

Cloud-First Strategies for Financial Data Storage and Processing

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ABSTRACT

The aim of this research paper is to examine cloud-first approach as a strategy used in storing and processing of financial data with special emphasis on secondary data analysis of risks encompassed, benefits inherent and market trends. The study also includes the historical timeline of cloud adoption, a risk register that outlines the main risks that are bound to affect cloud adoption and their possible solutions, as well as a market share analysis. The study proves that financial organizations have rapidly shifted to utilizing cloud solutions as they served to be cheaper and more flexible than on-premises solutions. The risk register describes a number of risks such as data security, compliance, operational risks etc which matters much for data encryption and multi-cloud, following new regulations. Market share analysis shows that the provider market consists of big players including AWS, Microsoft Azure, Google Cloud and therefore highlights the problem of vendor lock in and proper selection to ensure that the chosen provider supports a company's strategy appropriately. The research reveals that despite significant change in prospects carried by cloud-first approaches for financial businesses, the key to effectively leveraging them is in managing the risks inherent with these infrastructure shifts; this applies the identification of risks and adherence to the best practices to be employed in mitigation. With the help of enhanced tools and constant training, the organizations can build the necessary levels of organizational resilience, remain loyal to customers and become strong competitors in the changing environment. Such insights are useful for client organisations especially those considering or those that are thinking of extending their use of the cloud for managing financial information.

Keywords: Cloud, Finance, Storage, Data

I. INTRODUCTION

Cloud computing has become a popular solution for networked data storage and computing for many organizations, including financial

institutions, in the past years. The volume, the complexity and the sensibility of financial data that has increased over the years has created a need for adoption to cloud solutions because of flexibility and cost effectiveness.

As much as businesses have sought to stay afloat and relevant, the use of cloud first approach has become imperative for various financial firms working to future proof their IT environment [1]. This has led to adoption of a cloud first strategy where solutions are sought in the cloud first instead of on-site solutions to enhance an efficient, scalable and secure solution for the holding of massive amounts of data by the financial institutions [2].

The financial sector deals with strictly confidential and at the same time operation critical data such as transactions, client and investment information, and regulatory reports [3]. Traditionally, there have been hard and fast rules against adopting cloud solutions set by financial institutions because of the issues to do with data security, compliance and control.

With the technologies developing and the rules and regulations getting clearer, a lot of financial organizations have started using cloud-first approaches to solve the problems connected with cost, velocity, and new ideas.

Adopting a cloud-first attitude enables many financial organizations to start migrating from legacy systems and gain the benefits of cloud-storage and continuous updates and maintenance [4].

Policies known as cloud-first refer to the practice of integrating cloud solutions into all-new IT infrastructure projects, especially by migrating existing systems. These strategies include choosing cloud providers who offer computing, warehousing, and analysis of the big data that is important in making strategic financial decisions.

There are several advantages of going for cloud computing when it comes to managing financial data; well, to name a few, high-cost overheads of purchasing hardware, and the improvement of collaboration and flexibility of the

resources that are used to run them [5]. Furthermore, cloud-first approaches also allow organisations to integrate new technologies like artificial intelligence, machine learning, big data analytics, which are especially critical in the financial sector, at a faster rate.

Another key motivation for moving to cloud services is the capability to increase data processing rates as needed in the financial services industry. The application of financial reports increases rapidly and has a significant amount of data, and therefore, the storage and processing of this large data set require robust facilities [6].

The ability to scale up services lets the financial institutions de-link the amount of data from the amount spent on the infrastructure to store it, from the hyperscale cloud platforms [7]. This scalability is critical with regard to variations in transaction rates, periods of high activity, and big data processing.

The movement to cloud allows the financial institutions to incur in some disadvantage that comes with conventional data centres such as physical space and hardware and instead use cloud resources that are elastic in nature and expand as the institution expands.

Protection capabilities of the cloud are high and, at the same time, crucial for the financial sector. The reason is simple, financial data is always considered as one of the most valuable assets and therefore anyone associated with an organization or with access to the organization's database cannot be trusted to keep financial data safe [8].

Cloud providers have always taken measures in information security and provide sophisticated encryption, Access Control, and data protection. It is important to lessen possible risks as much as possible and protect the confidentiality and integrity of the financial data at rest and in motion.

In addition, with cloud platforms, organizations are able to continuously meet requirements of many stringent industry regulations such as those that apply to companies involved in banking for instance; cloud platforms provide means of data governance tooling, auditing and reporting [9].

