Cloud Computing Based Computing System for Women's Higher Education in Isolated Areas

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Cloud Computing Based Computing System for Women's Higher Education in Isolated Areas

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Abstract

A new chapter in information technology is opened by cloud computing in computer science and engineering education. Understanding the importance of using cloud computing (CC) in institutions of higher learning is the aim of this research. This analysis shows some of the benefits that cloud computing can provide to higher education, assesses some of the most significant challenges that academics may encounter as a result of its implementation, and suggests some initial steps toward its adoption while mitigating the risks associated. Enterprise apps have migrated in large numbers to the cloud in recent years. One of the challenges posed by cloud applications is the challenge of allocating resources to the application to ensure a service level along dimensions like performance, availability, and dependability. To do this, a system based on the infrastructure of governmental bodies, non-governmental organisations (NGOs), academic institutions, and other providers of social services has been established. The results of this analysis demonstrate that it is possible to use a few variables, including administrative bodies and governments, internal stakeholders, cloud suppliers, firm attributes, socio-political changes, IT framework, and others, to understand how CC adoption methodologies are used in higher education institutions. In addition to providing insight into how cloud providers, advisers, governments, and academics see various market demands and how they respond to

these expectations while expanding services provided by CC in higher education institutions, this analysis opens opportunities for future research. The implications for practice can aid decision-makers in utilizing CC services legally.

Keywords: Cloud Computing, Women's Education, Higher Education, Network Management, Enterprise Resource Planning

1. Introduction

A lot of colleges, institutions, and businesses have been working together in recent years to modernise society and make the entire planet a high-tech place. In today's high-tech environment, if a student is absent from a lecture due to unforeseen circumstances, they can still learn the material online if the lecture has been filmed and published. Similar to this, professors can videotape lectures and upload them to the web so that all students can access them even if they are not present in class. Using cloud technology anyone, including students, teachers, parents of students, and other authorities, can access and view or utilize all of the documents relating to classmates, educators, teaching materials, infrastructure, etc. on the internet as needed [1].

These modern educational trends call for a technologically sound educational infrastructure that ensures the security and accessibility of a significant number of students. To deliver high-quality instruction and conduct productive research, higher education must utilize IT infrastructures efficiently. Due to higher education institutions' funding constraints, the adoption of new technologies is extremely delayed. The issues associated with the expense of IT equipment have given rise to new solutions in recent years, such as cloud computing. A shared pool of adaptable resources (such as servers, network devices, memory, programs, software platforms, etc.) can be accessed via the cloud computing concept, and these resources can be dynamically allotted based on user needs. Since the entire computing task is handled by a distant server or cloud server, any device with a high-speed network connection can access these services from anywhere. The client does not need a high-configuration PC because all computing tasks are handled by the cloud server .In below figure 1 basic cloud clients model is illustrated [2].

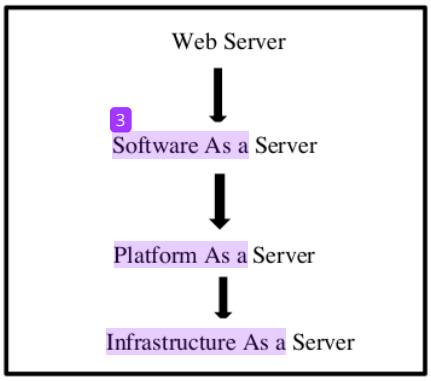

Figure 1. Cloud Clients Model

The most fundamental benefits of cloud computing include decreased prices, resource re-provisioning, and remote accessibility. However, there are many other benefits as well. By preventing the organization from having to invest resources to rent the basic infrastructure from a third-party supplier, cloud computing reduces costs. Because cloud computing is versatile, it can easily obtain new resources from cloud services when our firm needs to grow. Since cloud services are accessible remotely, it can use them whenever and wherever we like. The resources given as part of the services should be distributed to the cloud-based apps in the best possible way in order to reap the

benefits indicated above to the fullest extent possible. The importance of resource allocation is covered in the following section [3].

- When two apps attempt to access the same resource simultaneously, a resource contention situation occurs.
- Resources become scarce when there are not enough of them.
- When the supplies are separated, a resource fragmentation issue occurs.
- When a high availability more resources than it requested, over-provisioning of resources occurs.
- Whenever the application is given access to fewer resources than what is required, this is known as under-provisioning.

