E-Commerce service model based on cloud

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Abstract*: Cloud computing provides a powerful, scalable and flexible infrastructure into which one can integrate previously known techniques and methods of Data Mining. Cloud computing has changed the way of computing. It delivers the software services to the clients on demand. It also provides the capacity to users to connect to calculate resources and access IT managed services with a previously unknown level of ease. Due to this greater level of flexibility, the cloud has become the breeding ground of a new generation of products and services.. There are different types of software applications are running on the environment of cloud computing. E-Commerce is one of the major service of cloud computing. With the help of computers and telecommunication system, companies can now exchange information electronically within a short period of time. Electronic commerce involves everything from ordering "digital" content for immediate online consumption, to ordering conventional goods and services, to "meta" services to facilitate other types of electronic commerce. This reflects that the e-commerce has huge impact on the economy and society from the other side in the world.*
Keywords*: Electronic data interchange(EDI), cloud computing,B2B,B2C,C2B,C2C.*

I. Introduction

We are living in an extremely developed scientific era, where internet is becoming primary need of all human beings. In today's world everyone's life whether it is social, personal or professional is revolving around World Wide Web. Thus, giving birth to large amount of data at an incredible momentum.. With the arrival of digital technology and smart devices like cell phones, smart phones and laptops, a large amount of digital data is being generated every day. Nowadays people can buy and sell the things just by using smartphones or mobile devices .they select the things what they want from the different ecommerce sites on the internet.The cloud computing allows companies to do business without having to develop and maintain IT infrastructure. E-commerce provides the flexibility for business to sell products online without having to physically rent an office space. These days, almost all e-commerce companies take advantage of the benefits of cloud computing [1].

This paper emphasize on number of review papers which describes the cloud computing and E-Commerce. We also put light on the challenges increasing from the use of cloud computing in E-Commerce. We try to discover perfect approach to get valuable information from the pile of huge data. In this paper, we first define the E-Commerce and its related information. In section 2 we discuss the cloud computing, its types and its different services. Section 3 presents the Cloud computing and E-commerce. Section 4 defines the framework of traditional E-Commerce and todays framework i.e cloud computing with E-Commerce. In last section, we discuss the benefits of cloud computinf with e-commerce.

II. Electronic commerce

Electronic commerce has become a practical reality for number of businesses throughout the world. By integrating the serviceable capabilities of computers and telecommunication systems, organizations can now swap information electronically rather than sending and receiving paper documents. In so doing, businesses are achieving high accuracy, speed and efficiency with which all transactions may be negotiated, confirmed and executed. In the past years paper was the main medium through which ecommerce occurs, but nw different new technologies are emerging which makes ecommerce reliable as well as effiecient. Cloud computing play an important role in ecommerce industry. International electronic commerce throughout the global trading community is now fairly considered a project of the highest priority on the international agenda.

Electronic commerce is a disciplined method of doing business. The discipline results from the inherent need of all participants to create, transmit, process and store information electronically in a rational and productive manner[6]. The participants accomplish, through their adherence to the rules, the successful linkage of their independent operations in a manner which permits the efficient flow of the relevant information. However, a practical significance of the discipline is that entry into electronic commerce interchange(EDI)

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requires only certain essential technological assets[7]. Yet, without those assets in place and functioning, electronic commerce, as envisioned by the international trade community, is not occurring.

Internally, a business first needs a computer. A large mainframe is not required. There are thousands of businesses successfully conducting electronic commerce with personal computers. Indeed, experts currently face dares in determining the proper equipment required in light of the continually increasing computing capabilities of personal computers and workstations.

Second, a modem is required, in order to permit the sending and receipt of information over accessible telephone lines. Some EDI occurs through the manual delivery of magnetic tapes and disks containing the electronic files and documents[18]. However that practice is diminishing in developed countries as the quality of telephone systems is increased to move data effectively.

