

Challenges Involved in Implementation of ERP on Demand Solution: Cloud Computing

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Abstract

As the world is beginning towards the cloud where speed and scalability are critical; and the many software is taking over to one another even more intrinsic role in this period the Cloud ERP would play the vital role in organization specially in SME (i.e. Small Medium Enterprises). Organizations are increasingly seeking realizable benefits from their IT asset based investments. Due to this, a new deployment model of ERP Software has emerged in the Industry i.e. ERP on SaaS Model. Cloud computing is a set of services that provide infrastructure resources using internet media and data storage on a third party server (i.e. Datacenters). SMEs are said to be the lifeblood of any vibrant economy. They are known to be the silent drivers of a nation's economy. SMEs of India are one of the most aggressive adopters of ERP Packages. Most of the SMEs have adopted the traditional ERP Systems and have incurred a heavy cost while implementing these systems. This paper presents what are the challenges while implementing the ERP cloud on demand solution in an organization.

Keywords: Cloud ERP, SME, SaaS, PaaS, IaaS Cloud Computing, ERP, IS, Multitenant, HRM, SCM, CRM, MRP

Introduction:-

ERP software is intended to provide enterprise wide solution for all business activities with single application and single data repository, but today ERP is headed towards another direction.

The change which ERP software seems to adopt in near future is the Cloud ERP. ERP solutions like HRM, CRM, SCM, Financial management etc with complete and easy integration facilities and the future form of ERP is cloud.

ERP solutions inclined and equipped with more and more e-commerce facilities and tools. The availability of this ERP

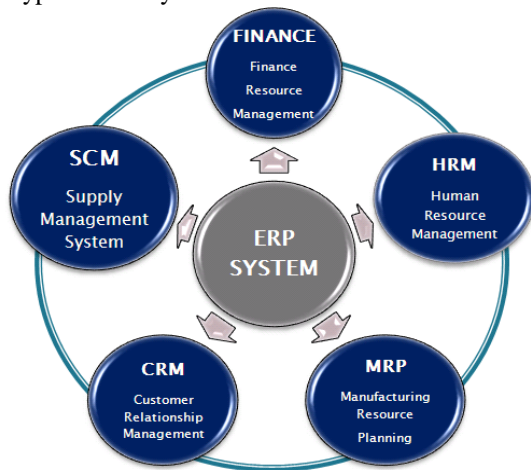
has opened up gates for the large companies to the global markets and in order to attract more and more user's future. ERP cloud computing, on demand and SaaS were all introduced in order to capture mid size and small sector companies by providing economical and easy to use solutions. The time and money involved with on-premise ERP software scared SME for opting for ERP solutions despite of its huge benefits, with these solutions minimum IT infrastructure is required and very less time is needed for implementation, this gives SME companies an ideal solution to utilize ERP benefits for growing and expanding their business. Such offers with more eased out licensing models and facilities are expected in future to attract more and more small and midsize buyers. Strong data security features and advanced ways of keeping back up of the user's data will also come up to increase trust and credibility of such solutions even in the organizations.

Many organizations today are turning to the cloud ERP systems in increasing numbers. There are many reasons why they are choosing the cloud. These are the reasons we hear most often:

- ✓ Do not want to buy the servers and hire the IT resources.
- ✓ Becoming more complex, and challenging to manage.
- ✓ Organizations have complex ERP system need something easier and more economical.
- ✓ Top management doesn't want to spend it on an ERP system.

To deploy the ERP system has three ways that is on-premise, on-demand (SaaS) and hosted. Purchasing and implementing traditional ERP system (on-premise) is always costly and difficult job for any organization and involves a great risk and consume more time. Implementing traditional ERP means deploying new infrastructure, purchasing servers, hardware and software thus it is always a costly affair for any organization.

