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# An Exploratory Study on Adopting New Technology

**Sirshananda Panda [1], Dr. Chetan Eknath Khedkar [2]**

*[1] Research Scholar, Department of MBA, Dr. D.Y. Patil School of Management, Savitribai Phule Pune University, Pune, India.*
*[2] Research Guide, Department of MBA, Dr. D.Y. Patil School of Management, Savitribai Phule Pune University, Pune, India.*

**Email :** *[1] sirshananda@hotmail.com, [2] chetankhedkar22@gmail.com*

**ABSTRACT**

Now a day new technology is growing at a fantastic rate irrespective of the domain like Information Technology, Medical, Infrastructures, Telecommunication named a few. Organizations are striving to keep up to date pace of technology to trap the business from the market to get maximum profits and to deliver in the quickest time to their customers with agreed quality. To take managerial decision regarding adoption of new technology or not, with certainty; few basic rules devised in this paper after doing an extensive exploratory research[1].
With extensive use of new technology, company operate in efficient and profitable mode. It has been observed champions are assigned identify and evaluate new technologies that are beneficial to the company. Based on your business model, you may be negotiate with vendors who promise that adoption of new technology will save you cost, quality and productive. Based on the risk appetite of the group, the impact of new technology will have on your business processes and people, it forward in bringing path-breaking technology in house. After adopting a new technology successfully, people feel proud to be working on the cutting-edge technology makes them much confident to take their next assignment. It takes organization to be ahead of the peers in term of technology innovations to get more business from the clients. Companies like IBM, Accenture, Microsoft, and Google have already spending lot of revenue on research work on adopting new technology in the market like social media, cloud computing, mobile tablets, and analytics named a few in IT domains. Similarly, Medical Industries have already started research in new technologies like nano structures to enhance their diagnostics imaging capability and other biological advances to detect and treating many diseases

**Keywords— Analytics, cloud, nano, social media, innovations.**

## I. INTRODUCTION

The research questions are presented to discuss the problem and research area and then on to some definitions.

### 1.1 Background

Considering the next generation technology in the market social media, cloud computing, IOT, AI and analytics development are the super growing segments in the information technology today. Use of cloud computing as an example. Companies gain competitive advantages using next generation technology.

### 1.2 Definition and Terminology

Here are some basic definitions around cloud computing like cloud service architecture and cloud-oriented architecture act as services on the cloud, Hybrid cloud and AI. The server less architecture and application programming interface including platform availability.
The platform users use various next gen application that brings more sales, profit to the enterprises through service and marketing.

## II. LITERATURE REVIEW

This below section brief about diffusion of innovation, communication, time, and social system.

### 2.1 Diffusion of Innovation (DOI) – An Adopter's Perspective

It has two perspectives. Once organization through with adoption of an new technology/innovation, then expansion/spreading occurs to a broad community[3]. In an Organizational context, R&D into "diffusion of innovations" regards the process of adopting to new/innovative technologies e.g. Cloud and AI, application of IT's.

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### 2.1.1. Definition and elements of diffusion of Innovation

Implementation of next generation technology indicates the successful Diffusion of Innovation by the users of the organization[2]. Rogers laid foundation of DOI upon which innovation research has been built[4]. Rogers defines DOI as:
The process by which

- An innovation
- is communicated through certain channels
- over time
- among the member of social system

Technology and innovation defines a automated solution that reduces errors and achieved a desired outcome". It used embed technology as a tool. Here describes the characteristics of next generation technology

- **Relative advantage**: The next generation technology is assumed to be better compared to old one. This is assumed to give more profits, while saving time and efforts.
- **Compatibility:** The next generation technology is assumed as good as with the values, experiences.
- **Complexity:** This is relative difficult to understand and use compared to old. The complexity of a technology as realized by users as negative rated to its rate of adoption. So, technology should be simple.
- **Risk:** Risks to be evaluated in context to implementation of next generation technologies.

### 2.2 Communication

The concept talks about Media and Interpersonal. Mass media means use of regards broadcast by television, news paper etc. and while interpersonal channels is in regards to F2F(Face to Face) exchange between two or more individuals.

### 2.2.1 Communication Model

Next generation push pattern begin when functional & technical knowledge is link to unresolved issues.

