Cloud Based Technology In Higher Education: A Need Of The Day

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Abstract: Now a day’s cloud computing is an emerging area which can be used for sharing the resources with the help of web technology like Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). And also the educational institutes, universities and industries are playing vital role in transforming the society and entire world economy. Various researches are carried out to update the present IT infrastructure especially in the area of education. Cloud computing can be a welcomed optioned in the universities and educational institutes for higher studies. It gives a better choice and flexibility to the IT departments by building multipurpose computational infrastructure once and then uses it for several purposes for several times. The research paper consists of cloud technology based conceptual framework for higher education in Indian environment. The research paper also consists of the opinion about the framework collected from the various domain experts.

Keyword: Higher Education, cloud computing, cloud based framework, educational system.

I. Introduction

The concept of cloud computing dates back to 1960, when John McCarthy opined that “computation may someday be organized as a public utility”. The term ‘cloud computing’ is confusion to many people as the term can be used to mean almost anything. ‘Cloud’ is used as a metaphor for Internet and its main objective is customization and user defined experience. In other words cloud computing provides shared resources, software and information through Internet as a PAYGO (Pay-as-you-go) basis. Higher education was acknowledged in time as one of the pillars of society development. Through the partnerships between universities, government and industry, researchers and students have proven their contribution to the transformation of society and the entire world economy. The tendency observed during the last few years within the higher education level, is the universities’ transition to research universities and ongoing update of the IT (Information Technology) infrastructure as foundation for educational activities and Science research. With the evolution of technology, the number of services which migrate from traditional form to the online form grows as well. For these specific services, an adequate providing form must be found in the online environment, using the proper technologies, guaranteeing the access of large number of users, fast and secure services. Due to this aspect, at the moment universities are confronting with a dramatic increase of costs in higher education, more than the inflation rate and a decrease of universities’ budgets, which leads to the pressure of finding some alternative means of reaching their purpose i.e. the education of students and accomplishing the research.

II. REVIEW OF LITERATURE

The development of banking (loan eligibility) knowledge based systems is a great milestone to such complex level problems. There are a number of intelligent system software’s that have been developed for Bank. Knowledge based systems may make a better choice than
human expertise because they are available all the time, can have collective expertise from different content resources, and do not suffer from biases and other human frailties. In the research article “Implementation of Cloud Computing in Education – A Revolution” by Saju Mathew [1]. He has been carried out a basic research to show how cloud computing can be introduced in the education to improve teaching, agility and have a cost-effective infrastructure which can bring a revolution in the field of education. It also tries to bring out its benefits and limitations.

In the research article “Using Cloud Computing in Higher Education: A Strategy to Improve Agility in the Current Financial Crisis” by Marinela Mircea and Anca Ioana Andreescu [2]. Their work was to identify the particularities of using Cloud Computing within higher education. Mainly, they have considered the risks and benefits of cloud architecture and proposed a cloud adoption strategy proper for universities. An analysis of the data and the main activities that exist within a university was the starting point for choosing a cloud model that should take into account the special security requirements of higher education and the available cloud solutions as well.

In the research article “Cloud Computing For Distributed University Campus: A Prototype suggestion” by Mehmet Fatih Erkoç, Serhat Bahadir Kert [4]. They have highlighted on Cloud Computing architecture, cloud services, layers and types of cloud and propose a cloud infrastructure prototype for distributed university campus.

In the research article “Cloud Computing in Higher Education: Opportunities and Issues” by P. Sasikala, Makhanlal Chaturvedi[5]. They have elaborated the concept of Cloud Computing from the perspectives of diverse technologists, cloud standards, services available today, the status of cloud particularly in higher education, and future implications.

In the research article “An Analysis and Implementation of Cloud Computing at Professional Education” by Kavita Suryawanshi, Rahul Chaudhari, Preeti Naidu [6]. This paper provides an approach on how to implement cloud computing at higher technical education, focusing on the implementation need and benefits.