Third, access to a telephone system that is capable of moving electronic data is required. Currently, some EDI users are experimenting with cellular transmission or satellite linkages, either of which can bypass the need for reliance on existing telephone systems[10]. Flexibility in this respect is contemplated, as some developing countries have also been considering bypassing the use of traditional wired technologies and moving directly to cellular as a basis for a national transmission infrastructure. However, in any case, the essential infrastructure of a means of electronically moving the data, together with reliable access, is needed.

All EDI presently occurs through the use of networks. Many companies will, in fact, be customers of more than one network. In some cases, an additional network is required for a user to access directly other players on the second network where interconnectivity between the networks does not exist. In other instances, the second network may offer as additional resources specialized information services or databases available only on an exclusive basis[23]. In many cases, EDI networks also offer services relating to the storage, retrieval and processing of information which many large companies may choose to perform internally but which smaller companies find desirable to delegate to the networks.

Software remains - for the individual company, the networks, the telecommunication common carriers and participating government authorities - the last significant tool required for electronic commerce. At each operational link in the flow of information, software is required to create, format, transmit, carry and have the data[16]. What emerges as the distinctive quality of electronic commerce, however, is that the software programs, and the uses of that software by all of the participants, are developed around common standards defining the elements, pieces and formats of the information, including the requisite codes and directories to permit complex trade terms, product references and instructions to be converted into discrete alpha-numeric units of information. It is in the disciplined adherence to these standards that electronic commerce finds its vitality. Merely having software is not sufficient; the software must be designed around, and used to construct and format information in accordance with, published sets of standards.

Much of electronic commerce has, and will continue to evolve on a sectoral basis. Banks, automotive manufacturers, and transportation companies, to name some early examples, collectively worked to develop industry-specific standards to facilitate the use of the technologies of electronic commerce and achieve the movement of information within their industry[17].Within major multi-national corporations, information processing standards were constructed to permit internally the same type of efficiencies now possible in trade. Many of these sectorial and proprietary standards continue to exist and will continue to thrive; however, current momentum supports the development of broader, inter-industry public standards, particularly with respect to international trade. Thus, the EDIFACT (Electronic Data Interchange for Administration, Commerce and Transport) standards under development by the United Nations Economic Commission for Europe Working Party on Facilitation of International Trade Procedures and the communication standards work by the International Organization for Standardization (ISO) (e.g. X.400 and X.500) are necessary to the continued forward progress of electronic commerce[23].The standards have become an essential tool for accomplishing both message development and processing by trade and administrative participants and establishing interconnectivity among the networks and common carriers. Thus, electronic commerce may be defined in part as the standards-based use of the preceding tools to conduct business.

Electronic commerce is one of the main criteria of revolution of Information Technology and communication in the field of economy. The Current edge for business today is Electronic Commerce, it refer to electronic transaction such as buying, selling, information flow and fund transfer over the internet. E-commerce broadly encompasses all business activities taking place over internet. E-commerce has the following Models:

➢ Business-to-Business (B2B): the transaction between business enterprises.
➢ Consumer-to-Business (C2B): this mean the customers selling products and services to the Business Enterprises.
➢ Business-to-Consumer (B2C): this means the transaction among Business Enterprises and customers.
➢ Consumer-to-Consumer (C2C): this mean the business transaction among users or consumers

III. Cloud Computing

Internet is often said to be a cloud and the term ―Cloud Computing comes from that analog. Cloud computing is defined as the dynamic provisioning of capabilities (hardware, software or services) from third parties over a network. It is said that clouds are the services relied on hardware presenting to compute, network and store where hardware management facilities are highly available and Infrastructure capacity is highly elastic[5]. The cloud is dissimilar from other conventional models where the users not needed to put hands to control over their own resources. Cloud computing is a computing standard, where huge group of systems are associated with private or public networks, to give vigorously scalable infrastructure for application, information and facts storage. The cost of calculation, application hosting, data storage and delivery is reduced significantly by this technology[8]. Most organizations today use Cloud computing services either directly or indirectly. For example when we use the services of Amazon or Google, we are directly storing into the cloud. Using Twitter is an example of indirectly using cloud computing services, as Twitter stores all our tweets into the cloud[11].