The typical ERP system framework is shown below:



There are many IT companies who are in the Cloud ERP and few known IT companies are Salesforce, Microsoft, TCS, Ramco Systems, etc. TCS Cloud ERP is for the Manufacturing, Retail, Education and Wellness. Changing business dynamic, increasing competition, and globalization constantly shape the manufacturing space. Enterprise needs to produce quality products at optimal prices, for which you need to enhance product development. Integrating Information Communication and Technology (ICT) initiatives with business helps in achieving through seamless operations. Giving new opportunities by connecting extended supply chains and extracting more value from the product lifecycle, they help them to achieve the cost-efficiency. TCS solution is offered through the innovative business model – 'TCS – ION', which facilitates in innovation, customer acquisition, and revenue growth, while addressing the future ICT needs they have the following strategies:

- ✓ Provide real-time visibility and traceability
- ✓ Improve productivity
- ✓ Enhance customer service
- ✓ Informed decision-making

Popular SaaS Based Solutions:

Salesforce.com - is a Customer Relationship Management (CRM) system and is considered the largest SaaS Company and most talked about when people refer to the SaaS

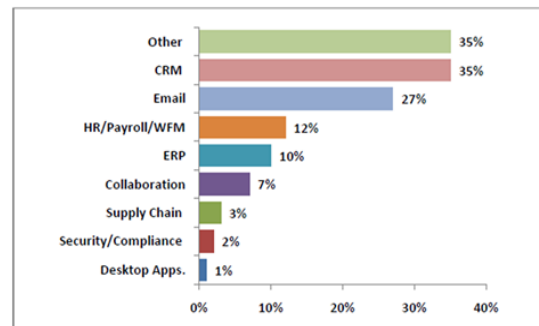
industry. Salesforce.com was founded in 1999. I have been using Salesforce.com for 4 years and I think it's an excellent product.

Ramco on Demand ERP (RODE): is ERP Solution on SaaS Delivery Model. The solution covers line of business services such as HR, Finance, Supply Chain Management, Sales and Shipping etc.

Net suite - offer CRM, ERP/Accounting and E-commerce on-demand or SaaS product offerings.

Saasu.com – this is an Australian based company offering easy online accounting.

Google Apps – this is a messaging and collaboration tool for small business. We use this at Style after moving from an in-house managed Microsoft exchange server. Google apps provide a full list of features including spam handling.



Source: Springboard Research, 07/2008 Q: What SaaS applications are you currently using? N: 94 (SaaS adopters)
 Note: Responses do not add up to 100 as the above reflects adopters with multiple SaaS applications

Top ERP Vendors also realized the above facts to utilize the cloud computing technology to deliver and implement the ERP on SaaS Model and provide the cost effective solution to the clients. They have already taken initiative and launched their ERP-SaaS Products in the market: Few of them are listed below for reference:

- SAP by Design – SAP
- Oracle on Demand – Oracle Corp.
- Ramco On Demand ERP – Ramco Systems

SAP Business By Design, Lawson software on Amazon's Elastic Cloud Computing (EC2) platform, Ramco On Demand are few big cloud ERP providers. Different parties involved when providing ERP as a Service to the users are:

- ❖ Cloud service provider (the company running the cloud environment).
- ❖ ERP vendor (the company developed and sells licenses for the software)
- ❖ ERP implementation partner (the company that supports the user company with the implementation)
- ❖ User company (the company that implementing ERP for their daily business processes & use)

Cloud services as SaaS (Software as a services), PaaS (Platform as a services) and IaaS (Infrastructure as a services).

There are different types of clouds: public, private and hybrid. The private cloud refers to internal data centers and not made available to the general public. The hybrid model might attract high attention by the companies, because it is a good way of managing the performance, security and privacy concerns related to cloud computing. (Armbrust et al., 2009)

The huge initial investments and costs usually needed for a business to establish one of the problems facing Small and Medium Enterprises (SMEs) to start developing their own IS (Information System). Cloud computing that converts the initial costs into operational costs. This conversion doesn't mean that the costs are lowered in the long run. These opportunities given by cloud computing might affect on the organization's decision to accept the technology. In the same time there are some concerns which are high obstacles for accepting the cloud computing. Cloud computing as a new trend is predicted to grow and has the potential to transform a large part of the IT industry. The obstacles of cloud computing are deployed in ERP arena. The cloud ERP space is still in its infancy stages and certain organizations might have a better fit to cloud ERP.

