Research Paper Management

Implementing Cloud ERP systems in Higher Educational Institutes and Universities

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ABSTRACT

ERP is an Enterprise information technology solution that integrates enterprise functions such as planning, financials, sales, purchasing, human resources, logistics, customer service, and manufacturing. ERP is the, "Commercial software package that enables the integration of transaction oriented data and business processes throughout an organization." Markus (1999). ERP is a system which consists of several integrated module that share data in organization in order to provide connectivity. An attempt is made to study the current issues of implementing ERP system with the cloud computing solutions in industries and institutes of Higher education. This paper includes the review of development of Low cost ERP Solution to Indian industries and institutes and opening a business opportunity in emerging countries of Asia with latest technologies such as SaaS in Cloud Computing, ERP and Mobile computing, etc.

KEYWORDS Enterprise Resource Planning, SaaS, Cloud computing, systems.

INTRODUCTION

The need of enterprise system is increasing through out the world. The enterprise processes in the industry and institutes is changing very fast in terms of IT based information system. Not only Industrial but nowadays higher education Institutions are coming out as large enterprises where huge amount of data is fed and managed every day. These problems are very complex and need lot of money and efforts.

Availability of expertise and skills causes another problem. An integrated Enterprise resources management solution can solve this kind of problem. But implementing the ERP in institutions is a big issue, as it needs large infrastructure. The ERP system implementation in industry or institute results in large changes in the systems. Organizations that face an ERP implementation project have several risks to consider in order to avoid problems that cause failures. System failure, software failure, security these are the problems that organizations have to keep track. The solution for implementing ERP system without thinking of any huge infrastructure has arrived. The purpose of this paper is to do a study on how the SMBs and educational institutes are getting solution to implement ERP without having any infrastructure and at low cost [1].

EVOLUTION OF ERP IMPLEMENTATIONS IN HIGHER EDUCATION INSTITUTIONS

A Implementation of ERP in Traditional way

More than 50% of the institutions in the developing countries are following traditional approach of managing information system with stand alone computer systems and store data in different departmental systems due to lack of infrastructure. Different modules like admissions, fee collection, attendance, grading, Feedback system, Billing, Smart classes, Inventory, Human resource management etc are implemented in individual system or in network based system in an Adhoc manner without having an overall objective of a comprehensive ERP. The softwares implemented on these systems do not integrate processes and cannot talk to each other. There is no concept of service architecture being used in these kinds of implementations [4].

B ERP On-Campus implementation

During the decade of 90s to 2000 organizations to manage their information system have developed in-house infrastructure for ERP implementation and without having any outside dependence. They tried to manage the data with in-house huge infrastructure, but it did not solve the integration of processes. The increase in the cost to adopting software to manage processes and implement the integrated ERP system avoided SMB and Institutions to adopt integrated ERP Softwares and implement [4].

C Implementation of ERP with Internet Host Provider

During 2000 with the increase in the web based technologies and cloud computing which works as a virtual computer made easy way to implement ERP using web based cloud system. These kind of implementations work on virtualization, uses Server side scripts or tools, Storage and networking component is looked after by the host who has been hired for providing the services It leads to lower cost of hardware by the organization. It also dilutes the requirement of highly skilled professions to

ERP IN EDUCATION SECTOR

Education system in emerging countries of Asia has witnessed massive growth in terms of numbers as well as a multitude of changes in the past few decades. Not only the quantum of intake in the group of colleges has increased significantly but the associated policies, procedures related to admission, teaching, examination, interaction with students also has grown many times[9]. IT tools are promising a panacea in order to effectively manage such a scenario. ERP is an information technology solution that integrates and automates recruitment, admissions, financial aid, student records, and most academic and administrative services. ERP can be used for both administrative and academic purposes by universities and Institutes [10]. Administrative functions include: human resources, accounting, payroll, and billing. Academic functions include: recruitment, admissions, registration, Time Table, attendance, Teaching and lesson planning and all aspects of student records can be managed[10].

Kvavik, Katz, Beecher, Caruso, King, Voludakis, & Williams, (2002) observed that ERP solutions offer improved services for faculty, staff, and students; administrative, academic, and student data are standardized; university data is globally accessible over the Internet; and the new systems involve less cost and risk than legacy systems [11].

INTRODUCTION TO CLOUD COMPUTING

Today is the age of information technology. The facets of work and personal life are moving towards the concept of availability of everything online. Understanding this trend, the

big and giant web based companies like Google, Amazon, Salesforce.com came with a model named "Cloud Computing " the sharing of web infrastructure to deal with the internet data storage, scalability and computation (Kambil,2009). According to the definition by NIST "Cloud computing is a model for on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction"[2]. Cloud computing is an online service model by which hardware and software services are delivered to customers depending upon their requirements and pay as an operating expense without incurring high cost (Bandyopadhyay, 2009). Basically cloud computing is a set of services that provide Infrastructure resources using Internet media and data storage on a third party server[3]. It has three dimensions known as Software level service, Platform level service, Infrastructure service (Fox, 2009). The main cloud computing attributes are pay per use, elastic self provisioning through software, simple scalable services, virtualized physical resources (Tucker). Models, such as cloud computing based on Virtual technologies enable the user to access storage resources and charge according to the resources access (Marcos, 2009). Cloud computing platforms are based on utility model that enhances the reliability, scalability, performance and need.

