A Comparative Study of Cloud based ERP systems with Traditional ERP and Analysis of Cloud ERP implementation

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Abstract :*Cloud based ERP system architecture provides solutions to all the difficulties encountered by conventional ERP systems. It provides flexibility to the existing ERP systems and improves overall efficiency. This paper aimed at comparing the performance traditional ERP systems with cloud base ERP architectures. The challenges before the conventional ERP implementations are analyzed. All the main aspects of an ERP systems are compared with cloud based approach. The distinct advantages of cloud ERP are explained. The difficulties in cloud architecture are also mentioned.*

Key words: Traditional ERP, cloud, integration, implementation.

1. Introduction

ERP systems place a vital role in the developments of a company. The implementation of ERP needs a good infrastructure and resources. Maintaining the resources and debugging through a big challenge to the firms. Any modification after the system implementation becomes difficult. Moving from one vendor to the other under unavoidable situations is a real challenge.

ERP maps the all the processes and data. It delivers business solutions to all the aspects of a company. ERP is a comprehensive software package that integrates the functions and processes ([Botta-Genoulaz et al. 2005). ERP system supports are: marketing, sales and distribution, enterprise solution, production planning, quality management, assets accounting, materials management, cost control, human resources, project management, financials, and plant maintenance (Berchet and Habchi 2005, Davenport 1998).

ERP systems are implemented in the companies by direct implementation of the software or bycloud based approach. The ERP systems traditionally used are implemented in thecompany premises. The servers and required packages of software are installed in the company itself. All the software is loaded onto the computers in house. The maintenance of the servers and emergency recovery is managed by the company itself. The enterprise itself is responsible for complete maintenance. Another option for ERP implementation is hosted networks, where the servers are located at different places and the company is connected through a direct network. The recent trends are utilizing the services of cloud based ERP systems[1]. The remaining part of the paper is organized as follows. The first section compares the cloud ERP with traditional systems.

2. ERP vs cloud ERP

2.1 Capital cost

Cloud based systems are becoming more popular because of the flexibility it offers. Cloud gives the firms all the services of computing, networking and storing from distinct location. It avoids the infrastructure cost of the companies. The maintenance is taken care by the provider. The companies need not required technical abilities to maintain the systems and software packages. The capacity of the cloud based systems can be easily increased without disturbing the existing services. All the software run on top of the cloud. These abilities of cloud technology offer lot of advantages. The cost of ERP implementation is significantly reduced by introducing the cloud based approach.

2.2 Cloud services

Cloud based systems are generally sub divided into three types based on the services provided. the three types are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). The ERP implementation based on cloud services is grouped under SaaS. ERP is end user business. The platform based cloud is a middle ware application provided by distance provider. Hardware services are provided by infrastructure services. Based on the access types the cloud can be divided into two types private and public systems. Private systems are accessed and managed by the company; it will not be accessible to the customers directly. Public cloud systems are accessed by anyone and the customers can directly access the systems. Even a hybrid cloud can be implemented to cater the needs of the companies which offer online services [2]. The hardware of the hybrid cloud is maintained by companies, but the data is outsourced.

Cloud ERP systems are accessed via common browser over internet connection and allow the user to get all the information through client configuration. ERP is based on public cloud approach. The service based cloud implantation provides offerings in the form of services and the public nature gives the key components of software to the users.

2.3 Advantages of cloud based ERP

The cost of the cloud based ERP implementation is lower compared to the traditional implementation. The cost of energy and maintenance, configuration etc is reduced. The scalability feature of cloud based ERP is enormous. The elasticity of the cloud based approach is one of the main advantages. The flexibility of cloud ensures competitive advantages to a particular company. Another advantage is faster implementation of software. Any changes suggested by the consumer can be implemented easily.

The companies are free to concentrate on their improvements without thinking about the software implementations. Resource sharing and allocation becomes a very difficult task in the host based ERP systems. In cloud systems all the difficulties are handled care by the providers[3]. Migrating to a new technology or software is simpler in cloud based applications.

Traditional ERP	Cloud based ERP
Hardware, user license required	Handled by the provider
Implementation at the company premises	Only client machines installed at the customer site
Training required to maintain the packages	Note required
Upgrading and debugging is difficult	Upgrading can be done without affecting the services,
Implementation is takes lot of time	Implementation is easy. Rapid changes also possible
Switching from one provider to another not possible	Not dependent on provider for switching Switch over is easy.
Overall maintenance required	Focus shift to main competencies
Rich functionality, back office requirements satisfied	Does not support complete back office requirements
Accessibility is not flexible	Improved accessibility and functionality
Compete customization and integration supported	Provider based approach integration becomes difficult
Very high level of security and confidentiality	Assuring security and confidentiality becomes very difficulty
Data and environmental standards can be easily met	Maintaining the standard specified by got and other organizations not ensured is
Not dependent on network erformance	Completely depend on network performance
System recovery and disaster management is difficult	System and data recovery possible

Table -1 : ERP – Traditional vs cloud ERP

Upgrading the features of ERP applications provides greater flexibility to the firms. Integration of shared infrastructures is inexpensive in cloud ERP. Recovery of any details, back up process and error debugging are very simple.

