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## STUDY & ANALYSIS OF CLOUD BASED ERP SERVICES

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### Abstract

The purpose of this research paper is to explore the knowledge of the existing studies related to cloud computing current trend. The outcome of my work will be demonstrated in the form of diagram which will exemplify the ERP integration process for in-house and cloud eco-system. It will provide a conceptual view to the new client or entrepreneurs using ERP services and explain them how to deal with two stages of ERP systems (cloud and in-house). Also suggest how to improve knowledge about ERP services and implementation process for both stages. The work recommends which ERP services can be outsourced over the cloud. Cloud ERP is a mix of standard ERP services along with cloud flexibility and low cost to afford these services. This is a recent phenomenon in enterprise service offering. For most of non IT background entrepreneurs it is unclear and broad concept, since all the research work related to it are done in couple of years. Most of cloud ERP vendors describe their products as straight forward tasks. The process and selection of Cloud ERP Services and vendors is not clear. This research work draws a framework for selecting non-core business process from preferred ERP service partners. It also recommends which ERP services outsourced first over the cloud, and the security issues related to data or information moved out from company premises to the cloud eco-system.

**Keywords:** ERP Service, Cloud Computing, Cloud Based ERP.



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## 1- Introduction

### Essentials of cloud ERP

The principles of cloud ERP is originated from the term cloud computing. To explain what cloud ERP means, it will be compulsory to first classify cloud computing and its significance. Mr. Miller states that cloud computing are based on the computer terminology Cloud which is seen to be several computers (thin & thick client) and servers connected through World Wide Web (WWW) or internet. Computers can be personal computers (PDAs, Mobile Devices) or network servers; they can be public, private or hybrid. Mr. Jennings describe the term cloud computing means access remotely to computing services offered by third parties (vendor of offering cloud based services).the term Cloud computing was evolved due to the revolution of internet. Researcher published that cloud computing gets its name as a symbol for the internet (as World Wide Web is life line for cloud services).

This statement was confirmed by Mr.Rittinghouse & Ransome, stating that the term cloud has been used traditionally as a synonym for the internet based services. Most of scholar & researchers agree that cloud based services has three layers. Group of researcher explained these three layers as three inter-related stacks: Software as a Service, Platform as a Service and Infrastructure as a Service as it shows in Diagram 1.1.

- **SaaS** web services and business applications (apps) are designed for end-users, delivered over the www or internet.
- **PaaS** is the set of web services and tools structured to make coding and deploying those services and applications rapid and proficiently.
- **IaaS** is the Information Technology Infrastructure (hardware and software part) that empowers the organization to outsource these non core activities related to IT Infrastructures e.g. operating systems, storage, routers, distribution systems, servers

and networks to third party. Now, Organization can be focused in to core business processes.

- **CaaS** – It is another flavor of cloud which facilitates the organization by outsourcing all the communication need of particular business activities.

