FACTORS INFLUENCING CLOUD ADOPTION BY THE ORGANIZATION FOR ENTERPRISE SOFTWARE PRODUCT

Doctoral Thesis Submitted

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By

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1. Introduction

Information technology industry has seen lots of tremendous changes over last few decades. During its evolution and with respect to hardware perspective, it was Mainframes by IBM which dominated the industry. The size of these mainframes computers was very big, and it was very expensive too. Personal Computers or Desktops or Microcomputers evolved during 1970s and 1980s. These were very least expensive and became de facto computer of choice for home and offices during mid-1990s. The most popular operating systems used for these computers are Windows, Linux, Mac OSx. Then came the boom for Mobile computers like Laptops which allowed the user to go mobile. Users can carry this computer with them from one place to another without disturbing work. Smartphones are the recent innovations in the field of IT industry. These are more often called pocket computers and are very small in size. Now with respect to Software, the evolution happened only into two kinds of deployment models namely:

I. On-Premise

II. Cloud Computing

On-Premise Model of Software product:

Software products that are installed on computers or appliances and are physically available on the premises of customers are known as On-Premise software products. These products are available to end customers via downloads, ISOs, DVDs, CDs, etc. The end user needs a license key in order to use this. Examples include but are not limited to operating systems like Linux, windows, Office applications like Microsoft office, and Account software like FOCUS, Wings & Tally, etc.

Cloud Computing Model of Software product:

In Cloud Computing model of Software product, The Software product is installed in the data center of vendor who is the manufacturer of the software product. In this model, the software product and its services are available to the customer through the internet. Cloud computing services are majorly available in three forms, and they are *Software-as-a-service, Infrastructure-as-a-service, and Platform-as-a-service.*

- *SaaS(Software-as-a-service)* is a type of cloud computing service model that provides virtualization of software applications. Ex: Google Apps, Office 365.

- *PaaS(Platform-as-a-service)* is a type of cloud computing service model that provides virtualization of Operating systems. Ex: Windows, Linux.
- *IaaS(Infrastructure-as-a-service)* is a type of cloud computing service model that provides virtualization of computing resources. Ex: Servers, Storage and Networking hardware.

2. Research Motivation

Cloud computing is a new innovation in the field of information technology. There are several advantages of cloud computing delivery model of software product but at the same time it is not a good choice for all kinds of organizations operating in different types of industries and environment. Until now researches have focused their study on adoption of cloud computing but there are several other factors which influences organizations to adopt on-premise model of software product or re-adopt back to on-premise model of software product from cloud computing.

There are lots of complexities involved in the process of decision-making for buying an enterprise software product delivery model. There are different stakeholders and buyers who are responsible for making the decision to buy either an on-premise or cloud computing model of the software product. These complexities and the perspective of each stakeholder and buyer sparked a special interest in pursuing this research study.

3. Review of Literature

Research studies indicate that organizations will perform better when technological innovations are adopted and may succeed over their competitors (Geroski et al., 1993). Innovations in Information and communication technology have been the subject of a lot of research studies and are widely accepted as a critical determinant for high performance (Blundell et al., 1999). Innovation is defined as an idea, practice, or object that is perceived as new by an individual or any other unit of adoption (Rogers, 2003).

- Burke (2022), in his research report on CIO strategy has said that an economic buyer is a person who controls the budget to buy the new technology and the persons who are in charge of this role ae the CIO, IT Department's Managers and more often project or program managers. On the contrary, the person who scrutinizes the technical features of the technology are IT

professionals like IT Managers, IT Admins, Engineers, and Architects, (Burke, 2022). End User buyers are professionals who work inside and outside of IT teams.

- Miller et al., (2011); Miller & Heiman (1985), in their book has mentioned that sales is a complex process and involves multiple buyers. In any complex sales process, there are four buying roles namely Economic Buying Influence, User Buying Influences, Technical Buying Influences, and Coach.

- Zebua & Widuri, (2023), did a research study on the adoption of cloud accounting. The study is related to the adoption of cloud accounts by integrating three theories TOE, TAM, and De Lone and McLean.

