International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Adoption of Cloud-Based Accounting Systems: A Study of Business Benefits and Technological Challenges among Small and Medium Enterprises (SMEs)

Dr.R. Gokila[1], Mrs. M. Jayanthi[2]

[1]Assistant Professor, School of Commerce and International Business, Dr.G.R. Damodaran College of Science, Coimbatore.
[2]D.Com. M.Com., M. Com (CA). M.Phil., (Ph. D), Research Scholar, School of Commerce and International Business, Dr.G.R. Damodaran College of Science, Coimbatore

Abstract:
In digital era the cloud accounting systems are reducing the cost of manufacturing products and increasing the storage systems with ease mobility & collaboration with secure file accessing. The article explains about the SMEs (Small and Medium Enterprises) massive adoption of Software as a Service (Saas) and Microsoft 365, Google workspace or Salesforce CRM. The virtual web services provide the Infrastructure as a Service (IaaS). The main critics are the vendor benefits and cost secure access and controls. In India stride the movement with Viskit Bharat 2047. The micro enterprises drastically leveraged with cloud computing virtual structure. The real time data accelerate the benefits and the economic growth. This study aims to find the digital challenges and the benefits concerning data security, privacy, internet dependency and lack of technical expertise and impact of AI. Through this our economy targets a $30 - $40 trillion economy and focuses on youth empowerment, zero poverty, modern infrastructure and technological innovation. A structured survey-based approach and the secondary data used in this research article. We are analysing the continuous storage process and accessible insights and the automated responses, while transferring the prototype. This article reveals the data encryption and identities management in the SMEs platform. The study edges the IoT through practical and theoretical perspective and spans the commerce and technology disclosure.

Keywords: IoT, SMEs, Data *Technological Challenges, Data Security*

Introduction:

In India business finance augmented with the Tally Prime., GST Filing, E-invoice, zohobooks and Hotshooks in the remote survey platform. The cloud computing system integrates through the internet facility to maintain accurate financial records among the company's servers. The cloud computing service furnishes the real time data with local server storage and connects the laptop through an internet facility. Software applications like Saas, Paas, Iaas, Xaas, Faas build the cloud computing system in SMEs. The Business model of cloud computing connects the firm and the group of industry. Our India estimated the cloud computing revenue to $4.61 billion in the year of 2031.CAGR evolved the adoption of SMEs cloud

computing fast growing economic sources implementation. In India 31% of GDP is occupied by MSME. Cloud computing categorised public and private service providers. The third-party cloud delivers the data to large groups of the public like Google, AWS, and Microsoft AZURE. The business resilient and the risk management travelling through the AI platforms. The SMGs analyse the challenges of risks through the implementation of AI and cloud computing. The adoption of AI tools in production and other business emerged activity cost of efficiency and the processing risk must be identified. Indian Banking system connected extracted the assets management through the equity databased management. The financial institutions adopted the digital tools to assess their needs. The business sectors apply the inventory management with inventory techniques by the way of cloud server systems.
The data storages servers' models enhancing the software tools and web browser.

Remote server Access

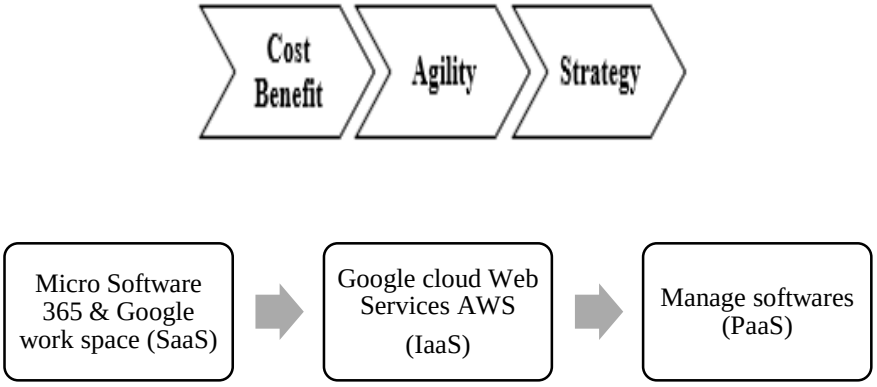


Fig 1: Cloud Service Models for SMEs: SaaS, IaaS and PaaS

The software tool enhanced the real time trading and cost reduction, time management, improve the productivity and team collaboration in SMEs sector. This study covers the technology implementation and practice challenges among the Digital operating literacy. The Business and the real-time selling process make the facility to consumer. The CRM and ERP cloud software collaborative and communication with real-time data structure backup and data recovery with lower cost benefits the SMEs travelling agility service to the customer. The scalability of data-complex level is enabling in the filed level digital transaction is the capstone of Indian SMEs. The challenges and barriers to be investigate among the SMEs entrepreneurs and operating digital markets and foster sustainability.