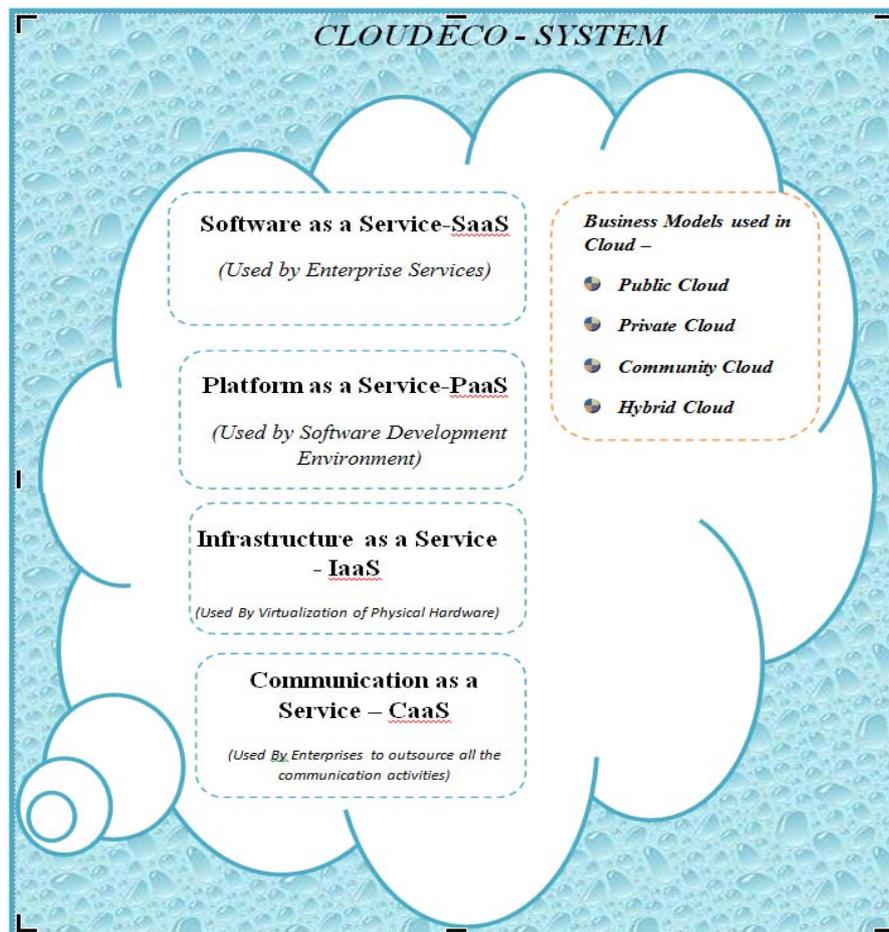


Figure 1: Cloud Eco System



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Federal Financial Institutions Examination Council Information Technology Subcommittee (2012, 1) concrete the area of cloud computing: “..... the term cloud computing is a comparatively latest terminology used to express diverse acknowledged business process flows, technologies, and processing techniques. Even though, the cloud technology demand is rising as per change in current business needs still there is no common definition. Several business processes, strategies, technologies, platforms, frameworks and architectures are suggested as cloud computing. Generally, cloud computing is a scheme of immigration from in-house resources to shared resources in which customer employees get enterprise services, on demand, from third-party service vendors by WWW or Internet. These lines present a specific definition of cloud phenomenon.....”.

The National Institute of Standards and Technology (NIST) (2011), presented the terminology in a different words:”.....As per report it is a model of web services distribution using flexible, low cost and easy available platform. Hence, the model empowers convenience, sharing of pooled IT Infrastructure as per business demand or situation permit. It provide computing resources (e.g., enterprise products, networks, servers, storage, business applications, and readymade services), that can be consumed instantly as trend changes in business and free with negligible management effort or service vendors communication”. Additional the report, described the cloud services from usefulness or the relation with user’s viewpoint.

The cloud based web services are used through internet (WWW) from a dedicated server that manage and store all related web services within a cloud. If the computer crashes due to some calamity or other reasons, the report created will be saved on the server that hosts the package of web services which can be accessed through web by other users as well. Correspondingly, if we think of ERP packaged services being stored in a dedicated server in the cloud, the ERP system is used through web with predefined access rights. So, cloud ERP



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is an ERP system which is hosted over the cloud platform by service provider. It will offer equivalent modules & services that are in the standard ERP package that is implemented on the organization's locations. There are many advantages if we look cloud ERP as a software project. Group of researcher believed in these advantages when they recommend applying cloud computing to project management. These advantages consist of faster ERP implementations, minimal operating costs with superior flexibility, scalability, profitability, malleability and consistency to the organization's business and dependent activities. Cloud services are a type of web applications or software; it provides solutions that can be accessible at any time, in any location with no physical boundaries in the world and by any person with accessing rights [3] [4].