The second driver for cloud-first initiatives is cost efficiencies that may be realized through an architecture built for flexibility and scalability. As an example, most traditional storage and processing data solutions use a lot of hardware including servers, disk and network equipment. These costs can be very expensive in that the small

financial institutions may not be able to afford to incur the costs [10].

It does away with instances that involve such capital expenses by availing a usage-based approach that enables organizations to pay only for used services. Another advantage about this is that it brings down the initial costs, besides giving the financial institutions higher discretion in issues to do with budgeting as well as shortage of resources.

Another benefit that comes from migration to the cloud is the ability to achieve lower total cost of ownership since the responsibility of upgrading to a new software release, deploying the security patches or hardware upgrades is on the Cloud provider [11]. Another benefit which can be actually derived by cloud first strategies in the financial sector relates to data management, with the combination of cloud-based data storage and processing with the aid of newer technologies such as AI and ML.

The adoption of these technologies provides more efficient ways of analysing the data acquired by these financial institutions; making right decisions; and even improving on the services being offered to the clients [12]. The use of AI and ML we get to analyze a massive amount of data that would otherwise be time-consuming to go through by humans and detect deep patterns within the data. For such financial data, it may be possible to get improved risk evaluation, efficient fraud identification, and more effective investment solutions.

AI and ML services are included in the portfolio of cloud services that can be provided by cloud providers allowing the financial institutions to adopt those services without difficulties.

However, as mentioned before, cloud-first statutes give financial institutions better collaboration opportunities [13]. This is especially important for financial organizations as they start to move away from their traditional centralized models and become more spread across geography. Platforms offer the possibility to work with the given data simultaneously from different locations because they are safe and easily accessible at any time [14].

There further lies a rich scope for cost optimization as well as making the required tools and solutions available where needed, namely with the help of the tools for facilitating group work by means of using communications and collaborations tools with focus on the financial institutions' tendency of offering remote work opportunities for employees and sharing important details [15]. This flexibility is perhaps highly beneficial in today's

dynamic financial setting since time greatly matters in gaining access to information.

Numerous benefits exist which make the idea of moving the financial information to the cloud attractive for businesses. The adoption of the cloud-first strategy has its drawbacks as well. The three most relevant challenges to financial institutions include; data sovereignty and compliance. More importantly are the challenges arising from data sovereignty and compliance. Specifically, challenges of data sovereignty and compliance.

Financial details sometimes require storage and analysis in specific locations to meet legal requirements of a country, for example the GDPR in the EU or the Dodd Frank in the USA. This can lead to issues when choosing cloud services as these financial institutions need to guarantee that their data stays within the appropriate geographical data location and that the services of their cloud provider that they use are compliant with all regulations. Even though almost all of the cloud providers have aligned data centres in different parts of the globe, obeying to these regulations might be a rather challenging endeavour.

The other difficulty is how to deal with some of the risks inherent to the use of cloud – they can face outages and service disruptions. Even though cloud providers can guarantee rather high availability of services, the chance of their unavailability is critical for financial operations.

This, however, poses a risk that financial institutions should consider very carefully and identify the reliability and resilience of the cloud providers before engaging any of them for financial services by finding out whether such providers have adequate disaster recovery plans, or backup solutions. Furthermore, situations where such an event occurs should be anticipated and procedures for handling them in situations where an organization's ability to operate and provide service to customers is at risk should be in place.

The notion of implementing the cloud-first policy as a general business approach for housing and operating financial data proves to be a golden opportunity for financial institutions. Through the help of cloud computing, financial organizations can transform their IT environment and secure their data, promote internal and external collaborations and gain more value from their data.

This outlook is contingent with the fact that cloud technologies are still a burgeoning concept and the legal aspect applied on them has not been clearly developed; thus, there is a

speculation that the financial firms will pursue more of the cloud-first approach in future. But as we will point out there are several compliances, data sovereignty and risk management concerns that organizations need to address appropriately to maximize on the advantages offered by cloud computing.

II. METHODOLOGY

The method for this research paper concerns secondary research, where established data, reports, and studies are analysed to examine cloud-first procedures for financial data. Therefore, the research approach applicable for this study is secondary research since it compiles different views and determines similarities across a plethora of scholarly articles, case studies, and market reports. Therefore, in the process of working with this method, the study is expected to have a comprehensive and informative analysis without using the methods of primary empirical research.