- Ibrahim et al., (2022), have done a systematic literature review for the adoption of the Software-as-a-Service cloud service model. 68 factors are addressed as obstacles in the adoption of the software-as-a-service cloud service model and out of which 16 factors are identified as critical factors and deeply discussed that will affect cloud computing SaaS adoption.

- Zhang et al., (2021), have done their research to examine the influence of various factors using the TOE framework in post COVID-19 world.

- Baral et al., (2019), have adopted an integrated approach for their research study using scientific models like technology-organizational-environmental framework, and human and business framework. The main objective of their research study is to identify the factors which influence cloud computing adoption in the Indian healthcare sector through the TOEHB perspective.

- Scherer et al., (2019), have used the Technology acceptance model in studying the teachers' adoption of digital technology in education. TAM variables are classified into Core variables, Outcome variables, and External variables.

- Weerd et al., (2016), have done research on Indonesian companies for the adoption of Cloud computing's software as a service delivery model. The framework used is Technology-Organization-Environment.

4. Research Gap

In general, the majority of researchers have done their study on the adoption of technologies like e-commerce, cloud computing, digital technology, mobile broadband, and telematics using scientific models and research frameworks like TOE (Technology, Organization, and Environment), TAM (Technology Acceptance Model), DEMTEL (Decision-Making Trial and Evaluation Laboratory), DOI (Diffusion of Innovation), TTF (Task Technology fit), TPB (Theory of Planned Behavior), TRA (Theory of Reasoned Action).

- There are different stakeholders involved in buying decisions for enterprise software products and they are the Economic buyer, Technical Buyer, and the end user. None of the research work done so far has considered the different viewpoints of these stakeholders and the different factors influencing them.

- The research done so far has not considered the different scopes of buying decisions. The different scopes are as follows.
    - Organizations that already have an on-premise model of software product wants to adopt a cloud computing model.
    - Organizations that adopted the cloud computing model want to re-adopt the on-premise model.

The factors differ according to the scopes defined above. Due to these complexities, appropriate research frameworks and theories need to be integrated into studying the influence of various factors in decision-making.

- The research done so far has not considered the different cloud services models like Software-As-A-Service, Platform-As-A-Service, and Infrastructure-As-A-Service.

Conceptual framework

The below figure represents the integrated model developed after the integration of research frameworks like Diffusion of Innovation (DOI), Decision making trial and evaluation laboratory (DEMATEL), and Technology-organization-environment (TOE). The proposed model takes into account Technical context, Organizational context, Environment context, Perceived Benefits

context, and Perceived Risks context while identifying the influencing factors on each stakeholder like an economic buyer, technical buyer, and end-user.

Figure: Integrated Model for adoption of Enterprise software product delivery model: On-Premise or Cloud Computing
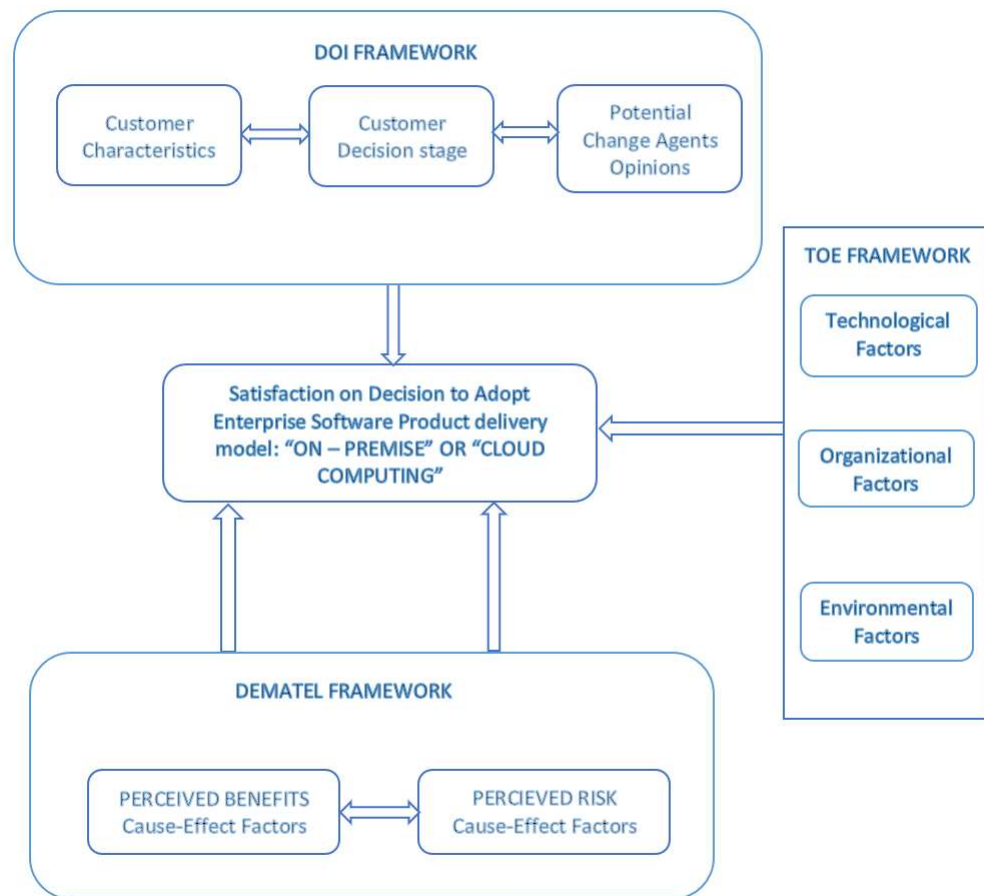
Source: Researchers own model based on models TOE, DOI, DEMATEL

