

Cloud Based ERP for Small and Medium Scale Enterprises

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Abstract

Cloud computing is one of the most important revolutionary changes in Information and Communications Technology (ICT). Its root can be traced to technology and business trends. In the current global business market, an Enterprise Resource Planning (ERP) is the only solution to the changing customer needs and for the growth and efficient functioning of the organizations. Now a day; organizations have three ERP deployment strategies: on-premise, hosting and on-demand (SaaS). Small and Medium Scale Enterprises (SME) play a pivotal role for the growth of any economy. For SMEs, on-premise or hosted ERP solutions are not feasible as they run business within a limited scale. Hence, they adopt cloud based ERP systems for an efficient and cost effective running of the business. The aim of this paper is to analyze the benefits rendered by cloud based ERP on SMEs. Also the issues concerning traditional and cloud ERP are discussed.

Keywords: Cloud Computing, SaaS, ERP

1. Introduction

SMEs are said to be the lifeblood of any vibrant economy [1]. They are known to be the silent drivers of a nation's economy. From the current Indian scenario, SMEs contribute the Nation's economy by 45% of the industrial output, 40% of exports, 42 million in employment, create one million jobs every year and produces more than 8000 quality products for the Indian and international markets. As a result, SMEs are today exposed to greater opportunities for expansion and diversification across the sectors.

The Indian market is growing rapidly and Indian industry is making remarkable progress in various Industries like Manufacturing, Food Processing, Pharmaceuticals, Textile & Garments, IT, Retail, and Service sectors. SMEs are finding greater opportunities to magnify their business activities in core sectors as well as in the service sectors.

Indian SMEs also play a significant and important role for Nation development through high contribution

to Domestic Production, Significant Export Earnings, Low Investment Requirements, Operational Flexibility, Location Wise Mobility, Low Intensive Imports, Capacities to Develop Appropriate Indigenous Technology, Import Substitution, Contribution towards Defense Production, Technology – Oriented Industries, Competitiveness in Domestic and Export Markets and Generate new entrepreneurs by providing knowledge and training.

Despite their high enthusiasm and inherent capabilities to grow in India, SMEs are facing a number of problems [2] like sub-optimal scale of operation, technological obsolescence, inefficient supply chain management, increased competition in domestic and global market, fund shortages, change in manufacturing strategies and turbulent and uncertain market scenario. To survive with such issues and compete with large and global enterprises, SMEs need to adopt innovative approaches in their operations.

Since the evolution of ERP systems, the functioning of any industry has become quite simpler and efficient, due to its capability of integrating and centralizing all the individual sections/departments of a company. Thus it finds an increasing demand in almost all the industrial sectors. For SMEs, ERP is a much optimized solution to mitigate their technological problems. But due to its high installation and maintenance cost, it is difficult to implement them in small scale industries. For them, ERP in SaaS platform is the best solution.

SaaS is a service model of Cloud computing paradigm. Cloud Computing is essentially one of the most prominent and on demand technological aspect that IT offers. It attempts to provide services to users on a leased basis which the user can get upon request. Thus it helps in reducing the operational cost and thus increasing productivity and efficiency.

In this paper, our discussion is focused on how cloud based ERP technologies can help SMEs to mitigate and overcome their technological hinders. We shall start with discussion on cloud computing in brief, moving towards cloud based ERP, and finally how it can be effective for SMEs.

2. Cloud Computing

Since the inception of the concept, Cloud computing has been the most enticing field of Computer research mostly due to its cost efficiency and flexibility [3]. The NIST definition of Cloud computing [4] [5] is “It is a model for enabling ubiquitous, convenient, 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.” Thus we consider cloud computing to be a computational model, rather than being a Technology. In this model “customers” plug into the “cloud” to access IT resources which are priced and provided “on-demand”. Essentially, IT resources are rented and shared among multiple tenants. Delivered over an Internet connection, the “cloud” replaces the company data center or server providing the same service. Thus, Cloud Computing is simply IT services sold and delivered over the Internet. Now a day, there are several vendors providing numerous cloud resources that are extensively used and deployed in many organizations.

