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Obstacles Challenge Investigating Scope in Cloud Based Distance Education System of the Quality of Services

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Abstract:

Cloud computing in education (online education) uses the service of open system e-learning for the flexibility, distributed and interconnected. Security issues be the biggest issues concerns that has been affecting the growth of cloud computing through distance learning complications with data privacy. The data breaches through services over networks continues effect to the educational field. Although expanding growth of user's demand using smart phone can perform task easily and effective manner with the utilizing services in cloud services, the flexibility of e-learning services demand made mostly students in higher education entries the services via mobility networks because the e-learning system are open. Users need to understand the risk of data transferring breaches in the cloud environment. This paper revels the prevalence attack internal web base system application as well as lack of proper resources facing e-learning system contributed with the IT standardization policy procedures highlight architecture of the specific security requirement and enhancing quality of services (QoS), performance analysis demand to Concern the theoretical model for cloud E-Learning service. Information Quality, risk management analyzing, Reliability, Perceived the proposed model was deemed fit in evaluating cloud E-Learning service as in the perspective were applied to assess discriminant validity and found appropriate.

Keywords:
Cloud Computing; Cloud E-Learning; Security; Risks; Quality of cloud e-learning services.

1. Introduction:

Cloud computing enables the companies and organization to consume compute resources as distributed system which involves group of infrastructure of remote services at networked to allow sharing of centralized data storage (Shukur, et al., 2020) (Saraswathi, Kalaashri, & Padmavathi, 2015) This days, the "cloud social" and "e-learning" work together to generate a sustainable resource sharing within cross multi-services provider to the users. This paper examines and introduce the lack of services, internet-based cloud computing and exploring the challenge of the services models which are used today as well as the risk of monitoring managing resource technology infrastructure using the web base application and platform in the field of e-learning. Cloud computing is a model of demanding resource sharing (e.g., networks, storage application, and services), that can be rapidly provisioned released minimal management effort of services provider interaction (Priyadarshinee, Raut, Jha, & Gardas, 2017) (Shukur, et al., 2020) (Arora & Nandal, 2020) Demand of cloud services is increasing day by day of the difference facilities of source program and application are used on regular basis. The significant of the integrity solution for safety data becomes compulsory requirement in secure manner is a difficult task. In educational sectors higher education, distance education is an essential service. Because e-learning system is an open system, distributed and interconnected. Then the security becomes an important challenge for to ensure the privacy reached to the safety data, and authorized, access to the right information at in the quality of service at the appropriate time. Risk assessment concerns should invest heavily to ensure there encrypts to protect data (Alzakholi, Haji, & Shukur, 2016). However, in the case of distributed clouds over networks with different resource, cloud services including demand management (Bhoyar & Chopde, 2013), data security management, application lifecycle management, mentoring and risk of complains management (Sean a, Li, Bandyopadhyay, Juheng, & Ghalsasi, 2011). Then the Security concerns must be addressed in order to establish trust in cloud computing technology and base system infrastructure.

The paper is organized as follows: Section 1 present introduction, Section 2 gives the related work, section 3 present research model, and Section 4 presents data collection and analysis the proposed system with the support of results, Section 5 Findings & Discussion and Section 6 Conclusion.

1.1 Need of cloud in distance learning:

The web-based technologies via system of the platform architecture attend students enrolls themselves for studies, teacher staff can be providing learning administration support using cloud- based education system in the presence of internet connection. More ever, teacher could also take the live session upload the Martials of the online classes study to educate their students. The observation of the cloud base system distance learning mechanism is also used in the online educational services. Technical and competent information is require provided to profession by online cloud services. These clouds are hosting interactive where the quality contents need to make available. However, several mechanisms to increase their security but these securities reduce the available competence users transferring data communication. Thus, there remains a need of system that could enhancing and provide mechanism of the security contents hosted on educational cloud without effecting performance of data communication. More ever it can be observed within unlimited user's connection via open interconnection system platform.

1.2 Cloud Computing Challenges:

The studies have to look at the challenges of implementing cloud infrastructure risk of lack services in the education field for faculty. Teachers and student's effects on education field for faculty, the number of high risks need to concern that the education sector faces many challenges. In developed countries are examined at this time and the future involves the different crashes, hacking and cracking, another issue in applicability demand of the open demand of cloud services is 24-hours availability. Presently the required demand for the students' needs to access required information at any time any place with different devices and software. Many existing research explore the challenge of the risk, mention that for reducing

cost of distance or presented proper utilization as a service, on this way to provide cloud –based education underdeveloped country, is a complicated task expanding in universities and executional over cloud, needs more mentoring underprivileged attention for developing protection tools reducing and protecting the amount of data competences accessing in different manner.