Research Gap:
The cloud-based accounting system adoption and the digital challenges in SMEs research articles are very limited in India. The remote server literacy and the technical expertise impacts are creating more benefits and improving the performance. So, the SMEs are driven to Cloud based financial management.

Research Problem:
The software developer integrates the finance and the hardware tools through the Internet. But the cost efficiency and network dependency real-time data empowerment and local server secrecy of information

reduce the data control.

Objectives:

To analyse the real-time challenges by adopting the cloud-based accounting systems.
To know the benefits of cloud accounting methods and the impacts.
To determine the performance and improvement with technical expertise in cloud computing literacy.

Literature Review:

Cogent Business and Management (2026) published a research article "The adoption of cloud accounting in Indonesian Small and Medium Enterprises (SMEs): exploring drivers, challenges and implications for performance". The author (Wuryan Andayan, Noval Adib, Moh. Erfan Arif, Indrayani, Sri Wahyuni, Sri Luna Murdianingrum, Rika Nur Widiastutik) contribute to the crucial role of Indonesian cloud computing systems and challenges, financial support and strategies to implement. The main objectives of this research are the adoption of cloud computing among their software systems and key drivers of technological performance and practical improvement of cloud computing systems. The methodology used qualitative research methods with conceptual framework theory. The finding and analysis are SMEs categorized experts, vendors, SME owners and government representatives. The SMEs eco system and service model describes the complexity and tackle of digital agility. The thematic analysis is the SMEs transferred through the software cloud computing system. The operational efficiency needed through digital literacy. Indonesia's digital policy interacts with the TOEO framework with a unique perspective of owners' understanding and behaviour. Through this the government improves the economy growth.

Manraj Kuwar Singh educational society July 2025published a Research chapter 'Cloud-Based Accounting Adoption among SMEs Drivers, Barriers, and Strategic Implications'. In this article the author connects the Indian economic growth and SMEs industrial output and strengthening the cloud computing accounting system. The conceptual framework used in this paper core characteristics and relevance of SMEs on the adoption of technology. Organization model and TOE (Technology-Organization-Environment) with DOI (Diffusion of innovation in the peer companies' visible benefits transformation and Business analysis through cloud computing platform in metropolitan cities implication analysis. The author found the barriers of no formalised financial techniques and often rely on informal practices to make the continuation of cloud adoption. Inadequate internet infrastructure and technological complexity data migration lack of skill and training is the complex in SMEs cloud adoption. The suggestion is undertaken with government policies and regulation.

In 2025 August a research article published by Dariyanti, Ebrahim Mohammed, Adrian in the title of "Challenges Adopting Cloud Accounting by Small and Medium Sized Enterprises: A Systematic Literature Review." In this research the author analysed the data governance and supporting scalability of SMEs. Profit measures and the economic expansion through cloud computing adoption. The author finds and suggests new technology and the cost benefits are integrating with down implementation. The unclear cost benefit and digital staff migration and human issues with computer skill and primary security are the key challenges of SMEs cloud embracing. The government support is minimal for this SMEs technology.

In 2022 September Manager - The British Journal of Administrative Management published a research article "The role of business and Artificial Intelligence in Direct Marketing". In this article the author K.K. Ramachandran, explained the technological development of AI and its impact in the business strategy.

This research explains for us AI Approach in business industry with algorithm pattern to solve real-time digital marketing platforms. The marketing mix connected with the sensors panel through AI Tools.
In 2022 September Manager - The British Journal of Administrative Management published a research article "Assessing The full impact of Technological Advances on Business Management Techniques" in this article the marketing strategy in technological advancement business implementations. The research reveals for us the employee proficiency and the technology implementation among the business development.
The literature explores the technological enhancement in the Business turnover is unavoidable needs at any cost.