Literature Review:-

Authors	Quotations/Predictions
John McCarthy	Computation may be someday being organized as a public utility (P8, 605554...)
Gartner	By 2011, early technology adopters "will forgo capital expenditures and instead purchase 40% of their IT infrastructures as a service P1, high
Larry Ellison	Cloud computing is, 'everything that we already do' (P12, 63933...)
K. Chellapa	Cloud computing paradigms where the boundaries of computing will be determine rational rather than technical limits.
Jamie Turner	Cloud computing to evolve include the maturing of virtualization technology, the development of universal high-speed bandwidth, and universal software interoperability standards P 42
Songnian Zhou	"Many IT professionals recognize the benefits cloud computing offers in terms of increased storage, flexibility and cost reduction," P 43
Julian Friedman	Security and other concerns will soon be resolved with the help of cloud computing. P 43

Andreas Asander	Cloud computing services "can enable an enterprise to expand its infrastructure, add capacity on demand, or outsource the whole infrastructure, resulting in greater flexibility, a wider Choice of computing resources and significant cost savings."
McKinsey	"Using clouds for computing tasks promises a revolution in IT similar to the birth of the web and e-commerce. P2, high
Gartner	Enterprise balance in opportunity and cloud mobile based Cloud computing is becoming a reality

Need and Importance of the Study:-

The need of ERP based SaaS solution is closely associated with attempts to improve the business value of IT investments, whereas an ERP solution seeks to integrate and streamline business processes and their associated information and work flows in an organization. By definition, Software as a Service or SaaS is a delivery model that enables application software for use by end-user organizations 'on tap' or 'on demand' or 'as and when required' using Internet based Services.

In India, SMBs - Small and Mid -Sized companies are always willing to implement ERP Application to automate their Business Processes. But they are unable to do the same due to huge costs & risks associated with any ERP Implementation (SAP, Oracle etc). Now, full fledged ERP on SaaS Model is viable option for these organizations where they need not to invest huge amount and minimized their risks with option to withdraw from using ERP on SaaS Model at any moment of time.

Objective:-

- ❖ To Compare and contrast the ERP on demand and ERP on Premise solution
- ❖ To study the implementation of ERP on demand and ERP on Premise solution
- ❖ To study the Cost effectiveness of on demand ERP with on premises solution
- ❖ To study what are the challenges involved in ERP on Demand solution.

Research methodology:-

The research methodology will consist of the critical comparative analysis of the existing ERP solutions available with SaaS Model, and counter the challenges faced by the IT Companies as well as User organization during implementation and deployment/Roll Out of ERP Solution

on SaaS Model. This would include collection of actual facts/figures and case analysis of IT companies and user organizations that have taken initiative of implementation and using of ERP on SaaS Model.

Secondary data: The Secondary data was collected using:

- a. Internet: Websites of most of the ERP providing software's using SaaS technology and related website were visited and most of essential data and information were collected via this method.
- b. Journals: White papers from emerald Journal were used to collect data.
- c. News Papers: Business Standard daily business news paper was also used as a source for secondary data collection.
- d. Magazines: The CTO Forum magazine, Business Week

Criteria	ERP on demand	ERP on Premises
Infrastructure Investment	-	+
Up-Front license cost	-	+
Maintenance Cost	-	+
Availability	Internet	Private Network
Control issues and Data Security	-	+
Customization	-	+
Scalability	+	-

Data Analysis:-

Comparison of ERP on demand (SaaS) with on Premises ERP based on following Criteria:-

- The major costs, which accompany the implementation (investment in the required infrastructure) and the use of the application (up-front license cost and maintenance cost)
- The control issues and data security concern.
- Customization capabilities indicate whether the application can be customized, dependent on the customer needs, and adapted to the changing business processes of the company
- Scalability factor refers to the ability of the application to grow together with the organization, such that the increasing amount of data is processed appropriately without any negative effect on the processing time.

Note: -

- The "—" sign indicates that the cost is eliminated from the business model.
- where "+" sign refers to the full internal control and data ownership.
- The channel, through which the application is available for use (private network, internet).

Table 1;- Shows Comparison of ERP on demand with ERP on Premises solution.