1.3 Security Issues in Distance Education Cloud-base System:

The main problem implemented due to which e-learning system is exclusively is security risk. Due to the speedy concern and developing tools or the technology of the software provider, in the present time of the expanding technology, cloud system service used by educational, the cloud system always remains safety issues. Out of the various technologies risk it can be originate in:

- Data integrity
- Access control
- Location of data
- Loss of data
- Service traffic

In this above point of the challenges at user services: it is necessary looking for the possibility of the data loss because of its own action verified user operator in services provider at common cloud server. At this point the application that are infected by the services supplier demand must be have to access server with overall privilege, login credential and account hacked. Malicious insiders in the program application performed to any consumer knows login credentials. The infected crack security in less time takes the advantage of this case.

2. Literature reviews:

In this article we have discussed cloud computing service models, also discussed cloud computing enables hardware and software to be delivered as services, scheduling tasks in cloud

computing. There are many challenging schedule issues in cloud computing infrastructure like computation time, load balancing, resource utilization, cost, and QoS (Ibrahim, Sadeeq, Subhi R. M, & Shukur, 2021). article proposed scheduling algorithms for enhancement the QoS (Jghef & Zeebaree, 2020), moreover summarized in Survey for Significant Relations between Cloud Computing and Distributed Computing cloud services, for optimization the researcher gives general revision on the tasks as in (Abualigah & D., 2020). Proposed a novel hybrid antlion optimization algorithm for multi-objective task scheduling problems in cloud computing environments (Zryan, Subhi, & Sengur, 2019), Design and analysis of proposed remote controlling distributed parallel computing system over the cloud. (Yazdeen, et al., 2021), FPGA Implementations for Data Encryption and Decryption via Concurrent and Parallel Computation: A Review and, article provided full details for A Task Scheduling Approach for Cloud Resource Management (Yong, K, Steven, & Jameson, 2020). Paper presented at the Fourth World Conference on Smart Trends in Systems, Security and Sustainability (WorldS4), introduced some of the key technologies for to view level of management. And the improvement of task scheduling, (Zong, 2020), gives An Improvement of Task Scheduling Algorithms for Green Cloud Computing. Paper presented at the 15th International Conference on Computer Science & Education (ICCSE 2020). (Prof, 2017), the Study impact of Cloud Computing in E-Learning In this paper we discuss the various impacts of cloud computing-based e-learning benefits and definition. Enhanced, technologies online survey described in its type's online survey to collect the required data for the use of cloud computing in the universities and other governmental or private institutions in the region. The cloud technology (Prof, 2017), Describe this status and probable considerations to adopt will help us review also on this paper presents the impact of using cloud computing upon e-learning solutions development. Article (Quadri, Alam, Qahmash, & Quadri, 2021) aims on this study identify the determinant of cloud E-Learning service quality. Methodology: A theoretical model was proposed to gauge the cloud E-Learning service quality by extensive literature search. The most important factors for cloud E-Learning service quality were screened. Group Decision Makers (GDMs). Empirical testing was used to

validate the proposed theoretical model, the self-structured closed ended questionnaire was used to conduct an online survey. Various research groups focused on identifying security and privacy challenges in Cloud computing (Yuhong, Yan, Jungwoo, Syed, & Athanasios, 2015).

3. Research model:

This paper explored the problems of risk and quality of service adoption in multiple perspectives. In particular, the measure through essential cloud characteristics of the cloud computing, adoption, as well as in the risk of security influence refer to the (see literature reviews). Is related issues adoption from number perspectives using system approach is refer to students, teachers, researcher, where non- adoption to the rejection of the knowledge on assessing from multiple perspectives, this was current potential namely management and admins for safety data. Main while, e-learning system used in higher educational, explore the quality and risks associated with the adoption framework particularly used in the model of educational area of technological infrastructure, shown as in the table below.

Table 1. Summary of quality and security risks of lack services.