The first process of the overall executed methodology was related to the process of collecting the required data and information from credible sources. To complete this process a comprehensive search through academic journals, articles, industry white papers, government documents and reports, and papers from well-known cloud service providers including AWS, Google Cloud and Microsoft Azure was carried out. Therefore, regulatory data from various global bureaus and historical financial institution data from annual reports, case studies and compliance regulations were also used. Furthermore, market studies to obtain quantitative statistics and overviews from reliable sources like Gartner, IDC, and McKinsey were collected to compare the vendors and to figure out market trends and tendencies. For the purpose of maintaining as much reliability as possible, only works published in the last ten years were used in this research, with specific focus on peer reviewed articles and any documents from reputable organizations.

Both qualitative and quantitative methods are used for the assessment of the findings in the present study. Exploratory case analysis and other forms of qualitative data are used to learn what financial institutions – especially pioneers who have adopted cloud-first solutions – face. This includes the areas that hold the cross over of first- and second-generation challenges, risks, and benefits of the utilized solutions, and the techniques that were employed in overcoming the hurdles. Qualitative data on the other hand is used in assessing trends, market share analysis and

physical assessment of the first cloud-first strategies animating the financial sector. Information is pulled to present data in the form of graphs and charts for better comprehension and to ensure that the message passed is well understood.

According to the method used in this research, data is presented in the form of a timeline that describes the history of cloud-first strategies in the financial sector. In constructing this timeline, this study assembled information on the historical events that have marked the use of cloud technologies. For example, discussions regarding the appearance of infrastructure/Platform/Software as a Service (IaaS/PaaS/SaaS), development cloud compliance solutions, and the implementation of the hybrid and polymorphic cloud were provided. The following timeline will help one to know how cloud computing has developed to meet the needs of the financial sector regarding safety, versatility, and compliance with the rules.

Another output of the analysis was the creation of the risk register. This entailed determining trends of risk inherent in cloud solutions that include data loss or theft, availability loss, lock-in, and non-compliance. Identifying data for the risk register, references from the industry, case studies, and academic articles that highlighted the issues affecting the adoption of the cloud in the financial industry were used. Probability and severity were considered to identify each risk and potential treatment approaches including those found in literature or employed by financial institutions. Even so, this analysis is useful as it identifies potential challenges of cloud-first strategies and goes further to proffer solutions for the same.

For this study's purpose, strengths and opportunities are sources from case investigations and studies as well as reports on some successful cloud technology implementations that has exposed organizations to better operational efficiency, organizational cost reduction and better security measures. The following were deduced from the barriers to adoption: weakness and threat. Importantly, the sources of threats and weakness include the restrictive nature of regulations, the high costs associated with initial migration and depending on the providers of cloud. Even though the approach to the cloud-first strategy analysis suffers from bias itself, the presented pros and cons present a reasonable starting point to assess the positive and negative effects of the strategy.

The quantitative data used for the trend analysis was culled from market research reports and surveys of market opinions by the pioneers of

the cloud-tech strategies. This data was then employed to generate growth curves and adoption and migration rates from on-premises hardware and software to cloud based systems. It also provides a comparative evaluation of the Cloud market by geographic segment including North America, Europe and Asia Pacific. In doing so, the study can identify key drivers of cloud take-up and possible future course of the cloud-first model in financial services.

Analysing the leading market players identifying their impact for defining cloud-first strategies was conducted for the following reasons. Market figures from top research companies including Gartner and Statista were used to present the market share between AWS and Google Cloud, Microsoft Azure, and other service providers. The above considerations included aspects of service portfolio, compliance tools, flexibility and value for money. Consequently, there was a content analysis of case studies of financial institutions partnered with these providers to establish why certain vendors were selected and how they helped the institutions meet their requirements. The given results are in turn useful for placing the current competitive environment of cloud services providers and their impact on the financial industry.

It also focuses on the regulatory activities, and security perspective that is very important in the financial sector for adopting the cloud. Official documents and guidelines along with regulatory requirements in the form of government publications, local and international compliance standards, and data protection acts including GDPR, PCI DSS, and ISO/IEC 27001 were used to assess how financial institutions function in a context of multiple regulatory layers. The case studies, and industry reports revealed ways in which cloud service providers have adapted their offerings to address these rules. In this particular perspective of the work, there is a call to harmonize the cloud-first frameworks with compliance and security frameworks.

The study employed descriptive and comparative research approaches to systematically lay out the results and develop a coherent story. To gain a general understanding of cloud-first strategies, their advantages and/or disadvantages, descriptive analysis was employed while comparative research gave a comparison between cloud and conventional solutions within the context of the financial data storage and processing. Additional diagrams, graphs, charts and other types of illustrations were also used to complement

quantitative analysis and make the results easily understandable to the readers.