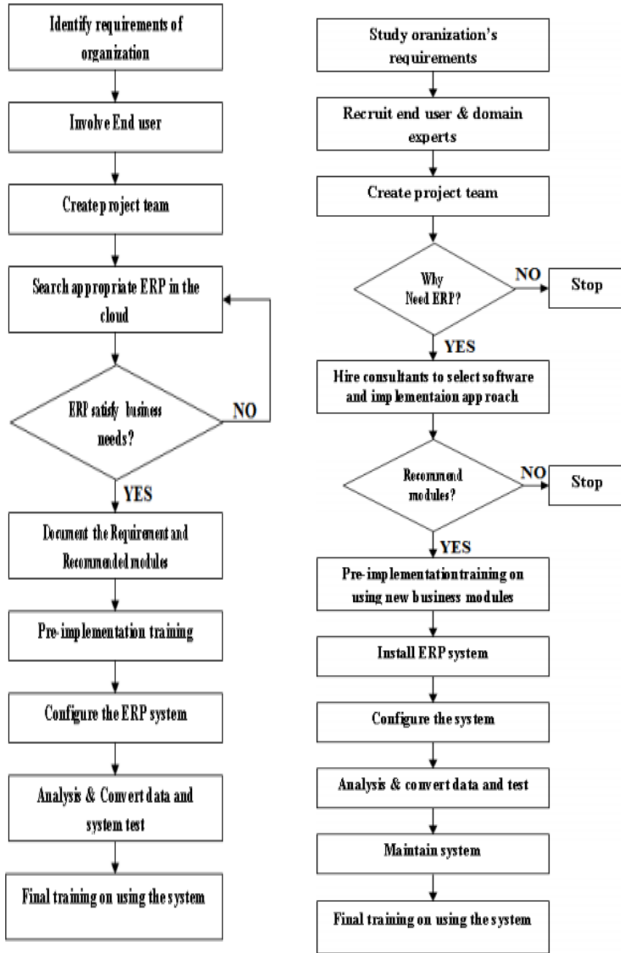
Interpretation of above Data:- On Demand solution is very cost effective compare to on premises solution. But data security and customization are a major concerns for on Demand solution.

On Demand ERP Model	ERP on Premises
No capital expenditure	High capital Expenditure
No investments	Direct and Indirect investment
Low-cost subscription model	Ballooning cost
Implement in weeks	Long implementation time
Scalable	Rigid
Access anytime, anywhere	Limited access
Free upgrades	Up grades at extra cost
Flexible licensing	Limited licensing

Table 2:- Comparison between On Demand / ERP on Premises

ERP LIFE CYCLE: IMPLEMENTATION

Typically (Casual Analysis), Cloud ERP can save almost 50% cost over traditional ERP in five years.



CLOUD ERP

TRADITIONAL ERP

Source: Journal of Information and Operations Management, ISSN: 0976-7754 & E-ISSN: 0976-7762, Volume 3, Issue 1, 2012

Cost Comparisons of ERP on Demand with On Premises Solution

When comparing the costs of options for cloud based ERP solutions will need to factor in the cost of licensing, hardware and IT support. The example below provides a very simplified cost comparison of a 5 user system deployed in 2 different scenarios. The on premises scenario includes the cost to purchase hardware initially and upgrade it every four years, as well as a cost associated with internal IT support. Other factors that we may want to include in a more thorough analysis would be cost of capital, electricity savings, and implementation and upgrade services.

ERP Cost	Cost	1 year	2 year	3 year	4 year	5 year	Total
On premises (5 users)	\$11,250	\$11,250	\$0	\$0	\$0	\$0	
Hardware	\$10,000	\$10,000	\$0	\$0	\$10,000	\$0	
IT support	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	
Software maintenance	18%	\$2,050	\$2,050	\$2,050	\$2,050	\$2,050	
Total		\$33,300	\$12,050	\$12,050	\$22,050	\$12,050	\$91,500
On Demand (5 users license)	\$225 per month	\$13,500	\$13,500	\$13,500	\$13,500	\$13,500	
Setup/Activation	\$2,500	\$2,500	\$0	\$0	\$0	\$0	
Total		\$16,000	\$13,500	\$13,500	\$13,500	\$13,500	\$70,000

Source: Microsoft GP Business Essentials sample pricing for information purposes only. Note: Does not include cost of implementation services which normally range from 1 to 3 times of cost of Software Licenses.

