Traditional System to Cloud Computing –
Pros and Cons-Risk and Responsibility

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ABSTRACT

Cloud Computing is the process of utilising the support of a cloud provider. This provides infrastructure facilities, software or a platform for the organization’s IT solution. Not only in foreign context, but in India also it got a major role recently. So the study focused on the effect of adopting cloud computing in the manufacturing units and its contribution to the GDP and finally its economic impact. The study offers an extensive literature review with the descriptions and definition of cloud sourcing and its impact, especially the pros and cons of utilising such innovative technology in the Indian market. The study also analyses the risk and responsibility of industry while adopting such innovative technological solution with due regards to security and also the risk associated with the transition of traditional system to the new system. As the study is more qualitative in nature descriptive research is more convenient.

Keywords: Traditional system, Cloud Computing, Advantages and Disadvantages and Risk and Responsibility.

INTRODUCTION:

Information system (IS) is dynamic. The technology, which is worth today, will be worth less tomorrow. So it is crucial for the industry to upgrade their technology in order to survive in such a competitive world and to cover the risk of obsolescence. The business units nowadays depending on both their in-built technological service and also services from external consultants or resellers. Some organisation may directly purchase such technology or some may take the services provided by the consultants and some others may entirely or partially hand over the IS to a third party which is known as outsourcing. The decision whether to purchase or to outsource IS computing depends to a large extend after the cost benefit analysis of such service. Recently the business organizations have taken decisions to virtualise their IT operations after considering the economic aspect and the opportunities received from them. Outsourcing got a major role in the virtualisation aspect of IT operations. In outsourcing the organisation depends on a third party to meet their IS needs, which lacks the flexibility to meet the changing demands of technology and also the conflicts occurring in their contracts. This can be avoided to some extend by the use of “cloud sourcing or cloud computing”. The US National Institute of Standards and Technology (NIST) (2011) defined cloud computing as “a model for enabling ubiquitous, convenient, on demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction”. Tata Consultancy Services, Infosys, Wipro, Zenith InfoTech, Synapse India, Ctrls, Ozonotel Systems and App Point are the top cloud service providers in India. On the other hand the international biggies like IBM and Microsoft are also adding the services. According to service models Cloud computing categories into three Software as a service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). As per deployment model cloud computing can generally classify into four i.e. Private cloud, public cloud, community cloud and hybrid cloud.

It is more relevant in business recently both in developed countries and in developing countries like India. Now
the company's willingness to adopt changes due to sophisticated technological availability, cut throat competition, major policies of govt. like Make in India, Digital India, NITI Ayog, GI cloud-Meghraj etc., made the Indian manufacturing industries to improve the position from their stagnation. The recent industrial development is the clearest reflection of that. The 2016 BSA Global Cloud Computing Score Card ranked 24 countries (80% of the global ICT market) for their preparedness in accepting and supporting the advanced development of cloud computing. Japan, US and Germany bagged the first, second and third rank respectively. Since the score card started in 2012 India’s rank was 19 (2012), 17 (2013), 17 (2015) and 18th in 2016, like every technical services these services also have its own merits and demerits. Many publications have highlighted these issues and also analysis was also done on the pre, post and the implementation issues of cloud computing.

The present study explores and validates the literature already highlighted cloud computing in order to find the pros and cons and the risk and responsibility of Indian companies especially the manufacturing units in adopting the support of cloud providers. The present study supports those who have a keen interest in knowing about cloud computing its impact on the Indian manufacturing industry and it also helps to know the positive and negative side of such service adoption and it helps in identifying the problems they will face while transferring the business data format which was used by the traditional internal IT system to the newly adopted cloud computing system. It helps the researchers to get more knowledge about this area and to contribute to their work and also to practitioners to take decisions regarding the adoption of cloud sourcing. The research also highlights the economic impact of such innovative technology.

LITERATURE REVIEWS:

(Bhogal, 2014) Conducted a study which done a detailed analysis of the challenges, risk and the best practices that should be adopted by the business owners, end users, application owners and IT integrators in the implementation of cloud computing especially at the time of transition of the traditional system to the cloud computing system.

(Lange, Harbert, & Verity, 2011) The study done a detailed analysis of the adoption of cloud computing in business units by replacing the existing traditional platforms of IT outsourcing and its infrastructure. The analysis done on the basis of the extensive interviews conducted with the business executives. The study conducted by the PWC had presented in six articles on a single web page. It examines the innovative features of cloud providers, the problems of cloud providers in the dual role of managing the traditional IT outsourcing still the transition completes at the same time managing the new cloud system, the security issues in public clouds, awareness of enterprises about the benefits of new system, the need of different cloud services and the future of cloud computing.

(Avram, 2014) The research mainly focused on the positive and negative aspects and factors to be considered, challenges while accepting the cloud computing services especially in companies. The study also gave light to the economical area of companies and suggesting the support of cloud in enhancing the economic process. As per the study cost reduction is the main advantage of cloud computing. The research also went through a thorough analysis of value that are increased due to the adoption cloud computing.

