



Cloud Computing In E- Commerce – An Exploratory Study

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Abstract

Cloud Computing has not only benefitted e-commerce but all other sectors and even government systems in effectively managing vast amount of data, information and events on real-time basis so much so that cloud computing infrastructure has become an utility infrastructure just like the telecommunication and electricity networks. However, the ecommerce business's soul is cloud computing technology services. The analysis of the cloud computing technology-based features and the business model of ecommerce have shown that the ecommerce business model genesis, growth and excellence has a lot to do with the ever-evolving technological features of cloud computing and is actually an instance of a successful nexus between technology and business strategy.

Key words: Cloud Computing, ecommerce, technology, strategy, business

Introduction:

According to a study by Deloitte, cloud computing will provide access to quick and affordable means to harness the power of data and computing capacity that will fuel proliferation of innovative and disruptive technologies and inventions further affecting the characteristics and dynamics of the society. Apart from providing new opportunities it will also come with adherence to new responsibilities both for individuals and organizations. It may happen the companies with higher capacity to harness cloud-enabled technologies for data and resources utilization may end up creating a monopolistic or oligopolistic society even though cloud-computing has led to lowering of barriers to entry in businesses with its accessibility (Foutty; 2018).

The study therefore attempts to understand Cloud Computing Technology and its efficacy as a path breaking solution in the software and internet technologies sphere understanding its role as a key technology solution to business strategies and corresponding technology requirements and its overall impact on business and society. It is taking the E-Commerce sector as a case to further the understanding of the role of Cloud Computing in providing revolutionary technology and IT services solutions to business requirements and offerings and facilitating the overall business strategy.

It is in fact a data storage and processing system and service that is in a remote location from the user of the service and is accessed with the help of worldwide web internet network technologies and systems to perform different software service-related activities.

Review of Literature:

Cloud Computing in Business: Cloud computing pertains to providing solutions for public services in the form of storage services, dynamically scalable multiple client computational power in servicing sectors like e-commerce, social media, smart phones and app-based mobile commerce. The business has grown from US\$ 9 billion to US\$ 40 billion between 2009 and 2014 (Devasena; 2014). This is because cloud computing is very efficient and affordable for both big companies and small entrepreneurs as well as individual software users. Companies using cloud infrastructure systems services need not buy software and hardware as they can rent it on subscription basis from the cloud system.

Cloud system has its own infrastructure and provides service as per the need of its business subscribers of clients. Cloud computing services is easy to access from any location by the authorized users with license to access. As a result, cloud computing is fundamentally making a positive impact on the micro, small and medium enterprises way of doing business and attaining profitability (Jain; 2011). Overall, cloud computing has been very beneficial to businesses in increasing their flexibility of operations, dynamism in software and hardware requirements for business and significant benefits in reduction in cost of operations.

Cloud computing has improved the efficiencies of business organizations by helping automate the traditional processes and helped them in an innovative way to stay competitive and prevent loss or downturn in business as per a study finding (Ting et. al.; 2016). However, along with advantages like huge reduction in unrequired procedural, administrative, hardware and software costs besides flexibility, scale and ease of use, cloud computing has some drawbacks like data and information pilferage through cyber attacks to cloud storage and processing servers, the study states. As a solution to such attacks, the cloud service providers should provide regulatory compliances to the concerns of the customers for secure certification, provide security policy to the customers with details on secured access, control, risk management, risk backup and system recovery, the study concludes (Ting et. al ; 2016). So, along with emergence of new technologies that provide greater advantages, some challenges also crop up and therefore there is a need for comprehensive analysis of technologies without only getting overwhelmed by the various benefits it provides to the society in general.

According to a study the cloud computing technology contributes to the operational efficiency of the IT platform of an organization by contributing to the operational efficiency in terms of providing infrastructure and software solutions via internet and networking technologies for the entire for the entire IT needs of a business organization. Such innovative strategies make it easier for companies to improve their operational and financial benefits. Additionally, due to its round the clock service across regions and geographies, cloud computing is able to provide businesses the ability and technology to stay connected with their customers, employees, suppliers and other stakeholders and improve the overall business performance (Attaran; 2017).