### 2.3 Time

Rogers defines the adoption process as "the process through which an individual or other decision maker unit passes from first knowledge of innovation, to forming an attitude towards an innovation, to a decision to adopt or reject, to implementation of new idea and to confirmation to its decision"

### 2.3.1 Five Stages in Adaption Process

Rogers's conceptualization consists of five stages as shown in figure 1 below:

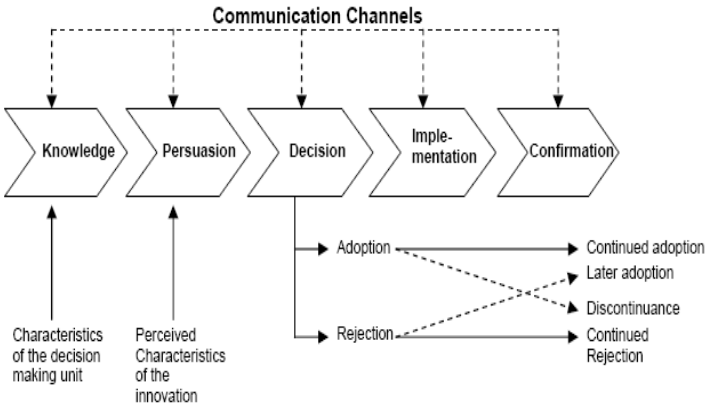


**Fig 1. Communication Channel**

**Knowledge**: This happens when an user is exposed to next generation technology and having the understanding of its functionality. At this stage user gained awareness through attending conferences, seminars etc.

**Persuasion**: This happens when user forms a intent or unintended attitude towards the innovation. This stage is to reduce uncertainty among the users.

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**Decision**: This happens when an user engaged in activities that decides to whether to adopt next generation technology or not. At this stage the users formed a positive attitude towards the adoption of new technology. Implementation: This happens when an individual puts a next generation technology to use.

**Confirmation**: This happens when an user enquire enforcement of an decision being made or reveres a earlier decision to adopt or cancel the innovation ***4.4 Social System***
Innovation diffusion occurs within the boundary of social system. It is made up of people, process and technology that are bundled to find a common goal.
Recently TOP model gained popularity in adopting new technologies.

**Technology:** Platforms, Infra structure, Softwares, Hardwares, Sensors, Networks, Chip,

**Organization:** Policies, cultures, business models

**People:** Hiring, training and retaining

## III. SCOPE

Let us analyze cloud computing as new technology in IT as being used by various software companies like Microsoft, IBM. Before adopting new technology like Cloud computing, individual must have the following questions in mind. What is New technology like Cloud? and How can it align to my business processes ? How does it help to minimize my cost and efforts? How does it help to my potential customers? How does it help to delivered faster and better?

## IV. OBJECTIVES

### 4.1 Case Study

In this section we will present the analysis of cloud computing solution according to next generation technology characteristics, people, process and organizational characteristics.

#### 6.1.1 Innovation Characteristics

If we consider cloud computing the relative advantages are the followings like world class service delivery, no hardware or software to install, empowered business users, proven web-service integration, real time reporting and faster and lower risk deployment. The cloud computing solution was developed to fit actual existing need, and this made it easy for employees to see relative advantage of the technology which made adoption process relatively easy. From compatibility side of cloud computing, presently, the concept of no/little code change as emerged to migrate application to cloud. From complexity side of cloud computing, we know every business is unique. So people should be given enough facts and figure before making any final purchase decision. From cost saving side, cloud computing is certainly a good option as storage, network and instance type are virtually managed[5].
In reality, it's been observed that the IT teams are adopting cloud technology to optimize their business processes and to promote their automation/innovation[6]. The new technology provides infrastructure and saves administrative cost significantly while comparing other tradition software.

#### 6.1.2 Communication

Companies like Microsoft and IBM had a technology push pattern when getting an understanding about the solution they could use. They got their information and knowledge about the technology in seminars, conferences, and magazines and trade fairs and also utilizing skilled resource for research and development. Realizing the problems and what technology can do for them opened for an innovative solution.

#### 6.1.3 Adoption Process

The experience of companies like Microsoft and IBM had in cloud computing solution was very low and they had to start from beginning[7]. First, they formed a positive attitude to innovation that was affected by innovation had the chance to take part in the decision process. This together with training and education made everyone feel involved in the project and reduced lot of uncertainty agenda for the users. To gather such information organization used email and other IT solution which provide network that enabled communication and internal networking together with personal meeting among the involved persons.

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### 6.1.4 Organizational Characteristics

Microsoft, IBM is large organization with very hierarchical structure, and they have a formal communication structure. These organizations be early adopter. These organizations also had a very good understanding of end user and what kind of information and education they needed to fasten up the adoption process and this comes from an organization's innovative potential.

## V. RESEARCH QUESTIONS

Sometime as you know adoption of new technology does fails, at the same time the new technology makes an organization to operate in a more efficient and productive way to maximize profit. In turn this brings customer values. We would like to get a in depth understanding of the factors which influence the process of adopting and implementing innovation solution. The questions made us enlightened regarding the factors which are impacting successful adoption of new technology. By adoption we mean an organization's ability to plan, implement and monitor/measure. Face to Face communication with Sr. Researcher/Analyst/Manager has used as a medium to conclude with our findings and observations.