Interpretation: - On demand ERP solution will enable to control following costs by:

- Avoiding up-front hardware acquisitions or updates
- Paying a predictable, monthly, per-user subscription fee
- Getting software maintenance without annual fees
- Taking advantage of software updates without paying for additional services

CASE ANALYSIS OF M/s. FUJITSU AND M/s PEARL POLYMERS LIMITED (PPL)

Company Name	FUJITSU Case Study: FUJITSU Customer Service Centre	PPL Case Study: Ramco On Demand ERP
Solution	Salesforce .com SaaS solution As a case management application	Ramco On Demand ERP (RODE) Solution for Manufacturing Industry
Services	SaaS solution for the management and reporting of customer queries, designed to increase customer satisfaction.	ERP software on a SaaS model.
Benefits	<ul style="list-style-type: none"> • Capture and assign cases to the appropriate teams • Provide flexible mechanisms for case capture, including:- from within a client web page (web-to-case), email to case or case creation directly in Salesforce.com • Associate a case to 	<ul style="list-style-type: none"> • Multiple Location Management: ERP cloud - rose from multiple locations and were tracked online with group-wise, time period-wise detailed analysis. • Efficient

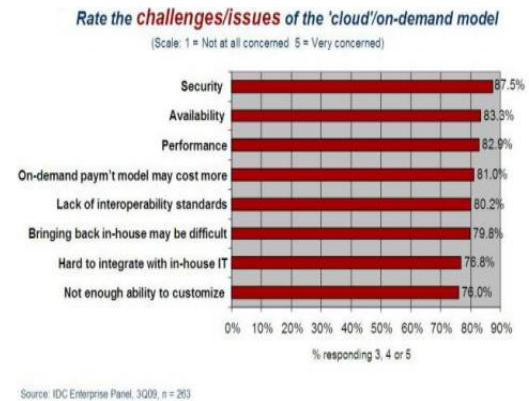
	<p>a contact or account if they already existed within Salesforce.com</p> <ul style="list-style-type: none"> • Increase the quality of interaction logging giving a 360 degree view of a customer • View real-time results via management reports and dashboards • Obtain better understanding of cases associated with institutions or individuals and in turn allow the sales teams to view the cases that have been raised by their customers before they contact them 	<p>Tracking: Ramco on Demand ERP – facilitate in tracking the stock of packing materials.</p> <ul style="list-style-type: none"> • Better Accessibility: Ramco On Demand ERP provided anytime, anywhere access; the senior management is now able to review the business parameters 24 X 7.
<p>Challenges</p>	<ul style="list-style-type: none"> • Existing spreadsheet-based approach for managing customer support queries proving increasingly problematic • Resulting in lack of timely response to customers, failure to meet SLAs and limited case visibility • Sales people have poor understanding of customer issues at an individual or company level 	<ul style="list-style-type: none"> • Huge amount of infrastructure CAPEX to connect all the five units. • Unavailability of online data . • Lack of production modules to map to the main line of business. • Need to consolidate data offline after exporting data from existing systems across all locations. • Unmanageable range of products.

Challenges for ERP Cloud:-

One of the most important challenges ahead is that clouds will always be compared to local machine in the time of usage. It is important for the user to know what are the gains of shifting to the cloud. Here is a list of issues that ERP cloud computing is currently facing: Customization of Cloud ERP is the big challenge.

Following are the current challenges in the implementing the ERP clouds based in an organization are:

- Difficulty of extracting data from the cloud
- Data security issues and lack of confidence
- Legal issues and liability
- Issues related to the Elasticity Complexity.
- Issues related to Technological aspects as of installing, testing etc.
- Issues as the consistency and performance of the ERP cloud based
- Overall Monitoring, Analysis and Building Trust in the implementation of the ERP cloud based.
- Issues related to Mobility and provisioning
- Issues of the budget
- Customization issues



Challenges in the context of SME's in implementing the ERP cloud based they faced:

- Awareness – there is a low awareness among the SMEs till now, this is the big challenge and issue for the vendors to give the services of the ERP cloud based to the SMEs.
- Perception – there perception is that the ERP is only meant for large companies, industries that owe the large capital, profits and the main problem is the complexity of the ERP cloud based.
- Approach to implementation
- Cost
- Limited resource

Before the SMEs start to implement the ERP they have to come across the following few aspects that:

- Infrastructure resource planning
- Education about the ERP
- Human resource planning
- Top management commitment
- Training facilities
- Commitment to release the right people for the implementation.