Component	Identified as appoints	Source
Information Communication Technology (ICT)	Information technology infrastructure (policy) – software license	(Paul & Thuthukile, 2020)
Quality	Measure Service Privacy Broad network Access, A model for evaluating e-learning systems quality in higher education in developing countries. (Shayan, Azarnik, Chuprat, Karamizadeh, & Alizadeh, 2013)	(Mohammed, 2019); (Shayan, Azarnik, Chuprat, Karamizadeh, & Alizadeh, 2013). (Hadullo, Oboko, & Omwenga, 2017), (Asoodar, Vaezi, & Izanloo, 2016)
Risk	Security Privacy Software program. , Framework to improve e-learner satisfaction and further strengthen e-learning implementation) (Asoodar, Vaezi, & Izanloo, 2016)	(Ibrahim, Sadeeq, Subhi R. M, & Shukur, 2021), (Shakeabubakor, Sundararajan, & Hamdan, 2015)

Considering, Multi-view caused can be used in this paper focusing on the necessary previous research challenge. To explore the quality and risks associated of technological issues from multiple perspectives. The model figure (1) comprises of three points remark, perspectives: technical, quality of service (QoS), and Security. In the study of the technical perspectives used to refer the quality and risk management cloud computing system in the educational fields which is adoption views has been shown figure (1).

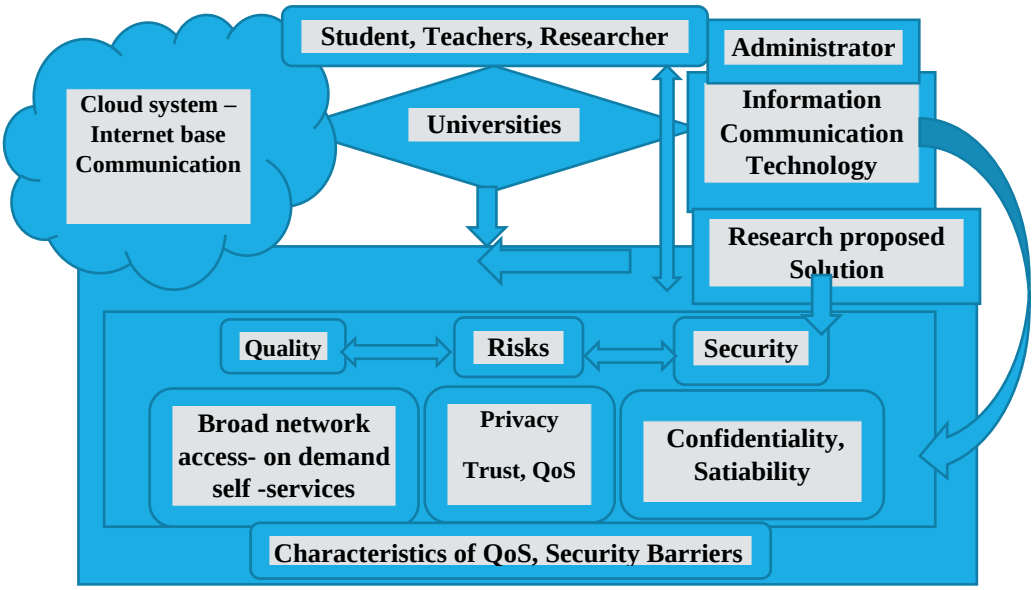


Figure (1). Research Model –cloud computing system

3.1 Method and Participants:

Methods of this Study refer to different participants made up of the required distance learning system in developing country in the demand of universities educational, the survey university take it from two university adopting cloud solution and risk management. The information collected through google forms questioner with specific inquire for the process of continue distance learning system, considering cloud –base application performs their task with effective manner utilizing cloud service provider, security and internet barrier, in addition, lectures, students based on the assess of effectiveness perspectives on the quality and risks of this data clustering. Moreover, a sample indicate exploring outlines of previous study of risk management shown as the model figure (1). The influence barrier in the online system come to identify there our requirement of the stability assurance.

3.2 Scope of research:

Further study is supposed secure play basic role of high-performance solution of online e-learning system. The accessibility of large amount number of users connected online through different devices login online education cloud system, due to growing development of this technology. There is demand within increasing technologies, study suffering due to lack of performance caused the development with enhance performance. One of the major problems which can be faced by using this technology are mass data loss, a access undefined, multi-users accessing at same time, infected application and data integrity, limited data privacy (Yuhong, Yan, Jungwoo, Syed, & Athanasios, 2015).

4. Data Collection & Analysis:

This data presents the reality state for the numbers of undergraduate's students distributed during war in Sudan its semi-structured interviews samples of some college in university randomly, chosen sample within under circumstance from to define knows the behavior of immigrant student in Sudan with two option their peoples in safety state and the area of conflicts, situation inside and outside Sudan. The data Survey taking five questions with the option checking vote for to summation, the percentage value analyzed shown the realistic of e-learning study in different geographical different area inside Sudan, figure of the simulation table shown below bellow:

Table 1. Questioner of e-learning Surveys of two college in Sudan study CS.