Cloud Computing: The National Institute of Standards and Technology (Mell & Grance, 2011) defines cloud computing as a model that gives users convenient, on-demand access to a shared pool of computing resources - servers, storage, networks and applications - that can be provisioned quickly with minimal effort from the service provider. NIST identifies four deployment models and three service models, each of which SMEs can incorporate differently depending on size, budget and the sensitivity of the data involved.
Cloud computing enables Small and Medium Enterprises (SMEs) to access secure computing resources, applications & storage through Internet without requiring more costly physical infrastructure. With authenticated proper access to an SME cloud account, businesses able to securely store and manage their data, also support remote collaboration, and scale resources based to their needs. It helps SMEs reduce IT costs, improve flexibility, strengthen data availability, and accelerate digital transformation.

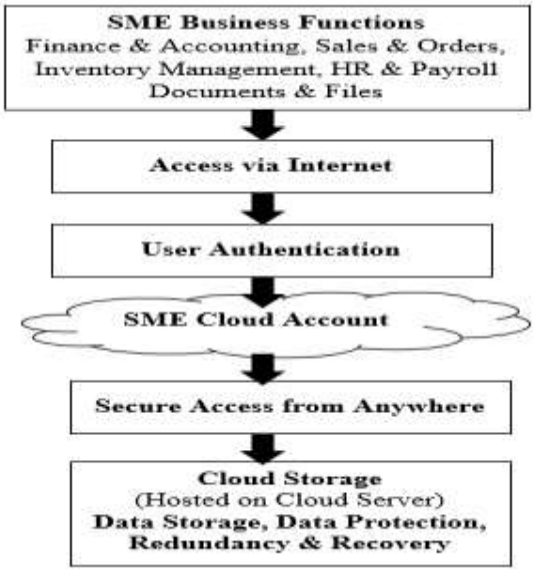


Fig 2: Cloud Architecture for SMEs

Types of Cloud Deployment Incorporated into SMEs: The four NIST deployment models are not equally suited to every SME; the right choice depends on firm size, budget and how sensitive the underlying financial data is.
Public Cloud: owned and operated by a third-party provider (AWS, Microsoft Azure, Google Cloud) and shared across many tenants at low upfront cost. This is the deployment route most micro and small enterprises incorporate first, since it needs no capital investment in servers and lets a firm start using accounting software such as Zoho Books or QuickBooks Online within days.

Private Cloud: dedicated to a single organisation, either self-hosted or run by a provider on isolated infrastructure. Medium enterprises handling larger transaction volumes or operating in regulated sectors incorporate private cloud when tighter control over financial data justifies the higher cost.

Hybrid Cloud: combines public and private infrastructure, letting an SME keep core ledgers and customer data on a private server while running reporting, e-invoicing or customer-facing portals on public infrastructure. This is a practical middle path for growing SMEs that want cost efficiency without giving up control of sensitive records; it also enables cloud bursting, where a firm temporarily borrows public cloud capacity during demand spikes such as festival sales or GST filing season, while routine operations stay on private infrastructure.

Community Cloud: shared by a group of organisations with common needs, such as an MSME cluster, an export promotion council or an industry association. Members pool infrastructure costs to access a common compliance or filing platform, which is particularly useful for smaller SMEs that cannot justify a private cloud individually but need more control than a fully public service offers.

Cloud Service Models Incorporated into SMEs: SaaS, PaaS and IaaS: The three NIST service layers sit on top of these deployment choices and map onto different levels of SME involvement, from ready-to-use software to raw computing infrastructure.

Software as a Service (SaaS): the layer SME staff interact with directly - ready-made applications such as Tally on Cloud, Zoho Books, QuickBooks Online, Microsoft 365 and Google Workspace, accessed through a browser with no local installation. SaaS is incorporated by the overwhelming majority of SMEs because it needs no in-house IT staff, is billed as a predictable monthly subscription that suits SME cash flow, and is updated automatically by the vendor.

Platform as a Service (PaaS): the development environment on which accounting and CRM vendors build and update their applications. SMEs rarely touch this layer directly, but the more digitally mature ones incorporate PaaS when they want to build a lightweight custom add-on - for example, a simple invoice-approval workflow or a dashboard that pulls data from their existing SaaS accounting tool - without having to manage the underlying servers themselves.

