**Cloud Computing and its Impact on Workplace - IaaS**

**Abstract**

Cloud Computing has been adapted successfully by multiple organizations across the industry irrespective of its size and type of business for various business use cases. Cloud is nothing but providing the computing power as a "service," where companies pay only what they have used. Companies are attracted towards cloud technologies for several reasons like cost savings, high availability, scalability, resiliency, quick data recovery and soon. The biggest driver for companies towards cloud computing is, we pay only for the services we use rather investing a huge upfront cost to buy the entire infrastructure. Many companies are attracted to cloud technologies because data backup and restore activities are much easier compared to traditional data centers. There might be some challenges associated with cloud technologies in terms of data security and privacy, but companies are investing some time and money on architecting the secure and resilient cloud solutions. In this paper, we will review the various cloud computing service models like IaaS, PaaS, SaaS, and discuss which one chose over another. We will also review different cloud deployment models like public cloud, private cloud, and how a hybrid model which is a combination of both public and private clouds will help organizations obtain more resiliency. We will also discuss about how cloud technologies are helping the organizations to design the disaster recovery scenarios to meet their Recovery Point Objective (RPO) and Recovery Time Objective (RTO) requirements for mission-critical systems.

Keywords: Cloud,Cloud Providers, Security, Privacy, DR in Cloud Computing

**Table of Contents**

[**Introduction** 1](#_Toc36657240)

[1. Problem Statement 2](#_Toc36657241)

[2. Purpose Statement 2](#_Toc36657242)

[3. Research Questions 2](#_Toc36657243)

[4. Research Hypothesis 2](#_Toc36657244)

[5. Research limitation 3](#_Toc36657245)

[6. Paradigm and conduct of the researcher 4](#_Toc36657246)

[7. Research Design 5](#_Toc36657247)

[8. Participants and Sampling 5](#_Toc36657248)

[9. Instruments 5](#_Toc36657249)

[10. Research procedures 5](#_Toc36657250)

[11. Data Analysis 5](#_Toc36657251)

[12. Ethical Consideration 5](#_Toc36657252)

[13. Plan for Presenting Results 6](#_Toc36657253)

[14. Summary-Conclusion 6](#_Toc36657254)

[**References** 8](#_Toc36657255)

[Short Bio 11](#_Toc36657256)

# **Introduction**

Implementing cloud computing in workplace has profound impact on the working practices for an organization. Adopting cloud computing technology for applications will achieve the needs of end customers with minimal delay and less disruption in application life cycle. Various cloud computing offerings and delivery models enable companies to migrate to the cloud with reduction in the cost of managing infrastructure with flexibility in on-demand scalability and reliability to products. Disaster recovery and business continuity processes became effortless for institutions by embracing the cloud. Service Level Agreements (SLA) from individual cloud providers empowering companies to focus key resources on product development.

# Problem Statement

# Purpose Statement

# Research Questions

# Research Hypothesis

# **Research limitation**

The research is primarily aimed to evaluate the impact of IaaS (Infrastructure as a Service) model and its impact on workplace. We have excluded other services model such as PaaS (Platform as a Service), SaaS (Software as a Service). The research provides an overview on deployment model such as public, private & hybrid (Gibson et al., 2012, pp. 199-201).We do cover the value proposition it brings when combined with IaaS but have left out community cloud. Our research does not assess each industry i.e. (Healthcare, Banking and Finance, Telecom etc.) in order to customize offering with respect to those.

# **Paradigm and conduct of the researcher**

The idea of adopting IaaS cloud computing paradigm in an establishment is inspired by several technical & non-technical factors. As a part of this research we evaluatedvarious aspects of organization that might impact the IaaS adoption process by going through the scholarly journals and came up with the TOE (Technology Organization Environment) framework based on the identified factors (Ahmed et al., 2020, p. 717)

**Technology**

We can assess technology based on the organizational expertise. It is vital to evaluate if the human resources within the organization are well versed with the technology. The other aspect includes the future of technology in terms of how it is accepted globally, how does it collaborate with other leading tools, operating system (Ahmed et al., 2020, pp. 717-718).

**Organization**

An organizational structure does play a pivotal role when you plan to set up IaaS model. The organizational size, structure and a well-defined management indicates how well you can support and maintain periodical patches, OS updates etc. (Ahmed et al., 2020, pp. 717-718).

