virtualization, and intelligent networks. (Klein & Kaefer, 2008).

Aymerich, Fenu, and Sursis (2008) Contrast the basic features of cloud computing with the earlier "Grid Computing" technology. They announced new products that will replace many types of computational resources in use today. From that perspective, they also believe that grid computing will significantly influence how cloud services will be delivered. Software as a Service is considered another innovation for the network society because it is intended to replace the current system architecture of the organizations, and because it is the service offering of Internet service providers and carrier businesses. (Hirata et al., 2008). In the SaaS paradigm of cloud computing, hardware, and software are offered by service providers with whom one interacts through an online portal. Such services may include.

### III. LITERATURE REVIEW

**Alshuwaier, F. A., Alshwaier, A. A., & Areshey, A. M. (2012). "Effective Use of Cloud Computing Services in Education", *Journal of Next Generation Information Technology*, 3(4)**

Describe the distributed computing model and discuss how academic institutions might work together with it. Distributed computing is seen as a common-sense approach that allows a sensible and efficient organization to log in to a suitable pool of processing resources that can be provided and delivered with a minimum of formalities and expert cooperative correspondence. However, many associations have an unanticipated understanding of distributed computing. In this analysis, we briefly look at the distributed computing applications and present some progress as well as completed educational and research items.

**Faisal A Alshuwaier, Abdullah A Alshwaier, Ali M Areshey,(2012) "Applications Of Cloud Computing In Education", "8th International Conference on Computing and Networking Technology (INC, ICCIS, and ICMIC), IEEE**

A summary of distributed computing looks at how it might be used to facilitate collaboration among academic institutions. Distributed computing is seen as the standard paradigm that allows an acceptable and productive organization to log in to a suitable pool of registered assets that can be provided and delivered with minimal effort and expert cooperative interaction. Nonetheless, a lot of associations have an unusual understanding of distributed computing. In this paper, we provide a brief overview of distributed computing applications, as well as some current and accomplished educational and research topics.

**Krelja Kurelovic, E., Rako, S., & Tomljanovic, J. (2013, May). Cloud computing in education and student's needs. In *Information & Communication Technology Electronics & Microelectronics (MIPRO), 2013 36th International Convention on* (pp. 726-731). IEEE.**

Due to the many advantages that distributed computing offers its users, its application is growing daily. This growth is fuelled by the increasing use of mobile devices such as PCs, tablets, and cell phones, as well as the increased accessibility of portable Internet connections. Although distributed computing is useful for teaching, it implies that these services must be acknowledged by all parties involved in the educational process. Consequently, the purpose of this article is to investigate if our students need apps and services in the "cloud" (SaaS), how much they use them, and what kinds of uses and services are most popular.

**Nor Hazreeni Hamzah, Maziah Mahmud, Shamsunarnie Mohamed Zukri, Wan Fairos Wan Yaacob and Jusoh Jacob (2017), "The Awareness and Challenges of Cloud Computing Adoption on Tertiary Education in Malaysia", *Journal of Physics: Conf. Series* 892 (2017) 012014, *Journal of Physics Conference Series* 892(1):012014**

The acceptance of distributed computing and mindfulness among teachers is acknowledged in the paper. It also tries to determine the type of cloud services and how frequently university workers choose them. The analysis suggests that the challenges faced by academics in adopting this innovation can be divided into two categories: the first category is security and reliance, and the second category is customer control and attitude. The benefits that university staff receive from using cloud administrations are also mentioned in the paper. Teachers at the college found ease of use, accessibility, lack of time constraints, and high performance to be the primary factors influencing their choice of cloud services.

#### IV. OBJECTIVE

- i. To determine students' level of awareness regarding cloud computing.
- ii. To determine why cloud services are being used
- iii. To determine which cloud services are most popular among students.
- iv. To investigate how frequently students use cloud services
- v. To ascertain the elements influencing students' use of cloud services.

#### V. RESEARCH METHODOLOGY

A descriptive study was conducted to meet the objectives. A reputable Mumbai institute's management students were used as the main source for a questionnaire-based survey. 80 is the sample size used for convenient sampling. To investigate the level of knowledge of cloud services, their use, frequency of use, and variables influencing their use, among other things, responses were gathered. To obtain a complete analysis, the responses were grouped based on a range of demographic factors.

