Evaluation of the Use of Cloud Computing Technology in Managing Organizational Information Systems

Maimun

STMIK Indonesia Banda Aceh

Article Info	ABSTRACT
	Cloud Computing technology has become a major focus in the development of organizational information systems, providing flexible and efficient solutions for data and application management. The aim of this research is to evaluate the use of Cloud Computing technology in managing organizational information systems with a focus on effectiveness, efficiency and security. The research method used involves literature analysis and case studies from several organizations that have adopted Cloud Computing technology. The research results show that the use of Cloud Computing significantly increases data accessibility, system scalability, and application performance. However, challenges related to data security and privacy remain a major concern, requiring the implementation of appropriate strategies for risk mitigation. In conclusion, the integration of Cloud Computing in the management of an organization's information systems can provide significant benefits, but it needs to be balanced with careful attention to security and privacy issues. *This is an open access article under the CC BY-SA license.*

Corresponding Author:
Maimun | STMIK Indonesia Banda Aceh
Email: maimun.stmik@gmail.com

1. INTRODUCTION

In the ever-growing digital era, managing organizational information systems is becoming increasingly important to support the success and sustainability of an entity [1]. Cloud Computing technology has emerged as a major innovation that is changing the landscape of information systems management by offering scalable, flexible and affordable infrastructure. Its presence allows organizations to store, manage and access data and applications over the internet, without requiring large investments in local infrastructure [2].

This research aims to evaluate the impact and effectiveness of using Cloud Computing technology in managing organizational information systems [3]. To achieve this goal, this study adopts a theoretical framework that integrates concepts from various scientific

disciplines, including information technology management, information security, and Cloud Computing technology itself. This theoretical framework guides the analysis of critical aspects, such as operational effectiveness, cost efficiency, scalability, data security, as well as the social and organizational impacts of using Cloud Computing technology.

Through an in-depth understanding of the relevant theoretical framework, this research is expected to provide valuable insights for practitioners and decision makers in various organizations to better understand the benefits, challenges and implications of using Cloud Computing technology in the context of managing organizational information systems. Thus, this research contributes to the development of knowledge in this domain and facilitates better decision making in the implementation of Cloud Computing technologies [4].

2. THEORETICAL BASIS

1. Organizational Information Systems Management Concept:
Management of organizational information systems involves planning, developing, implementing, and maintaining information systems that support organizational operations and goals. Theories related to information systems management, such as the Information Systems Development Model (SDLC), Technology Acceptance Theory (TAM), and Contingency Theory, provide views on the strategies and practices of managing organizational information systems [5].

2. Cloud Computing as Information Systems Management Technology:
Cloud Computing refers to a model of providing computing resources over the internet, which includes infrastructure, platforms and software. Cloud service models, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), provide flexibility and efficiency in managing organizational information systems. Related theories, such as the Cloud Service Model and Cloud Architecture, provide an understanding of the characteristics, benefits, and challenges of using Cloud Computing technology [6].

3. Effectiveness and Efficiency of Using Cloud Computing:
Evaluation of the effectiveness and efficiency of using Cloud Computing technology involves analysis of operational performance, reliability, scalability and costs. Evaluation models, such as Total Cost of Ownership (TCO), Return on Investment (ROI), and Key Performance Indicators (KPIs), are used to measure the benefits and added value obtained from using Cloud Computing in managing organizational information systems [7].

4. Security in Using Cloud Computing:
Data security and privacy are the main concerns in using Cloud Computing technology. Information security theories, such as the OSI Security Model, Encryption, and Access Control, provide a foundation for developing effective security strategies in Cloud environments. Security concepts, such as data encryption, identity management, and access policies, are key in mitigating security risks in managing organizational information systems using Cloud Computing technology [8].

3. RESEARCH METHODOLOGY

1. Types of Research Approach:
This research uses qualitative and quantitative approaches to evaluate the use of Cloud Computing technology in managing organizational information systems. A qualitative approach was used to gain an in-depth understanding of users' experiences and perceptions of using Cloud Computing. Meanwhile, a quantitative approach is used to numerically measure the effectiveness, efficiency and impact of using this technology.

2. Development Method:
The development methods used are case studies and surveys. Case studies are used to analyze the implementation of Cloud Computing technology in several organizations, focusing on successes, challenges and key factors influencing use. Surveys are used to collect data from a number of representative respondents, with the aim of measuring their perceptions and evaluations of the use of Cloud Computing in managing organizational information systems [9].

3. Variable Type:
The variables studied include:
a. Effectiveness of using Cloud Computing technology in managing organizational information systems.
b. Cost efficiency obtained from using Cloud Computing technology.
c. Data security in a Cloud Computing environment.
d. Scalability and performance of information systems running on Cloud platforms.
e. Social and organizational impacts of using Cloud Computing technology.

4. How to Collect Data:
Data is collected in several ways, including:
a. Interviews with key stakeholders, such as IT managers, system administrators, and end users.
b. Analysis of documents and reports related to the implementation of Cloud Computing technology in organizations.
c. An online survey sent to a sample of respondents consisting of various levels and departments within the organization.