5. Research Objectives

Organizations need IT infrastructure for their day-to-day operations. With the recent advancements in the field of distributed computing, organizations have a choice to adopt either an on-premise model of the software product or a cloud computing model of the software product. Even customers with the existing on-premise model of software products want to adopt cloud computing. Cloud computing is the new revolution in Information Technology, but it is not a good choice for all organizations. The objective of this research study are listed below and will help

organizations in decision-making for the adoption of enterprise software product deployment model.

Objective 1: To identify the factors influencing cloud adoption for enterprise software products.

Objective 2: To assess the influence of factors towards the decision to cloud adoption from an on-premise model of the enterprise software product.

Objective 3: To identify and assess the reasons behind moving from the cloud computing model of the software product to the On-premise model of the software product.

6. Research Hypothesis

For this research, we have integrated research models like Diffusion of Innovation (DOI), Decision making trial and evaluation laboratory (DEMATEL), and Technology-organization-environment (TOE), which help in understanding the viewpoints of stakeholders like Economic buyer, Technical buyer, and End-user with respect to scope "Organizations which already have an on-premise model of software product wants to adopt cloud computing model".

We now present our Null hypothesis and Alternate hypothesis, which are as follows:
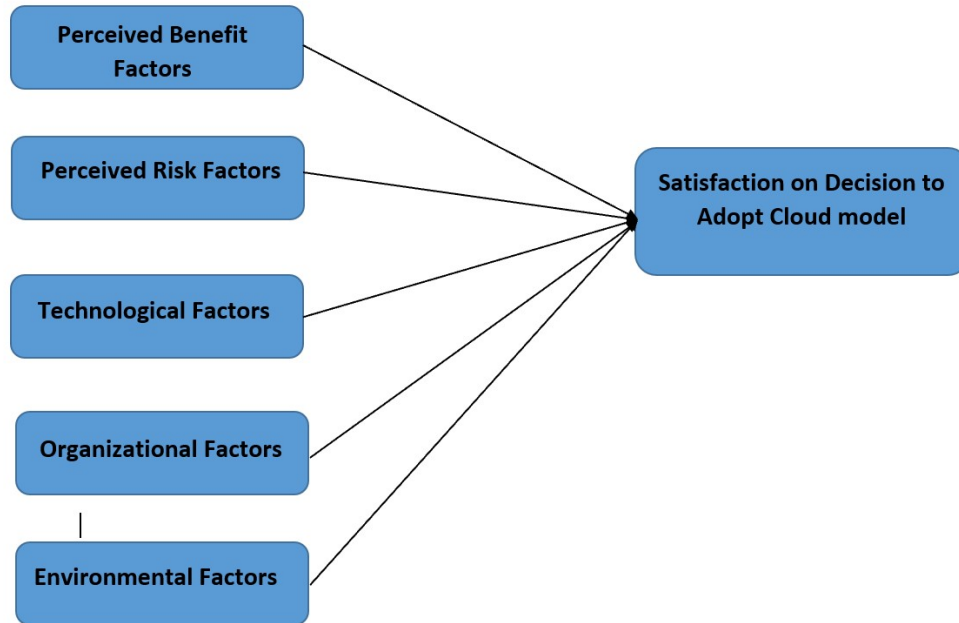
Hypothesis $H1_0$: **Adoption of cloud computing deployment model of software product from on-premise model is not influenced by technical, organizational, environmental, perceived benefit, and perceived risk context for the economic buyer.**