2.1 Cloud deployment models

For most businesses, organizations, or governmental agencies, there are three relevant types of clouds: Private (internal or vendor-hosted), Public (external), and Hybrid (mixed). Each cloud infrastructure has unique characteristics and offers different advantages and disadvantages.

- *Public Cloud:* This type of cloud infrastructure is available for all the public and is open to all.
- *Private Cloud:* This type of cloud infrastructure is generally owned by an organization or individual for private use.
- *Community Cloud:* In this model, the infrastructure of the cloud is shared by several organizations and supports a specific community with shared concerns.
- *Hybrid Cloud:* This type of infrastructure is characterized by the mixture of more than one type of above mentioned cloud models.

2.2 Cloud Service Models

Cloud computing provides different services rather than a unit of product. The term service in cloud computing [3] is the concept of being able to use reusable, fine-grained components across a vendor’s network. This is widely known as “as a service”. Offerings with as a service as a suffix include traits like the following—

- Low Barriers to entry, making them available to small businesses

- Large scalability
- Multitenancy, which allows resources to be shared by many users.
- Platform independence, which allows users to access the systems on different hardware platforms.

These services put forwarded three models: software as a service (SaaS), platform as a Service (PaaS), and infrastructure as a Service (IaaS).

Since our focus is on cloud ERP, which is mainly a software system, we shall discuss SaaS in details to be acquainted with the model

3. Software as a Service

In Software as a Service model, the capability provided to the consumer is to use the provider’s applications running on a cloud server. The applications available in the server are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. When the software is hosted off-site on a cloud server, the client doesn’t have to maintain it or support it. On the other hand, customer has no control when hosting service decides to change it. The idea is that you use the software as is and do not need to make a lot of changes or require integration to other systems. The provider does all the inside patching and upgrades as well as keeping the infrastructure running.

There are many types of software that lend themselves to the SaaS model. Typically, software that performs a simple task without much need to interact with other systems makes them ideal for SaaS. Some of these applications include—

- Customer Resource Management (CRM)
- Video Conferencing
- IT service management
- Accounting
- Web Analysis
- Web Content Management

SaaS applications differ from earlier distributed computing solutions in that SaaS was developed specifically to use web tools, like the browser. This makes them web native. It was also built with a multitenant back end in mind, which enables multiple customers to use an application. SaaS provides network based access to commercially available software. Since the software is managed at a central location, customers can access their applications wherever they have web access. Highest-profile examples are Salesforce.com, Google’s Gmail and Apps, instant messaging from AOL, Yahoo and Google, and VoIP from Vonage and Skype [7].

4. Cloud based ERP

ERP is an abbreviation for Enterprise Resource Planning and means the techniques and concepts for integrated of businesses as a whole from the viewpoint of the effective use of management resources to improve the efficiency of enterprise management. ERP packages are integrated software packages that support these ERP concepts.

ERP software when deployed into a cloud environment becomes "Cloud ERP Software". Cloud based ERP systems benefit customers by providing application scalability and reduced hardware costs. In addition, Cloud computing technology makes it easier to deliver ERP software as a service (SaaS) for customers who want to acquire ERP but don't want to manage the underlying hardware infrastructure, software, and upgrades while reducing up-front expenses. Customers can build an internal cloud to reduce ongoing hardware costs while maintaining greater control over integration and require local access to their data server.