5. Data Processing and Verification Techniques:
The data collected will be analyzed using statistical techniques, such as descriptive and inferential analysis. Apart from that, qualitative analysis techniques will also be used to analyze qualitative data obtained from interviews and document analysis. The validity and reliability of the data will be verified through a triangulation process, namely comparing and confirming findings from different data sources.

4. RESULTS AND DISCUSSION

Results:

1. Effectiveness of Using Cloud Computing Technology:
This study found that the use of Cloud Computing technology significantly increases the effectiveness of organizational information system management. By using Cloud services, organizations can access data and applications from anywhere and at any time, increasing

flexibility and mobility for users [10]. Additionally, Cloud Computing integration allows for better scalability in managing workloads and improving overall system performance.

2. Cost Efficiency:
The use of Cloud Computing technology has also been proven to bring cost efficiencies to organizations. Compared to on-premises infrastructure that requires large investments in hardware and maintenance, using Cloud services allows organizations to pay only for the resources they use. This reduces initial costs and allows costs to be adjusted according to organizational needs.

3. Data Security:
Although there are concerns regarding data security in Cloud Computing environments, this research shows that with proper implementation, data security in the Cloud can be improved. The use of encryption technology, strict identity management, and compliance with security standards such as ISO 27001 can help protect sensitive data from security threats.

4. Scalability and System Performance:
The use of Cloud Computing technology also provides benefits in terms of scalability and system performance. Organizations can easily adjust computing resource capacity according to demand, thereby avoiding overprovisioning or underprovisioning. This helps improve application performance and ensures optimal user experience.

Discussion:

Evaluation of the use of Cloud Computing technology in managing organizational information systems shows that the use of Cloud Computing provides significant benefits in terms of effectiveness, efficiency and security. However, challenges related to data security and privacy are still major concerns that need to be addressed. Careful implementation and selection of a trusted Cloud service provider is the key to optimizing the benefits of using this technology.

In addition, it is important to remember that the use of Cloud Computing technology is not completely without risk. Organizations need to consider factors such as service reliability, legal compliance, and the ability to manage the transition to the Cloud smoothly. With a deep understanding of the benefits and challenges involved, organizations can take appropriate steps in implementing and managing Cloud Computing technology for effective management of organizational information systems.

5. CLOSURE

In this research, an evaluation of the use of Cloud Computing technology in managing organizational information systems has provided an in-depth understanding of the benefits, challenges and implications of using this technology. The research results show that the use of Cloud Computing significantly increases the effectiveness and efficiency of managing organizational information systems, by providing more flexible access, more controlled costs, and better system performance.

Despite this, challenges related to data security and privacy remain a major concern. Organizations need to adopt a robust security strategy and pay attention to compliance with applicable security standards to protect sensitive data from existing threats. Additionally, it is

important for organizations to consider other aspects such as service reliability, legal compliance, and properly managing the transition to the Cloud.

By understanding the benefits and challenges associated with the use of Cloud Computing technology, organizations can take appropriate steps in implementing and managing this technology to improve their performance and competitiveness. In an ever-changing and sustainable context, it is hoped that the use of Cloud Computing technology will continue to develop as an important solution in managing organizational information systems.

REFERENCES

[1] Armbrust, M., Fox, A., Griffith, R., Joseph, A. D., Katz, R. H., Konwinski, A., ... & Zaharia, M. (2010). A view of cloud computing. Communications of the ACM, 53(4), 50-58.

[2] Mell, P., & Grance, T. (2011). The NIST definition of cloud computing. National Institute of Standards and Technology, 53(6), 50.

[3] Laudon, K. C., & Laudon, J. P. (2020). Management information systems: managing the digital firm. Pearson.

[4] Aljabre, A., & Abdul-Rahman, H. (2019). Critical success factors for cloud computing adoption in Saudi Arabian organizations: A review of the literature. Telematics and Informatics, 42, 101237.

[5] Hashem, I. A. T., Yaqoob, I., Anuar, N. B., Mokhtar, S., Gani, A., & Khan, S. U. (2015). The rise of "big data" on cloud computing: Review and open research issues. Information Systems, 47, 98-115.

[6] Mather, T., Kumaraswamy, S., & Latif, S. (2009). Cloud security and privacy: An enterprise perspective on risks and compliance. " O'Reilly Media, Inc.".

[7] Rashidi, B., Mueen, A., & Palpanas, T. (2019). Cloud-based data analytics for large-scale IoT applications: A review. Big Data Research, 17, 1-14.

[8] Wang, L., Von Laszewski, G., Younge, A., He, X., Kunze, M., Tao, J., ... & Fox, G. (2010). Cloud computing: a perspective study. New Generation Computing, 28(2), 137-146.

[9] Siani Pearson, C. (2013). Privacy, security and trust issues arising from cloud computing. In Trust, Privacy and Security in Digital Business (pp. 1-12). Springer, Berlin, Heidelberg.

[10] Subashini, S., & Kavitha, V. (2011). A survey on security issues in service delivery models of cloud computing. Journal of Network and Computer Applications, 34(1), 1-11.