Wherever possible and necessary, validity and reliability of the data used in this research were given due considerations. Information from only reliable and recent sources was used, and triangulation was used to check the validity of information. Also, ethical considerations were practiced through hard copy and electronic references of all sources cited and no form of data tampering or deception was allowed.

Overall, the secondary research approach adopted in this study is using a wide variety of extant data and analysis to analyze cloud-first approaches to the management and processing of financial data. Far reaching by using the key elements of qualitative and quantitative qualitative, as well as creative aspects like paper timelines, risk registers, the methodology provides a holistic and complex analysis of the given topic. In addition to the analysis of cloud computing adoption in the financial organization, this approach also reveals its current trends and perspectives as well as potential difficulties.

III. RESULTS

3.1 Historical Timeline

Figure 1. Historical timeline of Cloud evolution

The adoption of the concept of cloud first in financial data storage and processing has been a technology story, a regulation story and a business story. This timeline augments the detailed analysis of key events that led to the growth and diffusion of cloud technologies among the financial industry while also depicting interaction between gains and obstacles over the years.

The journey started in 2006 with AWS or the Amazon Web Service – which was an extremely revolutionary service that made cloud hosting a possibility for companies. AWS began the movement of strategic adoption in financial services, with other companies noting the opportunities of utilizing the cloud to meet need requirements for storage or immediate computation.

The promotion of this period was marked by careful trials and testing, solely because it started to worry about data protection and compliance with the rules of use. However, it is AWS that provided a framework that subsequent advancements built upon and proved that on-demand computing is a viable reality which paved the way for adoption of cloud in the financial services industry.

By the year 2008, Google embarked in clouds with GOOGLE CLOUD PLATFORM making competition and innovation. Google focused on analytical functions and data-based solutions that meet the needs of financial institutions trying to master big data.

This phase saw incidents where early adopters started to expand on capacity concerns, where they considered how cloud solutions could improve the capacity of their operations. Notably, there was a progressive change in attitudes to the cloud since it started delivering benefits: the financial sector started adopting the cloud to non-strategic functions—HR and payroll, for instance.

It was in 2010 that cloud technology got further impetus when SaaS models started gaining ground in the financial services field. The SaaS solutions helped the financial firms to reduce the number of processes that required various costs to deploy infrastructure within their premises.

Although the first use cases were mostly limited to peripheral domains, the effectiveness of SaaS platforms forced organizations to consider broader Cloud approaches. During this time, there was also serious consideration of the use case of cloud computing for analytical purposes with an emphasis on real time customer and market data analysis.

By the year 2012, this had evolved to the integration of cloud-based platforms with big data analytics to change the way the industry addressed issues of financial management. The spiral of innovation in the world of financial firms and carrying big data analysis by utilizing the cloud.

It provided an effective way of obtaining useful information on customer requirements and demands, and the general market environment, as well as sources of risk. Current trends with the emergence of big data and business adoption of cloud first strategies was best captured by the google translate service which was envisaged as a proof of concept of the power of cloud first strategies.

In 2014, the hybrid cloud models became popular, and this broadened the opportunity for cloud adoption for the financial services industries. Previous models vested institutions with the ability to incorporate the excellent qualities of both on-premises solutions and the cloud while embracing the exclusive features of the cloud in the creation of hybrid models.

This development was particularly important in meeting regulatory and compliance needs that require organizations to store most of the important data and applications locally while at the

same time balancing their use of the cloud for other less critical operations. The hybrid approach served as the foundation of mainstream cloud-first strategies and coordinated the technology with regulatory demands from the financial industry.

Due to observations in the cloud providers market, the financial institutions embraced multi-cloud systems after the year 2016. With the multi-cloud adoption, organizations were able to reduce their reliance on a single cloud provider and improve system reliability. This strategy also made it easy for institutions to achieve operational efficiency by exploiting the comparative advantages of players in the provider market. For example, some of the firms reported the use of AWS for scalability, Microsoft Azure for integration into enterprise and Google Cloud for analytical processes. The multi-cloud model

pointed to the increasing complexity of cloud solutions in the finance industry that demonstrated great awareness of the IT environment.

2018 also witnessed another major step in embracing cloud solutions – the appearance of industry-focused tools and services, primarily aimed at creating compliance. Cloud vendors began offering specific solutions that correspond to existing regulations as GDPR and PCI DSS thus removing one of the primary concerns of the financial industry with regards to cloud adoption.

