

A Cloud Computing Perspective towards Adoption of Technological Transformation and Innovation among Higher Educational Institutions

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Abstract - In this competitive business environment, each and every service providers tries to differentiate themselves in offering their products and services according to the basic expectations of the target audiences. Wherein currently technological transformation and its adoption becomes a predominant and essential factor for the success of any service provider in the modern educational institution of the growing Indian service sector. Adoption of modern technologies in to their business offerings certainly increased their competitive advantage compared to other service providers on one hand and on the other hand it provides a unique way of delivery its regular services with a major differentiation with help of technology among their major stakeholders. Modern Growing Educational Institutions are now a days forced to make use of the technological advancements available to them in order increase their business potential and also adoption of such technologies like Cloud Computing (CC), Internet of Things (IoT), Business Automation with Enterprise Resource Planning (ERP), Artificial Intelligence (AI), Machine Learning (ML), etc., has certainly provided a wider range of opportunities in the field of education. However, it is the basic responsibility of each and every service provider to make use of such technology in to their business when and wherever it is required, it needs to be analyzed and utilized within shorter period of time would certainly help them to become a market leader, at the same time, service providers of various educational institutions would be found to be more aggressive in their day to day offering of their services to various stake holders and also business activities would be certainly enriched with the higher adoption of Technology as a core competence factor.

Keywords: Cloud Computing, Higher Educational Institutions (HEI's), Technological Transformation

I. INTRODUCTION

In Modern Digital Era, Everywhere adoption of technology becomes a predominant factor in order to survive and sustain either in their functional domain of their business or automation in the whole business functionality keeps them more competent compared to their competitors and other major dominant threat factors prevailing in the global business environment.

Today Technological Transformation happening with innovation all over, which has changed the way of doing a certain functionality of business because of their lateral thinking and working by predicting the future expectations and trends of business, for which various business analytics

tools been used in order to analyze the current available information by their advancement and lateral thinking and applicability of suitable analytical tools with the existing data, due to its advancement and lateral analytical thinking ability, it would be able to predict the future trends of business with in a short period of time, this all happened due to emergence of technology and its major transformation across various industries. (V.P.Sriram, Pala Suriya Kala, Dhanaraj Shanmugasundaram, A.Arun, 2018)

One of its kind is the Higher Educational Institutions wherein right now started to focus more on adapting the emerging technology and its various transformation so that it would definitely provide a vibrant and competitive technological educational environment, wherein it would certainly provide a difference in the Teaching and Learning experience across its various stakeholders.

Let's examine the new emerging technologies and focus in particular, how emerging technological transformation could be adapted in the educational institutions so that it would provide a unique way of experience towards its various stake holders, certainly brings a change in the traditional way of practicing things to a modern way of practices. (A. Fox, 2009)

II. CLOUD COMPUTING BUSINESS MODEL AND TECHNOLOGY

Cloud Computing Technology originates mainly with a high value proposition that is not about ensuring competing technologies but it's all about a highly competitive business oriented model. However, these business model would not be certainly an attainable without the involvement of technology model.

The Following would explain the major benefits of both Cloud Computing Technology Based Business Model and similarly it bring other benefits of Cloud Computing Based Technology Model, which in turn depicts their individual importance and their applicability in the various business scenarios accordingly in order bring the unique competitiveness that each and every cloud computing based business model and technology certainly has its importance in this global competitive business environment.

Cloud Computing Business Model and Technology	
Business Model	Technology Model
<ul style="list-style-type: none"> The business model it's about that computing services should be provided on demand, fast and efficient and be very cost effective. This is the current mode of assuring a business has the IT support it wants, made possible by satisfying services, terms and prices. The concerns about how many servers are needed, how many IT specialists are needed or how long it takes to make it happen is not an argument in this model. 	<ul style="list-style-type: none"> The technology is actually what makes cloud computing conceivable. Cloud computing is, after all about IT capabilities. It is about providing identical resources, applications, infrastructure and platforms but in a scalable manner using the Internet to access them. This is a challenge to the IT industry for both software and hardware and a driver for technological advancement to answer to demands encompassing very varied services but also a substantial and perpetually growing number of varied devices.
<p>➤ Technology needs to do what it has invariably done, that is to offer the most effective services to support the business. The business can now halt trying to comprehend and be concerned about IT competencies and focus on what they do best.</p> <p>➤ Cloud Computing streamlines IT services and builds them more cost effective for businesses. Nevertheless, the IT industry as a whole needs to up the game, not simply technically but also to become more business oriented.</p> <p>➤ Safety, Reliability, Scalability and Availability are all essential qualities when thinking about cloud-based services for a business. Private cloud, public cloud, or a mixture of the two will seem sensible for any business trying to improve their IT capabilities fast.</p>	