It is demonstrated that different data sets have different effects on the outcomes of experimental cloud computing under the same other conditions. The remaining portions of the essay are structured as follows: The literature review for this study is presented in Section 2; Section 3 covers the materials and methodologies, which were then, combined utilising a global and regional probability fusion method. The experimental results are presented in Section 4 along with a comparison of the proposed work to the currently used methods. The conclusion and future research directions are provided in Section 5.

2. Related Works

Alghali, M., Najwa el.al [4] the term "cloud computing" refers to online computing. Through cloud computing, computers and other equipment can access resources, software, and information whenever they need it. Cloud computing is defined in a variety of ways. "Cloud computing is a concept for terms of controlling, on-demand network access to a shared pool of configurable computing resources [e.g., networking, computers, memory, apps, and functions] that can be instantly supplied and released with minimal administration effort or service provider contact." Wang, M., Chen el.al [5] the "Cloud," which provides almost endless storage and processing capability, can be used to store learning outcomes and content. Documents can commonly be modified and shared in the "Cloud," such as through services provided by Google Docs, Live SkyDrive, and Office Live. As lengthy as they have network access, learners can study. A low entry terminal is also made possible by mobile cloud learning because all software, apps, and data are run on cloud servers. This increased accessibility will be very helpful to developing countries. Getso, M., & Ahmed, R el.al [6] the system that will be provided in this study should be able to easily meet the needs of the admin staff (pupil relationships, accounting and, finance buying and sourcing, etc.) as well as the needs of students and faculty who work specifically in educational institutions in the field of education, coaching, and study needs. To satisfy demand, technology grows up and down quickly. Any cloud should be able to support the system. The system should be able to operate independently on own, hybrid, private, and public clouds. It should be able to embed servers and databases so that there is no need to configure them. The system should also be able to run on any type of OS. Bulla, C., Hunshal, B., & Mehta el.al [7] the precise type of cloud environment is represented by cloud hosting deployment types, which may be identified primarily by their ownership, capacity, and accessibility. It describes the function and makeup of the cloud. The majority of businesses are eager to use cloud technology since it lowers capital expenses and regulates running costs. Knowing the service and deployment types is crucial to determine which one best suit the needs of your site. Singh, U., & Baheti, el.al [8] education system is like spoon-feeding because it lacks supporting materials like instructional films or other digital resources that would facilitate students' understanding of the subject matter. Every day, students and educators interact in the classroom, and teachers observe all of the kids' activities. Favouritism from teachers damages students' moral standing and personalities. They believe they are useless and worthless. Additionally, the traditional educational system is quite expensive due to high tuition costs, books, and notebook costs. Cloud computing is crucial to higher education's efforts to address these traditional educational system flaws. Kale, M., & Mente el.al [9] the absence of equipment, and if it is present, the preservation of that facilities, as well as other issues, are the primary problems that the state encounters in providing education. A variety of gear and software must be purchased and kept up

to date, which calls for continued funding and the necessary expertise. The term "cloud computing" can propose alternatives to the aforementioned issues in the field of education. Users can utilize it to access, organize, and exchange data online. This is helpful for jobs including admissions, exams, professors, admin personnel, and higher education students. Nasim, R., Ullah, H., Rizvi el.al [10] users are unaware of where the gear is physically located that theoretically enables cloud computing. It is not technically necessary for users to be informed of which server is operating on which host in order to provide the necessary services, nor do they need to know where the hosted equipment are. But at the moment, deciding whether to adopt cloud computing for businesses is mostly dependent on where the gear is physically located. Cable companies from the same nation are preferred by businesses. For instance, the ERP SaaS supplier Scope Visio has made major investments in creating a "trustworthy" ecosystem that is situated physically in the Frankfurt banking centre.

3. Methods and Materials

3.1 Education System Using Cloud Computing:

Given the young Indian population, the range of potential applications is vast. "Academic institutions in India have a greater demand for automation and process management". In addition to other needs, MD - APAC & Europe, Talisma Corporation, educational institutions in the nation have identified the need for technology to increase transparency, establish governance standards, enhance standards for interaction between faculty and students, and provide a centralized view of scholars. All of these requirements can be met by various point solution and entire ERP programmers. Many institutions are also pursuing paperless acceptance, in which every step of the application processing process—including counselling and class fee payments—is handled online. Several technology implementations can be seen in the higher education sector, including Smart Card readers in all institutions, dynamic university websites and gateways, student enrolment portals, university portals, pupil data management for the student life cycle, professional life management, and learning management platforms [7]. Several academic papers concentrate on cloud technology in educational systems in below figure 2. Many experts and nations are becoming more conscious of the significance of cloud technology in education.