Cloud computing has a profound impact on the entire IT industry as a new business model [8]. Integrated into all sectors of business applications, cloud computing will reflect the value in a deeper level. With the rapid development and increased adoption of cloud computing, it can help enterprises to access high-performance IT services with lower cost, and also conducive to small and medium-sized enterprises to access high-performance IT services like large enterprises. Consequently, the reduction of IT burden can help enterprises to concentrate on its core business. The process of optimization which based on cloud computing can achieve throughout a large-scale reconstruction of the industry, and enhance the overall IT standards and competitiveness

Cloud ERP is just another potential opportunity and deployment option available for the customers with little computing infrastructure available at their disposal. Just as ERP was considered the panacea for all business automation pains, cloud ERP is positioned as a revolutionary approach to deploying an ERP solution [8]. Cloud ERP provides a solution that is flexible, adaptable, scalable, efficient, and affordable. Customers can enjoy painless upgrades, rapid deployment, and easy customization along with availability "anywhere at any time".

5. Cloud ERP for SMEs

SMEs of India are one of the most aggressive adopters of ERP Packages. Online services are better suited for small industries whereas large enterprises face more problems in implementation because of their complex

functionalities and data security concerns. Small and Medium businesses have sufficient IT budgets to buy the bandwidth and pay as per their need and usage. The main problem faced by the SMEs when it comes to traditional ERP implementation is that their requirements are limited while the product offered always exceeds their specifications in every way (including the costs). This gap between the SMEs Requirements and the traditional ERP's specifications needs to be analyzed by the companies (traditional ERP providers) and the SMEs. It is not possible for the traditional ERP providers to bring down their standards for the sake of the SMEs neither is it feasible for the later to upgrade for the sake of the former. Either of these if done leads to direct monetary losses for either one party or both.

In the cloud computing environment the SMEs will not have to own the infrastructure so they can abstain from any capital expenditure and instead they can utilize the resources as a service and pay as per their usage of the resources provided by the cloud. SaaS will provide an opportunity for the SMBs to automate their business by reducing their investment in IT infrastructure. Cloud based services helps the industries to reduce their cost that are involved in on-premise ERP solutions such as hardware, software, up gradation, training and licensing costs [9]. Moreover long implementation cycles with regular maintenance costs adds to the total cost of traditional ERP.

Recently a survey was conducted on small scale companies by SAP Inc. and has seen an increase in enquires for on-demand or cloud ERP for smaller businesses. The survey shows that the Software as a Service (SaaS) market is expected to grow by 18% of SME software sales by 2013, up from 6% in 2007. The primary reasons for such a growing demand are—

- Need a scalable solution: Some of the companies witnessed rapid growth from 5 users in 2011 and now employ 23. They want a solution that helps them in adding users in the future easily.
- No in house IT skills: This situation was found in almost all the organizations. SMEs usually do not have techie inside their organization and due to that reason they are lacking behind. They, therefore, rely on third party solution provider to manage their IT related problems.
- Multiple locations: The companies function from different locations and have different work cultures. They need an efficient single window system that will provide them with

the capability to maintain the various departments under an integrated view.

- **Security:** This has been a serious matter of concern for almost all the companies. Since cloud will contain all the data related to the business including customer information, finance and accounting information etc., it is very necessary to provide a reliable solution to the actual requirements.
- **Cost Effective:** The ultimate target of cloud computing was to cut the computational cost of an individual and organization by providing them with a leased based connectivity to the software's and required infrastructures. Traditional implementation of ERP systems incurs a huge amount of money, and there are some major issues also regarding its implementation.

Business Continuity: Any business is started off with a continuous growing state of mind with optimist attitude. To maintain that business continuity, cloud ERP would be the most suitable keeping in mind, their scale of business, financial concerns and available manpower.

6. Traditional Vs Cloud ERP

By now, most people are familiar with traditional ERP systems that have been implemented in the distribution environment for nearly 25 years. These are on-premise systems that organizations use to run their businesses, such as order entry, inventory control, purchasing, accounting, warehousing and shipping. Linked together within a network, the traditional on-premise systems allow users throughout the organization to effectively manage their piece of the business via hardware and software that is under complete control and responsibility of the organization.