Source: <http://cloudcomputingnet.com/cloud-computing-business-model/>

Fig. 1 Cloud Computing Business Model and Technology

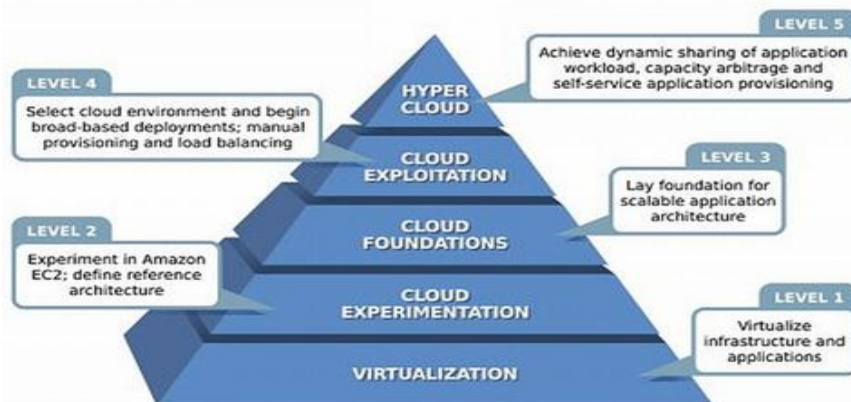
Cloud Computing is a unique and competitive model which has been meant certainly for enable ubiquitous occurrences, conveniences, most on-demand network access to all the shared pool of configurable computed resources that can be rapidly provisioned and released with utmost minimal management effort or unique service provider with major interaction.

1. *Private Cloud*: was exclusively meant for the usage of single organization which certainly comprises of multiple consumers. These Private based cloud be operated or managed or owned by that single organization.
2. *Community Cloud*: was exclusively meant for the usage for single community users of consumers wherein

similar to the private based cloud, these community cloud based infrastructure was also be operated or managed or owned by that single community users.

3. *Public Cloud*: was provisionally only meant for the general public. But Public Cloud infrastructure was managed or owned and operated by an academic, business or government organizations etc.,
4. *Hybrid Cloud*: infrastructure has the major composition of two or more distinct and similar cloud infrastructure that certainly remains as a unique entities but they are highly bounded together by standardized technology that in turn enables application portability, which increases the competency of this hybrid cloud

THE CLOUD COMPUTING ADOPTION MODEL



Source: <http://cloudcomputingnet.com>

Fig.2 The Cloud Computing Adoption Model

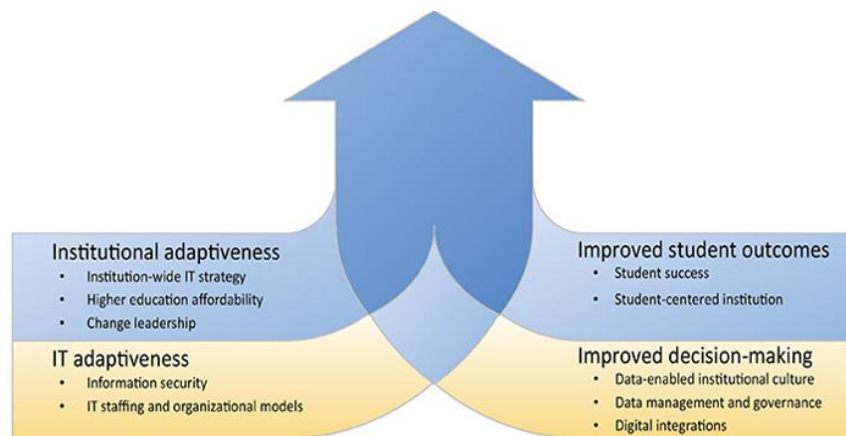
A. *Cloud Computing Service Models*: The Following are the various Cloud Computing Service Models, which they are as follows,

1. Software as a Service (SaaS)
2. Platform as a Service (PaaS)
3. Infrastructure as a Service (IaaS)

III. CLOUD COMPUTING TECHNOLOGY BASED ENTERPRISE RESOURCE PLANNING (ERP) SOFTWARE SYSTEM FOR EDUCATIONAL SECTOR

At Present, Educational Sector has gained a rapid momentum, it is developing and expanding in a more predominant and progressive manner day by day across the globe. Education Industry plays a major role in the service sector and creates a major impact on both economic and social facets. A Cloud Computing Technology based Enterprise Resource Planning (ERP) Software System has been adopted in many educational institutions across the

globe, where as it gives higher operational efficiency of the institutions various functional activities in a most systematic and efficient manner. Also adopting a cloud computing based Enterprise Resource Planning (ERP) Software System will certainly improve decision making process at all the levels of the institution. A Cloud Based Enterprise Resource Planning (ERP) Software System has changed the regular traditional way of carrying out the educational practices into modern way of practicing with the help of technological advancement, which in turn increases overall efficiency of the educational institution. (V.P.Sriram, Pala Suriya Kala, Dhanaraj Shanmugasundaram, A.Arun 2018)



