An Exploratory study on Cloud Computing Adoption in few selected Financial organisations

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Abstract

The financial organisations like other business houses have stepped into digital transformation as a need of the hour. The researcher has carried out an exploratory research to understand the factors of cloud computing and its advantages which came as benefits for the financial organisations. The researcher has selected few financial organisations for his study against few determinants as suggested in the theoretical model , Theoretical Model , adopted from Delone and McLean IS Success Model (DeLone & McLean, 1992). The following factors were studied to understand how the selected financial organisations adopted cloud computing technology and eventually the benefits if any : Use of cloud due to various benefits, Cloud with AI implementation, Cloud use real-time streaming events, Efficiency, Security. The summary of the findings traced to each other that are related to Delone andMcLean IS Success Model (DeLone & McLean, 1992). It is proved from the study, that factors when mapped to the model gave a clear view that each of these factors align to the objectives and study of the model which was taken as base line for the exploratory research. It was also found that each of the financial organisations have several benefits which are revealed from this research paper.

Keywords: Cloud computing, AI, Artificial Intelligence, Financial organisation

1. Introduction

Cloud computing is the new norm of progressing a business where security, customer centricity and net benefits play a major role (Misra & Doneria, 2018).As highlighted by (Parthasarathy & Kumar, 2016) , cloud computing is a latest enhancement in computer based business concepts which combines hardware and software along with storage and interfaces to execute high end applications. As highlighted by Carcary, M., Doherty, E., & Conway, G. (2014) , Cloud Computing ability to support increased capacity or extended firms capabilities, without incurring extra costs which would have historically necessitated

investment in infrastructure, software or staff training, it can be inferred that this technological platform may hold several opportunities (Aljabre, 2012). There are many research paper which are found on cloud computing and implications on financial services however they did not qualitatively defended the Delone and McLean IS Success Model (DeLone & McLean, 1992). Through this study, the objective of research was to understand the factors which were responsible for successful implementation of cloud computing for the chosen set of organisations and how these factors correlate to the Delone and McLean IS Success Model (DeLone & McLean, 1992).

2. Research Methods

The researcher has used Literature review of the various sources on the topic and carried out content analysis across eight cases financial organisations. The objective of research is to find the factors which promote the adoption of Cloud computing. It also aims to reveal a cause and effect analysis between factors. DeLone and McLean IS Success Model, proposed by DeLone & McLean, is based on theoretical and empirical research in information systems, conducted by several researchers between 1981 and 1990 (DeLone & McLean, 2003, 2016)(ISRI, n.d.). This model is adopted to check the factors coming out of the research study for fitment in the model.

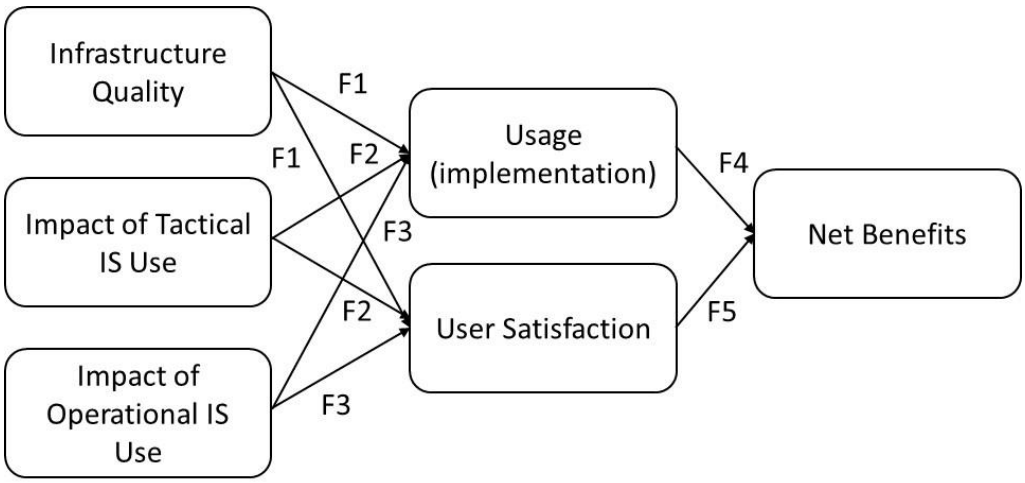

Figure 1 **:** Theoretical Model , adopted from Delone and McLean IS Success Model(DeLone & McLean, 1992)

The main Research Question derived is – "What are the factors that affect the overall success of implementation of cloud computing in financial services?"