Hypothesis $H1_a$: **Adoption of cloud computing deployment model of software product adoption from on-premise model is influenced by technical, organizational, environmental, perceived benefit, and perceived risk context for the economic buyer.**

Hypothesis $H2_0$: **Adoption of cloud computing deployment model of software product adoption from on-premise model is not influenced by technical,**

organizational, environmental, perceived benefit, and perceived risk context for the technical buyer and end user.

Figure: Conceptual Model adoption from On-Premise model of Software Product

Source: Researchers own model based on models TOE, DOI, DEMATEL

Hypothesis H2$_a$: **Adoption of cloud computing deployment model of software product adoption from on-premise model is influenced by technical, organizational, environmental, perceived benefit, and perceived risk context for the technical buyer and end user.**

7. Scope of the Research

INDIA is a fast-growing economy having the presence of multi-national companies in large numbers. The scope of this research is different types of organizations located in Bengaluru, Hyderabad, Pune, and Chennai in INDIA. The types of Industries covered are Banking, Financial institutions, E-commerce, Information Technology, and Pharmaceuticals. The factors are classified according to the type of buyers involved in decision-making buying an enterprise

software product, and they are economic buyers, technical buyers, and end users. The scope is further refined as below:

- Organizations with existing on-premise infrastructure want to adopt the cloud computing model of the software product.
- Organizations with existing cloud computing infrastructure want to re-adopt the on-premise model of the software product.

8. Research Methodology

Research Design

This research study uses the mixed method approach by (Creswell & Clark, 2010). Multi-level mixed method is complex method because it involves integration at different levels of respondents, (Creswell & Clark, 2007). In this research, the data is collected from multiple stake holders like economic buyer, technical buyer and end user.

Type of Research

The type of research study is descriptive and as well as exploratory in nature. Descriptive research is used where there is a need to describe the characteristics of a population. This research is descriptive in nature because it tries to describe the facts through survey relating to the complexities involved in the decision to adopt to on-premise or cloud computing model of software products. A definition by Zikmund et al., (2012) states that causal or explanatory research is "identifying cause and effect relationship." This research study is casual research done to find out the cause-and-effect relationship between various factors derived from the integrated research model and the organization's decision to adopt to on-premise or cloud computing model of the software product.

Qualitative Research

Interviews and Focused Group Discussion construction

Creswell (2009) says that the face-to-face conversation between a researcher and a participant for the transfer of information needed for the interviewer is an "Interview". "Focus Group discussion"

is similar to an interview where the researcher will facilitate and ask questions to a group of people and record their responses (Bell & Waters, 2014).

Quantitative Research

In Quantitative research, Questionnaires are used to discover what the masses are thinking. These include but are not limited to market research, customer service feedback, social science research, and opinion polls (O'Leary, 2014). The questionnaires are distributed using emails, survey monkey. The questionnaire has to be administered personally because it enables the researcher to explain the purpose of the study to the respondent and increases the chances of receiving the response in return (Bell & Waters, 2014). For this research study, we have used qualitative data collection tools like interviews and focused group discussions and recorded them on online collaboration tools like Cisco Webex and Zoom. We have also used a survey questionnaire for quantitative data collection and collected the responses through emails, survey monkey, and google forms.