They helped to explain to the institutions that cloud platforms are secure enough and compliant to be implemented extensively. While this was happening, cloud providers started exploring offering solutions that would address specific industries and built even more value for financial organizations.

3.2 Risk analysis

Table 1. Risk Register

Risk ID	Risk Description	Likelihood (High/Medium/Low)	Impact (High/Medium/Low)	Risk Level (Red/Yellow/Green)	Mitigation Strategy
1	Data breaches	High	High	Red	Multi-factor authentication
2	Downtime	Medium	High	Yellow	Multi-cloud strategy
3	Non-compliance	Medium	High	Yellow	Regular compliance audits
4	Data loss	Low	High	Yellow	Pilot testing
5	Vendor lock-in	Medium	Medium	Yellow	Multi-cloud or hybrid strategies
6	Insufficient staff training	Medium	Medium	Yellow	Regular training sessions
7	Cost overruns	High	Medium	Yellow	Monitor usage patterns
8	Security vulnerabilities	Medium	High	Yellow	Conduct API penetration testing
9	Loss of customer trust	Low	High	Yellow	Incident response plan
10	Slow performance	Low	Medium	Green	Regularly monitor and upgrade

The risk associated with a cloud-first strategy in the storage and analysis of financial data is identified and possible risk management

measures are outlined in the risk register tailored for a cloud-first strategy. To better understand each of the risks, it becomes necessary to look at their

implications, likelihood and impact, and then how they might be managed.

Security Risks

In the area of cloud first strategy, one of the biggest threats is that resulted from data leakages through illegitimate means of access. The frequency of this risk is high as well as the consequences, so it proves one's point that exhaustive security should be employed.

Specifically, financial information is one of the most valuable and frequently attacked parameters, thus, MFA, encryption and security audits are obligatory. These procedures are measures in place for a foreseen attack, which maintains the confidentiality and integrity of data.

The other major security risk is Third Party API risk, where weak APIs may lead to exposing core systems to cyber risks. Since functionality in many cloud environments relies on integrations with external APIs, penetration testing and secure API gateways are valuable. From the above vulnerabilities, organizations are able to reduce means by which actors may attempt to exploit them and in effect strengthen their security.

Operational Risks

High availability of cloud services is still seen as a major operational risk, including for the financial industry that often needs its data and services to be always available. Despite having moderate risks, outages have high risk consequences; therefore, adequate risk control measures are required. Several providers are used simultaneously with backup systems actively running, allowing for work to continue despite the problems of a certain provider. Such duplication is essential to ensure that businesses remain afloat, and clients continue putting their faith in them.

Failure to retrieve data because of migration to cloud services is also a challenge in operation. While this makes the occurrence of this risk small anywhere, due to the extreme huge effects it brings about on the financial institutions, then it warrants planning to avoid it. This risk is quite possible and is normally reduced with pilot testing, and backup of data before migration, to prevent loss of important financial data.

Compliance Risks

Lack of compliance is one of the bigger issues for organizations when transitioning to the cloud first model in regards to financial regulations. Challenges such as General Data Protection Regulation, California Consumer

Privacy Act, Payment Card Industry Data Security Standard not only regulate how data is stored and processed but they are the law and financial institutions cannot afford to violate the law.

The risk is named as submitting a medium likelihood and high impact due to penalties as well as reputational losses in case of failing to follow the regulation. Another risk is non-compliance-related issues. In other words, to eliminate this risk good compliance audits every so often and training has to be conducted among other staff.

Vendor lock-in is one of the compliance-related factors of early integration. Moderate in both likelihood and consequences, the over reliance on a single cloud provider could hamper flexibility and create issues regarding compliance to ever evolving regulatory standards. To this end, using multiple cloud providers or a combination of the two means flexibility and reduces reliance on a specific provider making the provider negotiate for better terms with the organization.

Financial Risks

Cloud utilization beyond what was predicted is a critical major financial issue affecting many institutions. Labelled the high likelihood/medium impact danger, this risk originates from the opportunities of unpredictable prices of cloud services.

As a result of having no adequate cost control instruments and usage regulating techniques, financial institutions may surpass the predetermined budgetary costs and thus operational costs may rise. In expense management, usage alerts and budget thresholds are the best ways of practicing cost discipline to eliminate unnecessary expenses.