2.4 Disadvantages of cloud ERP

The conventional ERP approach needs huge capital investments. The cloud based systems are subscriptions based. The main difficulty of cloud approach is security and confidentiality. The reliability of the network and integration issues is few other disadvantages of cloud ERP. The companies are at a risk of depending more on the cloud providers for its operations related to ERP. The standards and regulations specified by government and other

organizations are not based on cloud type of procedures. Meeting those requirements becomes difficult for the organizations. Cloud based ERP procedure is not competent enough to handle the back office needs of an industry.

The above discussion explains the advantages and difficulties in ERP cloud systems. The table- 1 list the comparison between the traditional and cloud based ERP systems.

3. Choice of Cloud ERP

The choice of cloud ERP is based on the size of the industry and the parameters involved in a particular enterprises systems. Generally looking at the comparison the cloud based ERP systems outperform all the other implementations. Direct cost requirements such as implementation of network and systems reduce a lot. The customization and back office procedures become difficult in ERP cloud systems.

3.1 Security and cloud ERP

Many companies prefer to migrate to the cloud ERP systems. The main concern of the companies about the cloud ERP is security. The data can be accessed by private parties other than the company professionals. The private cloud system has lesser issues than the public cloud. But it is

3.3 Automated services

The manual approach is very difficult and time consuming in general. Cloud based ERP completely automates and provides the companies the required flexibility in implementations. Accelerating the business process through automation ensures productivity. The cloud ERP architecture completely automates accounting and fiancé, payroll, human resource and customer managements, purchasing and inventory, Manufacturing and distribution[4] etc.

3.4 Customized approach

The implementation of ERP and cloud architecture completely modifies the overall approach of the companies. The standardized process of ERP supports the employees in a unique way to improve the overall performance. Configuring new systems becomes easier. The end users can modify the screens based on their needs. They can personalize the fields and buttons. They can remove the unwanted columns and fields. The required modules can be purchased by the companies and integrated later. Individual software packages are also available in cloud ERP.

3. 5 Extended services

Most of the companies operate from diverse locations. They have global operational centre and some of them support extended supply chain. The cloud ERP architectures standardize these features and streamline the process required. The collaboration between a single location to multiple countries can be easily managed. The individual operations can be customized and information sharing is assured.

necessary to move to public cloud systems to cater the needs of the market. Public cloud provides greater flexibility and reduces cost by much. Handling vital records like payments and transition details in public cloud is difficult. New implantation of virtual machines and software updates becomes necessary to satisfy the demands of an industry. New security tools are required to avoid intrusion of unwanted data. Focus must be on the customer side implementation to provide secured data services. Much new software is available to overcome these difficulties.

3.2 Improving the efficiency

The implementation of cloud based ERP simplifies standardizing the business process and also makes it accessible across multiple locations. It provides flexible reporting services and allows the collaboration between different departments. The stand alone applications do not provide flexibility to manage operations and maintaining the customer relationship details and operational sheets becomes difficult. The use of cloud based ERP architecture overcomes these problems and improves overall efficiency [5]. ERP solutions automates the business process and integrates the required applications provides the business intelligence. This improves the decision making process and planning becomes very easy.

The data are available in different formats and languages. Companies would be able accommodate all the transactions across various organizations. Consolidating the information across various departments is achieved with ease.

3.6 Integrated applications

Though the integration of the existing business process and ERP is difficult in cloud based approach the applications can be integrated easily. The inventory systems, order entry and account settlements are integrated across various domains. The executives and managers can check the system at any level and empower the employees. The decision making becomes easier because of this kind of architecture. Once the cloud ERP systems are implemented it improves the accuracy and helps employees and the firms to meet the customer requirements. Information from different people need not be gathered down to maintain stock levels or accounts[6]. Data can be entered at various locations and sites of a global company and the ERP system will automatically normalize the data and required information would be available as a report. This enormously saves time and improves the business strategy. Any changes to be implemented in the system can also be easily incorporated.

3.7 Reports and analyses

General all the data collected from various locations and from different departments should be suitable arranged and organized to find out the overall performance in a financial year. The manager and executives need to get data from different system and integrate it into spread sheets using standard queries and reports. Cloud based ERP provides all the details in the expected form. All the information can be grouped together easily and reports are generated in the required format. The provider takes care of all these operations and the companies are free concentrate on the

core competencies. The overall appraisal report of any division or product can be easily monitored. Personalized reports can be generated by the customers. Additional querying capabilities can be given by the companies in real time which provides improved visibility. All the key performance indicators can be monitored and intervened at any time.

4. Conclusion

In this paper attempt has been made to compare the performance of traditional ERP systems with cloud based ERP architecture. The flexibility offered by cloud ERP systems explained. Any improvements in the systems after complete installation are easy in cloud ERP. All the data stored at different locations can be easily grouped together. Reports can be generated and analyzed efficiently. All the applications can be integrated and maintenance becomes simple. The companies are free to concentrate only on core competencies. All the other details can be presented by the providers.

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