Infrastructure as a Service (IaaS): raw computing power, storage and networking rented from providers such as AWS, Microsoft Azure and Google Cloud instead of buying physical servers. IaaS is incorporated mainly by medium enterprises that run their own ERP system, e-commerce backend or custom database beyond what an off-the-shelf SaaS tool covers; it converts a fixed capital cost into a flexible operating expense and lets the firm scale computing capacity up or down as transaction volume changes.

Cloud Computing Techniques Supporting SME Accounting: Beyond the service and deployment models above, several technical mechanisms determine whether a cloud accounting system is actually secure, reliable and worth the switch for an SME.

Data encryption and access control: financial data is encrypted in transit (TLS) and at rest (commonly AES-256), while role-based access control and multi-factor authentication restrict who can view or edit records - directly addressing the data-security concern this study's survey participants raised.

Automated backup and disaster recovery: cloud providers replicate data across geographically distributed servers, so a single local machine failure no longer means lost financial records, unlike the traditional on-premise server model.

API-based integration: Why this matters specifically for SMEs, and not just larger firms, comes down to the constraints that define how small businesses operate. Most SMEs don't have the luxury of a dedicated finance department, so the automation that API integration brings effectively substitutes for

staff they simply cannot afford to hire, letting one person handle what would otherwise require a small team. This becomes especially important for owner-operators who are juggling sales, operations, and finance all at once, real-time cash visibility through automated bank feeds means they aren't left waiting until month-end to understand where their business actually stands financially. There's also a cost dimension to error reduction: a manual bookkeeping mistake that a large firm could absorb might seriously disrupt cash flow for a small business, so having API-driven feeds catch these errors early matters far more when margins for error are thin and audit controls are minimal or non-existent. Finally, as an SME grows and its transaction volume increases, this kind of automated GST and banking synchronization scales in a way that manual entry simply cannot, since manual processes tend to become unmanageable once a business crosses a certain size, whereas API-based systems keep pace without demanding proportionally more manual effort.

Elastic scalability: computing resources scale up or down with transaction volume, so a micro-enterprise pays only for the capacity it uses, while a medium enterprise can absorb peak-season load - such as GST filing periods - without maintaining idle infrastructure year-round.

Real-time multi-user synchronisation: the owner, accountant and auditor can access and update the same ledger simultaneously from different devices, which is the technical basis for the real-time collaboration benefit SMEs report experiencing.

Embedded AI-assisted analytics: many SaaS accounting tools now include AI-based features such as anomaly detection in transactions, automated expense categorisation and predictive cash-flow analysis, running on the vendor's cloud infrastructure without requiring the SME to build or manage any machine-learning system itself.

Methodology:

This study explores the conceptual framework with structure questions. The secondary data are used among the case study of cloud adoption trends.

A. Data Collection: Structure survey was distributed 100 SMEs across industries like retail, manufacturing and services in India. The survey included questions on real-time challenges and the benefits of cloud computing accessing and the performance improvement with technical literacy. The survey includes the challenges by adopting cloud computing access through real-time and benefits, performance improvement technical literacy among the digital platform.

B. Survey Design: The Likert scale questions (1-5) to measures the challenges alongside open-ended questions for qualitative feedback. Participants sampling to ensure representation across SME sizes and sectors.

C. Participant Demographics: Participants included 40 micro-enterprises (10 employees), 40 small enterprises (10-30 employees, and 30 medium enterprises (30 – 150 employees). The 68% of SMEs adopted the cloud computing access and the other in strategizing.

D. Ethics and Experiments: The survey followed the ethical consent among the participant's privacy and the secrecy's comparative analysis evaluated by historical IT infrastructure.

E: Data Analytics: Quantitative data with thematically descriptive scalability and trust.

Chi-Square Test:

H0: There is no Association between the Enterprises Size and Lack of Technical Knowledge.

H1: There is an Association between the Enterprises Size and Lack of Technical Knowledge.