Now we can acknowledge that cloud services will change the way of working patters of different ERP users around the globe, they will not be limited by working location or time as long as they are connected to web. Mr. Rittinghouse and Ransome published that different electronic service (e-services) based on website was recognized earlier in 1999 by Mr.Marc Benioff (former Oracle executive), who have given the notion of offering enterprise services and solutions through a simple web site. Though, there are four diverse types of Clouds Diagram 1.1, as suggested by Mr.Huth and Cebula , users can opt any type of given clouds depending on their unique requirements [20]:

“As a small business owner and personal user will generally use public cloud services”.

1. Public cloud - Easily accessed by any user with a connection to the internet and access to the cloud eco-system.
2. Private cloud - It is established for a particular group or company and limits access to just that group.
3. Community cloud – It is shared among two or more organizations that have analogous cloud necessities.



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4. Hybrid cloud - It is a mash up of minimum two Clouds, where the Clouds included a mix of public, private or community”.

Most of other researchers and ERP providers SAP (2013), Oracle (2013), Ramco (2013), categorize cloud types mainly in four categories: public cloud, private cloud, community cloud and hybrid cloud. As diagram 1.1 is showing that community cloud is a part of public cloud if it does not necessitate any particular access rights, or else it will come under private cloud with the specific access rights.

## 2- Research Outcome

**(The decision has been made by the text mining results of the Rapidminer Data mining tool version 5.3)**

### **Which Enterprise services can be outsourced over the cloud ERP?**

As per outcome of various published articles, web-blogs and interviews of many IT experts in ERP services and domain experts in manufacturing firms; there are not a major differences between in-house ERP and cloud ERP; together will satisfied the customers (SMEs from different industry verticals) need once these needs are recognized. The majority of SMEs in all vertical are still hesitant in replacing in-house ERP to the cloud by implementing cloud ERP as Software as a service (SaaS). However, there are numerous organizations which have personalized cloud ERP as conversion from in-house to the cloud. A group of SMEs prefer to stay with in-house style. Other group of SMEs have took decision to use both flavor of ERP enterprise services, the in-house version of standard ERP generally installed in central offices of the parent company; this happens when the organization has several subsidiaries in other geographic locations.



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In favor of newly launched SMEs they will implement or have implemented cloud ERP services in starting of business, they are suggested to delay in outsourcing cloud ERP services because intensive research work is required. In-house ERP and cloud ERP have same modules and services in general. SMEs may outsource any enterprise services whenever they required particular expertise in non-core business process which cannot provide by their own employees. Hence, the below described services can be outsourced over cloud ERP as discussed.

**HRM (Human Resource Management) activities:**

I propose outsourcing HRM module as primary step toward outsourcing to the third party. almost every organization need either to hire new workforce as their existing ones retire or simply leave for vacation or due to other reasons (e.g. family condition, better opportunities etc.). Identifying the right skills and capable workers is difficult exercise; it consumes lot of time and resources. In other hand, SMEs should search their workforce in right time before retirements or to fill short-term open positions which can be due to sick or maternity leave. Due to HRM outsourcing over the cloud ERP the organizations will have a prospect to appoint the required capabilities in short time. After taking first lap, the SMEs will have an experience that how the outsourcing works for cloud environment. This HRM services procurement will be the learning phase in the direction of outsourcing other ERP modules in cloud eco-system.

**Critical data storage and server maintenance activities outsourcing:**

This research work is in context of SMEs (small and midsized enterprises in manufacturing domain) hence the cloud based ERP service that can be outsourced should not be part of the manufacturing activities, such as production, product design in terms of know-how that give a competitive advantage for the company over their competitors e.g. Tata steel out sourced



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non-core IT infrastructure processes to TCS. On the other hand, using cloud ERP based on SaaS model will necessitate in special to buy cloud ERP storage in specific case where the actual ERP will take place, in other words the cloud ERP provider may offer cloud storage as well. The storage space over the cloud can be rented from ERP vendor or from various cloud service providers. However, cloud storage will contain organizations data (master and transactional data) and will require regular server maintenance which can be outsourced as service in cloud eco-system. Yet, outsourcing data storage services can be in other countries which have different laws than the home country of SMEs. The upsetting issue is that the majority of firms do not necessary know where their data is stored although the provider is in same country of the SMEs. There is no guarantee that clouds vendor's necessarily own the cloud. SMEs have to know the geographic physical location of their data storage, possibly in same country where the law is well established. The law has to protect customer's data ownership.