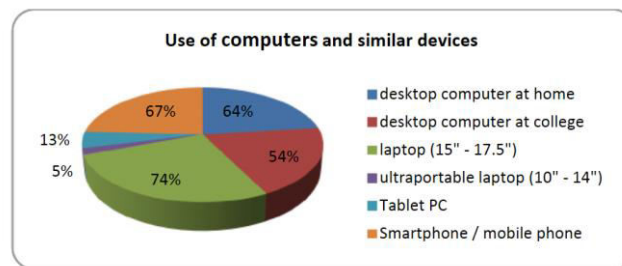


Figure 1. Use of computers and devices for accessing the Internet and data, distribution of answers

##### Goal 1: Determine how familiar you are with cloud services

The results of the survey indicate that 91% of the population (80 respondents) is aware of cloud services, while just 8% (7 respondents) are unsure of their familiarity with them and 1% (1 respondent) is unaware of them.

##### Goal 2: Determine the reason for using a cloud service

Results of the survey indicate that, in order, 66% of respondents use storing services, 70% use sharing services, 48% use calendar services, 60% use software and applications, and 96% use social networking services. Additionally, the primary uses of these services are for the storage and sharing of documents, files, videos, and photos, with respective consumption percentages of 93%, 66%, 96%, and 80%.

##### Goal 3: Identify the most widely used cloud service

According to the survey results, WhatsApp is the most widely used service among the respondents, since all of them reported using it. Gmail came in second with 97% of respondents using the service, then WhatsApp with 96%, and then Linked, Instagram, and Facebook with 96% of respondents using the service. Thus, WhatsApp, Gmail, LinkedIn, Instagram, and Facebook ranked as the top 5 services that the respondents now use. Google Drive and YouTube were the most popular apps, with 93% of respondents using them. Other popular apps included Google Docs, Snapchat, Office 365, Twitter, Dropbox, and Yahoo, with usage percentages of 89%, 70%, 60%, 54%, 49%, and 46%, respectively.

##### Goal 4: Determine how frequently cloud services are used

Most of the population, or 53% of 46 respondents, uses these services only a few times per hour, according to survey results. 25% of respondents (22 respondents) use these services once every minute, 18% of respondents (16 respondents) use them a few times each day, and 5% of respondents (4 respondents) use them a few times per month.

##### Goal 5: Identify the variable affecting cloud service utilization

According to survey results, 93% of respondents use cloud services because they make file sharing simple. Other reasons for adopting cloud services include increased collaboration, global scale, access on the go, unlimited storage, and 75%, 61%, 48%, and 46% of respondents, respectively. Moreover, among the issues that the respondents have,



security ranks first with 71% of the vote, followed by connectivity, trust, and loss of control, which each receives 43%, 34%, and 25% of the vote, respectively. Furthermore, just 13% of respondents said they had no worries about using these services.

## VI. CONCLUSION

Knowing and comprehending the influencing aspects during the adoption process may help to lessen the problems with cloud computing adoption in universities. For instance, careful preparation and carrying out an adoption analysis of cloud computing based on the criteria found will assist the company in selecting an appropriate cloud provider as well as deployment and service models. Additionally, by comprehending the resource's capabilities, including knowledge and IT expertise, budget, and financial level, completing a cost-benefit analysis, and creating internal cloud governance, unsustainability operational costs and data privacy issues may also be minimized.

Cloud computing is a new approach to delivering IT services that involves renting resources that are situated in the "cloud"; it is thought to be the path that the IT industry will take going forward. A growing number of regular people are using the internet, and more work is being done there. Activities such as writing and editing documents, collaborating, checking emails and other forms of communication, watching movies and videos, listening to music, and even storing personal documents and photos online are all done online. Since all applications and services can be accessed through a web browser, there is no need for software installation, licensing, upgrading, or maintenance fees.

The industrial trends that the leaders of tomorrow need to be aware of are a result of Industrial Revolution 4.0 and other new technological breakthroughs. One such trend is the use of cloud services, which management students are familiar with and have a reasonable understanding of. These services are accepted and used frequently for a variety of routine reasons, with most users utilizing them between a few and many times per hour. Among the most popular cloud services currently in use are Facebook, Instagram, LinkedIn, Gmail, WhatsApp, and Instagram. The primary uses of these services are for the transfer of documents, files, videos, and photos.

One of the biggest benefits of cloud computing for university IT professionals is that it relieves them of the maintenance burden within the institution. Cloud computing offers instantaneous worldwide platforms, does away with H/S capacities and licensing, lowers costs, and simplifies scaling. By using cloud network redundancy, disaster recovery risks and associated expenses are eliminated. To enhance IT features, new tools and apps are always being developed.

Of course, there are drawbacks as well. Most of the IT services that clients require are not yet provided by the cloud computing services that are required. Application offerings, SLAs, and—above all—security concerns continue to present challenges and limitations. For their respective technological levels, not every cloud provider is the same.

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