E-commerce on Cloud

D.Lena Vino[1], M.Munafur Hussaina[2], R. Bhuvanesvari[3]

Asst.Prof in CS, Aiman College, Asst.Prof in CS, Aiman College, Asst.Prof in CS, Aiman College

ABSTRACT

Newly emerged cloud computing technology in IT field plays an important role in business field. Now a day, there is a tremendous shift of business enterprises towards e-business to gain customers worldwide. But this leads to the need of storing and managing bulk amount of data by each single business enterprises. The cost entitled with installing the infrastructure for managing and maintaining bulk data is a big overhead for business enterprises. These requirements are fulfilled by cloud, which extends its services to all enterprises who want to gear up their promotion of products through E-commerce. This paper put forth the overall vision of practices going through the business enterprises over these decades from traditional enterprise software to modern enterprise software that incorporates with cloud computing.

Keywords: E-commerce, cloud computing, ERP, cloud services.

INTRODUCTION

The rate of growth of technology rapidly increases and also drastic change takes place in all sectors especially in business sector. The recent trends like cloud computing, data mining have evolved into going hand in hand with the business applications like e-commerce.

In those days sale of products meant to rent a physical space like an office which also led to be accumulation of expenses. This is when e-commerce emerged. Even enterprises like small and medium sized enterprises (SME) take little advantage of cloud computing. The growth of the innovation led to the competition with large enterprises providing services as they have large infrastructure rather than limited infrastructure.

As cloud enables the provider to host its application on its own infrastructure which its client can use on a subscription basis the client is thus saved from investing heavily on its infrastructure constraint and rather invest more on its business concerns. The cloud services such as Gmail and Google Docs are used by most of the company to store the infinite flow of information about customer and their feedback, which is used to leverage their power of business strategy to a next level.

Hence, whatever might be the cloud services in use, the net result is less consumption of time and money and also data are easy to access and manage. Investments made by many companies in cloud computing are widely accepted as they provide reliability, flexibility and also reduces the cost of e-business [1].

This paper thus highlights the need of cloud computing in e-commerce by traversing through the challenges in the traditional enterprises software that was over thrown by cloud computing. Next up, exploring the setback still prevailing in the proposed modern enterprise software incorporating with cloud computing.

I. E-commerce

E-commerce is electronic commerce. It is nothing but the buying or selling of products electronically over the Internet. It goes hand in hand with many technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Currently it also incorporates with cloud computing [2].

A more complete definition is: E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals [3].

The types of E-commerce are: [1]

1. Consumer to Consumer E-commerce (C2C E-commerce): The E-transactions between consumers themselves
2. Business to Consumer E-commerce (B2C E-commerce): Enterprises can sell to the consumers directly.
3. Business to Business E-commerce (B2B E-commerce): The E-transactions between Enterprises.
4. Consumer to Business E-commerce (C2B E-commerce): Consumers can sell products to the Enterprises.

Actually, there are many different types of E-commerce applications, which grouped in Figure1 according to categories.

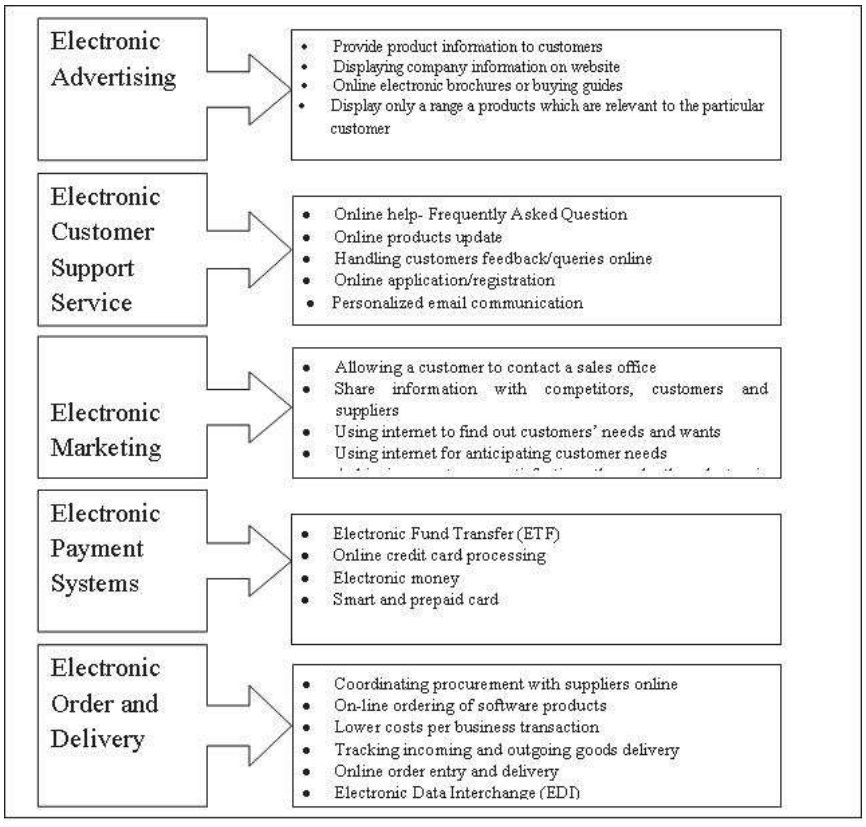


Figure 1. Applications of E-commerce [1]