**Payroll functions outsourcing:**

This is an essential business activity of any organization and it can be consider under non-core business processes and planning services. Payroll outsourcing practice has been experienced by every second company in business scenario and it has been advantageous in terms of low outsourcing cost. The SMEs can outsource payroll using cloud based ERP services under finance module. The organizations with the help of new platform or technologies and using the expert view of IT consultant can link their cloud ERP to niche third party partner. This will empower the manufacturing firms to stay away from payroll trained employees in their premises simultaneously saving the costs of the software licenses needed to process payroll activities. In addition to that payroll outsourcing can release the burden of tax calculations and other lawful rules that can be complex to SMEs but can be



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easily maintain by specialized third party vender by fulfillment of payroll business process with the legislation rules.

**Logistics and supply chain activities:**

It is a part of supply chain management module and several activities in logistics are necessary to facilitate the flow of manufacturing product from point of origin (raw material exploration) to point of sell (where consumer buys the finished goods). Cloud ERP contains a separate module that is reserved to logistics business processes. Many of them do not have own transportation vehicles to transport their raw materials and products. Hence, outsourcing this enterprise non core business process over the cloud can be more advantageous in terms of money and time saving. There is one more non-core business process which can be outsourced within logistics modules is the inventory management (compulsory in manufacturing domain) including warehouses and raw material storage.

By adapting this business decision, the manufacturing firms can benefits from raw material, toll charges, fuel and market price forecasting. The forecasting (predicting market trends) can be build in cloud based ERP services in sort of added apps and can be embed in dashboard apps that facilitate visual real time information for management associates. The real time information can be verifying on dashboard apps, like raw material availability from different suppliers, locations and prices discount offers. The moving of firm's material can be tracked by implanting RFID in trucks; it can facilitate Just-In-Time (JIT) delivery of raw material and finished goods.

**Outsourcing of marketing related activities:**

Cloud ERP facilitates marketing by a separate module on this. As it is already mentioned in point 4 that marketing activities will help manufacturing firms to get response from their



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existing regular & irregular customers, reach new customers and new ideas on how to be pioneer in new markets (in last quarter Hero Moto Corp launched its flagship bike splendor in African countries which are new market for the Hero). Innovation can be achieved by improving existing products and services or inventing new products and services. Hence manufacturing firms can outsource marketing services over cloud ERP.

Outsourcing marketing to the third party is typically expecting intervention of social media platforms which are rich of customer's information. The information can be: customer's expectations, judgments, and complaints about the organization's or competitors products, new ideas for new innovation; we are living in era where customers drive changes through social network platforms. All this information can be crucial in shaping the manufacturing companies competitive advantage. But the puzzle here is: how can manufacturing firms select the right marketing partner? Special business consultants (e.g. Boston consulting group) may solve this puzzle.

**Data service management:**

Outsourcing need arise to this module usually when cloud ERP partner offer only standard ERP system over the cloud. It will necessitate securing and protecting data over the cloud by using third party services. The third party service provider will ensure the data security, safety, control, availability, and accessibility around the clock and data ownership as discussed in point 4. For securing data the service provider generally uses masking or encrypting of the master data, for making leak proof environment for data services provider generally uses discretionary access control (DAC) or Mandatory Access Control (MAC) in combination with encryption algorithms.