**Environment**

Environment implies to the data center and location an organization would like to pick for their consumers and it is primarily based on consumer locations. It is also important to note if they have a well-defined mechanism to support resource spike, disaster management (Ahmed et al., 2020, pp. 717-718).

# Research Design

# Participants and Sampling

**Instruments**

The research study primarily used secondary data. This was done by reviewing research that has been conducted earlier. This information was then used to narrow the scope of the research. Having analyzed the available data, it was discovered there was a huge amount of data and information. For this reason, we selected secondary research data on Infrastructure as a service (IaaS) while neglecting data relating to Platform and Software as a service (PaaS and SaaS Respectively) Research studies data. The data was sourced online from companies offering cloud computing services.

This comprised mostly of names of organizations using the service, the demographic aspect of the organizations in terms of the age, number of employees, physical location and revenues, and reasons for using the services. The data collected comprised of general data and personal information such as Payment Card Industry (PCI) data and Personally Identifiable Information (PII) data were excluded in line with our ethical practices. This information was then used to select the scholarly articles and peer-reviewed journals used to form the body of this research.

Scholarly articles and peer-reviewed journals selected were those that predominantly from technology experts with a bias in information technology.

They were then narrowed down articles/journals that tackled the topic of cloud computing. The articles and journals used in the research study came from current studies and reputable sources with a majority being sourced online.

 This ensured that the information and data used for the research were authentic and reflected the current market practices. These were the two instruments used to conduct the research. They were selected due to the ease of acquiring the information needed. Besides, the information and data were recently acquired. With technology being dynamic, it represented the ideal form of information and data for use in this kind of research (Daoli & Xi, 2012).

# **Research procedures**

The first step in the research procedure was identifying the data and information to be used in the research study. Primary data was ruled out due to the logistics and amount of resources that would have needed to acquire the information. Secondary data was the logical option since it was easier to acquire since the information was readily available and plenty of sources were available. The secondary data was then used to identify the scholarly articles and peer-reviewed journals that would be ideal for the research study. These were then selected depending on the relevance and amount of information offered.

After identifying the type of information that would be needed the next step was to determine the best ways to locate the information to be used in the research study. To locate the secondary data, organizations specializing in Information Technology were earmarked. Organizations specializing in cloud computing were the main target of our research. The data was availed upon request with the condition that the research would adhere to the ethical practices to protect sensitive organization data as well as personal information considered private and confidential.

Sourcing for scholarly articles and peers reviewed journals was relatively simple. The material was sourced from online sources considered reputable. It was also sourced from reputable institutions that conduct research studies such as universities and colleges. All the sources were confirmed to have been peer-reviewed. This offered information that was not only reliable but also quite informative. This gave us sufficient information that could be used for the research. The next step was to analyze the data and information available to come up with results that could be used to make conclusions for the research.

#

**Data Analysis**

Data analysis required several steps. The data has to be transformed into a form that is suitable for the research. The secondary data collected has to be organized uniformly. The data being from several organizations was in different forms. All these data were compressed and organized to form a single set of data. To create a single format, data were presented as words to represent both names and numbers.

Cleaning of the data was done to make the data relevant and clear out unwanted information. Personal information and sensitive organization information was removed. Information that was deemed surplus and irrelevant to the research was also deleted. The information had to be lean to make it manageable and easier to analyze. Having already identified the articles and journals that were to be used in the study, analysis of all the information was done.

The main methods of analysis used included observation to determine the most preferred forms of cloud computing, why organizations preferred cloud computing to other solutions available in information technology, and the type of organizations that used cloud computing. Data analysis software was also used to analyze the data to ensure that the conclusions made were rightly informed.

The information retrieved from the data analysis was used to conclude. From the conclusions drawn, it is clear that cloud computing is having a massive impact on the operations of organizations. Its ability to reduce costs while at the same time increasing the organization’s efficiency has made it the preferred option for most organizations. Organizations can choose the resources needed which are shared in a network. These resources can easily be upscaled or downscaled when needed. Cloud computing is also efficient with minimal interruption (Gibson et al., 2012).

**Ethical Consideration**

During research, ethics is more about how we are treating the participants in the research, how are we collecting the relevant information, how are we maintaining the secrecy or confidentiality and finally how are we analyzing and reporting our research results.

According to Saunders (2009: 193-194), following are the ethical considerations for any research

* Our ultimate goal is to make sure our research or the results should not have negative impact on any individual or an organization.
* The individual participating in our research should be fully informed about the research being conducted.
* The research team should make sure no harm comes to the participant and the participant should be able to withdraw at any time without any consequences.
* The research team should maintain confidentiality such that any identifiable information like Personally Identifiable Information (PII) data or Payment Card Industry (PCI) data should be excluded before publication.

