

ERP in Cloud for Small and Medium Enterprises



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Cloud computing is an emerging paradigm that dominates the attention of Industries for Business Enterprises application. MS Office, ERP, CRM, SCM, Infrastructure like Server and Platform are offered as a service through cloud. Small and Medium Enterprises (SME) need to catch up with the technology adoption for a viable solution to increase the profit by increasing the efficiency of Business. This Paper deals with the factors influencing selection of ERP in cloud and its benefits in comparison to proprietary ERP packages as a business solution. The adoption of ERP in cloud for SME is discussed considering case studies relevant to them. The Cost effectiveness of cloud based online office suites versus MS Office is presented. Further, certain issues on security related to implementation of ERP in cloud for SME are also discussed.

1. Introduction

Cloud computing has offered computing from desktop or portable devices to remote computing to its users. It delivers hosted services over the internet which can be assessed by its patrons. Cloud has features like elasticity, dynamic massive scalability, measured service and self-provisioning of resources which attracts many industries for its adoption. The profit making was the primary goal of any business that in turn can be achieved through increasing the efficacy of business by adopting cloud. Three Level of Services and Deployment models are offered by Cloud computing providers and these services are customized based on its consumers need and demand.

The growth of Indian economy can be rendered stable by improving the performance of Small and Medium Enterprises (SME) as they are the main sources of growth of economy. The country's GDP can be improved by improving the efficiency of SME business models that can deliver stable growth. The SME faces challenge in technology adoption and it is because of their financial distress towards investing in hardware and software, Cloud could provide a practicable solution for adoption of technology. Service providers are providing a customized way through new nascent technology which is faster and easier to put into operation by all business. The technology up-gradation provides the competitive edge to the companies justified by cost effectiveness of the business solution. The acceptance and adoption of technology by SME can improve business efficacy.

This paper deals with the adoption of cloud by SME offering a wide range of advantages to their company which can differentiate them from their competitors in business. The factors influencing the SME towards the selection of "ERP in Cloud" as a business solution are presented in this paper. "ERP in Cloud" is compared to 'Simple ERP' by portraying its customized usage with reduced cost. The cloud platform used by SME with desired advantages listed by service providers will be a solution by taking into account cloud adoption problem with cost effectiveness. This paper deals with the implementation of ERP in cloud by considering the aspects of technology and cost by considering the case studies which are not related to each other. Further, Case studies relevant to the vendors and end users are also presented.

2. Services of Cloud and Deployment Models

The level of services provided under cloud is shown in Fig.01 and Fig.02. The Cloud deployment models in public, private, community and hybrid domain are illustrated in Fig03, Fig04, Fig 05 and Fig 06 respectively.

The use of technology in business benefits industry in the large number of aspects that delivers competitive gain to companies. The companies can reach more potential customers through technology as it was the primary target that drives profits in the present competitive environment and will help companies to develop business relationship with the potential customers. The technology can streamline operations that bring improved efficiency in the business and can reduce cost thereby maximizing profit. The technology can curtail waste and devote talent to core business instead of overhead. It can provide better service to customers and support better relationship with key allies.