SaaS-based systems run a distribution network the same way the traditional systems do – except these systems are Web-based and there is no on-premise IT infrastructure present. These systems use "SaaS" as their delivery model and "Cloud" as their processing infrastructure. SaaS, sometimes referred to as "software service on demand," allows an application to be delivered to the end-user via an Internet browser. With SaaS, organizations can purchase their ERP solution usage as a subscription or on a pay-as-you-go basis. The Cloud is a host site where the ERP applications and data are stored and the computing takes place on remote servers. Even though applications delivered

through SaaS look and perform like desktop applications, the computing is performed off-premise and is referred to as Internet-based computing.

There are a number of differences between the cloud-based technology and the traditional ERP implementation in terms of ownership, maintenance and customization. In traditional ERP implementation, you are actually buying a customized set or version of the software for use in the company. Under the cloud ERP, you are actually 'renting out' the software. There will be monthly fees that will be paid and the arrangement is subject to some predefined rules and regulations. Under good thing about the cloud ERP solution is that maintenance is not a responsibility for the organization as it is also taken care of by the service providers. There's no need to purchase new servers or pay for an IT team to maintain the software. This is the best thing about the cloud ERP- it will be patched and improved for you by the service provider as long as you are still renting the technology. But in terms of customization, the traditional ERP implementation is far ahead of cloud based ERP technology. But overall, many companies and industry leader see the cloud ERP as better and highly recommended. This is the reason why cloud implementation will overtake the traditional ERP implement and this is also backed by researches and studies.

The current market surveys also indicate the customer preference shift to cloud delivery of the software. This is fueled by the desire of businesses and the customers to share files, ideas and contents using a number of devices. And only the cloud technology will make it happen. In fact Gartner, a research firm boldly claims that by 2016 more than 1/3 of data will be hosted on cloud []. This is just one of the many validations that business and customers are going to cloud.

Today, distributors have a choice to make to find the best possible solutions that support their goals of reducing cost or going lean. A simple comparison of technology platforms helps distributors make this decision, as it can clearly show which solution reduces costs. Other operational factors may also come into the decision, however, and it is up to the distributor to determine the importance of these factors to the way they process their information. Whether the choice is a traditional on-premise ERP system or a SaaS/Cloud ERP system, the system must handle the complexities of distribution and they must do so in the most efficient manner with the least amount of costs.

7. Figures

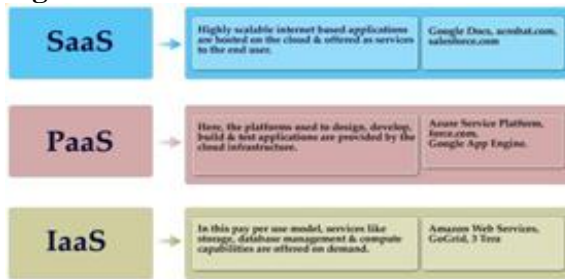


Figure-1: Cloud Service Models

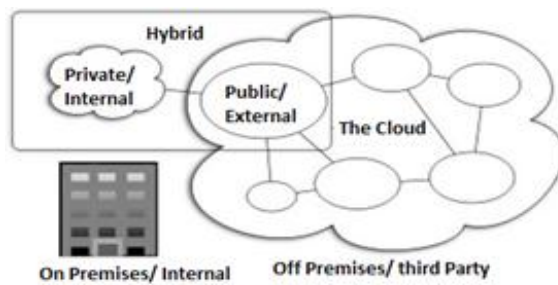


Figure-2: Types of Cloud

8. Conclusion

To be competitive, organizations must deliver products of the highest quality on time, as quickly as possible and at the best possible price. The set of business processes known as enterprise resource planning (ERP) has proved to-be an effective tool in achieving these objectives. And with the help of different service models of cloud computing like SaaS, implementation of ERP systems has been much easier for almost all industries. SMEs are said to be the lifeblood of any economy and in Indian business context, it one of the major contributors to the growth and development of the economical conditions. Cloud based ERP systems provide the right computational solutions with a cost effective manner. To manage and maintain the functioning of small and medium enterprises, cloud based ERP is the most suitable that can eventually lead their unmatched growth and development.

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