(Stieninger, Nedbal, Wetzlinger, Wagner, & Erskine, 2014) The study emphasis on the factors which influence the adoption of public cloud computing in the organisation. It also concentrated on reconceptualising and operationalising the identified important factors on the basis of research gap found from various reviews. Those factors are classified into five ie computability, relative advantage, complexity, image, security and trust.

(Ruhse & Baturova, 2012) The study examined the adoption of cloud computing in the light of case studies and examples. The study considered cloud computing as an important part of organisations, IT strategic decision making. So it suggests the need for integrating IT and business processes. The study also made an attempt to analyse the challenges in practicing the cloud computing and it identified internal and external security, national and international data protection laws, strategic alignment with IT and business, organisational IT governance, risk management and compliance requirement as the most important challenging factors.

(Mell & Grance, 2011) The paper shows the basic details of cloud computing ie the definition, essential characteristics, service models and deployment models, which can used to know the basics of cloud computing.

(Wagh, 2015) The paper is a detailed study of the prospect of adopting cloud computing in Indian manufacturing industry. The study also provides the basics of cloud computing and its advantages. It also analyses the adoption rate of IT in Large, Small and micro enterprises. The study identified the benefits of adopting cloud in MSMEs. The study also came to a conclusion that larger organisation with higher IT adoption and multiple location, usually cheaper alternatives so they c’most often take decisions to outsource.
manufacturing sector. The study went through the new policies of govt. like Digital India and Make In India.

METHODOLOGY:

The study used secondary data from various reviews like research work, conference proceedings, paper publications, articles and websites. From reviews it is found that only limited research has done in this area in the Indian background especially in the manufacturing industry. So the research style is descriptive as the topic of the study is relevant and new.

FINDINGS AND DISCUSSION:

Transformation Traditional System to Cloud System:

As per the reviews majority of the Indian manufacturing companies were not ready to accept any change because their risk overview is more than the advantages they had understood. This made the business in a mode of stagnation. Most of them use the support of cloud services for short periods only, i.e. only to accomplish a particular project or task. External competitions, the availability of abundant sophisticated technology, especially in the field of IT, stagnant business growth, need of product improvisation, differentiation and diversification etc... made them think about the transition to the new system. Recent trends indicate that the organisations are implementing the service for long term strategic purposes. It took years to implement such technology, even many companies are still in the process of implementation and planning. The companies which implemented such technology went through various risk features. Following are some of the roadblocks they faced during the transition from traditional systems to new computing method of cloud providers.

(Bhogal, 2014) Analysed and described the risk and its solutions while transferring the traditional system to cloud computing in different stages

First Stage:

Pre-assessment: In this stage the study is defining the risk of adopting the solution that will correctly meet the need of organisation otherwise it will be a disaster. The study suggests a thorough analysis, including the cost benefit analysis. It also suggests the support of cloud brokers to select the application

Second Stage:

Budget overruns: This is due to the overuse of cloud’s on-demand self-service features by the end users. This stage also looks to the depleted Business-As-Usual (BAU) due to over allocation. As per the study right governance model can help to tackle such problems to a great extend. Otherwise the uncontrolled on-demand self-service will curb the benefits of such service.

Third Stage:

Customisation: High level domain experience and business knowledge of the IT partner in cloud sourcing is required in forming customised coding, otherwise the cloud environment will not accommodate the business applications

Fourth Stage:

Lack of connection: the development operations and quality assurance are much slower on the traditional platform of IT solution. These pitfalls effects the collaboration and responsiveness. Only sluggish development will occur. As per the study this hurdle can remove to a great extend with the IT partner’s deep development or operations knowledge.

Economic Impact:

- Up to around 2010 cloud computing is not a part of the strategic IT solutions by Indian industry. But due to technological advancement, the fastest growth of competition from domestic and foreign companies including MNCs, challenges in the legacy software, disparate systems, inefficient demand planning, high cost and low productivity compelled the organisations to change the existing traditional pattern. Years of analysis helped and supported the strategic decision makers of Indian industries to adopt sophisticated technology including cloud computing. The BSA Global Cloud Computing Score Card is the evidence for such development.

- Manufacturing units, mostly adopting the support of cloud for using the applications like CRM, SCM and ERP for inventory and supply chain management. Some of the enterprises reports about 60 to 80% cost savings by accepting cloud services.