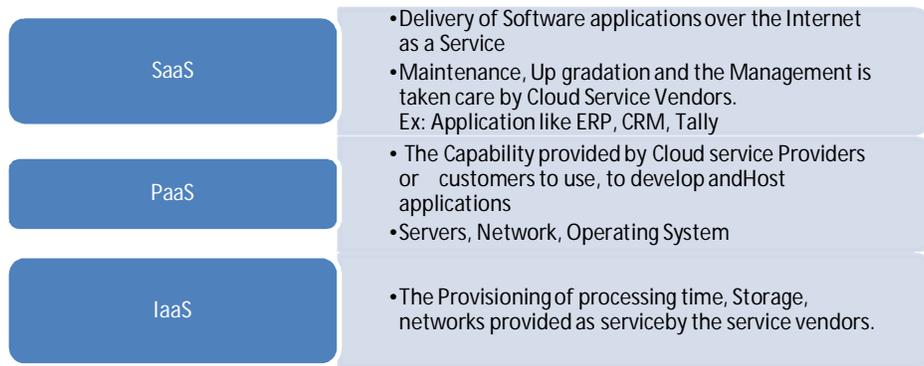
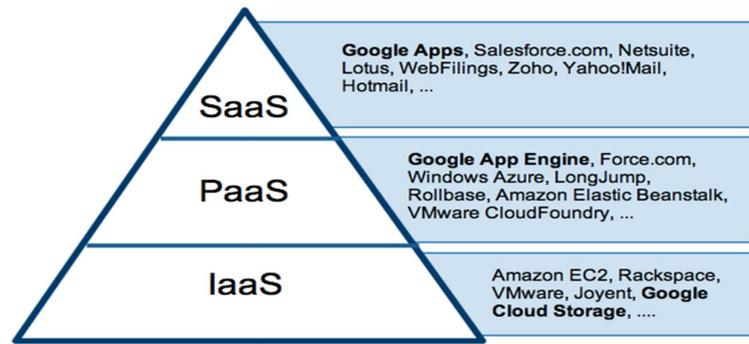