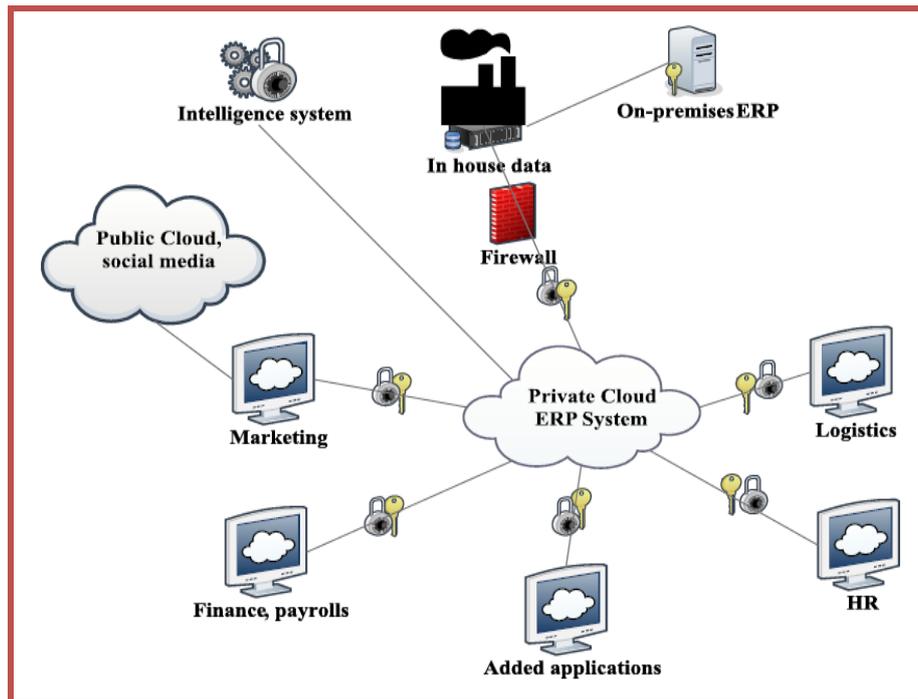


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**Added-On applications:**

These apps can be the extra tools or add-on service offering that are not included in the standard cloud ERP. All SMEs will not utilize same cloud ERP modules with same service offerings; each one practices its own methods of manufacturing processes in a different way even though they might produce same or identical products. One example of these added apps can be dashboards or intelligent user friendly GUI that enables management associates to access real time information with greater transparency. Hence outsourcing services offerings over the cloud ERP appear quite complex and interfered with each other. As cloud ERP is based on SaaS model, the cloud ERP services consumer need only the internet connection and computer or any mobile device that enables users to log-in with their ID's or usernames and passwords. Physical presence on particular premises does not matter here, so the third party service provider will have their own ID's and passwords. They can use ID's and passwords only for the task they should perform. Similar, to the in-house ERP users from different departments have their own ID's and passwords.

Users can pay and use the needed ERP modules according to their business demand. HRM modules will be handled with HR expert, logistics will be handled with logistics experts and so on. None of these enterprise services will hinder with other activities, users will not necessary know each other. ERP systems integrations are used in complex organization structure and carefully taken into consideration; it will involve enormous work to convert data to be companionable with all diverse ERP systems. Hence forth before outsourcing services, firms are suggested to select the right cloud ERP that will be companionable with their partners ERP systems it would be easy if the group of partners create alliances that use same ERP system and allows them to avoid the burden of ERP system integration that might consume a considerable time and human resources (e.g. Reliance is using SAP ERP Services across all the business verticals).



**Figure 2: Typical scenario of SMEs in Cloud ERP eco-system**

SOURCE: Based on my ERP experience & research work

In the Fig. 2, the locks and keys show that each user from different third party has their own ID and password that allow them to log in to the cloud ERP system. All the data will remain in the private cloud of the manufacturing companies. The intelligent system is used for monitoring the cloud eco-system in order to ensure the safety and security of the implemented system.



