



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 12, December 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.524

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Introduction to Cloud Computing and Application of AI in Cloud Computing

Arun Kumar M S, Bhoomika N

Assistant Professor, Department of Information Science and Engineering, CIT, Gubbi, Tumkur, Karnataka, India

UG Student, Department of Information Science and Engineering, CIT, Gubbi, Tumkur, Karnataka, India

ABSTRACT: Cloud computing has emerged as a transformative technology, reshaping the way organizations utilize computing resources by shifting from traditional products to on-demand services. This fundamental shift enhances operational efficiency, elasticity, and cost-effectiveness, allowing companies to restructure processes and substitute innovation. Global IT colossuses like Google, Amazon, and Microsoft have accelerated the development and adoption of cloud services, driving growth across sectors worldwide. In Vietnam, for example, cloud computing is playing a crucial role in the banking sector's digital transformation, enabling enhanced data storage, processing, and decision-making efficiency. AI integration in cloud computing further amplifies this evolution, unlocking powerful tools for data analytics, machine learning, and intelligent automation. By leveraging AI, cloud platforms empower businesses to create dynamic, intelligent applications that support complex tasks, from predictive analytics to advanced operational insights. This paper explores the applications and potential of AI-enhanced cloud computing, examining its role in enabling real-time, data-driven solutions that offer profitability and scalability for businesses of all sizes.

KEYWORDS: Cloud Computing, Architecture, IoT, digital transforming, cloud computing in the world, Mobile cloud computing, cloud computing applications, AI, Cloud, Big Data.

I. INTRODUCTION

Cloud computing has transmuted organizational tactics to data storage, processing, and deployment by breaking down large-scale tasks into smaller, untroublesome processes handled by headwaitresses within a cloud network. This distributed model enables the dynamic and ascendable delivery of resources, making IT infrastructure more efficient, cost-effective, and malleable for businesses of all sizes. Through service models like Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), cloud computing allows companies to simplify operations, improve customer engagement, and create new digital solutions in rejoinder to changing market needs. The addition of artificial intelligence (AI) within cloud platforms has further fuelled innovation, giving businesses access to machine learning, real-time analytics, and automation tools that enable smarter applications capable of acclimatizing to new data over time. With the development of AI-as-a-Service (AIaaS), companies can connect the power of AI without in-house expertise, driving productivities through predictive insights, advanced recognition technologies, and natural language processing. Additionally, AI's role in mobile cloud computing has expanded the potential for smart devices to access and leverage cloud-driven intelligence, making high-powered analytics and data processing available to applications in healthcare, finance, and beyond. This ongoing convergence of AI, big data, and IoT within the cloud promises a new era of digital transformation, offering flexible, intelligent, and accessible technology across industries.

II. LITERATURE SURVEY

The application of cloud computing (CC) and artificial intelligence (AI) in telecommunications has gained significant consideration in recent literature, highlighting benefits and challenges in modernizing industry operations. One study emphasizes that cloud computing allows telecom companies to improve service delivery and customer satisfaction by reducing functioning burdens and enabling focus on core business goal sonal business strategies are increasingly outdated in this rapidly digitizing environment, prompting a need for revised approaches that incorporate AI, digital reengineering, and cognitive computing. AI particularly valuable in telecom customer service, enhancing customer experiences through personalized offers, predictive maintenance, and AI-powered tools like Vodafone's chatbot, TOBi . Additionally, n detect security threats like DDoS attacks in real-time, helping telecom companies manage complex networks securely and efficiently.