E-Commerce Sector and Cloud Computing: This started in 1999 with the concept of cloud computing coming along with salesforce.com. Since then, cloud computing has added immense value to e-commerce business by means of providing scalability, building trust with verifiable services, providing speed and agility of operations, optimizing the cost factor and preventing redundancy with cloud-based back-up infrastructure to save business from loss of data and connectivity (Nair; 2020). Presently, e-commerce has grown into a huge business worldwide with potential for further growth and much of that has been possible with a well spread out distribution network and strategy aided by technologies like the cloud computing technology and system among others. As per 2020 figures, over two billion customers purchased goods and services online and sales in e-retail sector was more than US\$ 4.2 trillion worldwide and it is expected that the share of e-commerce in the total global retail sales will go up to 21.8 percent (Coppola; 2021).

In USA a study mentions that 37 percent of the small business have adopted cloud computing technology by 2014 and the number is expected to grow to 80 percent by 2020 (Attaran & Woods; 2018). This may have exceeded also, due to the Covid 19 Pandemic induced lockdown that saw a noticeable migration of consumers to online based e-commerce sector to source their daily and periodical as well as essential needs.

There are many advantages and benefits accruing to e-commerce due to cloud computing. Cloud computing provides the technology for quick scalability in the e-commerce sector as the business grows in demand. It provides the technology to quickly advertise one's products and services to the target customers. The cloud hosting facility with pay per usage service provides huge advantages in cost and flexibility of choice in doing business. Most importantly, cloud computing technologies have enabled safe and secure financial transactions and payment methods online thereby providing a huge boost to the e-commerce sector (Penny; 2021).

Most importantly, it has provided the wherewithal to small and medium enterprises (SME's) to overcome the challenges of operations and service needed to thrive and compete in the market as equal players with big companies thereby fueling and thriving entrepreneurship in the current environment (Shah & Bodiwala; 2014). So, it is evident that cloud computing has provided fundamental technology solutions for the establishment and growth of e-commerce sector.

Research Gap:

The literature review reveals that the present state of development of the e-commerce sector has grown from being an online mode of doing business in retail to expanding its scope in terms of scale and reach as well as variety in offerings. Is cloud computing technology being useful to businesses in strategizing for new products and services? Is it opening new channels of distribution and ways of doing business? To put it broadly, is Cloud Computing technology an active partner in the strategic decision-making process? Is Cloud Computing aiding business strategy? These are some of the questions the study seeks to answer with the help researching on the following objectives to seek answers to draw conclusions and recommendations.

Research Objectives:

The study has the following research objectives -

- To study Cloud Computing Technology and discuss the different advantages for business strategy, technology aided and technology enhanced operations provided by Cloud Computing
- To analyze the role of advantages provided by cloud computing technology in e-commerce business strategy and its implication in the e-commerce sector

Significance of the study:

Cloud computing has facilitated smooth remote work and integration of discrete software systems including remote storage, access and software application facilities. It is a significant development and needs to be studied further as to how it has been a technology solutions provider to businesses.

It therefore is significant to know the various dimensions and ways cloud computing has aided and contributed in developing and implementing newer and innovative strategies of doing business by studying its application in the e-commerce sector.

Research Methodology:

The study will be based on adopting a qualitative approach with an exploratory and case study method.

Limitations of the study:

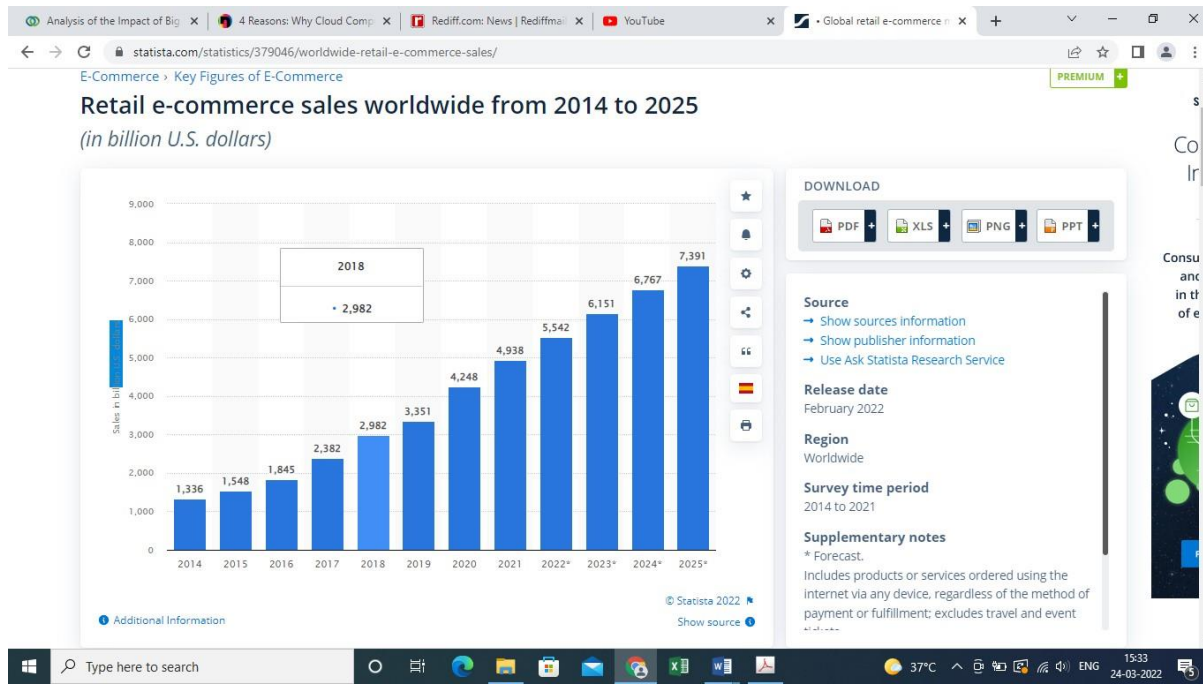
The study looks at the broader aspects of cloud computing systems and its utility on business technological requirements and other possibilities by taking the e-commerce sector. It is a broad level conceptual study by taking the e-commerce sector as a case study. Inclusion of applied aspects of Cloud Computing technologies might have provided actual information of application and utility of cloud computing. However, that is beyond the scope of the study.

Analysis and Findings:

From the extensive literature reviews done and based on the qualitative analysis, one of the major implications of cloud computing technology on ecommerce sector is the scale and spread of ecommerce ventures over the decade and that coincides with the development in different features of cloud computing technologies.

The following figures in the chart below indicate the exponential growth of ecommerce sector over the last decade across the world.

Chart 1: Retail E-Commerce Sales Worldwide from 2014 to 2025

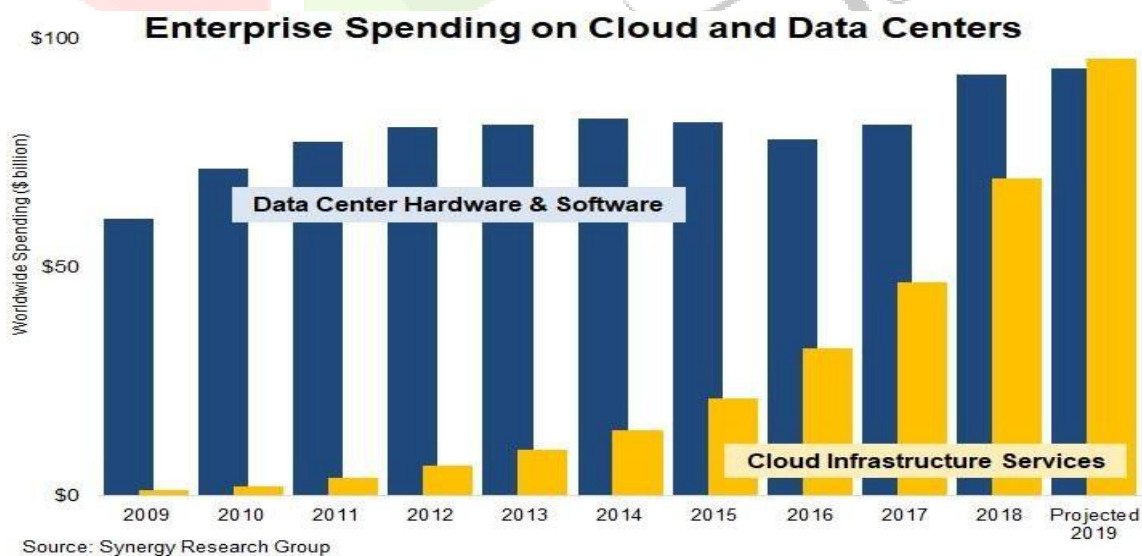


Source: Statista.com; 2022

The chart indicates that global ecommerce sales grew by more than 400 % within the period 2014-22. In 2014 the global ecommerce sales was US\$ 1336 billion and it rose to US\$ 4918 billion in 2021 and expected to grow to US\$ 7391 billion in 2025.