3. Cloud Computing And Financial SMEs

(A) Literary Context:

Since the inception of cloud computing in 2006, many small and medium enterprises (SMEs) have leveraged from the benefits of technical advancement of cloud computing (Carcary et al., 2014). As per the Google Cloud Survey , 2021 (Maufe, 2021) , the banking sector is implementing cloud is becoming new norm of the era. As highlighted by (Maufe, 2021), Google Cloud survey has suggested 83% of world's financial services have adopted cloud technology which is primary need of the organisation infrastructure today. (Maufe, 2021) also suggested that Security is one of the key elements for heavily regulated businesses and since financial service based companies need to handle the highly sensitive data security cannot be compromised. As suggested by (Bansal, 2020), Google cloud is one of the preferred cloud computing platforms with multiple advantages (Shabani & Dika, 2015). As suggested by (Kenyon, 2021), Google cloud using AI realised higher customer experience.AI capabilities with cloud computing has given rise to intelligent decision making since they are powered by Machine Learning algorithms, Time-to-market reduced drastically , value delivered on time and cost of ownership reduced thus increasing overall performance and productivity (Zuo, 2021). Google Cloud has been implemented across many organisations and it has brought in multiple benefits such as – savings of resources by automating time consuming tasks, reduction of human errors(Cloud, 2021). While Amazon AWS has claimed that it has achieved reduction of 33% of deployment time and launch, has given a high cost/benefit advantage to the organisations, scalability and security (Amazon AWS, 2021b). The literature review has clearly indicated that there are higher benefits in using cloud computing by any organisation. The researcher had conducted study on cloud implementation across the financial organisations to find the benefits on the journey.

(B) Findings From Study:

Nine financial SMEs were reviewed through Literature review and content analysis. Conducted content analysis to understand the implementation aspects of the cloud computing which are summarised in the tables below.

[1] Commerz Bank:

Causes (Factors)	*Effect*
[F1] UsedGoogle cloud due	• 85% bank's distributed applications were migrated to cloud

to various benefits	due to proven Google cloud features. • Bank realised 15% higher customer experience
[F2] Google Cloud with AI implementation	• The Tasks are automated with Google Cloud and this helped the bank to reduce years of work into milliseconds which gained reduced expected time of transaction.
[F3] Google use real-time streaming events.	• Customers are able to use real time system and the cloud imitativeness reduced the risk of data and breaches with all vulnerabilities.
[F4] Efficiency [F5] Security	• Bank claimed that they could gain higher efficiency gain and higher security.

[2] HSBC Bank:

Causes (Factors)	*Effect*
[F1] UsedGoogle cloud due to various benefits	• Full scale automation gave 87% efficiency.
[F2] Google Cloud with AI implementation	• AI and Data scientists deployed for intelligent bank operations which helped operations efficiency with accuracy.
[F3] Google use real-time streaming events.	• Bank realised 15% higher customer experience
[F4] Efficiency [F5] Security	• Sales calls cost reduced through automation giving savings of 1,200 man-hours . • Bank claims security aspects reached higher than ever.

[3] Paypal:

Causes (Factors)	*Effect*
[F1] UsedGoogle cloud due to various benefits	• Google cloud hosted 20% of core infrastructure which gave higher customer experience and security.
[F2] Google Cloud with AI implementation	• Productivity increased and ownership cost decreased. • Around 300 customers across 200 markets with 100 types of currencies supported.
[F3] Google use real-time streaming events.	• Transactions now are near the source which aligns with local regulations.
[F4] Efficiency	• Higher network security with layers of encryption and fraud

Causes (Factors)	*Effect*
[F5] Security	detection. • 1000 payments per second.