Population

Population can be termed as the entire collection of entities a researcher is trying to understand. The eligibility criteria for the participants/respondents in this research study are as follows:

   i. *Economic Buyer:* The people in this buyer category are CEOs, CIOs, VPs, AVPs, IT Directors, IT Managers.
   ii. *Technical Buyer:* The people in this buyer category are IT Directors, IT Managers, IT Staff.
   iii. *End user*: The actual consumer of the software product

Sample

Polit & Hungler (1999) has defined a sample as "A subset of the population which is selected for participation in the research project". It is a fraction of the whole selected to participate in the research study.

Sample Size

Krejcie & Morgan (1970) has emphasized that research can increase the sample size depending on the low response rate from the survey respondents. For this research study, the sample size selected

is 384 because the target population is any organization with Information and communications technology (ICT) infrastructure, which is not a finite number (Krejcie & Morgan, 1970).

Sampling Method

This study has adopted the Purposive Sampling method for quantitative data collection. For collecting the qualitative research, the Snowball sampling method was adopted.

Sampling Frame

INDIA is a growing economy and has a large presence of different types of industries with ICT tools and infrastructure enabled. The respondents in our research study are multinational and national organizations operating in INDIAN cities like Bengaluru, Chennai, Hyderabad, and Pune. The majority of organizations are using both On-premise and cloud service models like Software-As-A-Service and Infrastructure-As-A-Service. Data was collected from different types of organizations like E-commerce, Pharmaceuticals, Financial Institutions and Banks, IT industry. The respondents are from different levels in an organization such as Co-Founders/CEO/CIO, IT Managers, IT Procurement Managers, IT Staff, and IT Admins.

Pilot Study

The pilot study is carried out to test the validity of the integrated research model at the initial stage of the research study. From the results of the pilot study, The scope of this research study is now limited to the following.

Scope I: Organizations that already have the on-premise model of software product wants to adopt the cloud computing model.

Scope II: Organizations that adopted the cloud computing model want to re-adopt the on-premise model.

Furthermore, for Scope II, we have presented only qualitative data analysis.

Data Collection

Primary Data: We have used both online tools like the "Email Questionnaire" and Google Forms as a way to administer the survey questionnaire.

Secondary Data: The secondary data was collected from well-known analysts Gartner and other online sources.

9. Research Data Analysis

Quantitative Data Analysis

For Quantitative data analysis, the scope of this research study with respect to stakeholders like the economic buyer, technical buyer, and end-user is limited to Organizations that already have the on-premise model of the software product and want to adopt the cloud computing model. In total, 404 organizations participated in the research study. The purpose of data analysis was to apply suitable statistical tools to facilitate examining, transforming, and modeling data. As a part of the descriptive statistical analysis, the central tendency and variation of the data were analyzed using SPSS Software. After this, hypothesis testing was done using structural equation modeling (SEM).

Economic Buyer's Data Analysis and Interpretation

Organizations or Respondents profile		Count	Column N %
	1-49 employees	96	23.8%
Organizational Size	50-249 employees	32	7.9%
	>250 employees	276	68.3%
	5-10 Years	105	26.0%
Organizational Age	10-15 Years	131	32.4%
	15-20 Years	69	17.1%
	>20 Years	99	24.5%
	IT	148	36.6%
	E-commerce	81	20.0%
Type of Industry	Pharmaceutical	118	29.2%
	Financial Institutions and Banks	57	14.1%
	Diploma	0	0.0%
	Graduate	260	64.4%
Education Qualification of respondents	Postgraduate	144	35.6%
	Doctorate	0	0.0%
	Professionals	0	0.0%
	20-30 Years	56	13.9%
	31-40 Years	239	59.2%
Age of Respondents	41-50 Years	109	27.0%
	51-60 Years	0	0.0%

	61 and above	0	0.0%		
	IT Manager	111	27.5%		
	IT Staff/Admin	1	0.2%		
Designation	IT Procurement Manager	285	70.5%		
	IT Director	7	1.7%		
	Founder/CEO/CIO	0	0.0%		

Factor Analysis and Hypothesis Testing

Exploratory factor analysis (EFA) yielded 4 components with 11 items loadings among these factors. The alignment of items among the factors was in tune with the correlation of items. Partial Least Square - Structural Equation Modeling Analysis was carried out using SMART-PLS along with bootstrapping and blindfolding to yield results as discussed below:

Hypothesis 1a

The significance of the constructs of the Integrated Model (Influencing Factors) on the decision of organizations to adopt the cloud computing model is tested with the significance level kept up to 0.05 p-value. If the p-value is greater than 0.05, then the construct doesn't have any influence on the decision. Results tabulated below:

PATH	T Statistics	P Values	Result	Significant*	Interpretation
Organizational Factor -> Satisfaction_on_Decision	8.428	0.000	Accepted	Yes	Organizational Factors are having significant impact and positive relationship with Decision
Perceived Benefits -> Satisfaction_on_Decision	4.541	0.000	Accepted	Yes	Perceived Benefits Factors are having significant impact and positive relationship with Decision
Perceived Risk -> Satisfaction_on_Decision	1.392	0.164	Rejected	No	Perceived Risk Factors are not having significant impact with Decision
Technological and	2.835	0.005	Accepted	Yes	Technological and Environmental Factors are

Environmental Factors -> Satisfaction_o n_Decision			having significant impact and positive relationship with Decision

To conclude out of the 5 constructs, 4 constructs have a significant impact on the decision of organizations to adopt the cloud computing model with a positive relationship, and the Perceived risks construct has an insignificant impact.

Technical Buyer and End user's Data Analysis and Interpretation

	Organizations or Respondents profile		
		Count	Column N %
Organizational Size	1-49 employees	96	23.8%
	50-249 employees	32	7.9%
	>250 employees	276	68.3%
Organizational Age	5-10 Years	105	26.0%
	10-15 Years	131	32.4%
	15-20 Years	69	17.1%
	>20 Years	99	24.5%
Type of Industry	IT	148	36.6%
	E-commerce	81	20.0%
	Pharmaceutical	118	29.2%
	Financial Institutions and Banks	57	14.1%
Education Qualification of respondents	Diploma	0	0.0%
	Graduate	306	75.74%
	Postgraduate	98	24.26%
	Doctorate	0	0.0%
	Professionals	0	0.0%
Age of Respondents	20-30 Years	40	9.9%
	31-40 Years	319	78.9%
	41-50 Years	45	11.1%
	51-60 Years	0	0.0%
	61 and above	0	0.0%
Designation	IT Manager	111	27.5%
	IT Staff/Admin	293	72.5%

IT Procurement Manager	0	0.0%	
IT Director	0	0.0%	
Founder/CEO/CIO	0	0.0%	

Factor Analysis and Hypothesis Testing

Exploratory factor analysis (EFA) yielded 5 components with 26 items loadings among these factors. The alignment of items among the factors was in tune with the correlation of items. Partial Least Square - Structural Equation Modeling Analysis was carried out using SMART-PLS along with bootstrapping and blindfolding to yield results as discussed below:

Hypothesis 2a

The significance of the constructs of the Integrated Model (Influencing Factors) on the decision of organizations to adopt the cloud computing model is tested with the significance level kept up to 0.05 p-value. If the p-value is greater than 0.05, then the construct doesn't have any influence on the decision. Results tabulated below:

PATH	T Statistics	P Values	Result	Significant*	Interpretation
Environmental Factors -> Satisfaction_on_Decision	1.104	0.269	Accepted	Yes	Environmental Factors are having significant impact and positive relationship with Decision
Organizational Factor -> Satisfaction_on_Decision	5.31	0.000	Accepted	Yes	Organizational Factors are having significant impact and positive relationship with Decision
Perceived Risk -> Satisfaction_on_Decision	7.215	0.000	Accepted	No	Perceived Risk Factors are having significant impact with Decision
Perceived Benefits -> Satisfaction_on_Decision	7.218	0.000	Accepted	Yes	Perceived Benefits Factors are having significant impact and positive relationship with Decision
Technological Factor ->	5.278	0.000	Accepted	Yes	Technological Factors are having significant impact and

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Satisfaction_on_Decision	positive relationship with Decision

To conclude out of the 5 constructs, 4 constructs have a significant impact on the decision of organizations to adopt the cloud computing model with a positive relationship, and the Perceived risks construct has an insignificant impact.