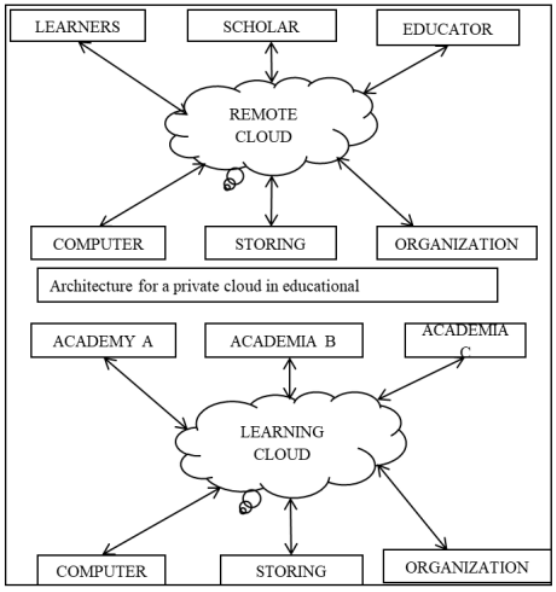

Figure 2 Proposed Resource Planning Architecture for Cloud Computing from a Female Perspective

The following are some major advantages of cloud computing in higher education:

- ✓ *Instead of using pricey volumes, digital texts are used instead, which are available anywhere and at any time.*
- ✓ *The learning materials are current and revised. The student is not required to use out-of-date teaching materials. Every instructional resource is always available and from anywhere.*
- ✓ *It is not necessary to use expensive gear (servers, supercomputers, etc.). Institute can purchase them from the cloud on a pay-per-use basis. Hardware that is hosted in the cloud can be accessed from anywhere at any time.*
- ✓ *It is not necessary to have specialized software (such a web server or Microsoft Office, an operating system, or development tools). Cloud-based software can be accessed from any location at any time.*
- ✓ *The cloud offers more options and tools, which is advantageous for both students and instructors [8].*

3.2 Models of Service for Cloud Computing:

a) IAAS (Infrastructure as a Service)

Over internet, it offers virtualized computational power. According to this approach, an outside provider hosts software, processors, equipment, memory, and other infrastructure components on behalf of its customers. It manages duties including management, recovery, and resilience planning in addition to hosting user applications. IAAS solutions are ideally suited for transitory or exploratory workloads since they offer high resources that may be changed as needed. Dynamic scalability, virtualization software, and administration job automation are all included.

b) PAAS (Platform as a Service)

When cloud hosting offers its users the software and hardware needed for application development as a service, an application is delivered over the internet. A PAAS relieves users of the requirement to install their software and hardware in order to build or execute a new implementation by hosting it within its own facilities. However, a PAAS does not alter a current facility; rather, it relies on PAAS providers for essential services like advancement or cloud applications, etc. When a user logs in and begins using the platform, it supports all the necessary underlying software. This user can do this by using a Web browser experience.

c) SAAS (Software as a Service)

This service model offers various software programs, such as an online storage application and a remote management service, so vendors are not required to buy, implement, and operate the software on their servers. Samples of this model include Google Drive, Acrobat.com, etc [9].

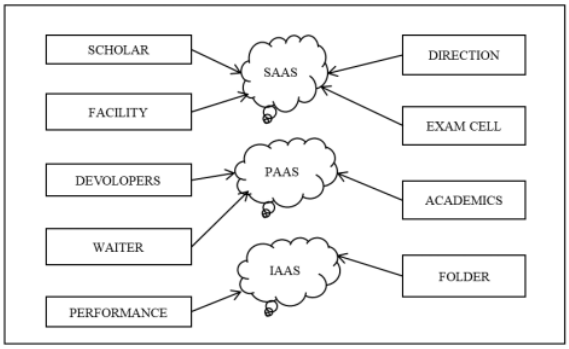

Figure 3. Cloud Education Users

3.3 Employment of Cloud Computing In the Educational System:

The absence of infrastructure, and if it is present, the maintenance of that infrastructure, as well as other issues, are the primary problems that the government encounters in providing education. A variety of gear and software must be purchased and kept up-to-date, which calls for continual funding and the necessary expertise. The term "cloud computing" can offer solutions to the aforementioned issues in the field of education. Users can utilize it to access, manage, and exchange data online. This is helpful in higher education and includes duties like those in Figure 3.3 for pupils, professors, administrators, examinations, and admissions.