Source: <https://er.educause.edu/articles/2018/1/top-10-it-issues-2018-the-remaking-of-higher-education>
 Fig. 3 Cloud Computing Based adoption in Higher Education and its restructuring



Source: www.techclouderp.com
 Fig. 4 Cloud Based Enterprise Resource Planning (ERP) for Educational Institutes

IV. CLOUD COMPUTING BASED TECHNOLOGIES MADE MUTLI-CHANNEL EDUCATIONAL INSTITUTION CAMPUSES ALIVE

Use of this cloud computing based technology among the educational institutions having multiple campuses has got an technology based unique online cloud based platform, when they could be able to offer various educational courses

across different campuses has happened and seems to be simpler to access and this could have got a live momentum across all the campuses of the educational institutions irrespective of the location, where they could be able to provide unique kind of experience in teaching and learning across the globe made it simpler and smarter. Due to technological transformation and advancement, it certainly helps the educational institutions to adopt certain emerging

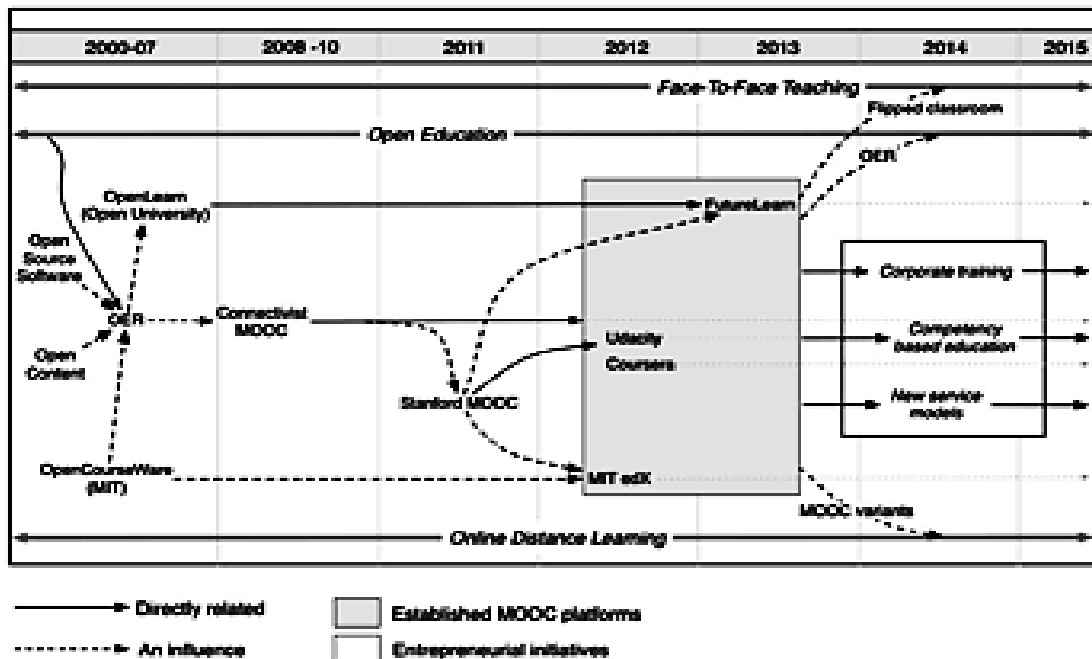
technologies for increasing their operational efficiency and provide a differentiation, comfortness in teaching and learning would certainly help them rather than moving around the traditional way of teaching and learning would be replaced by modern way of delivering the educational services. (B. Alamri, and M. Qureshi, 2015) (A. Mansuri, M. Verma, and P.Laxkar, 2014).

Cloud Computing Based Technology has provided a virtual learning space for learners through which they could be provide a different learning experience among the learners of different target groups. This virtual learning environment can be accessed at any part of the world at any point to time provided these technology has a back ground support through web based internet services. In addition to that now a days it's very difficult to manage the day to day functional activities carried out inside the educational institutions, they are forced to rely on the technological assistance in order to maintain their existing the data information available and provide a new technological platform that would enable stake holders to make use of it and get the maximum benefit out of using such technologies. Similarly, Educational Institutions started to adopt a Cloud Computing Technology Dependent Based Enterprise Resource Planning (ERP)

System. The Introduction and adoption of Enterprise Resource Planning (ERP) System has provided a competitive advantage among others wherein by having such technology would certainly enabled them to easily differentiate themselves from other similar competitors. (V.P.Sriram, Pala Suriya Kala, Dhanaraj Shanmugasundaram, A.Arun 2018)

V. ADOPTATION AND USAGE OF CLOUD COMPUTING TECHNOLOGY – MASSIVE OPEN ONLINE COURSES (MOOC's)

Massive Open Online Courses (MOOC's) are a recent technological development and advancement, wherein provides a greater progression in distance education teaching and learning. The concept of Massive Open Online Courses (MOOC's) has originated in early 2008 among the continuous effort of open educational resources (OERM) movement. In the initial stage of the introduction, most of the initial MOOC's courses were certainly influenced by important connectivist theory, which merely emphasizes that knowledge and learning would needs to arise from a network relationships or network connections. (R. Kop, and F. Carroll, 2011).