Chi-square (χ^2) = (O-E) ^2/E

Observed Value:

Table 1. Distribution of SMEs by Enterprise Size and Technological Challenges

SMEs	Enterprises employees (A)	Lack of Technical knowledge (B)	Total
Micro enterprises	52	48	100
Small enterprises	43	57	100
Medium enterprises	53	47	100
Total	**148**	152	**300**

Table 2. Observed and Expected Frequencies of Technological Challenges among SMEs

SMEs	A Observed	A Expected	B Observed	B Expected
Micro enterprises	52	**47**	48	**52**
Small enterprises	43	**47**	57	**52**
Medium enterprises	53	**47**	47	**52**

Table 3. Chi-Square Test Results for the Association between SME Size and Technological Challenges

Chi-square value	2.890684141
Degree of Freedom	df =Rt-1* CT-1 = 2
Table value	0.05
P value	0.235665449

There is a real, non-random relationship or difference between your variables.

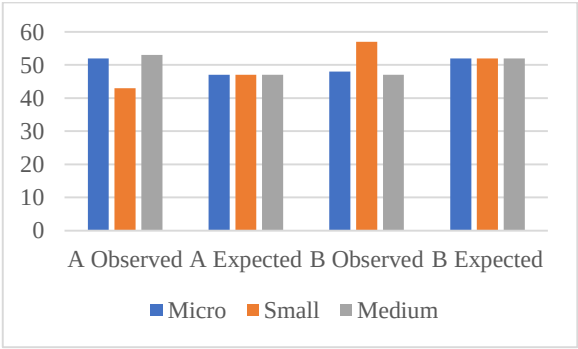


Fig 3: Observed vs Expected Values by Enterprise Size (Chi-Square Test)

Interpretation of Chi-Square Result: The Chi-Square test was conducted to examine whether the size of SMEs (Micro, Small, and medium enterprises) is significantly associated with the lack of technical

knowledge in adopting cloud computing technologies. The calculated Chi-Square value was 2.888, with 2 degrees of freedom and a p-value of 0.236, which is greater than the 0.05 level of significance. Therefore, there is no statistically significant association between enterprise size and the lack of technical knowledge. This result indicates that technical knowledge is an important concern for SMEs irrespective of whether they are Micro, Small, or medium enterprises. The finding supports the need for wider technical support, cloud computing awareness, and software-based training initiatives across SMEs in different regions of India. Such initiatives can help SMEs in metropolitan cities as well as smaller towns and developing areas improve their adoption of cloud-based systems and real-time data applications. This highlights the importance of strengthening technological capabilities among SMEs to support the broader expansion of cloud computing across different geographical locations and enterprise categories.

Data Explanation:

A. SMEs Cloud Service:

Iaas (Infrastructure as Service model used in the High market situation in SMEs. The development model of PaaS supports the SMS Digi Management. Salesforce and client relation enabling service provided by SaaS (Software as a Service). Through the platform the logistics and the supply chain agility in the distribution arena.

B. Challenges among cloud computing: The expertise lacking and the technical literacy among the employees or very low. The data security and the encryption documentation is high risk among the SMEs. The SMEs are struggling in the part of IT solution. Simulated version will reduce the risk to implement and practice. The firm environment and the financial resources must be accelerated by the government or the management of the firm.

C. Software tools: inventory management tool and ERP tool collaborative work space and teamwork and in depending tracking system will reduce the challenges.

D. The cloud-based accounting access develops the sales and production margin level among the competitors. The improve scalability increasing sustainable. The technical expert Steady growth of Theoretical Model Triability reduce the accounting expenses and support the real-time data in the remote area. The market trend analysis automated by the AI data analytics with cyber threat and security detection. E: Technical Expertise: The technical experts are lacking in the cloud accessing. The bridge build between the employees and the technical needs. The continuous internet facility improves the service benefits. The performance improvement and practices of cloud accounting through make betterment of optimal resources like labour money and time

Findings and Suggestions:

A. Processes and benefits associated with cloud accounting adoption among Indian SMEs:

Sustainability of business among the competitors the SMEs force to adopt the cloud computing due to the web application. The cost benefits efficient scalability for their improvement in the trading bills and utility. Operating expenses and running trade practices change the virtual structure in the practice through ML. worldwide Cloud computing benefits extended with server maintains and the daily caused benefits increasing and the cost expense reduced 22% (Gartner 2025)

B. Challenges faced by Indian MSMEs in implementing cloud accounting:

In the organization among 22,000 employees 10 – 15 persons literate knowledge among the cloud computing accounting. The internet facility and the web availability is very less in our country due to lack

of financial resources. Especially after Covid epoch SMEs and other business platform transferred in the digital channel. Vendor lack-in high fee to operate the clouds. The hurdle is to update the software application with contemporary digital world novelty. The firm's regulations must take some flexible. The data security and the external vendor visibility is under the unpredictable risk.