- Indian Govt is also making so many initiatives to develop the industrial sectors which will benefit both the industry as well as the nation. The (UNIDO) United Nations Industrial Development Organisation currently (2015) ranked India as the 6th largest manufacturing countries from the previous 10th rank.
• ‘Make in India’, ‘THE ‘DIGITAL INDIA’ ‘NITI Ayog’ and ‘GI Cloud’: Meghraj plan of govt will boost the growth of Indian Industry. Especially the digital India policy of govt. increases the cloud adoption strategy among the SMEs and large scale undertakings, this will foster the GDP growth which will ultimately results the economic development of our country.
• The current contribution of manufacturing units to GDP is approximately 16%. The currently developed programmes and policies of Govt. is estimating a 25% of total contributions to GDP.
• These data are also highlighting the growth of IS and also the innovations in the IS
• According to Infoholic research, between 2015 and 2020 the CAGR of the ERP market in India estimated to be 25.4%. As per their research the SMEs cloud adoption rate is faster. The cloud ERP adoption in SME is estimating a growth of CAGR 23.9% between 2015-2020 and the estimated growth is at a CAGR of 23.9% between 2015-2020.
• The Gartner recently reported that in 2017 the cloud market will reach over $3 billion, which is almost five-fold higher than the market from 2012.

The Govt initiatives and the innovative policies will promote the development of information Technology industry in India, which enhance the utilisation of ERP in different industries which ultimately the productivity and profitability of the industries in India including the manufacturing sector. In the coming decades the Indian industry adoption rate of such services will show a drastic increase and an unstoppable growth which will make a positive and prosperous impact to the industry and to the economy at large

RISK AND RESPONSIBILITY:
Like every technology, cloud computing also has its own risk. From reviews it is found that most of the studies highlighted the security issues as the greatest risk in cloud computing. This risk itself enhances the responsibility of service providers and end users. It is vital from the part of managers to be vigilant about the cloud computed IT solutions. So they are responsible to make a detail and effective evaluation of the service providers before accepting the contract. Not only on the pre implementation stage, they should monitor the work frequently to avoid hacking and such threats often faced by the Information System. A proper and adoptable governance program is required.

ADVANTAGES:
(Wagh, 2015) described clearly the advantages of using cloud computing to the Indian manufacturing industry.
1. Low cost. As per the study small firms is most beneficial due to lower cost of adopting such computing applications. But some other studies also have the opinion that the aggregate of the hourly cost of adopting the service of cloud providers is costlier than purchase their own application software.
2. No upfront capital investment: it supports immediate access to hardware.
3. Infrastructure flexibility.
(Apostu, Puican, Ularu, Suciu, & Todoran, 2013) described the advantages and disadvantages of cloud computing. Below shows the advantages and disadvantages discussed in their paper.
4. Mass storage capacity: the cloud providers are offering huge storage capacity even unlimited storage capacity
5. Backup and recovery: the backup and restore process is carried efficiently and effectively than the traditional system
6. Automatic software integration: through cloud computing the software integration happens on its own without giving any efforts of customisation and integration by cloud consumers.
7. Easy access to information, irrespective of time zone and geographic location issues. The only requirement is the internet connection.
8. Quick deployment
9. Easier scale of services
10. Deliver new services.

DISADVANTAGES:
Like every other services, cloud computing has its own disadvantage. Because this version of cloud computing many manufacturing units in India still reluctant to accept such services. Even the companies who are ready to adopt such technology went through all of the following disadvantages to analyse them deeply to evaluate the
effect of such demerits then only they decide the acceptance of cloud computing
(Apostu, Puican, Ularu, Suciu, & Todoran, 2013) disadvantages regarding cloud computing are the following:
1. Technical issues are a part of every technology, even the best providers. Cloud computing is also facing such
issues.
2. Security: Companies are providing all the valuable and sensitive data base or information to a third party.
That is questioning the confidentiality.
3. External hack attacks and threats may lead to stealth of sensitive data.
4. Cost: Sometimes the companies need to pay huge amount rather than pay for use. The company should do a
thorough analysis of the pricing plans and details for each application
5. Inflexibility: Choosing a single cloud computing vendor may create the problem of inflexibility. The
company should avoid or accept cloud providers as per the business growth.
6. Lack of support on time from the service providers.

CONCLUSION:
The analysis through various literature reviews shows that many external pressures like competition,
availability of technical knowhow etc... leads to internal pressures for product diversification, Differentiation
e tc. Compelled the manufacturing units of India to adopt the sophisticated technology. The govt initiatives like
Make in India, Digital India, NITI aayog etc... are promoting the acceptance of such innovative technology. The
18th rank of BSA Global computing score card and the 6th rank among the largest manufacturing countries of the
UNIDO is a clear picture of our industrial development with the support of information system. The companies
should beware of the pros and cons of accepting such technology and it is very relevant to analyse the quality,
cost benefits, contract and schemes, risk involved, responsibilities etc. providing by the various agencies and
consultants. Otherwise the pitfalls will lead the company into a drastic disaster. But if it is implemented
efficiently it may lead to enhance the productivity and profitability of the manufacturing units,
which results in the development of the GDP growth of our country and which ultimately supports the
economic growth of our country.

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