Questioner of e- learning Surveys- 600 student							
Networks		Bandwidth	Sociology Stability	Security	Cycology Behavior	Immigrants	Online Studies
A available	Yes: 45 %	Available 65 %	Good 20%	Safety 40%	Good 70%	Immigrant 55%	Agree 60%
Not :	Not: 55%	Not : 35 %	Not : 80%	Not 60%	Not: 30 %	Not immigrant 45%	Disagree 40%

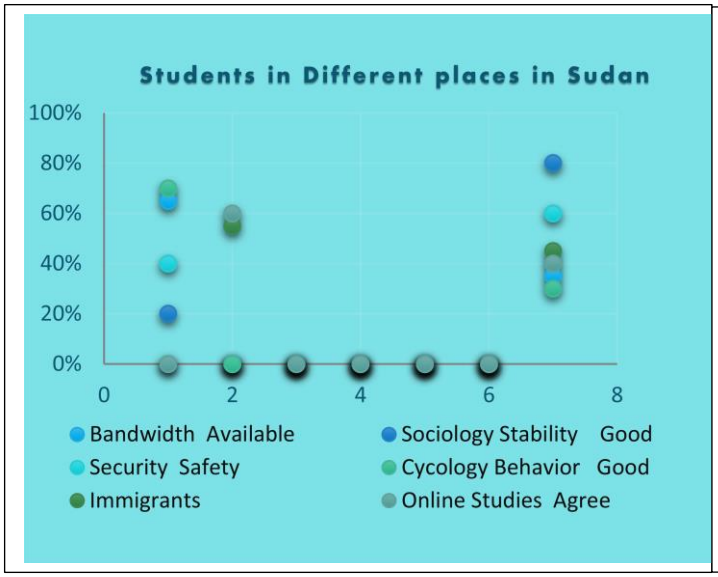


Figure (2) Shown Bandwidth online service – online Students.

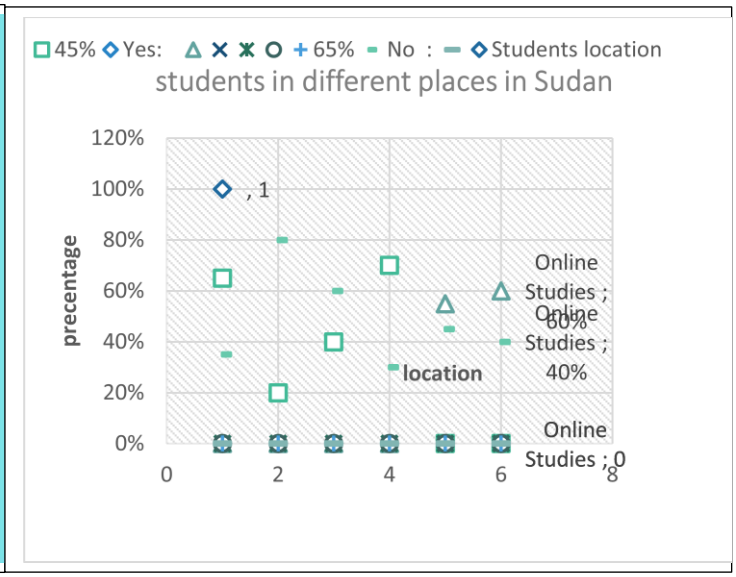


Figure (3) explaining online percentage- Students Location.

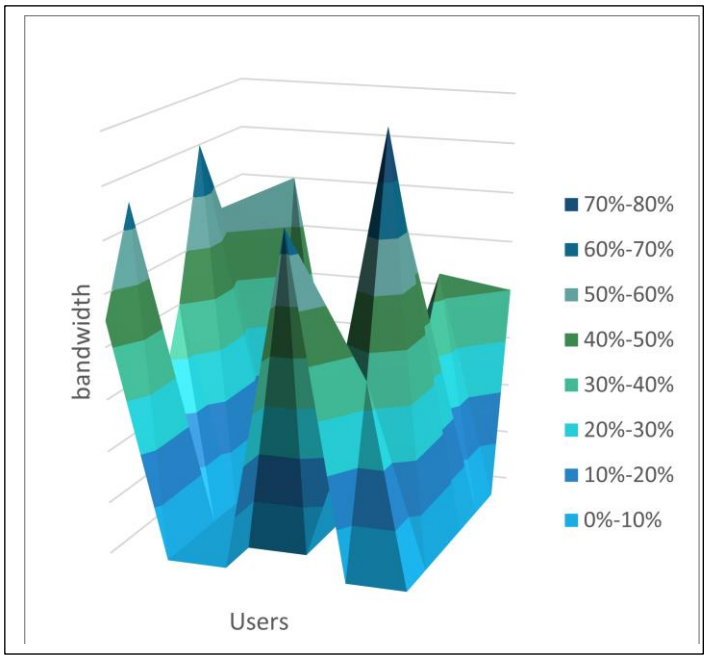


Figure (4) Described bandwidth percentages sharing with users through online e-learning surveys.