[4] Tassat:

Causes (Factors)	*Effect*
[F1] UsedGoogle cloud due to various benefits	• The transactions processed quicker que to cloud implementation since 2019 is around $400 worth.
[F2] Google Cloud with AI implementation	• Compliant to AI standards , the organisation has gained higher throughput.
[F3] Google use real-time streaming events.	• Real time streaming has helped in higher customer experience.
[F4] Efficiency [F5] Security	• Higher security through ledger technology which is distributed. • 15% higher transactions processing per second

[5] AU Small Financial Bank:

Causes (Factors)	*Effect*
[F1] UsedAWS clouddue to various benefits	• 25% of workload of the bank migrated on AWS cloud improving scalability and reliability.
[F2] AWS Cloud with AI implementation	• AI has improved customer experience through personalized recommendations and safety/security.
[F3] AWS Clouduse real-time streaming events.	• Quicker computation of value-at-risk and re-balanced the portfolio.
[F4] Efficiency [F5] Security	• Layered security measures giving higher secured experiences. • Savings through automation and infrastructure.

[6] Goldman Sachs:

Causes (Factors)	*Effect*
[F1] Used AWS clouddue to various benefits	• Integrated consumer crediting with digitalised consumer banking. The fast transaction bankingconnected to the institutional securities

Causes (Factors)	*Effect*
	database giving higher accuracy.
[F2] AWS Cloud with AI implementation	• Higher operations efficiency with accuracy.
[F3] AWS Cloud use real-time streaming events.	• Productivity increased and ownership cost decreased
[F4] Efficiency [F5] Security	• Scaled up data security • Efficiency gain through x3 transaction speed.

[7] Lending Kart:

Causes (Factors)	*Effect*
[F1] Used AWS clouddue to various benefits	• Scaled up services to more than 4500 cities across globe.
[F2] AWS Cloud with AI implementation	• Higher intelligence with reduction in manual efforts and gain higher accuracy.
[F3] AWS Cloud use real-time streaming events.	• Increase by 16% customer base
[F4] Efficiency [F5] Security	• Efficiency and Security aspects enhanced.

[8] Paytm:

Causes (Factors)	*Effect*
[F1] Used AWS clouddue to various benefits	• Sales shot up by 37%
[F2] AWS Cloud with AI implementation	• Personalisation Model for recommendations to customers on product and services.
[F3] AWS Cloud use real-time streaming events.	• Real time data on transactions
[F4] Efficiency [F5] Security	• Higher security and efficiency increased

[9] Bendigo and Adelaide Bank:

Causes (Factors)	*Effect*
[F1] Used AWS clouddue to	• The customer base went upto 2.1 million

Causes (Factors)	*Effect*
various benefits	
[F2] AWS Cloud with AI implementation	• Real time workload increase by 30%
[F3] AWS Cloud use real-time streaming events.	• Achieved higher data transparency for customers
[F4] Efficiency [F5] Security	• 60% Cost reduction • Higher security in data handling.

4. Conclusions

The summary of the findings traced to each of the factors that are related to Delone andMcLean IS Success Model (DeLone & McLean, 1992)is given below. The factors F1 to F5 are related to the correlation between variables in the model under study.