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### **3- Which ERP data can be kept in-house and which can be moved to the cloud?**

Cloud is latest buzzword in computer system terminology and platform, the area is widely researched by information system management (ISM) researchers also. According to ISM researchers the cloud is misunderstood technology but still it gained attraction from different industries and communities. On the other hand, the cloud concept is new notion for various SMEs (small and medium size enterprises). The majority of small and mid-sized manufacturing firms see that moving data to cloud and will be a challenging, confusing and worrying task. The below given data is recommended to remain in the company's location:

#### **Data of Core business processes:**

The data is life-line for any manufacturing company and cannot be shared at any cost. The core data comprises design of core business processes, data related to raw material cost, profit margins, future plan related to new product offerings, planning to grab market in geographical location etc. This type of data is the most receptive data also known as master data. Most of the SME in manufacturing domain will agree that manufacturing secrets or patented process must remain in the house so that nobody can re-engineer the process and not able become competitor in the same domain. These secrets consist of the manufacturing of products or spare parts and services related to them. The secrets can be designs, secret insights of product recipe, cheaper raw material source, skills and own dynamic capabilities who carry the actual tacit knowledge. All these manufacturing secrets constitute the organization's core businesses and competitive advantage drivers.



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**Data of daily transactions:**

The data generated on daily basis or due to regular tractions comes in this category. A competitor can analyze any business turnover and average daily limit of product supply on the basis of this data. It is also known as transaction data. This kind of data is another susceptible data generated on daily basis e.g. trillions of bank tractions happen in worldwide bank like Citibank. It contains data that supports the daily operations of manufacturing companies (e.g. transaction related to raw material uses on daily basis). This data is generated regular basis by cloud or in-house ERP's application systems or other in house applications. Since most of transactions are made online, so most of organizations are having fear of losing this data, provided that there are well established security platforms (e.g. Axis Bank is using dual authentication technique to secure its electronic transaction, Reliance is using RSA Algorithm based authentication technique to access their systems on-line.).

**Contracts data (personal data related workforce and partners):**

The data is also generated on regular basis, because nobody can assume organization without human resource or intellectual assets. This data comprise of suppliers, logistic vendors, third party, employee's contracts and legal related activities. For the employee's contracts it should be kept in-house and confidential. Previously, I recommended outsourcing HRM over the cloud, the role of HR here just to find the right person for the company; the contract step will be performed and will be kept in-house. The data related to vendors, suppliers and third party contracts that contain legal duties of each part, should remain in house of each part involved in company's businesses activities. Here all parts involved as partners should protect each other's information from any leak are peeping from outsiders or competitors. Each type of data and their interchange transactions will need to be managed between all cloud ERP modules. That is why companies have to implement risk management



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solution for master data. The next point will deal with this problem. The below mention data is recommended to be moved to the cloud:

**Customer's data:**

customer's data encloses information about the organization's customers it should be protected when it will be moved to the cloud due to confidentiality and ethical reasons. Usually, customer's data contains customer's names, addresses, mobile numbers, email IDs, purchase history. Not all customers accept that their information will be available for public use or used by other unknown parties. The customer's information should be secured by the organizations and their third parties. That is why SMEs are suggested to use private cloud for their cloud ERPs. Policies should be maintained regarding safety and leak of customer data.

**Internal employee's data can be moved into the cloud under authoritarian conditions:**

This data can be related to the organization's core and valuable business capabilities. It was suggested that the manufacturing companies should outsource HRM and payrolls activities to third party; this will force the company to send information about their existing employees and new required ones to the third party. As a result, the companies here must build a trustful relationship with their third party partners, especially HR partners. This is possible by setting special rules that will prevent the leak of information from one company to the other through employee's movements. This may occur when an employee decides to join workforce of the competitor for better salary. In well developed countries there are rules that protect company's rights in such cases.