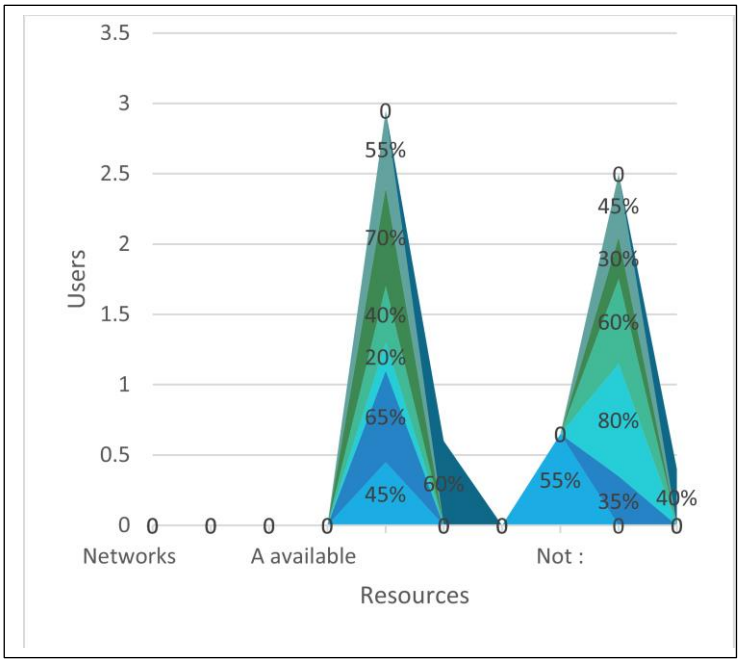


Figure (5) Shown the network Coverage, out of coverage, users losing network.

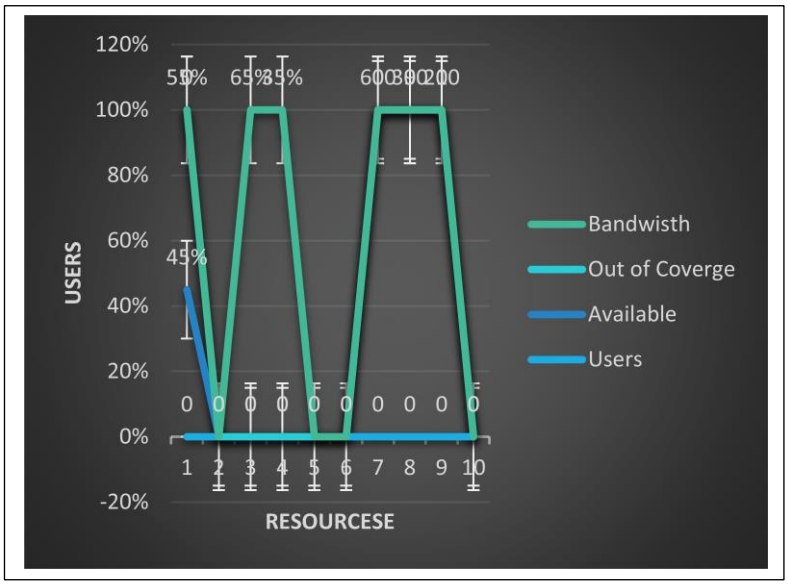


Figure (6) Users participating resource sharing afternoon.