Figure 01 Level of Services



Source: Gartner AADI Summit Dec 2009

Figure 02 Levels of Services

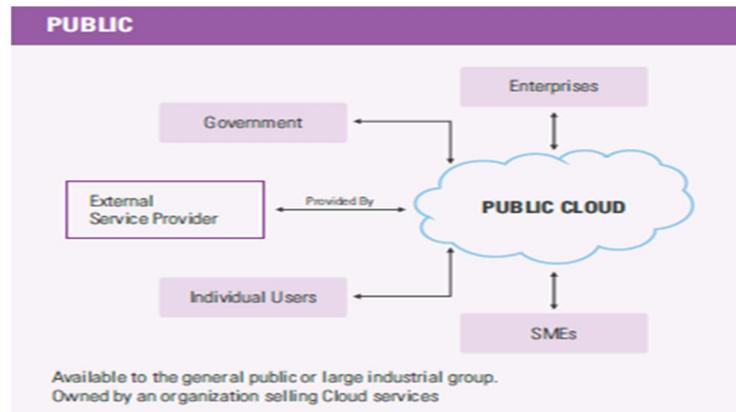


Figure 03 Public Cloud Deployment Model

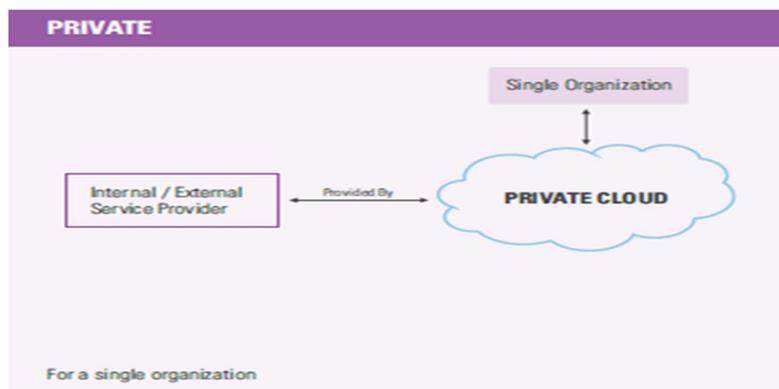


Figure 04 Private Cloud Deployment Model

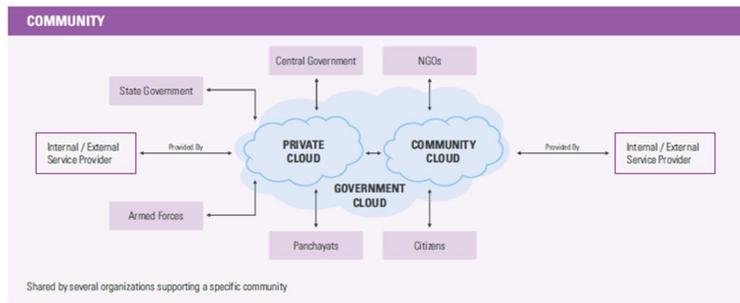


Figure 05 Community Cloud Deployment Model

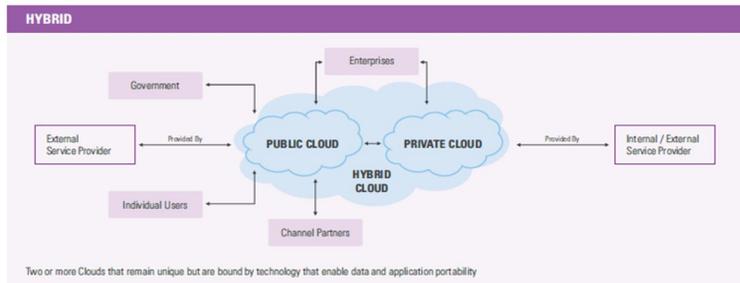


Figure 06 Hybrid Cloud Deployment Model

Source: KPMG’s The Cloud: Changing the Business Ecosystem, 2011

Cloud offers many advantages to companies that can deliver numerous ways that provides companies a competitive edge over their competitors. The Business solution in cloud renders faster Implementation time ensuing in rapid start of the services. It offers “pay as you Use” model that result in greater advantage for SMEs in cost aspects. Cloud computing comes as a cost effective solution to key business demands that in turn offers companies with the advantage of competitive pricing of their products in the aggressive market environment. Cloud offers anywhere anytime access with high level of security so that the companies can have transparent and hassle free working methodologies towards faster decision making and companies betterment. Real-time backup to offer maximum up time & availability are possible in cloud. The advantages of cloud are well illustrated in Table 01.

Table 01 Advantages of Cloud

	Advantages
Administrative	Availability of / ease of access to hardware and software
	Easier to recover after disaster
	Reduced system administration
	Rapid acquisition and deployment
Partnership	Improved Information Sharing and Collaboration
	Easier to partner with other organizations
Cost-Based	Little or no capital investment
	Need for less IT staff to support system
Data-Based	Transforms high fixed –capital costs to lower variable and operating expenses
	Better data Security
	Data is being organized
	Data is more under control

3. Offline Suites of Cloud Vs Desktop Based Microsoft Office

The software are available for desktop devices and on online markets for the users in a customized way based on their need towards the software. Office 365 of Microsoft was used by most of the desktop devices and it was challenged by established

adversaries like Google Apps and Zoho Docs. Table 02 depicts the comparison of these services based on its advantages, data security and cost effectiveness.

Table 02 Cloud Based Offline Suites Vs Microsoft Office (Desktop Based)

	Office 365	Google Docs	Zoho Docs	Microsoft Office
URL	http://office.microsoft.com/en-in	https://docs.google.com	https://www.zoho.com/docs/	www.microsoft.com
Cost	Rs.420.00 per user/month.	Rs.150/- per user / per month for the Business Users	Rs.250 per user/per month	18,500/- per user / per system (Enterprise Edition)
Total Cost per year	12 Months & Rs.420 =5040/- Per year	12 months & Rs.150 = 1800/- per year.	12 months * Rs250/per month. =3000/- per year	
Advantages	No big initial investment/cost. <i>Ease of deployment.</i> No Hardware Required Reduce your IT overhead and headaches Collaboration made easy The single most important feature is the feasibility of true scalability, allowing businesses to acquire and release hardware resources on demand. Process efficiencies also shoot up as more and more employees are able to access applications remotely and update data in real time.			Initial Investment high
Is data Secure	Your/User data is very secure. Cloud Service providers take utmost care in ensuring that your/user data is safe. These include physical security practices (24 x 7 x 365 security, video monitoring, biometric access, bullet-resistant walls etc.) Example : With nearly 10 million users worldwide accessing Zoho services, individuals, small, medium and large organizations count on Zoho security and data protection to meet their needs. Zoho take security very seriously and have developed a comprehensive set of practices, technologies and policies to help ensure your/user data is secure.			
Uptime	Reputable SaaS providers generally offer far better uptime and protection than individual businesses can hope to match.			