The design of cloud computing is relied on a very simple concept of reusability of IT capabilities'.

Cloud computing can be considered as:

"A pool of abstracted, highly scalable, and managed compute infrastructure capable of hosting end –customer applications and billed by consumption[4].

Types of Clouds:

Cloud computing is the delivery of a set of services to heterogeneous community of end- receipt[14]. There are four different cloud models that you can subscribe according to business needs:

- *Private Cloud*: Here**,** computing resources are deployed for one particular organization. This method is more used for intra-business interactions. Where the computing resources can be governed, owned and operated by the same organization.

- *Community Cloud*: Here**,** computing resources are provided for a community and organizations.

- *Public Cloud*: This type of cloud is used usually for B2C (Business to Consumer) type interactions. Here the computing resource is owned, governed and operated by government, an academic or business organization.

- *Hybrid Cloud*: This type of cloud can be used for both type of interactions - B2B (Business to Business) and B2C (Business to Consumer). This deployment method is called hybrid cloud as the computing resources are bound together by different clouds.

Cloud Computing Services:

The service models that compose cloud computing are[5] :

- *Software as a Service (Saas)* – A technology platform that allows access to applications via the internet in the form of services.
- *Platform as a Service (Paas)* – This model allows the user to build his own applications that run on the provider's   infrastructure.
- *Infrastructure as a Service (IaaS)* – Providers provide the ability to use computer infrastructure. Users do not buy the servers, software, data storage or network equipment.

The service models that compose cloud computing are[5].
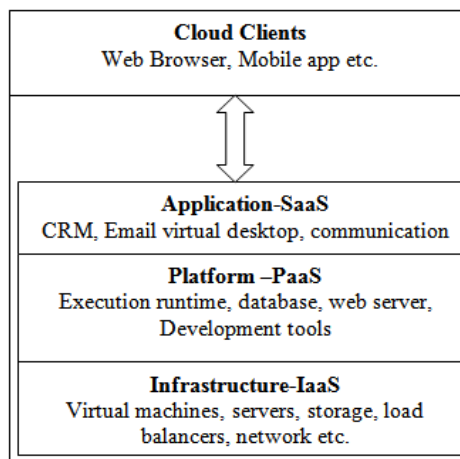
IV. CLOUD COMPUTING AND ELECTRONIC COMMERCE (E-COMMERCE)

Cloud Computing and E-commerce are now two significant part in our routine uses. Cloud computing service reduce cost of Information Technology infrastructure , on the other hand E-commerce helps vendors to do business without renting or buying a business entity shop[19]. Cloud gives good opportunities for e-commerce, but before use it, organization should have a trade-off between costs. Many researcher demonstrate that cloud computing and E-commerce the most striking industries that has been developed at fastly in recent years.

Actually, cloud computing is not a brand new calculating mode. It is the evolution and extension of the traditional distributed computing and grid computing [21]. For example, Weiss [24] defines cloud computing as the natural evolution and integration of effective computing, distributed and grid computing. Mell and Grance [25] defines cloud computing as a model which is able to visit the configurable resources such as network, server, memory, applications and services based on the demand.
E-commerce and cloud computing are described as follow by
several researchers:

➢ The fast growth of the global economy enhance the developing of online web based businesss.
➢ Online shopping is an attractive new trend as it is more suitable while comparing to traditional way of shopping.
➢ The safety and trust of data and information technologies are enhanced quikly.
➢ The level of education and IT skills of customers have been better.
➢ Iincreasing of telecommunications techniques speed up the execution of e-commerce Industry across all over the world.
➢ Cloud Computing give chances for small-scale and middle-scale business companies to move to the Internet technology with a reduced amount of efforts