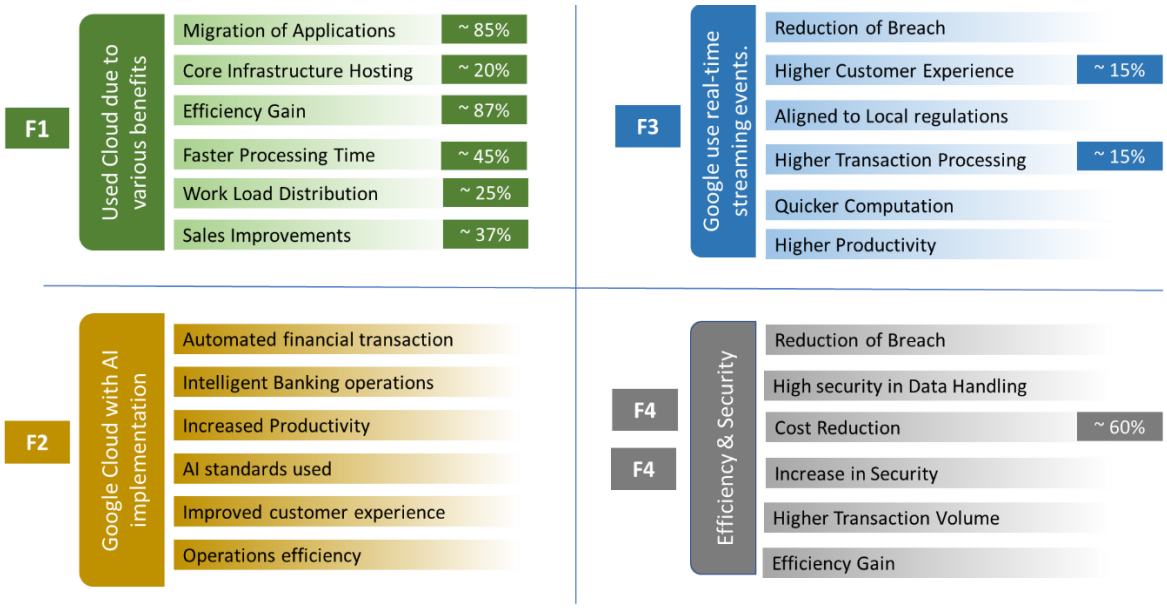

Figure : Summary of findings traced to each factor of the model

These factors when mapped to the model gave a clear view that each of these factors align to the objectives and study of the model. The factor F1, indicates a clear relationship between infrastructure quality and usage (implementation) and findings like migration, infrastructure hosting, efficiency gain , user satisfaction. While, factor F2, F3 which indicates that the findings stated above influences usage and user satisfaction. F4 and F5 factors proved that the usage of cloud has brough multiple benefits to the organisation as indicted in the study above. Based on these findings and analysis , it can be clearly seen in the diagram below that the model holds good for adaptation of cloud computing in the financial organisation.

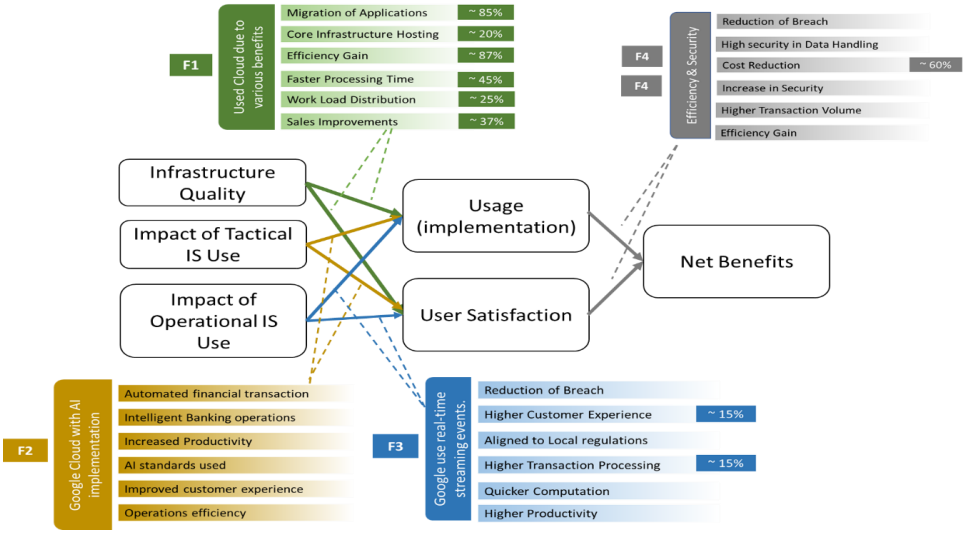

Figure 2 : Delone and McLean IS Success Model (DeLone & McLean, 1992) mapped to factors and findings

Finally, the study has revealed that the objective of study to verify of the theoretical model holds true for adoption of cloud computing is affirmative and other organisations can use this study to understand the implications and benefits.

5. Limitations of The Study

The study was conducted based on Qualitative research principles (Thomas, 2017/2017, pp. 119–147) and to prove the model's implications in financial organisation , the quantitative research was not conducted and could be one area to be explored in future study. The study was conducted for less than 10 financial organisations , which needs to be extended to other institutions as part of future study.

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