Source: https://en.wikipedia.org/wiki/Massive_open_online_course#cite_note-blogs.cetis.org.uk-10
 Fig.5 Timeline and Massive Open Online Courses Growth Cycle on Technology Adaption

Later in the year 2012, Massive Open Online Courses (MOOC's) has gained its importance and greater efficiency as the industry attracted significant media buzz and provide a great opportunity and interest for the venture capitalist. (N. Alwi, and Ip. Fan, 2010). Several number of service providers have emerged and they started to provide this Massive Open Online Courses (MOOC's) that are majorly affiliated to the top universities in India and Abroad. Some of these major service providers of Massive Open Online

Courses (MOOC's) include EDX, Swayam and Coursera (www.techopedia.com).

Massive Open Online Courses (MOOC's) had brought a revolutionary change in to the field of education sectors and it had given a new momentum in terms of Teaching and Learning. However, their impact is major focusing on innovative delivery of educational services and mainly benefiting the stakeholders who pursue Higher Education degrees. The lack of personalized support and experts'

advice in Massive Open Online Courses (MOOC's) is causing a major problem among many of the learners that they have not developed their work habits accordingly and At the same time self-learning skills would be seen as a major obstacle, and in turn they do not see Massive Open

Online Courses (MOOC's) as an major alternative solution for their teaching and learning.(Carlos Alario-Hoyos, IriaEstévez-Ayres, Mar Pérez Sanagustín, DerickLeony, Carlos Delgado Kloos, 2015).

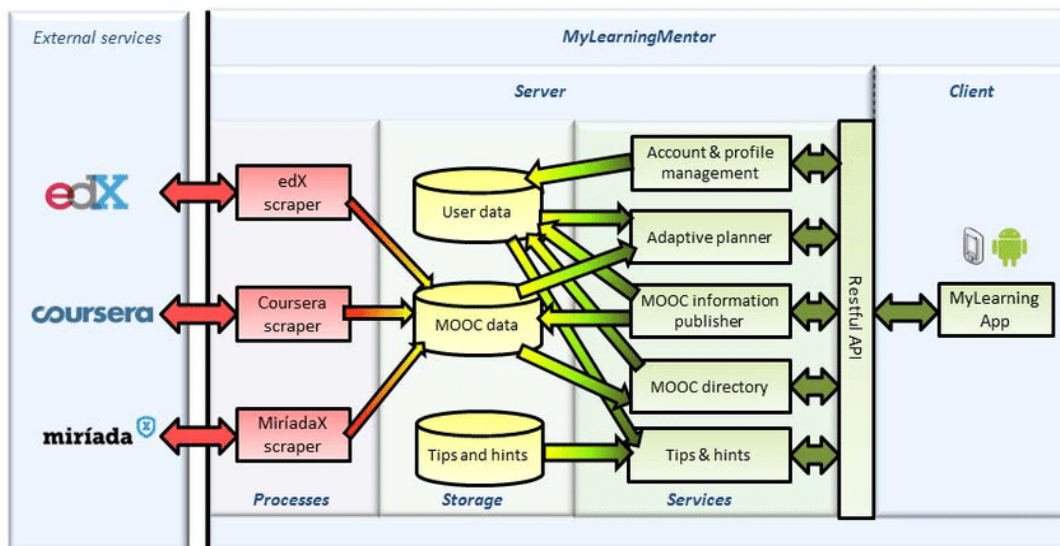


Fig. 6 Functional Architecture of My Learning Mentor (MLM) (Carlos Alario-Hoyos)

VI. CONCLUSION

Cloud computing based Technology in the field of education has transformed the classroom experience. Cloud computing based Technology allows any education institutions provides a clear solution to reap all the advantages of such cloud computing based technology in education sector. (E.Tuncay, 2010). It provides higher flexibility in the learning environment, it increases the with elasticity and scalability while supporting and facing complex situations with compatible infrastructures that contains more storage costs and at the same time protecting the sensitive data more securely from data loss or data corruption (Yifat Perry, 2018). Overall, Adoption of such Cloud computing technology certainly boostthe competitiveness with the educational institution and provide a unique kind of experience to all the stake holders of the business environment. (C. Bulla, B. Hunshal, and S. Mehta, 2016)

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