SME are facing a huge cost capital towards Microsoft Office (Desktop Based) and it results in the notion of technological bane in the cost aspect of the company. In this connection, the Cloud providers are offering their packages in a customized way added with more security aspects. The clients are ensured with the freedom of selecting their own ERP packages with the functions that relate to their company through Cloud when compared with Microsoft Office (Desktop Based). The clients can also switch their packages based upon the changing needs of the market.

The users are concerned about the privacy and security issues of ERP in Cloud and it can be addressed by IAM Model (Identity and Access Management – IAM). It can ensure the right access by the right people at right time. IAM model offers various functional elements namely Identity Provisioning and DE-Provisioning, Authentication & User Management, Identity Federation Management, Authorization & Compliance Management.

The user gains enough security credentials to gain the access to the system or a particular service and it is ensured by Authentication & User Management. The Identity provisioning and DE-Provisioning of IAM model ensures the Procedure of on boarding of user (Provisioning) when they join and off-boarding (DE-Provisioning) the user when they leave the enterprise.

The Authentication & User Management deals with the process by which the user gets enough credentials to gain the access to the system or a particular service. The Identity Federation Management is a Method of establishing the trust relationship between different enterprises. Authorization model supports complex access control policies comprising user roles, user groups and its attributes. Compliance Management is used to clearly track and monitor the access rights and privileges of the users are not violated auditors to validate compliance. (Sudha,S ., ViswanathamV.Mathu (2013), "Addressing Security and Privacy Issues in Cloud Computing", *Journal of theoretical and applied Information Technology*)

SLA (Service-level agreement) is another way of security addressing process where it provides a contract between a network service provider and a customer that specifies the list of services offered by network service provider. The Internet service providers (ISP) are providing SLA for their customers to ensure security and privacy.

4. Factors Influencing Selection of ERP in Cloud

SME has to analyze three perspectives in the ERP software on cloud that will ensure better and hassle free usage. The first perspective is focused on **Economical** view which deals with financial issues as cost play the major role in decision making. The second perspective is **Technological** which deals with technical evaluation of the software towards adoption of the software in the company. The third perspective alerts on **People concerned** with the effect that selection and adoption of ERP will have on the people within the organization and their adoptability towards the software.

The Factors Affecting Selection of ERP in Cloud (Hofmann, 2010; Clarke, 2010; Tripti Negi Mahara , 2013) are as follows:

- **Flexible Payment:** The charges are determined by actual use of the ERP software rather than by fixed license fees as charged by the traditional ERP vendors. Prices are very competitive. This is one of the major advantages of moving to the cloud.
- **Reduced IT Infrastructure Cost:** There is no need to invest upfront in hardware, software or any other IT infrastructure as the virtual services are on a remote server and only a login through internet is needed to access the ERP software.
- **Low Operational Cost:** The cost to maintain and run the ERP software reduces.
- **Data backup and Recovery:** Assured backup of data and in case of data loss or tampering, efficient recovery should be possible.
- **Ubiquitous access:** can access the ERP software on the cloud without any delay and technical difficulties.
- **Scalability on demand:** The number of modules and users for the ERP software on the cloud can be scaled depending upon the organizations usage.
- **Low IT Manpower:** The IT manpower needed to maintain the ERP software goes down as it is the task of the vendor to manage the required infrastructure.
- **Availability (24X7):** Readiness and accessibility. The services available on demand and 24X7 on the Internet.
- **Platform Independence:** The ERP software can be accessed at any location and compatible to the digital devices.
- **Data Security:** The data can not be accessed by unauthorized persons on the network and within an organization.