Qualitative Data Analysis

Qualitative data analysis for Organizations that adopted the cloud computing model are re-adopting the on-premise model.

Data Collection

Sample Size and Case Selection

INDIA is a growing economy and has a large presence of different types of industries with ICT tools and infrastructure enabled. In total, we have invited 30 companies. Out of 30 invited companies, 20 have given their consent and participated in the focus group discussion and interviews. The organizations were represented as O1, O2, and so on till O20.

Data Analysis and Findings

Economic Buyer Analysis

The 7 organizations that re-adopted the on-premise model are O1, O2, O3, O6, O7, O8, and O10 due to the factors "Bill surprise", "Monitoring the unused hosts", "Exit Charges", "Licensing of OS and application", "Provider Data pull out charges", "Top management support", "Size of the company or its IT unit", "Relative advantage".

Technical Buyer and End-user Analysis

The 7 organizations that re-adopted the on-premise model are O1, O2, O3, O6, O7, O8, and O10 due to the factors "Performance", "Local data retention laws", "Risk mitigation strategies", "Monitoring the unused hosts", "Awareness level of IT team", "Availability of the required organizational resources", "Compatibility", "Complexity".

10. Research Contributions

This research study makes contributions that have both theoretical and practical implications for overcoming the complexities involved in decision-making for the adoption of appropriate deployment models of enterprise software products by organizations.

Theoretical implications

The theoretical contribution of this research study is the conceptual model which integrates the existing scientific models namely the Diffusion of Innovation, the Technology-organization-environment model, and the DEMATEL framework. In this research study, it is found that the organizational factor "Top management support", and "Availability of required organizational resources" are the key factor in the decision-making process. This is in line with the research findings from (Weerd et al., 2016) for the adoption of cloud services in Indonesian organizations. Similar to the research findings of (D. Chen & Zhao, 2012) and (Subashini & Kavitha, 2011), the key technological factors identified in this research study are "Relative advantage", "Trialability", and "Complexity". The environmental factors that play an important role are "external support" and "Government support". This aligns with the research findings of (Yoo & Kim, 2018). The perceived benefit factors that play a key role in the decision-making process are "Pay only for what you use", "Identity management" and "Virtualization vulnerability". This is in line with the research findings from (Wu et al., 2011). Finally, the perceived risk factors which play an important role in the decision-making process are "Data privacy", "Data Security", "Data locality", "Data Storage" and "Auto-scaling". These findings are in line with the findings from (Wu et al., 2011).

Implications for the practice

The practical implications of this research study are the assessment of critical factors that helps in adoption of cloud computing from on-premise model. With respect to the economic buyer, the factors are "Top management support", "Relative advantage", "Pay only for what you use", "Size of the company or its IT unit", "Awareness level of IT team related to On-Premise or Cloud Computing model of software product". Now with respect to technical buyer & end-user, the factor "Relative Advantage", "Complexity", and "Compatibility" plays a key role. However, there are

other factors that play important roles, and they are "Relative advantage, Complexity, Data Security, and Data Privacy.

Finally for the scope "Organizations which adopted cloud model wants to re-adopt on-premise model", the most important factor is "Bill surprise". The most significant factors with respect to Technical buyers & End-User that plays an important role in re-adopting on-premise infrastructure are "performance", and "local data retention laws".

11. Findings and Conclusions

Now with respect to scope "Organizations which already have an on-premise model of software product wants to adopt cloud computing model" and with respect to stakeholder economic buyer, the factor "Top management support" plays a key role in the adoption of cloud computing model of the enterprise software product. The top management should support the costs involved in the adoption process considering the long-term goals of cost optimization of an organization. The factor of Organizational readiness in terms of financial resources also plays an important role in overcoming the complexities. The other important factors in this scope are "Pay only for what you use" and "Autoscaling of computational resources charges". With respect to technical buyers & end-user, the factor "Top management support" plays a key role. The more the managers are skilled with cloud technology, the more adoption of the cloud services model. However, there are other factors that play important roles, and they are Relative advantage, Trialability, Complexity, Data Security, Data Privacy, Network and web application security, Virtualization vulnerability, and Identity Management.