As part of this research project, we do not collect any firsthand data from any individual or an entity rather we use the scholarly articles, peer-reviewed journals to gather all secondhand data with appropriate citations and annotations by crediting the authors.

**Plan for Presenting Results**

A research results can be presented in multiple formats. Our team would like to provide an oral presentation and will submit the paper for review.

Here are the highlights we would like to cover in our oral and written presentations -

1. Introduction - Introduce the problem statement and the research we do to address the problem statement.
2. Research Methods - Methods we used for our research like how we gathered secondary data form scholarly articles, peer-reviewed journals etc...
3. Overarching question - We will discuss more in detail what the overarching question is and how are we trying to solve as part of this research paper
4. Limitations - We will discuss what is in scope for our research and what is out of scope.
5. Results - We will discuss about the results of our research and will go through the solutions to our overarching question.
6. Acknowledgment - Finally, we will acknowledge all the authors, peer-reviewed journals we used for our research.

**Summary-Conclusion**

Cloud computing is accessing the computing resources over the public internet and it allows the employees to collaborate by accessing them from anywhere in the world (Ruparelia, 2017, pp. 35-55). Cloud computing saves several hundreds of dollars for companies because of pay per usage model and no need to spend millions of dollars on capital investment (Fazli et al., 2018, pp. 1-5). Many organizations did an excellent job in cloud adaption and running their several mission critical applications in cloud. Implementing cloud-based solutions is easy and cost effective compared to the traditional data center model. Some companies have reservations like data security and data privacy, but several cloud providers are offering wide variety of solutions to mitigate those challenges (Kathuria et al., 2018, p. 741).

# **References**

Ahmed, I. (2020). Technology organization environment framework in cloud computing. TELKOMNIKA (Telecommunication Computing Electronics and Control), 18(2), 716–725. https://doi.org/10.12928/telkomnika.v18i2.13871.

Carroll, M., Van de Merwe, A., & Kotze, P. (2011). Secure cloud computing: Benefits, risks and controls. 2011 Information Security for South Africa Information Security South Africa, 1-9. doi: 10.1109/ISSA.2011.6027519.

Cusumano, M. A. (2019). The cloud as an innovation platform for software development. Communications of the ACM, 62(10), 20–22. https://doi.org/10.1145/3357222.

Daoli, H., Hao, Y., & Xi, X. (2012). Research on Information Security Risk Control and Legal Regulation of Typical Cloud Computing Services. 2012 International Conference on Industrial Control and Electronics Engineering Industrial Control and Electronics Engineering, 700-703. doi: 10.1109/ICICEE.2012.189.

Fazli, A., Sayedi, A., & Shulman, J, D. (2018). The effects of autoscaling in cloud computing. Management Science, 64(11), 5149-5163. doi: https://doi.org/10.1287/mnsc.2017.2891.

Gibson, J., Rondeau, R., Eveleigh, D., & Qing, T. (2012). Benefits and challenges of three cloud computing service models. 2012 Fourth international conference on computational aspects of social Networks (CASoN). 198-205. doi:10.1109/CASoN.2012.6412402.

Joe-Wong, C., Sen, S. (2018). Harnessing the Power of the Cloud: Revenue, Fairness, and Cloud Neutrality. Journal of Management Information Systems, 35(3), 813-836. doi:10.1080/07421222.2018.1481639.

Kathuria, A., Mann, A., Khuntia, J., Saldanha, T, J, V.,& Kauffman, R, J. (2018). A Strategic Value Appropriation Path for Cloud Computing. Journal of Management Information Systems, 35(3), 740-775. doi: 10.1080/07421222.2018.1481635.

Mohammed, M. A., & Abed, F. S. (2020). A symmetric-based framework for securing cloud data at rest. Turkish Journal of Electrical Engineering and Computer Sciences, 28(1), 347–361. https://doi.org/10.3906/elk-1902-114.

Saunders, M., Lewis, P., Thornhill, A. (2009) Research Methods for Business Students, 4th edition, Prentice Hall

Tripathi, A., Parihar, B. (2011). E-Governance challenges and cloud benefits. IEEE International Conference on Computer Science and Automation Engineering Computer Science and Automation Engineering (CSAE). 1, 351-354. doi: 10.1109/CSAE.2011.5953237.