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### Data warehouse and cloud storage:

Data warehouse is a need of every SME because this era belongs to information. The data stored in ware house usually contains historical data resulted from transaction data and other source of data. Therefore, data warehouse is updated regularly through online transaction processing. On line analytical processing and transaction processing is the famous tool used for data mining which lead for decision making. Data warehouse is gather data from different ERP system and inter-transaction of used modules; this type of data might be moved to the cloud only in case if the *cloud is having strictly policies related to data security*. I recommended to SMEs to use only private cloud, the data warehouse can be moved to cloud as well [11] [13].

### 4- How secure is cloud ERP services as compared to in-house ERP?

The scenario of using cloud based ERP is analogous to moving in-house ERP to the cloud. Therefore, before starting data migration process from in-house to the cloud, SMEs have to think about what will happen to their data centers and its repositories in the cloud. The most tormenting issue that kept various organizations from migrating to the cloud is security and safety of the cloud. Many incidents of data (master and transactional data) theft or leak have happened in recent year before the cloud concept born. Cyber attacks or Cyber warfare recorded plethora of on-premises data leaks that belong to large organizations. The data has been either destroyed or exposed to public.

These attacks may cripple the manufacturing network with their partners causing major damages such as sending products or raw materials to wrong location or simply delay an important business processing transaction [14][19]. By the data collected during an interview with few SMEs in manufacturing domain, IT ERP consultants and ERP providers, I concluded that the safety and security concern is the precedence of their businesses.



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Numerous cloud ERP vendors offer only the ERP system without cloud or security related to it. But they have their co-partners who can offer either cloud or security or both as it was pointed out in point 4. Other cloud ERP providers offer almost everything what small and mid-sized manufacturing organizations need. The security of the cloud ERP compared to in-house ERP can be studied and implemented by using Data risk management. As per this thesis research work the data risk management includes not only the SMEs, but all their partners and co-partners who look after of the non-core business services. These partners are linked to the SMEs through cloud ERP models according to their outsourced businesses they expect to offer.

Organizations and their co-partners have to safeguard all data traffic that will occur in the cloud ERP modules during various business processes e.g. procuring raw material and selling finished goods. Safety of data (master or transactional) is the accountability of the SME's and all partners who assist their businesses core and non-core business processes. Data risk management comprises these important data security terminologies: data control, accessibility, data recovery, availability and flexibility. The data control comprises of the ownership of data. The owner must have a full control of his or her data. In this case the SMEs will have the administrative data control in the cloud ERP, for the reason that the cloud ERP belongs to manufacturing organizations. Hence cloud provider can use access control mechanism to handle this data base (Mandatory Access Control – MAC, Discretionary access control - DAC).

Since the data risk management involves the third parties responsibility, the cloud provider has to offer data recovery in case of unwanted disaster (e.g. Tsunami, Earthquake etc.). Cloud provider has to make data accessible from right owner (including data protection) and available 24/7 for the users of the SMEs. The most important point is that organizations have to ensure the availability of the cloud provider. In worst case, if the cloud provider



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decides to shut down his or her business or went bankruptcy: in this case organizations and cloud vendor have to make sure that their cloud ERP and data related to it is save and can be moved to other provider. Generally, the security is related to local legislation, defining the cloud vendor and cloud's physical location is important aspect to take in contemplation when the organizations will outsource cloud storage. Legislation in other countries may not give safety and security to the data. Due to this premier reason organizations need to have cloud provider and cloud storage location in countries where the law protects their rights related to security of data in the favor of SMEs.

As data security is one of important concern for SMEs. So forth, data safety over the cloud here are numerous suggestions of securing own data. In order to protect data over the cloud, SMEs are suggested to create confusing or bogus data. Once the cracker or intruders tries to crack the false data the system sends warning to third party co-partner who is taking care of security then they will have to take the essential safety measures. The bogus data might contain real Id and passwords that allow hacker to get access to bogus data after hard work. The bogus data will be used as hurdle to protect the genuine data. The safety for genuine data must be tight, using new techniques of data protection e.g. using encryption algorithms, Hash Functions or Digital signature for authentication. The protections algorithms and methods must remain top secret.