II. Cloud Computing

Cloud computing do not have a unique definition, many authors have proposed their own perspective of cloud clouding, here are some of them. Buyya et al. have defined it as follows: “Cloud is a parallel and distributed computing system consisting of a collection of inter-connected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements (SLA) established through negotiation between the service provider and consumers.”

Vaquero et al. have stated “clouds are a large pool of easily usable and accessible virtualized resources (such as hardware, development platforms and/or services). These resources can be dynamically reconfigured to adjust to a variable load (scale), allowing also for an optimum resource utilization. This pool of resources is typically exploited by a pay-per-use model in which guarantees are offered by the Infrastructure Provider by means of customized Service Level Agreements.” [4].

“Cloud” is a virtualized pool of computing reusable resources. It is:

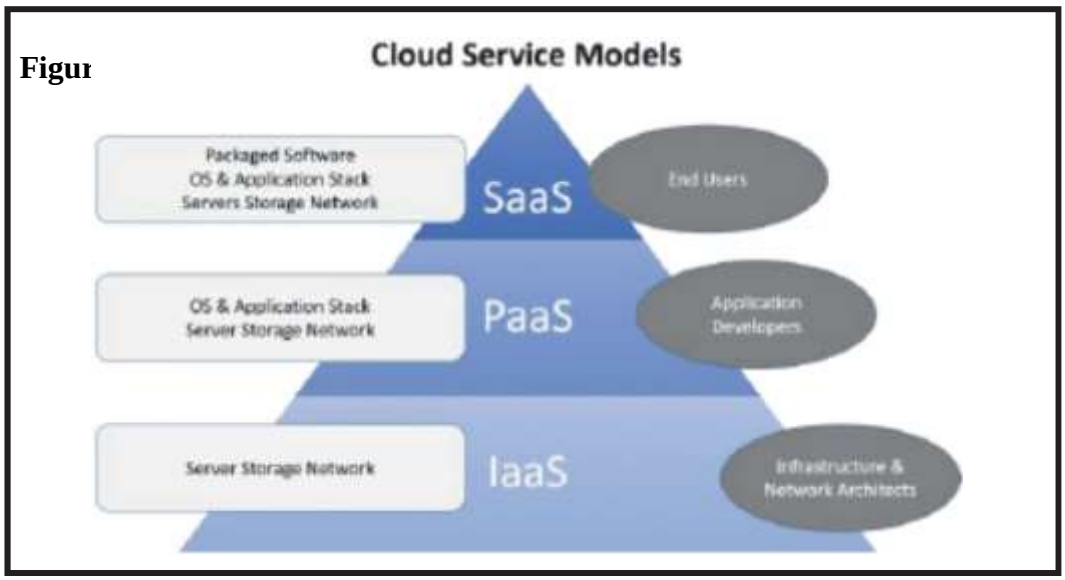
- Flexible in increasing workload by virtual machines.
- Reliable by supporting redundancy, that is saving the data in more than one machine.
- Scalable by allocating resources on demand
- Maintainable as autopilot at times under the supervision of cloud administrator.

Cloud computing services are classified into three models: "Applications”, "Platforms," and "Infrastructure". Each model serves a different purpose and offers different products for businesses and individuals around the world. The server administrator monitors traffic and client demands to ensure everything runs accurately [5].

III. Cloud Technology Service Model

As stated before, the cloud computing has three service models as shown in Figure 2.

Figur



They are as follows: [6]

1. **Software-as-a-Service (SaaS):** This refers to remote access of sites that are hosted with applications like CRM (Customer Relationship Management), ERP (Enterprise Resource Planning) over the internet for the consumption of the end-user. The data center which displayed by Amazon Web Services are examples for this model.

2. **Platform-as-a-Service (PaaS):** This refers to availing operating systems, software development kits (SDKs) and tools (like Java, .NET, Python, Ruby on Rails) without buying the software licenses, which are made available over the Internet for software developers. The Google App Store is a best example for this model.