Future Prospects:-

Prediction for future in ERP on demand solution is:

- Gartner states that nearly every vendor who briefs them has a cloud computing strategy yet few have shown how their strategies are cloud-centric.
- PaaS is one of the most highly hyped terms Gartner encounters on client calls, one of the most misunderstood as well, leading to a chaotic market.
- Cloud-based ERP in the Enterprise and Small & Medium Businesses (SMB) are accelerating along the Hype Cycle faster than Gartner indicates
- Cloud-based ERP systems most often considered in industries that have high variable costs, rapid transaction cycles and tends towards higher Return on Invested Capital (ROIC).
- Large companies (over \$500M in annual revenue) using Cloud-based ERP systems are opting for hosted deployments managed by their ERP vendor (10%) or an independent 3rd party (11%), with just 2% relying on a SaaS platform

According to research firm Gartner, cloud computing services revenue should total \$56.3 billion for 2009, representing a 21.3% increase compared to 2008. The market is expected to explode to \$150.1 billion in 2013.

Gartner expects SaaS revenue to total \$7.5 billion in 2009, which represents a 17.7% increase over 2008 revenue of \$6.4 billion. SaaS demand is expected to continue to surge to a total of more than \$14 billion by 2013. It states that:

- ❖ Nearly every vendor who briefs them has a cloud computing strategy yet few have shown how their strategies are cloud-centric.
- ❖ Gartner predicts that the most transformational technologies included in the Hype Cycle.

- ❖ Big Data is also an area of heavy client inquiry activity that Gartner interprets as massive hype in the market.
- ❖ By 2015, those companies who have adopted Big Data and extreme information management (their term for this area) will begin to outperform their unprepared competitors by 20% in every available financial metric.
- ❖ PaaS is one of the most highly hyped terms Gartner encounters on client calls, one of the most misunderstood as well, leading to a chaotic market.
- ❖ SaaS performs best for relatively simple tasks in IT-constrained organizations.

Findings and Conclusion:-

Global challenges force financial organizations to seek a new technology foundation for business. The combination of Service-Oriented Architecture (SOA) and Software-as-a-Service (SaaS) provides ultimate expandability cost effectively and unlimbers organizations for SaaS rapid change.

SaaS is a delivery model that unloads software over the internet in a one-to-many model which is combined with a repository of SOA components provides the ability to align technology with business. Monolithic on-premise applications are no longer viable for delivering products or services in a highly dynamic environment. Software as a Service (SaaS) is gaining momentum across global markets. Specific to India, most organizations are increasingly realizing the latent benefits that this model of IT service delivery can provide which spawns the interest for SaaS and its adoption.

The cloud services market in India will see significant growth during the next five years. However, this is highly dependent on cloud services providers meeting enterprise user concerns on issues ranging from pricing, to availability guarantees, to security. We could, therefore, see future forecasts revised significantly up or down. SaaS heralds an alternative approach to empower organizations with the provision of business impacting IT solutions through a web-based delivery model and it can be deployed rapidly and eliminates the need to invest in infrastructure and ongoing software maintenance costs that traditional applications require.

For SMBs, SaaS has always been a viable option, given that there is a monthly subscription instead of huge upfront costs, but for large enterprises, the benefits of SaaS are not too hard to find. Technology updating, easy adoption, scalability is just few of them. Data security is the main concern and growth obstacle for the SaaS industry. The future development of SaaS should focus on the design of

data security and assurance for SaaS applications and transactions. Needless to say, customers will not subscribe SaaS service if they will not feel that their business data and transactions are securely protected by the vendor. But, that view is gradually changing as many larger organizations get more comfortable with the SaaS model, but there are still concerns about the idea of multitenancy, Data Security. Big-company CEOs/CIOs want the option of bringing the software in-house or having it hosted by a third party if the SaaS vendor gets in any trouble or they are unhappy with the services. SaaS-based ERP also raises the question of data security especially when it comes to financial / critical data where any manipulation or adjustment can carry painful and serious consequences with heavy losses.

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