The basic property of cloud ERP is to be handy from any location thorough the globe, here the SMEs is suggested to build an intellectual system admonition that can recognize ERP user's manners. Further, the intellectual system will identify user's admittance according to time and geographic locations. If an organization user gets admittance to cloud ERP, let's say: from Bangalore, India and he will log off from the cloud ERP services after he or she end his or her job. In a limited period, with the identical ID and password another user gets admittance to the cloud ERP services from geographic location that is remote from



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India, let's suppose: Far North or China. So, it does not make sense that the user from India will move fast in short time to Far North or China, therefore the intellectual system will involuntarily terminate the user's ID and password. The intellectual system will be made based on time, locations and optimization of user's movements from their last access to the ERP system. In any case of cloud ERP users will shift from their customary location they must notify the accountable person for administrative authentication rights [16] [17]. On the other hand, the security of cloud ERP in comparison with in-house ERP seems to be more susceptible due to all parts mixed up in it.

However by the use of emerging refined technologies there are systems services that can supervise the inner ERP user's manners and outer user's system threats. The safety of cloud ERP must be handled by special experts in system security domain. Implementing the most excellent conventional security solutions is not enough to give assurance of the safety and security of the cloud ERP system. As my research work recommend here that the SMEs should have their cloud ERP installed in private cloud, but still the organizations need to safeguard the flow of the transactional and master data transmission from and to diverse ERP modules; keeping in mind that this traffic of the transactional and master data comes from diverse outsourced partners and co-partners. The outsourcing co-partner may not have analogous ERP as the SMEs; for central monitoring of data flow will require data integration between different partners in cloud eco-system.

## **5- Importance of QoS for SMEs and Cloud ERP Provider**

Quality is a multidimensional word which uses to measure the satisfying level of consumers/clients. In relation with enterprise services if a package of cloud services improves return on investment (ROI) then the package is having higher quality as compared previous product. So it means it is a qualitative term for judging any services or products. So, to



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facilitate the service companies and manufacturing firms standards of quality are set in the form of Quality certificate. This is an effort by intellectual communities for measuring quality in quantitative manner. Outcome of these efforts are certificate like six sigma, CMMI, ISO certification etc.

Two famous Quality Standards are:

- Capability maturity Model Integration (CMMI) for software industry
- Six Sigma for Manufacturing Industry

When strategy is designed by lead firm to outsource IT services from vendors then alignment of business process quality is measured and equate with vendor's quality of service (QoS).

In current competitive business scenario every successful organization wants to achieve quality in their products and services. Better quality products can be success formula for any existing or new business. To achieve this, organization use to outsource their non-core activities from third party and some time it become reason for collapsing the whole organization. If outsourced business processes are not compliance with quality standard then how they will give better result to lead firm. So there should be matching of quality standard in both the partner. As example a six sigma compliance manufacturing firm can procure services from Level-5 compliance IT vendor [5] [7].

### **Conclusion and recommendation for further research**

Cloud ERP and in-house ERP basically have similar enterprise concept oriented modules and functions. The cloud based web services are predicted to grow in the future. The trepidation and the economic crises have halted the momentum of cloud based services



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deployment. It will be fascinating to perform researches work in field of Cloud ERP vendors and there business strategy for stimulated the need of cloud based enterprise services. The research therefore should focus on most of the business verticals, industries behaviors and their reactions. Future scope can identify latest technologies and platforms which facilitates cloud eco-system in decade to me e.g. new version of AJAX - Asynchronous JavaScript and XML and virtualization. New technical and business alliances will be formed, in particular field of data security and ERP systems in order to overcome the issues of ERP systems integrations. The service outsourcing and customization of service offering will be reshaped; the legislation related to cloud outsourcing will be developed as well. The research work can be carried out with people from different domain e.g. technical, management, law and finance vertical. These researchers can be technical engineering students, law student, finance experts and business oriented students.

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