5. Cloud for SME as Business Solution

Micro, Small and Medium Enterprises (MSME) contribute nearly 8 percent of the country's GDP, 45 percent of the manufacturing output and 40 percent of the exports [<http://msme.gov.in/Web/Portal/New-Default.aspx>]. The financial and security aspects are hindering the SME to hire technology that in turn obstructs them towards the path of continuous development in spite of their innovative business ideas.

SME tend to use pirated software in order to meet the competitive environment by reducing their cost burden. The original software was not affordable to SME and instead they try to use semi functional pirated software that gives an unsafe environment of data theft or loss. MIS of Indian Government are tracking pirated software use as it is a crime. TALLY/ERP software is used by most of the SME to meet their accounting needs and these are offered through cloud by improvised security at reduced cost that can stimulate SME to use ERP in Cloud in a genuine manner.

Science & Technology which positively intrude SMEs on a cluster basis is today well appreciated internationally. SME can group themselves as a community and they can adopt community cloud or private cloud, where they can be able to access original software at a reduced cost and improved security in the cloud. The payment is designed to pay as per the usage of the company and maintenance of the software is done by the vendors and thus the clients have ease of maintenance towards usage of service.

The cloud ERP is compared with simple ERP and the following conclusions drawn justifying the choice of cloud ERP as a Business Solution for SME.

- Enterprise resource planning (ERP) is the latest buzz in the industry and has helped many organizations to boost their productivity.
- Clients can decide on the type of ERP based on their organization's requirements, it could be either Cloud ERP or On-Premise ERP (simple ERP).
- A cloud ERP is an online subscription-based solution and a third party vendor would manage the software and related data using a robust database centrally.
- On-premise ERP would be installed locally at the enterprise place.
- Low initial Investment for Cloud.
- Clients can have quick Return On Investment.
- Clients have better performance delivery.

6. Case Studies

The case studies are discussed with respect to end user and vendor point of view towards ERP in Cloud. The end users view towards adopting ERP in Cloud can be clearly visualized as discussed in sections 6.1 and 6.2. The case of ERP in Cloud from the point of view of vendor is depicted in the section 6.3.

6.1 A Japan Based Conglomerate

A Japan based conglomerate manufactures Umami seasoning which does its operations in 26 countries. In India it markets from its Chennai-based headquarters with employees in various functions spread among various branches. This organisation maintains all its transactions manually, which it results in lack of integration among various functional departments and its branches leading to poor efficiency of business.

This organisation approached RAMCO for enhancing their business through cloud based ERP. RAMCO provided them comprehensive end-end functionality with local statutory compliance, affordable subscription model through cloud. It allowed the client to pay for an employee per month and more importantly RAMCO provided exhaustive training to help familiarize the users with the systems.

The implementation of Cloud based ERP for the Japan based conglomerate tasted success by integrating among all departments and its geographical locations by providing error free, low cost, updated and timely data of all the functionalities. [<http://www.ramco.com>]

6.2 It Services: UST Global

UST Global is a leading provider of end-to-end IT services and solutions. They use a client-centric Global Engagement Model that combines local, senior, on-site resources with the cost, scale, and quality advantages of off-shore operations. UST Global chose SAP Cloud for Travel and Expense for various advantages like reduced costs and improvised decision making. With SAP Cloud for Travel and Expense, companies can manage their business travel, from planning to expense reimbursements. It is designed for enabling companies to travel smarter, spend better, get reimbursed faster – all while staying in compliance with corporate policies and delivering on their business goals.

SAP Cloud for Travel and Expense helped UST Global to reduce corporate travel expense costs by 11.6% and with the addition of the SAP integrated GetThere Online booking tool they recognized an additional 15% savings in total travel cost without reducing actual travel. [<http://www.sap.com/pc/tech/cloud/software/cloud-for-travel/customer-reviews.html>]

6.3 A Case Study For Tracking Solution

The case study of J-Tech tracking solution is highlighted to spot the cost benefits that are offered through cloud as Software as a Service (SaaS).