An organisation's whole user base can access the cloud, and each user is given a unique login or ID for their specific tasks. Students can access all of the information and data provided by the academic staff through the Web using notebooks, PCs, and other electronic devices at anytime and anywhere by uploading it to a server known as the cloud. This server hoes all of the class data, including tutorial videos, classwork, and test results. The Teacher can spot doubts by looking over their pupils' study logs. All of these services have been moved to the cloud and are available directly online as SAAS, PAAS, or IAAS. How different university users can access cloud services is shown in Figure 3.2.

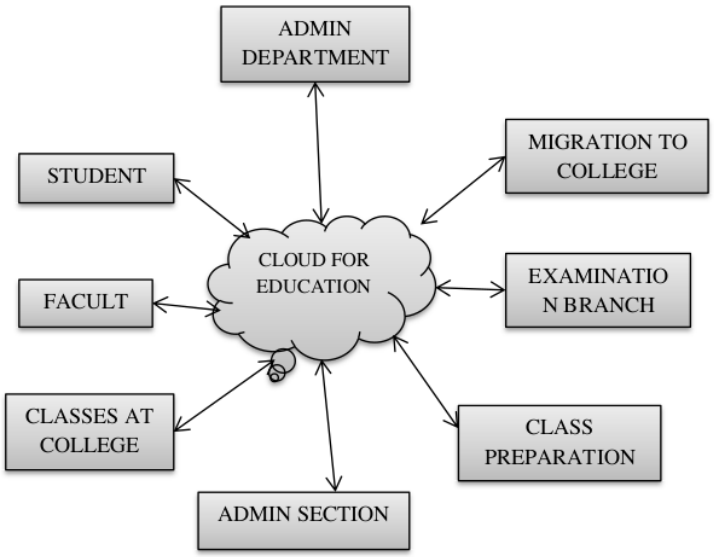

Figure 4. Associated Services for Cloud Education

4. Implementation and Experimental Results:

4.1 Educational institutions' survey:

In three institutions, a survey using questionnaires was carried out. There were both indirect and direct questions in the survey, and once it was completed, survey graphs were made using the replies from the respondents. The survey has 30 questions with four possible answers for each. Participants were only allowed to choose one alternative and express their views. Four categories were used to group the data. In this part, each group is described in detail [10].

Table 1. Survey questions 1-5, Group I

S.NO	EXCEPTIONAL	MORAL	REGULAR	REDUCED
1.	6	5	6	33
2.	2	7	5	40
3.	2	10	37	3
4.	1	13	39	7
5.	1	12	32	7
ENTIRE	13	62	123	107
PROPORTION	5%	21%	41.66%	36.33%

It divided the survey into four divisions or groups. Five questions made up the first portion. These inquiries centred on women's educational attainment in particular. Table 1 displays the individuals' survey data. A Critical Study of user comments reveals that there is a problem with women's low educational representation, especially in higher education. Productivity, sales, and customer satisfaction are all negatively impacted by this issue. Women who lack education may be seen as a drain on the economics of any country.

Table 2. Using questions 6–14 for Group II

S.NO	EXCEPTIONAL	MORAL	REGULAR	REDUCED
6.	6	13	26	9
7.	6	6	6	36
8.	4	5	39	6
9.	2	12	14	26
10.	4	4	41	5
11.	4	8	33	9
12.	12	8	16	18
ENTIRE	39	99	195	123
PROPORTION	9.12%	22.77%	43.88%	28.88%

Seven queries form the basis of this consistency section. Table 2 displays the responses from the respondents and includes the ratings "outstanding," "excellent," "mean," and "bad." In light of the kind of questions asked and the secondary data collected in response to them, the topics were chosen in order.

Table 3. Based on Questions 13–20, Group III.

S.NO	EXCEPTIONAL	MORAL	REGULAR	REDUCED
13.	16	27	7	4
14.	11	30	8	5
15.	11	21	15	7
16.	17	23	5	9
17.	26	10	9	9
18.	7	35	9	8
19.	11	35	3	5
20.	33	9	9	3
ENTIRE	100	150	60	39
PROPORTION	**28%**	**45%**	**15%**	**10%**

According to feedback, resource planning in the current architecture was deemed inadequate and ideal in the proposed design. The applicants were pleased with the suggested architecture's transparency, and it was determined that no one could arrange the budget on their own. It is challenging for a person to guarantee that modern tools and cutting-edge technologies are accessible in the cloud. The suggested architecture addresses this financial issue. The newly created architecture offers tools with advanced economies. The graph demonstrates that, in comparison to the pre-existing clouds depicted in Figure 5, the proposed architecture enhanced the cloud.