Finally, for the scope "Organizations which adopted cloud model wants to re-adopt on-premise model", the most important factor is "Bill surprise". Organizations were attracted to cloud technologies due to initial promotional offerings, but after some time, the billings ends up being significantly greater than predicted. This will affect the long terms goals of organizations and eventually force them to re-adopt the on-premise model of the software product. The most significant factors with respect to Technical buyers & End-User that plays an important role in re-adopt on-premise infrastructure are performance and local data retention laws.

12. Limitations of the Research

The limitations of this research are mainly divided into three sections, namely scope limitations, geographical limitations, and cloud services limitations.

Scope Limitations

There are three scopes discovered during the pilot study, which are mentioned below:

- Organizations with a new requirement of buying enterprise software products can adopt either an on-premise model or a cloud model of the software product.
- Organizations with an on-premise software product model want to adopt a cloud computing model.
- Organizations that adopted the cloud model want to re-adopt the on-premise model.

This research study has presented the Qualitative data analysis for "Organizations which adopted cloud model wants to re-adopt on-premise model". However, for Quantitative data analysis, the findings are presented only for the scope "Organizations which already have the on-premise model of software product wants to adopt cloud computing model".

Geographical limitations

The research study is carried out in INDIA, which has a high presence of multi-national companies. Data is collected from both national and multi-national companies which have IT infrastructure available. The majority of respondents are from cities like Bengaluru, Hyderabad, Pune, and Chennai. Since INDIA is a developing country and the findings may be generalized to other developing countries as well.

Cloud services limitations

"Private cloud", "Hybrid cloud", and other public cloud services which are not included in this research study are Monitoring-as-a-service (MaaS), Communication-as-a-service (CaaS), and Anything-as-a-service (XaaS).

Other Limitations:

- The data collected using a survey questionnaire allowed respondents to select the influence level of each factor. It is possible that some respondents are biased towards a particular

delivery model of the software product. This is eliminated by ensuring the sampling framework is adequate and by increasing response rates. (Heywood et al., 1995)

- The data collection period ranges from July 2018 to July 2020. The data collected is linked with the period, which is pre-pandemic and highly influenced by the environment and dynamics of that period. Subsequent changes after the pandemic are not taken into account due to resource and time limitations.

- The data is collected limited to the software products generally used by any type of organization such as Email servers, Wiki, Bug Tracking Software, Firewall, VPN, Employee Database, HRIS software, Online collaboration tools(zoom, Google meeting), etc.

- Monetary value of the product also plays an important role. This is not covered as an influencing variable in the study due to the stage at which this factor is discovered.

- Cyber Security risks factors for cloud includes several items such as Data Privacy, Data breaches, Un-Authorized access, Malware infections, Cyber-attacks, Data loss, API vulnerabilities, (Zainab Al Mehdar 2023). This research study has considered only Data Privacy, Authentication and Authorization due to unavailability of information at the time of data collection.

- Customers of an organization also influence the decision process. This is not covered as an influencing variable in the study due to the stage at which this factor is discovered.

- India is a developing nation and has a large presence of MNCs. This study majorly focused MNCs.

13. Scope of future work

Future research with respect to scope:

For Quantitative data analysis, this research study mainly focuses on the adoption of cloud technologies from an on-premise deployment model with respect to scope. The scope available for future research is as follows:

- Organizations with a new requirement of buying enterprise software products can adopt either an on-premise model or a cloud model of the software product.
- Organizations that adopted the cloud model want to re-adopt the on-premise model.

Future research with respect to cloud services:

There are new upcoming public cloud services like Monitoring-as-a-service (MaaS), Communication-as-a-service (CaaS), and Anything-as-a-service (XaaS). Researchers can do extensive research and find organizations that are adopting these public cloud services. There is also scope to do research for the adoption of private cloud and hybrid cloud services.

Other Future Research Directions:

- There is also a scope to do research for the adoption of private cloud and hybrid cloud services.
- There is also a scope to make a Strength, Weakness, Opportunities, and Threat (SWOT) Analysis after the adoption of Cloud services.
- Product's monetary value also plays an important role. The research can be done separately for products of high monetary value.

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