Cloud computing technology provides services in different areas and can meet several of the advance and futuristic requirements of ERP implementations in organizations of higher technical education and can cater to increasing volume and range of services.[7]

It uses the virtualization technique the context of utilizing the hardware or software resources virtually including the processing power of a machine. There are different types of virtualizations like Hardware virtualization, Desktop virtualization, OS-level virtualization, Network virtualization and application virtualization etc. virtualization is all about saving costs of system by running parallel tasks virtually from a single source increasing the utility of that source [7].

CLOUD COMPUTING INFRASTRUCTURE MODELS

The organizations can decide the type of the boundaries of cloud computing which deploy their applications according. The type of cloud computing can be categorized into three classes, the public cloud, the private cloud and the hybrid [3] as depicted in figure 1. The idioms public, private, and hybrid do not impose location. Whereas the term public clouds are naturally "out of organization" on public sites on the Internet and private clouds are positioned on premises, a private may be hosted at a collocation facility as well.

Public clouds are maintained outside the organization. Various customers' applications can be grouped together on the cloud server's memory and network. Public clouds basically hosted on a remote place which is away from the customer's location. Public cloud plays a major role in reducing the customer's risk and cost by extending the enterprise infrastructure [4].

Private clouds are basically hosted for a single client. They offer better security, quality of service and utmost control over the data. Every organization will have its own infrastructure and the way in which applications are organized. Enterprise's data center or a collocation facility can be used to deploy the private clouds.

Hybrid clouds are the result of combination of private and public clouds. They provide on-demand, externally provisioned scale. The resources of a public cloud can even support private clouds to maintain high service levels with respect to rapid work load fluctuations. This clearly shows the use of storage clouds to support Web 2.0 applications. In addition to these, even hybrid clouds also help to maintain planned workload spikes and even public clouds can also be utilized to perform periodic tasks.

1.	Utility computing service and billing model.	2.	Automation of administrative tasks
3.	Dynamic scaling	4.	Desktop virtualization.
5.	Policy-based services.	6	Internet connectivity.

In 2011, India emerged as the third largest user of Cloud services -

signalling the wide scope of Cloud computing here. The market in India will see higher growth in near future owing to the bigger IT spending coupled with the adoption of cloud services amongst the SMBs as well as the large businesses. India has become a viable market for cloud offerings.

SERVICES OF CLOUD COMPUTING.

a SOFTWARE-AS-A-SERVICE (SAAS) IN THE ENTERPRISE

Software-as-a-Service (SaaS) is also known as on-demand or hosted applications which can be used in the enterprise resource planning systems which provide application software to manage the business process on existing platform and it will be very useful in running ERP applications. SaaS can be moulded for adapting for the implantation in the software applications like ERP systems. Organizations makes payment for services, implement, and run their software applications. SaaS offers low initial cost -mostly based on subscription cost and further operation costs - as the service provider is the one that operates the system. This process definitely represents savings in terms of money cost of purchasing software and installing with required infrastructure, IT resources, and time spent from development to implementation [8].

They can lease the web-based software from service provider, which is responsible for the operation, upgrading and maintenance of the software related technology [8].

b INFRASTRUCTURE AS A SERVICE - IAAS

Infrastructure as a Service is a provision model in which an organization outsources the equipment used to support operations, including storage, hardware, servers and networking components. The service provider owns the equipment and responsible for housing, running and maintaining it. The devices are maintained remotely from service provider. The client typically pays on a per-use basis [9].

Factor	Percent
Replacing Aging legacy system	30%
Improve Service to customers	21%
Transforming Institution Operations	16%
Modernize Campus IT Environment	12%
Keep Institution Competitive	7%
Increase Efficiency	5%
Better teaching learning process	5%
Accountability / Regulatory compliance	4%
Out of	100%

Table 1. Reasons for Implementing ERP Systems in Education Institutions

Reasons for Implementing ERP Systems in Education Institutions

Some of the vital reasons for implementing ERP Systems in education sector are to improve service to customers as students are stake holders of institution managing their data properly starting from attendance to result will improve quality and there will be transparency in data which can be shown to college authorities and parents if required. To keep institution competitive, increase in efficiency of teaching syllabus coverage can be entered as per syllabus and other activities

conducted, which will help the institution to get good grades from different authorities of government. Better teaching and learning process as some learning management softwares are available for uploading teaching material and slides for students.

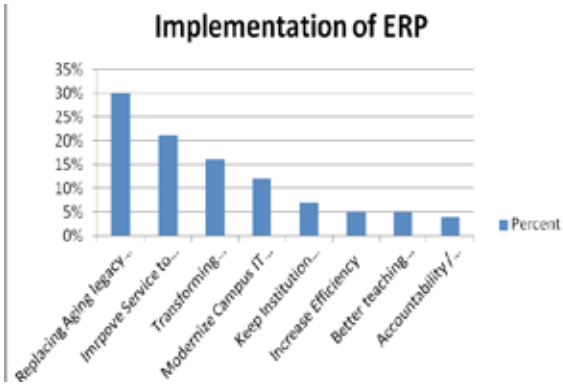

Figure: 1. Chart representing the above table

CONCLUSION:

The need of enterprise system is increasing throughout the world. The enterprise processes in the industry and institutes is changing very fast in terms of IT based information system. The institutes are running various courses providing autonomous courses and enrolling huge number of students for the courses. The taking care of processes starting from admission to academic manually is becoming tedious. To implement on campus ERP system to manage all such processes has become a nightmare. Now as the IT sector is providing the ERP system on cloud, without worrying about the infrastructure, the effectiveness and efficiency of operations of educational institution would improve significantly through the implementation of ERP. The processes like HR, Payroll, CRM are improved. Yet no clear cut trend is observed with respect to nature of the experience of ERP implementation in Academic management.

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