Fig.3 Flowchart on cloud computing

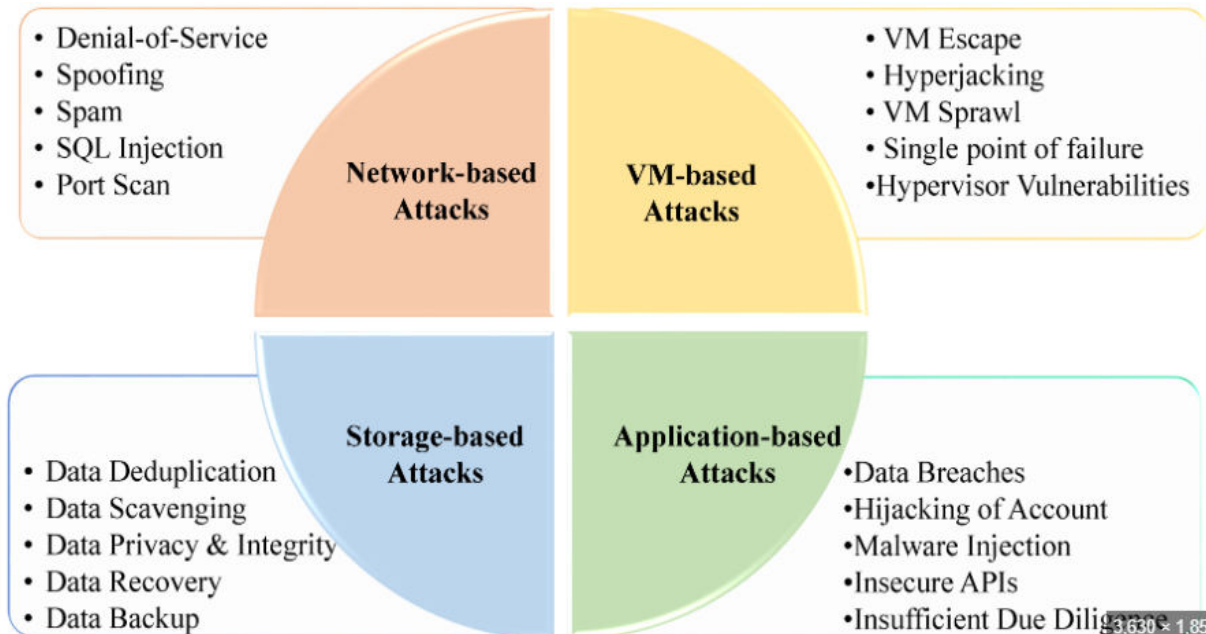


Fig.4 Review of cloud computing security

Cloud computing security is a critical feature of cloud adoption, addressing anxieties around data privacy, access control, and the protection of alphanumeric resources stored on remote servers. As organizations wander to the cloud, they often antagonize unique security challenges that differ from traditional on-premises models, such as the shared responsibility between cloud providers and customers.

SPENDING ON CLOUD COMPUTING IS EXPECTED TO GROW BY NEARLY 22% YEAR-OVER-YEAR IN 2023, HELPED BY AI-RELATED INVESTMENTS

Source: Global X Forecasts with information derived from Gartner, (2023, April 19), Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly \$600 Billion in 2023.