J-Technologies India Ltd (J-Tech) is a part of the Euro €60 million IndoShell Group. J-Tech provides an integrated solution through the brand “VCare” to maintain the vehicles in an effective manner, incorporating all the latest industry standards with GPS Tracking. “Vcare” is a time-tested application and comes on a “Pay-as-you-go” model reducing the need for a high initial investment on either hardware or software. The model provides the clients with the flexibility to pay for the product based on usage and the freedom to exit. 80+ clients are using this application without hassles.

The cost effectiveness of in-house developed GPS tracking solution and cloud based GPS tracking solution provided by J-Technologies has been analysed by the authors.

The cost involved in developing the in-house GPS tracking solution is categorized under the following captions and the related costs are specified below.

- Application Development Cost : Rs. 10,00,000 (approx.)
- Web Server Cost for Hosting : Rs. 2,00,000 (approx.)
- Bandwidth Cost : Rs. 1,00,000 (approx.)
- Google Map Cost : Rs. 1,00,000 (approx.)
- Maintenance cost : Rs. 5,00,000 (approx.)

The total accountable cost for development of the application is Rs.19,00,000 per year(approx.).

Whereas the cloud based GPS tracking solution provided by J-Tech through (Software as a Service) SaaS Model in Cloud is charged only Rs. 550 per month for a vehicle, Rs.55000/- for a fleet of 100 vehicles monthly and Rs. 6,60,000 yearly.(approx.)

From the above working model, it is possible to save up to Rs.12, 40,000 per year (Rs.19, 00,000-Rs.6, 60,000) when a client adopts cloud based solution offered through SaaS in cloud provided by J-Tech.

7. Data Security in Cloud ERP for SME

Cloud secures customer's business data stored in its data center by using various security measures that are needed for a person to access and thus it can provide data security to SME. If RAMCO cloud is considered, it has more than 430 servers in its data center. These servers hold the worldwide business data of customer projects being executed by Ramco Systems. These servers are also connected to the global offices of Ramco Systems and their customers through high-speed networks and telecommunication systems. To protect the data, Ramco has put in place a comprehensive Information Security System as mandated by ISO27001 standards. The various security aspects handled by Ramco Systems are Internal theft, Physical Access Control, Physical Access Monitoring, Login Access Control, Audit Trail, Data Transport over Internet, Firewall, Privacy and Fire & Natural Calamities [<http://scn.sap.com/docs/DOC-54865>]. If J-Tech service is considered, the basic security is User credentials with user name and password for login purpose and encrypted to validate the security of users. This prevents phishing of sensitive information. They also provide retina security scanning and digital signatures on demand by customers to protect their sensitive data. This can provide confidence to SME towards adopting ERP in cloud by addressing the security issues in cloud. SME can protect the data in cloud through various kinds of security measures that are provided by the vendors and they also have option towards selecting their security measure based upon the sensitivity of information and their budget allocation.

8. Conclusion

Cloud computing is attractive for SME customers because it offers significant potential for players of all sizes and it is one of the large and fast growing market. Companies must focus on managing the top and bottom line to hold its competency and it

can be done through “Cloud Computing”. The SME can adopt ERP in cloud as a concrete business solution compared to simple ERP tool. SLA (Service Level Agreements) and IAM (Identity and Access Management) offer data security through user authorization. The cost effectiveness of Microsoft using Google Docs as a service provider are revealed through case studies. Based on the case studies presented from the point of view of end users, RAMCO cloud ERP demonstrates the improvement of efficiency in business and SAP offering its ERP through cloud in a customized cost effective manner to its clients provides an end to end solution. J-Tech–GPS, as presented by the vendor, is found to be a specific cloud service for cost effective tracking solution. Thus, ERP in cloud can provide a Business solution for SME and also improve the business prospects of service providers working in cloud platform.

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