In relation to growth in ecommerce business and sales, the following data on cloud computing business by major cloud computing technology service providers is interesting to note.

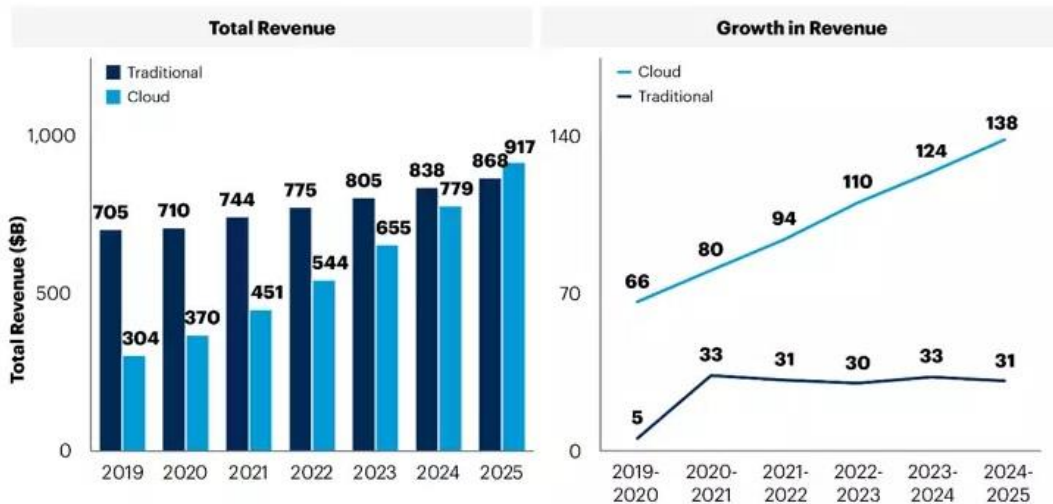
Chart 2(a): Enterprise Spending on Cloud Data: 2009 - 2019



The above chart shows that there has been exponential growth of cloud computing data centre hardware and software business as well as cloud infrastructure services business during the period 2009 -2019. The spending on cloud infrastructure services grew from virtually zero to US\$ 100 billion between the period 2009-2019 and cloud computing business saw 40 percent growth worldwide in 2019 alone.

At the same time, industry spending on data centre hardware and software stagnated during this period thereby marking a big shift towards cloud-based infrastructure. This is further reinforced by the fact that during the period 2009-2019 the average annual spending on data center grew by four percent whereas cloud computing annual average growth grew by 56 percent.