3. **Infrastructure-as-a-Service (IaaS):** This refers to providing the tangible physical devices over the internet virtually like virtual computers, servers, storage devices, network transfer, which are physically located in one data center. Organizations use their own platforms and applications within a service provider's infrastructure using the login authentication systems and passwords from any dumb terminal or device.

IV. Challenges Faced by Traditional ERP Software

Implementation of traditional enterprise software like System Applications and Products (SAP) in Enterprise Resource Planning (ERP) is a challenging task as a detailed analysis of factors that are critical to the implementation has to be taken into account. Further focusing on the critical success factors (CSF) from four different perspectives such as: technology selection; change management, knowledge management, emerging technologies would give a detail view of challenges in ERP implementation [7].

The ERP developed on a technology selection requires adequate training for the employees. If Chennai based industries are taken into consideration, they spend 16 to 20% of the ERP software cost on training. So, in this kind of situation most organization tries to retain their employees. Adversely at times these employee conflict against the interest of the organization when change management comes into role. 27% of Chennai based industries resist to change [8]. Then comes the knowledge management challenges that mitigate the implementation of ERP. The fundamental knowledge management challenges include the lack of knowledge in the employees about customization and process knowledge [9]. At last from the perspective of emerging technology it is up to the organization to take decision of continuing on-premises ERP or switching over to cloud ERP by taking all CSF into consideration – cost, employee adoption to the new environment.

V. Benefits of Cloud

The biggest benefit of the cloud computing is its ability to help business enterprises to increase their productivity and reduce their cost of and maintenance while providing new products to their customers.

The subscription of cloud client to a cloud provider is very flexible in the sense that the pay-as-you-go pricing model allows the users to try the applications or infrastructure before they commit themselves to renting them. When the users rent assets, the responsibility of maintenance of the data centers is in the hands of cloud provider, so the users care free about maintenance [10].

The cloud services are generally available 24/7 and accessible from multiple browsers (i.e., Mozilla Firefox, Chrome, Safari) and devices (i.e., desktop, laptop, smartphone, iPad) in any given time zone. This gives enormous flexibility for everyone to conduct their work [11].

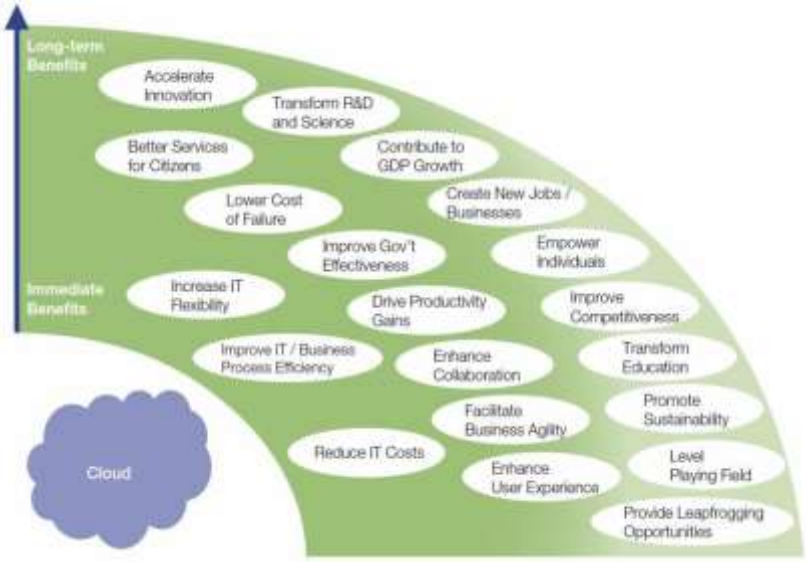


Figure 3. Examples of Benefits of Cloud [12]

VI. Benefits of Cloud Computing for E-commerce

Both cloud computing and e-commerce is in peak usage over the Internet. Cloud computing allows clients to use services in a transparent way. E-commerce on the other hand, allows consumers to buy services or products from anywhere in the globe and anytime. The cloud computing for e-commerce has several benefits [13].

New Technology, cloud computing has brought a paradigm shift in e-commerce in the following aspects: [10]

Transparency

It is up to the organization to decide to go in for cloud or not, as there is no guarantee for security. However, many cloud computing users trust the cloud provider because of transparency and looking at the security standards followed by them.

Scalability

The most important aspects of cloud computing are scalability of resources based on the demand of the cloud clients, with an added advantage of disposing them when they are not needed by the cloud users.

Mobility

E-commerce is benefited by cloud computing which allows the users to access products and services from anywhere in the globe and anytime from their mobile devices even while they are in travel.

Global expansion

Global expansion of business enterprises through e-commerce can be accomplished by cloud computing. The e-commerce product could be readily made available to customers all around the world at any time.