V. A FRAMEWORK FOR E-COMMERCE BASED ON CLOUD COMPUTING

Cloud computing may effect the traditional E-commerce bussiness chain and lead to the chain restructuring-Traditionally, the E-commerce industry chain is consists of different members like the hardware supplier, software developer, Internet service provider, system integrating provider, service supplier, E-commerce enterprise and customer. Each member of the bussiness chain performs its own functionalities[4]. The hardware supplier, software developer, Internet service provider, system integration provider, service supplier exist as the backend of the E-commerce enterprise and offers it the technical support. Traditional E-Commerece chain is shown in figure 1.
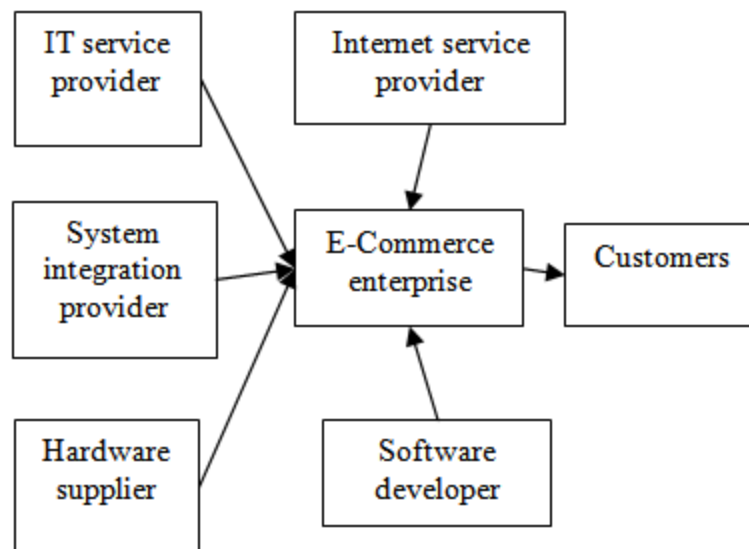

Figure 1. Traditional E-commerce bussiness chain.

When cloud computing is migrated into E-commerce business, one cloud service provider can supply almost all the necessary products and services to an E-commerce website. All the member elements are connected to cloud computing service provider which further forward the information or data to the E-Commerce website and the finally to customers[9]. As a result, the structure of E-commerce industry chain will be changed. E-commerce bussiness chain based on cloud computing is shown in Figure 2.
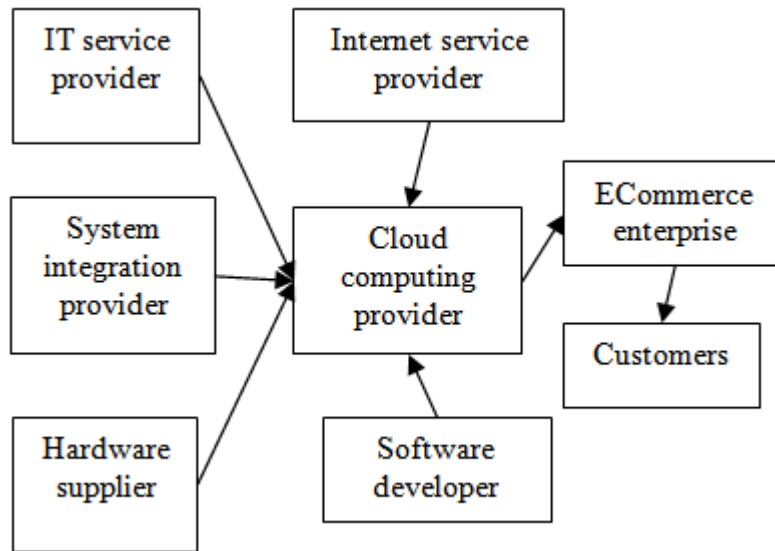
Figure 2. E-commerce bussiness chain based on cloud computing.