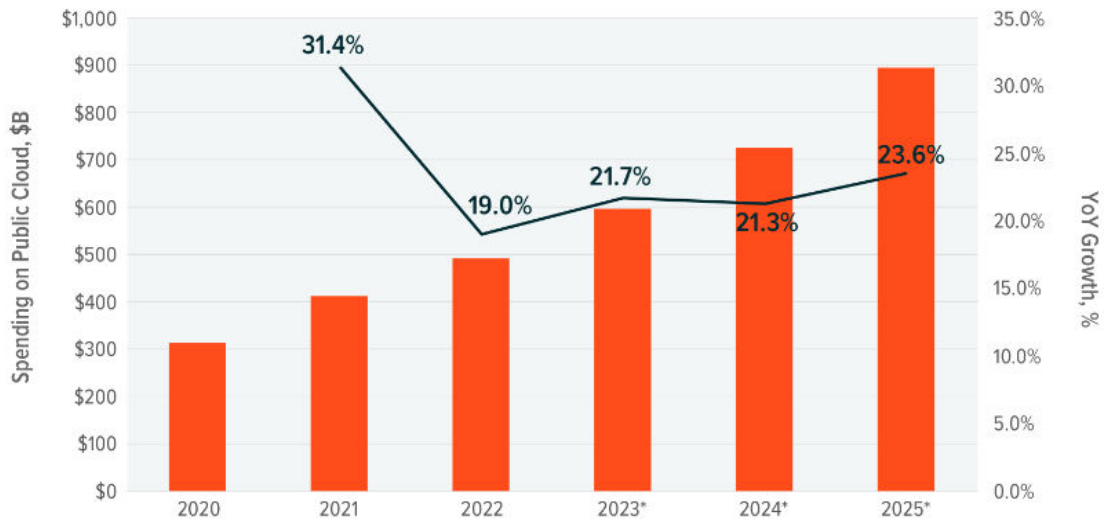


Fig.5 Generative AI Delivers a Boost to Cloud Computing

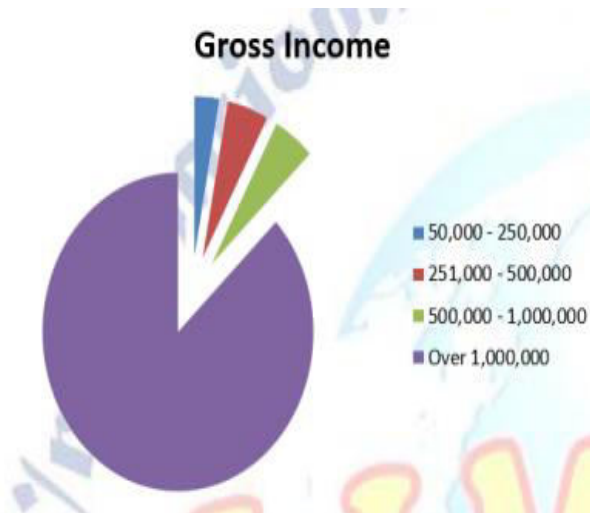


Fig.6 Rate of gross income

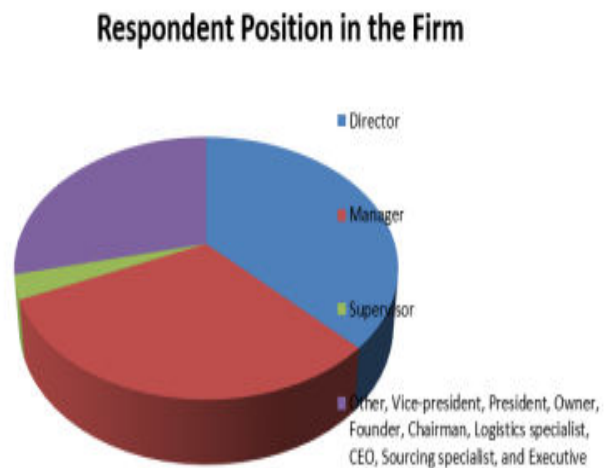


Fig.7 Respondent position in the firm

Network connectivity: Cloud-based machine learning applications necessitate network connectivity, which can also affect the working process of the machine learning algorithm. It also takes time for data to reach the cloud for further processing. There is a large time delay in data being delivered to the cloud, which affects the timely intervention and rapid work required to resolve issues. This is private information. Data collected by smart sensors captures customer and delivery information before it is sent and processed. The nonappearance of security protocols in web and mobile cloud computing will allow information to be stolen and will lead to additional security problems.

Identity and Access Protection Key Management Virtual Machine Security among the important security issues in the cloud, information security and fair-mindedness are considered the most difficult problems that will prevent the use of cloud computing. In fact, access control and key management are issues related to information security. Information security in the cloud is related to data confidentiality, integrity, availability and traceability (CIAT), and these requirements create serious problems for cloud computing.

The research objectives scrutinize whether the impact of cloud computing on the association between collaborative relationships and relationship outcomes is stronger for small businesses than for large enterprises. Organizations large and small are demonstrating that collaborative relationships have a big impression on the benefits of collaboration and the results of relationships. The use of cloud computing shows significant differences only for small organizations in the results of collaborative advantage. This result somewhat supports hypothesis according to which for small companies, the impact of cloud computing on the association between the collaborative relationship and the collaborative advantage will be stronger than for large companies.

V. CONCLUSION

Cloud computing and AI integration has transformative potential. Cloud computing offers scalability, flexibility, and cost-effectiveness, while AI enhances decision-making, automation, and optimization. Together, they enable real-time data analysis, predictive analytics, and machine learning, driving business modernization and competitiveness. This synergy revolutionizes data management, streamlines operations, and fuels growth. As cloud computing and AI continue to evolve, their combined impact will redesign the technological landscape, empowering organizations to harness data-driven insights and thrive in a digital era. The integration of cloud computing and AI marks a paradigm shift in the technology landscape. Cloud-based AI solutions optimize resource utilization, reduce operational costs, and enable rapid scalability. Furthermore, AI-infused cloud services simplify intelligent automation, extrapolative maintenance, and data-driven decision-making. As this working together continues to evolve, it will empower organizations to circumnavigate complex challenges, capitalize on developing opportunities, and drive sustainable success in an increasingly competitive digital landscape.

REFERENCES

1. “An Introduction to Cloud Computing Platform” Hoang Anh Thu, MA.1, Nguyen Thi Thu Trang, PhD.2, Luong Xuan Minh, PhD.3 Engineering and Technology Journal e-ISSN: 2456-3358 Volume 08 Issue 05 May-2023, Page No.-2191-2197 DOI: 10.47191/etj/v8i5.05, I.F. – 7.136.
2. A Survey: “Systems and Applications Based on Cloud Computing” Palestine Technical University Research Journal, 2024, 12(2), 142-160 ,2Computer Science, Palestine Technical University Kadoorie, Tulkarm, Palestine.
3. “Integration of Cloud Computing with Artificial Intelligence and Its Impact on Telecom Sector”—A Case Study Mounir M. El Khatib¹, Ahmed Al-Nakeeb¹, Gouher Ahmed^{2,1}, School of Business and Quality Management, Hamdan Bin Mohammad Smart University, Dubai, UAE.²School of Business Management, Skyline University College, Sharjah, UAE. <https://csrc.nist.gov/publications/detail/sp/800-145/final> [7]
4. “A Heuristic Approach for Service Allocation in Cloud Computing”, in International Journal of Cloud Applications and Computing 7(4), 2017, pp. 60-74 DOI:10.4018/IJCAC.2017100104
5. “A Study of Role and Impact of Cloud Computing in Supply Chain Management” December 2021 International Journal for Modern Trends in Science and Technology 8(1):292-295 DOI: 10.46501/IJMTST0801051
6. “Application of AI in Cloud Computing” Kumar Kishan Chandra¹, Dr. Manisha Kumari Deep² 1PhD Scholar, YBN University, Ranchi, Jharkhand, India 2Professor, YBN University, Ranchi, Jharkhand, India



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details