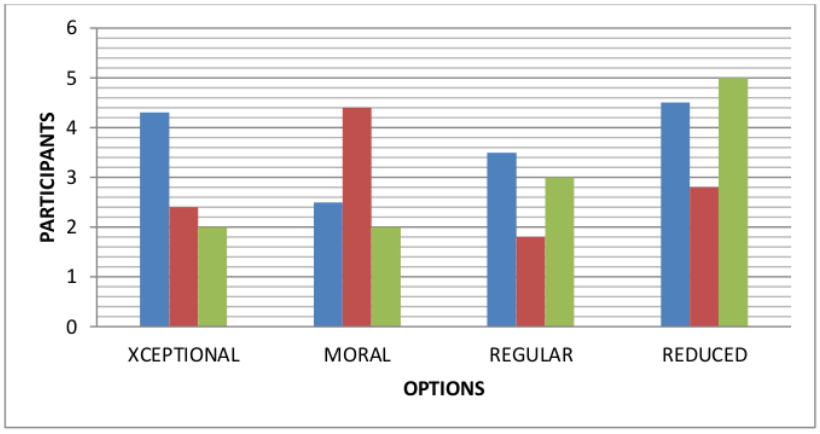

Figure 5. Graph of Classification Comparison

Table 4. Summary tables for each of the 3 groups

GROUPS	BRILLIANT	DECENT	NORMAL	REDUCED
GROUP 1	13	61	121	96
GROUP 2	36	88	153	96
GROUP 3	121	198	66	54
TOTAL	519	606	456	320
PERCENTAGE	25%	30%	26%	18%

The total number of picks for "good" in the question is 606, of which 320 choices came from Group 2's comments. This means that 30% of the votes were recorded for the "good" group (Group 3). This analysis supports the suggestions made for the suggested architecture in light of the survey's results.

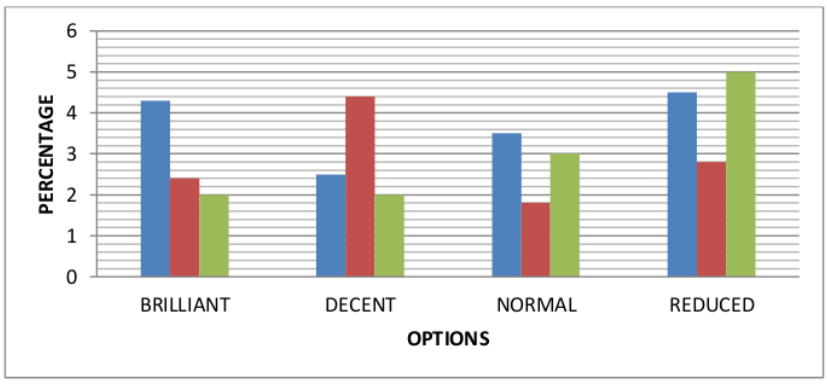

Figure 6. Summary of the Outcome Graph

This section was created to collect feedback on the suggested architecture. In this area, respondents were regularly questioned directly and indirectly about the effectiveness of the suggested architecture, assessing factors like openness, safety, accessibility, issues with the finances, uniformity, and management. An emerging technology that will benefit academics, employees, and learners in the next years is cloud computing. Despite these drawbacks, cloud computing provides staff and students with dependable services that help teaching and learning methodologies become more efficient and high-quality [11].

5. Conclusion

An important alternative from today's educational standpoint is cloud computing, which is an exciting development. The educational system greatly benefits from information systems. Between groups and civilizations, racism and ignorance are present in industrialized nations. The goal of this study was to draw attention to and make recommendations for these underserved communities. Isolated areas and women's education received special emphasis. The researcher put out cloud architecture as a solution to the challenges experienced by women in rural areas who want to further their education. To promote equality, enhancements are necessary, and this architectural design supports it. Millions of examples have improved, including the accessibility of services, their reliability, and how affordable they are in remote locations. The environment has completely transformed as a result of the spread of virtualized environments and their domination in each industry. A centrally controlled environment with a uniform distribution of dominant clouds is said to be impartial. The suggested design aids and promotes women's education in underdeveloped places. This project's goal is to highlight the value of cloud computing in higher education. A thorough examination of the various data sets gathered from the various institutions reveals that they are using this cloud model to meet both their unique higher education needs and the cloud solutions that are now accessible.

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