With all keeping in mind, our investigation should focus on the two following research questions:

- Which are the most Critical success factors which impact the successful adoption in new technology like Cloud
- Monitoring or measurement criteria

## VI. RESULT AND DISCUSSIONS

The below themes are identified. Few challenges are already been studied by previous Authors as given in the Table 1 and Table 2. Few new challenges are to be studied in the further research by the academician and industry.

**Table 1. Themes, Description and Challenges**

| THEMES | DESCRIPTION | CHALLANGES |
|---|---|---|
| Business Case | Requirement of a competitive business case | · Financial rewards, Da Silva and Rahimi (2007)<br>· Business reasons, Da Silva and Rahimi (2007) |
| Manpower Shortage | Lack of manpower in the new IT industry Siebel (2004) | · Cost of training<br>· Technology Disruption<br>· Risk of transition |
| Resource Skill Gap | Right Skill required, Chen and Chen (2004) | · Continuous learning program<br>· Thought leadership |
| Technology Challenges | Right Technology Partner, Croteau and Li (2003) | · Simplicity, Mankoff (2001)<br>· Operational issues , Eid (2007) |
| End User Hindrances | Resistance to change, Da Silva and Rahimi (2007) | · Frustrations, Anger and Fear, |
| Lack of Ownership | To empower end users, Siebel (2004) | · Communication at each level |
| Social Factors, Mankoff (2001) | Support needed from all the stakeholders | · Partners, Sponsors<br>· Vendors, Suppliers |
| Organizational Factors | Lack of organizational preparedness | · Financial, Human, Infra, Saloman et al (2005) |
| Personal Factors | Lack of personal Motivation , EID (2007) | · Belief, Trust, Attitude |

**Table 2. Themes,Descriptions and Challenges**

| THEMES | DESCRIPTION | CSF's |
|---|---|---|
| Customer Segment Management(Mendoza et al (2006) ) | Maximize customer segment profitability and Customer lifetime value | · Profit/Lifetime Value<br>· Customer acquisition to retention ratio |
| Customer Insight(Roh et al. (2005) ) | Gather collect transform data into actionable knowledge | · Quality and timeliness, Mendoza et al (2006)<br>· Speed of response<br>· Accuracy of predictive model |
| Channel Management,King and Burgess (2007) | Optimize channel mix for customer segment | · Cost effective route to market<br>· Customer have access to service when it is required, Da Silva and Rahimi (2007) |
| Marketing Service Management, Mendoza et al (2006) | Optimize marketing campaign effectiveness | · Speed of response , Alt and Puschmann (2007)<br>· Cost effectiveness of Campaign |
| Product Management , Roh et al. (2005) | Deliver quality products and configurations in a timely manner | · Product Profitability<br>• Time to market (Pan and et al. (2007)<br>• Product development cost |
| Brand Management | Define Brand value and communicate consistently and effectively | · Brand Awareness<br>• Brand Consistency |

## VII. SUMMARY OF FINDING AND CONCLUSION

With the technology advancement, one has to constantly upgrade the tools to be used without spending much time and cost. By adopting new technology, one can compete in the today's market and make sure their workforce's are competitive .

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## VIII. LIMITATION OF THE STUDY

The study is based on preliminary investigation to understand how innovative technology impacts and adopting organization. The study is not to address the all kind of new technology issues instead focus on organizations that have adopted the same kind of technology. The objective of choosing cloud technology is due to its impacts to the whole organization. This is a new technology which really suits to our problem discussion. Adopting Cloud computing has shaken to entire organization's people, process and technology landscape. To explore the changes and the influencing factors the current study leads us to few basic questions.

## IX. SCOPE OF FURTHER RESEARCH

Security is one of the area probably not well thought before rushing to adopt new technologies. Research to be made to implement change with enterprise wise measures. Likewise, for mobile tablet research to be made on adoption of security techniques and encryption of techniques. Being security is top the funding are available for Cloud to make a research and development to minimize the threat.

Currently business enterprises are moving to multi cloud and hybrid cloud which are of high security and running their business smooth. One solution does not fit to all problems. So one has be intelligent enough to pick and choose the right technology at right time at right place.

Further Research can be made to implement change with enterprise wise measures

- Strategy of new technology adoption to be revisited.
- There will be a set hypothesis based on questionnaires while doing problem analysis.
- The researcher will continue his study through descriptive investigation.
- Qualitative methods may be used to do the study the truthfulness of information.

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