VI. Benefits of Cloud Computing for E-commerce

Internet is the main source for cloud computing and ecommerce . Cloud computing allows customers and users to access different services, computational resources and storage in a transparent way. E-commerce on the other hand, allows customers to buy products from anywhere and anytime in the globe[12]. The cloud computing for e-commerce has several consequencies .The cost can be calculated based on the requirement of every company. Cloud computing helps businesses to lower the costs such as hardware procurement, security, privacy, energy, and maintenance[22].

 Cloud computing has proved to very beneficial for the ecommerce platforms due to the following advantages [13]:

A. Cost-effective:
Cloud computing helps the organizations or business to reduce the costto be spent on implementation of information technology resources. In today's world data is growing rapidly and   e-commerce is directly related to the data growth . The need of hardware and software requirement is increased and hence their cost of construction and maintaince also

B. Speed of Operations:
Installation and execution of e-commerce platform using cloud platforms is fast because of the fact that IT infrastructure needed for hosting the approval has already been installed. What's more, it hastens the execution use of various modules of the approval and it is more capable.

C. Trust and Security :
The security of data stored in the cloud is an important aspectn by everyone [15]. The hearts for information loss or network intrusion has become checked effectively with the roll-out of various standards drafted by various organizations like ISO for cloud vendors. The concept of trust is not easy to define; however, many cloud computing users agree that transparency is important when it comes to trust issues in cloud computing. The businesses must clearly check that the service providers indeed adhere to security standards and best practices. Storing data in the cloud for e-commerce applications is generally considered the best choice.

D. Investments tailored to the needs of e-commerce:
Cloud computing helps different companies of ecommerce to reduce the cost upto 80% .for sustainable and future development ecommerce industry have to maintain IT infrastructure.

E. Scalability:
One of the most essential benefits of cloud computing is its ability to scale based on the requirements of the cloud users or organizations. Many of the operations such as activation of the server, increasing the computation power, to reallocating the loads due to changing demands of the users or clients on the cloud can take place in a

fast manner[21] . These operations basically define the scalability of the cloud and the flexibility to allocate more resources when requested and disposing of them when they are no longer needed by the cloud users. Scalability contributes in optimizing the burden time of the necessary paperwork while using the traffic. Hence, cloud service is again less expensive for your retailer.

F. *Mobility:*
Users or customers can access the different services,products anytime from anywhere through the cloud computing and ecommerce with the help of mobile devices.

G. *Global expansion:*
With the help of smartphones or mobile devices ecommerce allowing users or customers to access the products and services from anywhere and anytime in the world as the cloud centres are spread across the globe[20]. The access time and cost of product is reduced thorough it. Cloud computing can also assist to handle numerous e-commerce businesses specific to customers within many different countries.

H. *Quality of e-commerce:*
Quality of e-commerce depends on the computing services which should be scalable and reliable to make quality high. Cloud services like eBay ,amazon, google etc have their own data centres which provide flexibility to access the products from anywhere and anytime means 24 *7 hours in the world n order to sustain the quality of e-commerce, the computing services must be scalable, reliable and provide flexibility of access to products and services from anywhere and anytime in the world.

VII.   Conclusion

In this paper an E-Commerce service model based on cloud is discussed. The new rising technology of cloud computing is making a new ecosystem service which will integrate all the E-commerce services and facilitate the new service modes. Cloud computing helps business or organizations to handle more efficient use of their Information Technology hardware and software resources. In the traditional E-commerce enterprises, each member of the enterprise performs their own functions but when cloud computing is migrated into e-commerce industry ,one cloud service provider can supply almost all the necessary requirements to an ecommerce website.

Cloud computing is essential for e-commerce industry as it provides numerous opportunities for e-commerce industry as we discussed in this paper. In the near future, the e-commerce industry may be even more tightly combined with cloud computing since many of the e-commerce industry maintain their competitive edge due to the benefits of cloud computing.

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