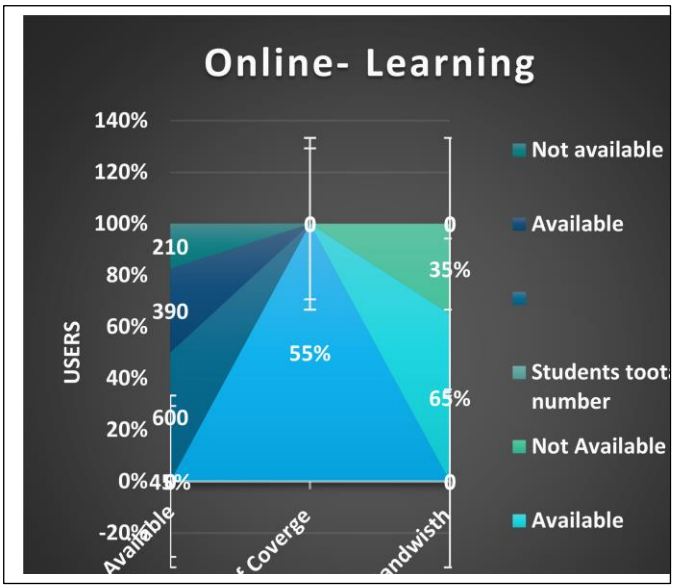


Figure (7) Users participating resource sharing in different time - night.

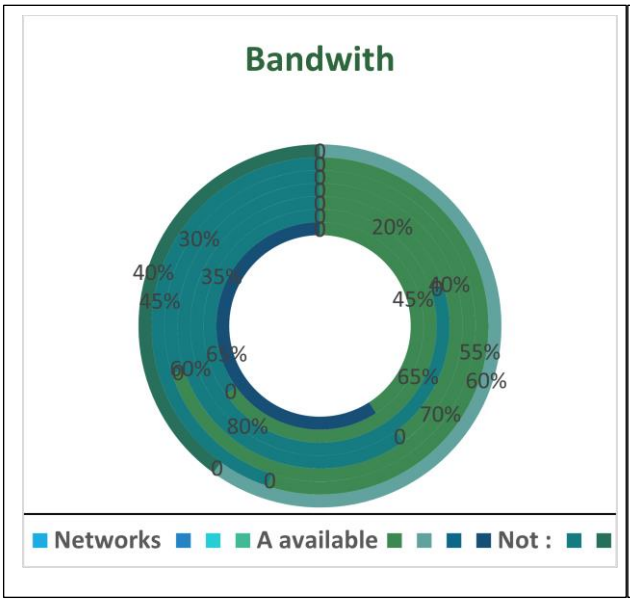


Figure (8) Bandwidth in different state available, not available online study.

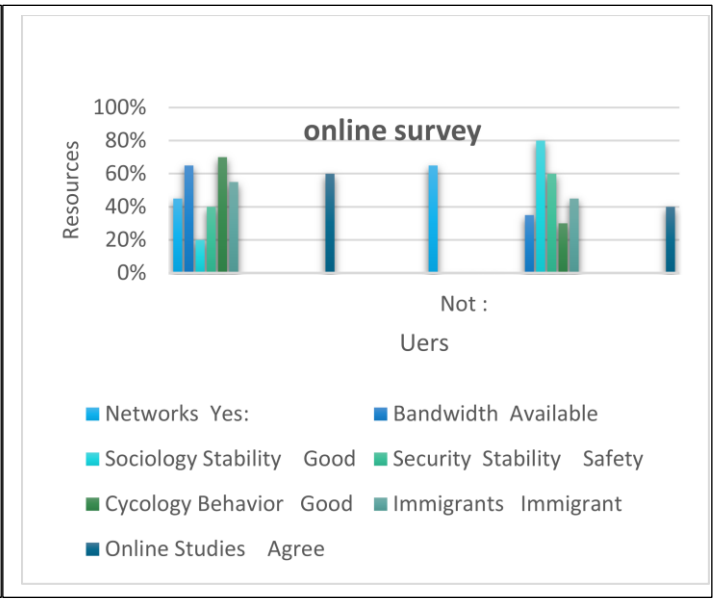
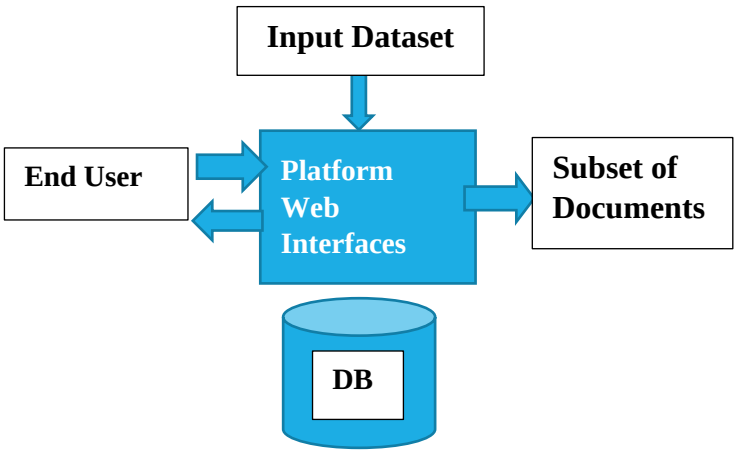


Figure (9) Explain bandwidth capacity and users sharing internet in different location.