Quality of e-commerce

Quality of e-commerce is provided by making it available 24/7 over the Internet. So, the products and services of business enterprise are accessible from anywhere and anytime in the world. Many of the large cloud providers such as Google, Amazon, and Microsoft have their data centers spread across the globe in order to guarantee reliability in accessing the cloud applications in cases of failures [14].

VII. Difficulties Posed by Cloud ERP

In spite of all the advantages, enterprise software poses challenges, even if rendered via the cloud. Here are three major problems that executives, planners, decision makers, and directors face with existing enterprise software solutions in cloud [15].

1. Lack of mobile compatibility

Enterprises are struggling with legacy software that does not support mobile applications seamlessly. This lacks in compatibility of software on mobile devices. Even leading software enterprise developers are vigorously participating in developing software that operates well on all kinds of mobile devices.

2. Less cohesion in software integration

In many cases, enterprises face the problem of integration of software with more than one software solution to automate a single business process; for instance, an ERP system integrated with a third-party warehouse application, and the invoicing in ERP integrated with an external document management solution vendor. Breakage within these interfaces is a major disruption in the flow of routine business day operations.

3. Software complexity

Understanding the software solution by the end users need continuous training. These steep learning curves dissuade employees from properly engaging with the technologies, which leaves massive software potential untapped.

VIII. Conclusion

The expansion of e-commerce along with cloud computing is enormous in recent trends. They go hand-in-hand in all aspects such as flexibility in subscription, scalability of resources; reliability in providing backup, maintainability is autopilot. This enhances high productivity, creating new products and gaining customers all over the world.

These benefits of cloud computing are enjoyed by business enterprises under some compensations such as lack of mobile compatibility, Less cohesion in software integration and software complexity.

In the near future e-commerce and cloud computing has to be tightly coupled across these drawbacks. Perhaps, cloud computing plays a vital role in the growth of e-commerce with a cutting edge of success for large enterprises. But still SME struggles to survive in cloud. This also has to be overcome in the near future. I think this paper might open a path for new researchers in providing a prior knowledge.

References

[1]. Tamara Almarabeh & Yousef Kh. Majdalawi, "Cloud Computing of E-commerce", Modern Applied Science; Vol. 13, No. 1; 2019, PP: 27-36.
[2]. [online] Available: https://en.wikipedia.org/wiki/E-commerce
[3]. Bhat, Dr. Shahid & Kansana, Keshav & Majid, Jenifur. (2016). A Review Paper on E-Commerce.
[4]. Rajkumar Buyya, James Broberg, Andrzej Goscinski, "Cloud Computing Principles and Paradigms", Wiley (2017)
[5]. Prasad, M.Rajendra & Ramavathu, Lakshman & V, Dr. Bapuji. (2013). Cloud Computing: Research Issues and Implications. International Journal of Cloud Computing and Services Science. 2. 134-140. 10.11591/closer. v2i2.1963.
[6]. C.Lakshmi Devasena, "Impact Study of Cloud Computing on Business Development", Operations Research and Applications: An International Journal (ORAJ), Vol. 1, No.1, August 2014
[7]. Shree Ranjan; Vijay Kumar Jha; Pralay Pal**,** "Literature review on ERP implementation challenges" by *International Journal of Business Information Systems (IJBIS), Vol. 21, No. 3, 2016*
[8]. M.K. Gandhi, Dr. K.Sarukesi (2015), "Change Management Challenges in Erp Implementation in Apparel Industry", International Journal for Scientific Research. 4. 190-192.
[9]. Anjali Ramburn, Lisa Seymour, Avinaash Gopaul, "Understanding the Role of Knowledge Management during the ERP Implementation Lifecycle: Preliminary Research Findings Relevant to Emerging Economies", 6th Conference on Research and Practical Issues in Enterprise Information Systems (CON- FENIS), Sep 2012, Ghent, Belgium. pp.234-241
[10]. Nevin Aydin, "Cloud Computing for E-Commerce" by *IOSR Journal of Mobile Computing & Application (IOSR-JMCA) Volume 2, Issue 1. (Mar. - Apr. 2015), PP 27-31*
[11]. [online] Available:http://www.esri.com/news/arcwatch/0110/feature.html
[12]. World Economic Forum In partnership with Accenture 2010
[13]. [online] Available:http://www.einfolive.com/5-benefits-of-cloud-computing/
[14]. Buyya, R., C.S. Yeo, and S. Venugopal. Market – oriented cloud computing: Vision, hype, and reality for delivering it services as computing utilities. 2008. IEEE
[15]. [online] Available: http://techgenix.com/traditional-enterprise-software/