Chart 2(b): Enterprise Spending on Cloud Data: 2019 - 2025

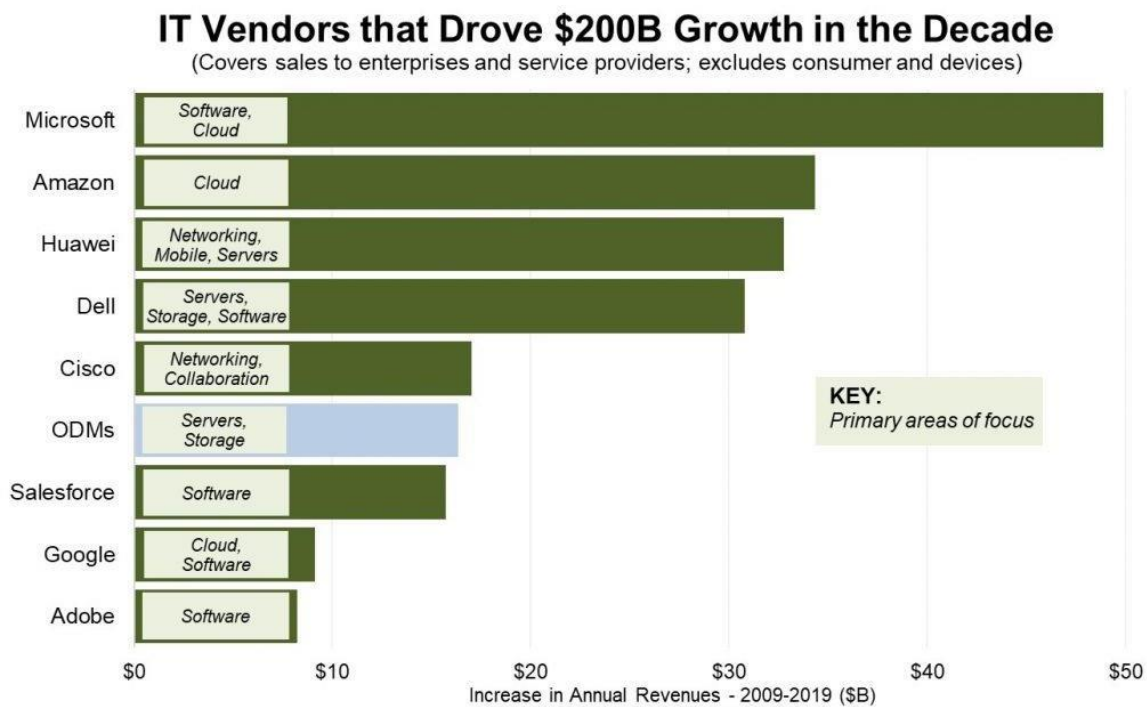


Source: Gartner
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Gartner

In the above infographic, Gartner's 'cloud shift' research includes only those enterprise IT categories that can transition to cloud, within the application software, infrastructure software, business process services and system infrastructure markets. The study states that by 2025, 51% of IT spending in these four categories will have shifted from traditional solutions to the public cloud, compared to 41% in 2022; and almost 65.9% of spending on application software will be directed toward cloud technologies in 2025, up from 57.7% in 2022.

Chart 3: List of IT Vendors Driving Growth in the Decade: 2009-2019



Source: teal; 2020

A look at the growth of business in cloud computing of the top ranking cloud computing service providers shows that top five companies have witnessed exponential growth during this period with Microsoft and Amazon leading the pack with the top two performers achieving this feat i.e. Microsoft and Amazon by selling cloud technologies (Teal ; 2020). The statistics are testimony to the fact that there has occurred a large-scale shift of IT infrastructure from static data centers and servers to cloud based servers and data centers.

The growth of cloud computing gained further traction with the growth of big data technologies, AI, IoT and Design Thinking; technologies that require the collation and processing of large number of discrete data and information located across regions, devices and geographies. Such requirements are also witnessed in ecommerce technologies that power ecommerce business. The growth in cloud computing business and market is commensurate with the development nature of markets in terms of technological preparedness and consumer preferences.

Some of the spurt in cloud computing technology requirements is a result of the constraints posed by the lockdown imposed due to the Covid-19 Pandemic, but the overall trend shows a growth in requirements of cloud computing technology.

The analysis of both the data on ecommerce and cloud computing show that both the sectors witnessed exponential growth simultaneously during the same period. Though the growth in cloud computing is a logical progression in growth on information & communication, data management and networking technologies, yet the noticeable profound impact on the strategic and business requirements of the ecommerce sector cannot be overlooked.

Conclusion:

- **Cloud Computing Technology's Attributes Provide Immense Possibilities for Businesses to Make Business Efficient and Competitive with its capability** to build and operate businesses efficiently and competitively beyond the constraints of physicality of space and time.
- **Cloud Computing had Made Attainment of Scale and Speed in Business a Possibility:** As a result, a business start-up that incubates on a small-scale can quickly scale up to the global level with the right business model aided by cloud computing technologies.
- **Global Ecommerce is the Manifestation of the Power of Cloud Computing as the** attributes and facilities of cloud computing that provide safe, secure, efficient and continuous business operations support aid the business model of ecommerce.
- **Cloud Computing Will Further Empower Ecommerce Business Model due to the** regularity of technological developments and improvisations happening in the cloud computing technology and the way it is helping in streamlining the ecommerce business model towards attaining greater scale and efficiency.
- **Cloud Computing directly contributes to the business strategy of ecommerce as** cloud computing attributes and features are compatible with the business model of ecommerce. So, any technological improvisation or improvement opens up possibilities for ecommerce companies to fine-tune their business strategies to attain higher levels of competitive advantage.
- **Cloud Computing has Empowered Consumers** as now they can choose between different product and service providers beyond their region and geography. So, ecommerce companies have to compete among themselves to get maximum consumers and they are not assured of a sellers' market advantage like in traditional marketing models.

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