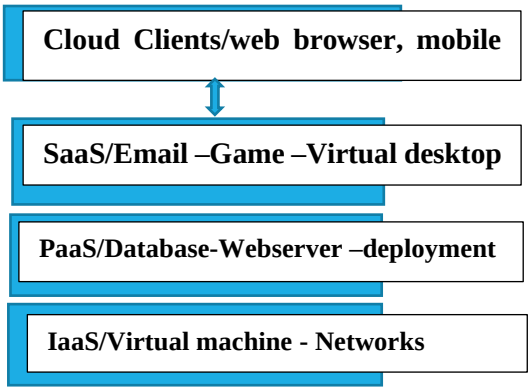
Proposed Model

Phase one: Header



Architecture shows a high-level depiction of the architecture. The output of the Million Search Results Service, which is a sorted list of links

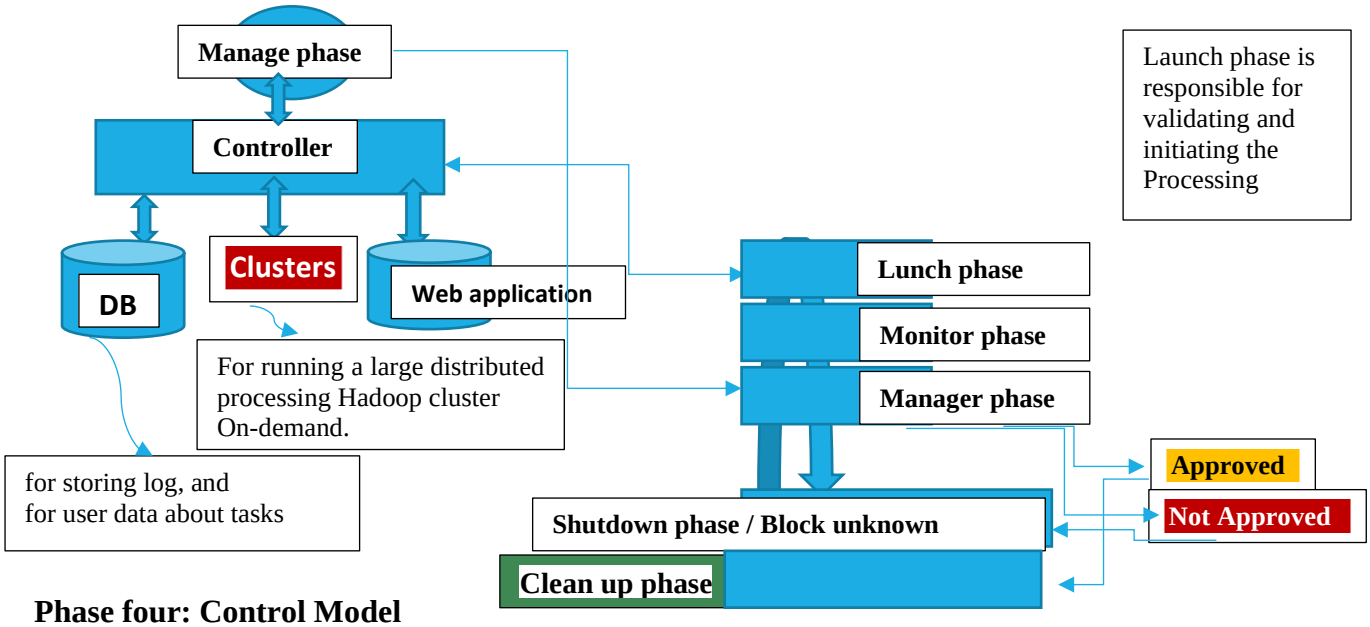
Phase two: Body



Service Models are the reference models on which the Cloud Computing is based. These can be categorized into three basic service models as listed below:
1. Infrastructure as a Service (IaaS)
2. Platform as a Service (PaaS)
3. Software as a Service (SaaS)