In the research article “CLOUD COMPUTING IN DEVELOPING ECONOMIES: DRIVERS, EFFECTS AND POLICY MEASURES” by Nir Kshetri [7]. He has focus on how various determinants related to development and structure of related industries, externality mechanisms, and institutional legitimacy affect cloud related performances and impacts to the local economy.

In the research article “Cloud computing: Opportunities and issues for developing countries” by Sam Goundar [8]. He has made an attempt to address the issues and challenges in deploying mobile applications, such as m-Banking, m-Education, m-Health, m-Agriculture, and others that already exist and are popular within developing countries via cloud computing in developing countries when compared to developed countries.

In the white paper, “Shaping the Higher Education Cloud”, by Karla Hignite, Richard N. Katz, Ronald Yanosky [9]. This paper will explore what shape a higher education cloud might take and to identify opportunities and models for partnering together.

Need & purpose of the study
Now a day’s educational institutes, universities and industries are playing vital role in transforming the society and entire world economy. Various researches are carried out to
update the present IT infrastructure especially in the area of education. Cloud computing can be a welcomed optioned in the universities and educational institutes for higher studies. It gives a better choice and flexibility to the IT departments by building multipurpose computational infrastructure once and then uses it for several purposes for several times. Amazon, Google have already started providing their facilities for large business group. With the help of cloud computing the platform and application the user uses can be on-campus or off-campus or combination of both depending on the institutions need. Due to the evolution of cloud computing number of services have migrated from the traditional system to the online form.

**Statement of Problem**

In the present scenario, many education institutions are facing the problems with the growing need of IT and infrastructure. Cloud computing which is an emerging technology and which relies on existing technology such as Internet, virtualization, grid computing etc. can be a solution to such problems by providing required infrastructure, software and storage. There is tremendous need to handle the resources efficiently and effectively.

**Objectives of the Research**

Based on Review of literature & available data, following objectives have been stated: -

To study the existing higher education system.
To study the need and benefits of cloud based technology to enhance the efficiency and effectiveness of higher education system.
To design the cloud technology based conceptual framework for higher education in Indian environment.
To suggest remedial measures, if any.

**Challenges**

At present, as many universities are trying to update their IT infrastructure and data, but they are facing few challenges which can be solved by cloud computing. The challenges are

Cost: choose the subscription or PAYGO plan.
Flexibility: cloud computing allows to dynamically scale the investment in infrastructures as demand fluctuate.
Accessibility: making the data and services available publicly without losing the sensitive information
Security: making data secure.

**Proposed MODEL**

In the present study the cloud technology based conceptual framework is designed for higher technical education system. The proposed model will be useful to improve the effectiveness and efficiency of higher technical education system. It is also helpful to bring the uniformity throughout all universities and institutes or colleges. This will be also helpful for reducing the cost and time.

research Framework

The proposed framework consists of various beneficiaries of the cloud technology based system for higher education. These are as follows.

Government bodies:
This will consists of government bodies which monitor the higher education process running through various universities and their affiliated colleges. These bodies can be AICTE, DTE etc. They will prepare the guidelines for various courses and make sure that all will follow the same.

University:
This will consist of university under which higher education under the supervision government bodies like AICTE, DTE etc. of provided through the university department or through the affiliated colleges. In this proposed model the cloud technology based system will be implemented in the university level. It will consist of IaaS, PaaS and SaaS. The access of the system will be provided to government bodies as well as affiliated institutes as per their requirement.

Institute / College:
This will consist of institutes, which providing higher education and they are affiliated to the university and approved by AICTE, DTE etc. The various users such as student, teacher, research scholar etc. will access the cloud technology based system through the institute level.

Figure 1: shows the cloud technology based conceptual framework for higher education system

Conclusion
As per the research it is found that there is a need to upgrade the present IT infrastructure of education system to improve the efficiency and effectiveness. Cloud computing can be a welcomed optioned in the universities and educational institutes for higher studies. It gives a better choice and flexibility to the IT departments by building multipurpose computational infrastructure once and then uses it for several purposes for several times. Therefore the proposed cloud technology based framework is designed for the higher education system. As per the opinion of domain experts this framework will be a better solution and its implementation will bring the revolution in education system.
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