C. Contribution of cloud accounting integration to improving technical literacy among Indian SMEs:

The skill gap must address by the government take initiative regarding seminars workshops and other improvement way make it efficient. Technical literacy is the major component in the day operating activities. The IT infrastructure must take bridge between the SMEs business and the clouds. AI migration and the system set-up must link between the Xero and sage inacct is the software application of SMEs seamless tools. But the fact is technical expert need to daily receipt feed and the virtual ML. The dependency ratio is little high in the SMEs cloud accounting adoption.

Conclusion:

Indian economy is nearly 63 million of SMEs segmented with tier I, II, III. Tier I city Surat (Textile) switched middle size cloud inventory management. Tier II Bengaluru improved the real time virtual. Data. Tier III Hyderabad health care start-up improved the hybrid Cloud access through the patient's data software. The reality is metropolitan city more enhanced the cloud accessing. Reality is in-depth of location the SMEs have to develop through the cloud accessing software tool among the village and towns and cities in India. Our government take steps to lift the receipts and feed accounts with real-time virtual data implementations partnered with SMEs sectors. Two directions merit attention for future research: edge computing, which processes data closer to the SME's location and could ease connectivity constraints in smaller towns, and blockchain-based ledgers, which offer a tamper-resistant audit trail for financial records.

Bibliography:

1. https://www.tandfonline.com/doi/epdf/10.1080/23311975.2025.2603023?needAccess=true
1. 2.https://doi.org/10.1109/icacite57410.2023.10182662 - Raman, R., Joshi, K., Saravana Kumar, G., Ramachandran, K. K., Bothe, S., & Trivedi, S. (2023). Benefits of implementing an ad-hoc network for hospitality businesses with IOT smart devices. 2023 3rd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE).
2. 3.CloudBased_Accounting_Adoption_among_SMEs_Drivers_Barriers_and_Strategic_Implications
3. 4.https://doi.org/10.1109/icacite57410.2023.10182679 - Saravana Kumar, G., Ramachandran, K. K., Sharma, S., Ramesh, R., Qureshi, K., & Ganesh, K. (2023). Ai-Assisted Resource Allocation for improved business efficiency and profitability. 2023 3rd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE.
4. Ramachandran, Dr. K. K., Anil Kumar, T. Ch., A Rana, Dr. G., Thakur, Dr. J., Chauhan, Dr. S., & Agrawal, Dr. K. K. (2022). The role Of Business and artificial intelligence in Direct Marketing. Manager - The British Journal of Administrative Management.
5. 6,https://www.researchgate.net/publication/394043062_ADOPTION_OF_CLOUD_ACCOUNTING_SYSTEMS_IN_SMES

6. Ramachandran, Dr. K. K., Carmel Mary, Dr. S. S., Kant Painoli, Dr. A., Satyala, H., Singh, B., & Manoharan, G. (2022). Assessing the full impact of technological advances on Business Management Techniques. Manager - The British Journal of Administrative Management.
7. Ramachandran, D. K. K., & Karthick, D. K. K. (2019a). Inventory Management Technique in Business Sectors. International Journal of Research.
8. Shukla, A., Narayanaswamy, S., & Krishnakumar, R. (2020). Impact of board size on the accounting returns and the asset quality of Indian banks. International Journal of Law and Management.
9. https://www.amity.edu/gwalior/ajm/pdf/paper3.pdf
10. https://drbgrpublications.in/wp-content/uploads/2026/Special-Issue-2026/2026-paper-3-Digital-Transformation-ANITHA.pdf
11. https://ir.uitm.edu.my/id/eprint/125204/1/125204.pdf
12. https://www.researchgate.net/publication/395664780_CHALLENGES_ADOPTING_CLOUD_ACCOUNTING_BY_SMALL_AND_MEDIUM-SIZED_ENTERPRISES_A_Systematic_Literature_Review
13. https://www.tandfonline.com/doi/full/10.1080/23311975.2025.2494712#abstract
14. https://ieeexplore.ieee.org/document/10442048
15. ttps://www.researchgate.net/publication/3978847
16. Mell, P., & Grance, T. (2011). The NIST Definition of Cloud Computing. National Institute of Standards and Technology, Special Publication 800-.