Figure (10) Phase one and two Header and body of proposed control model system

Phase three: Core model



Phase four: Control Model

Data flow process

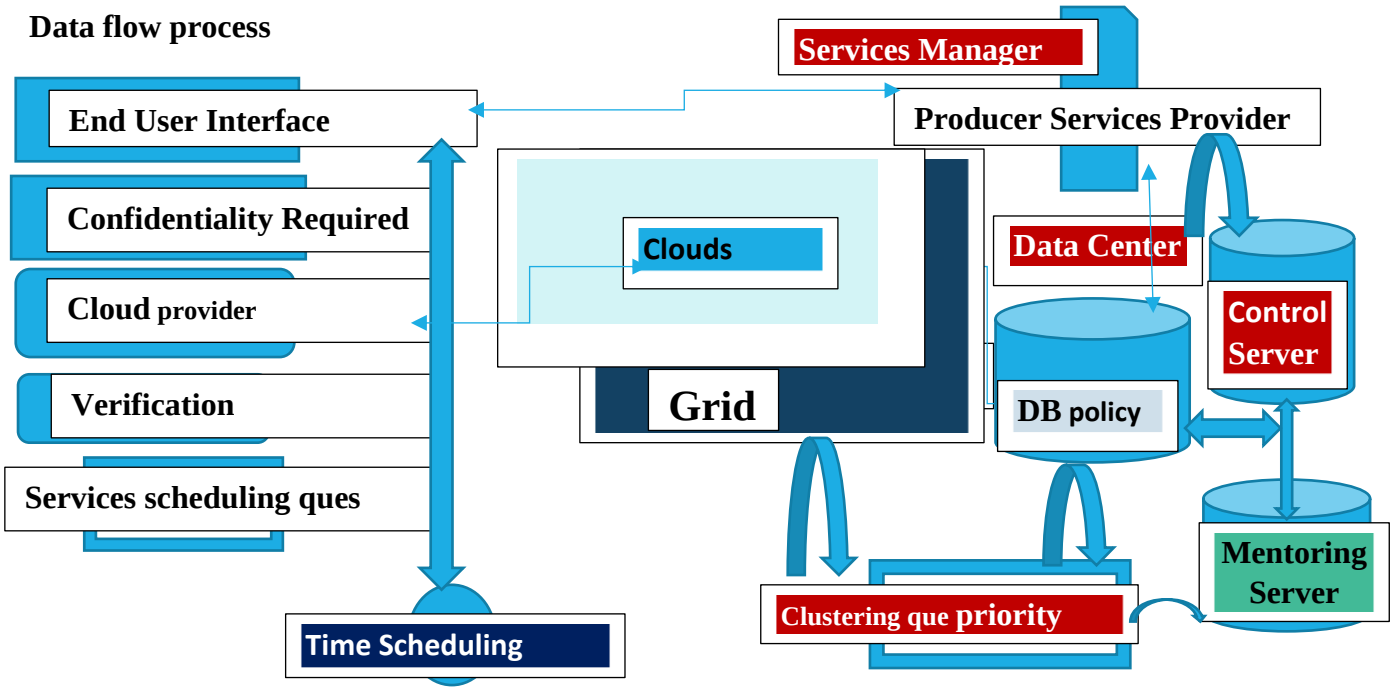


Figure (11) Contains Phase: three and four proposed Control Model –Cloud computing system.

5. Findings & Discussion:

The analysis of Cloud Computing has shown specific probably cases of lack delivery and lose data in the Source. There are no uniform cloud management software standards across different cloud computing system. The findings the research study shown in figure (8). Phase models, consequently, enhanced methodology to improve the lack of the existing resources and methods in cloud system presented in online services, e- learning. The research takes the deployment of IT systems components in educational within the ware in Khartoum - Sudan and other city. In this paper, researcher concern that the mean issues about adopting cloud services are security, and connectivity problems within the cloud system between students and lectures. The analyzing shown the rate of the internet bandwidth less than numbers requested services in mostly immigrant state in Sudan that have a high capacity of user's study online. Also, the summarized the bit rate of resource sharing shown in the data analysis. Based on the conclusion in this study, the platform- of the e-learning system must be developed in such a way to different faces facilitate and enhance software technological infrastructure for to reduces the number of risks of the security management.

6. Conclusions

Finally, this study explored the obstacles and challenges facing the quality of e-learning services based on cloud computing in Sudan. This research addressed the problems and risks of cloud computing services from multiple perspectives. The research proposed a model for evaluating e-learning services based on cloud computing, by deployment the components of information technology systems in education within the devices in Sudanese universities, the research concluded that the main problems facing reliance on cloud services are security and communication problems and the low rate of Internet bandwidth in Sudan. Based on the conclusions reached by this study The research recommends developing e-learning system platforms in Sudan in a way that facilitates various aspects and enhances the technological infrastructure to reduce risks and improve the quality of e-learning services.

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