Customer distrust that occurs in the aftermath of a data breach is still another financial concern. I must admit that such events are rare; however, due to their potential in affecting customer loyalty programs, that also define – to great extent – the companies' reputation, they should not be overlooked. This risk can be managed by the formulation of a good incident response plan and a good communication policy. Therefore, organizations should guarantee the clients that Berkshire security, and meanwhile, correct any deficiency immediately to reduce the long-term cost of a breach.

Organizational Risks

Lack of sufficient training of staff on cloud systems can be considered as a medium likelihood, with a medium impact risk factor that

may delay/improper implementation of the first-moving strategy with regards to the cloud. If organizations do not provide adequate training for their employees, the employees are unable to find their way through new systems and may cause some delays and mistakes may occur. A continuous training programme is necessary to manage this risk since employees need to acquire the adequate competencies for exploiting cloud solutions.

Another organizational challenge is also slow performance because of inadequate bandwidth, with low likelihood and moderate impact. Sparse networks on the other hand results in slow data processing and collection of information thus slow operations. The challenge here is keeping the so introduced network resources within a cloud-first environment well-monitored and timely upgraded.

Strategic Recommendations

In order to mitigate the various risks identified adequately, most financial institutions require an amalgamated strategy. First of all, improving security seems to be the primary goal because threats, such as data leakage and API exploitation, are dangerous. Attention to technologies like cryptography, biometrics, router and firewall protection, combined with awareness campaigns and training sessions, can go a long way to establishing the effective spirit of cyber security within the company.

Second, it states that operational resilience requires improvement due to the absence of multiple cloud providers and insufficient backup systems. Such an approach has been established to be a reliable strategy since it can still run operations even if it encounters service interruptions or migration issues. Furthermore, it is also possible to carry out check trials before

proposing essential changes to evade such problems.

Here, the compliance risks are cyclically audited, proper measurement of the risks is possible only with the help of flexible strategies. This way, the conditions for regulatory compliance can always be met while at the same time remaining scalable, flexible and able to capitalize on the various advantages of cloud services that are currently available.

A way to minimize the risk of getting locked with a particular vendor is to sign contracts with termination terms and contemplating use of multiple vendors or a mix of cloud environments. It is just as important to forecast costs and, consequently, to control them in order to avoid sanctions related to customer trust breakdown.

Sophisticated cost control instruments and setting cost constraints will assist to manage costs, while showing integrated Incident plans will effectively moderate Customers' trust affected by data loss. This paper posits that increasing organizational learning is a key approach to managing risks within an organisation. Offering training and tools to your employees guarantees they'll be ready to integrate the challenges of cloud systems and therefore driving the success of a cloud-first strategy.

The risk assessment of the risk register also reveals intricate issues surrounding the cloud first approach to containing financial data and computations. Some security, operational, compliance, financial, and organizational risks and opportunities of cloud computing in financial institutions are discussed below. In other words, various proactive actions, accurate strategies, and the ability to make constant improvements make the cloud-first approach possible for an organization to succeed in.

3.3 Cloud adoption trends

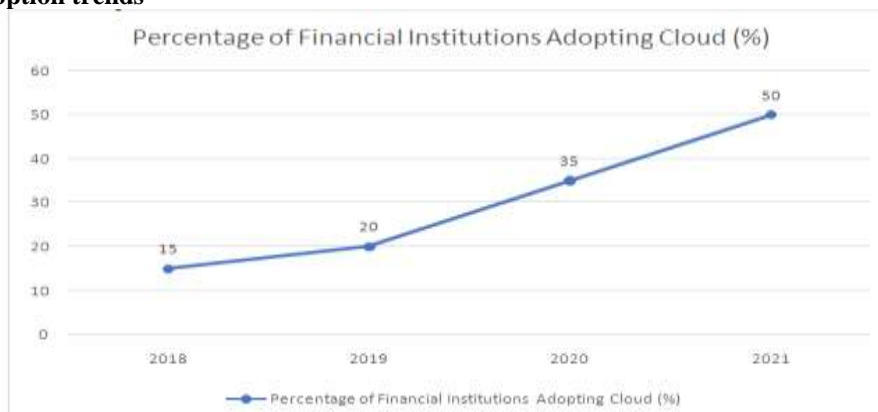


Figure 2. Financial Institutions adoption trend

The line chart on the usage of cloud solutions and services reveals the growth of using cloud technologies in the financial institutions. As for 2018, the penetration of cloud services was quite low: only 15% of the total number of

institutions offered such service. But, a sharp increase can be seen between 2019 and 2021, as organizations almost tripled their use, thanks to the Covid-19 forcing organizations to go digital.

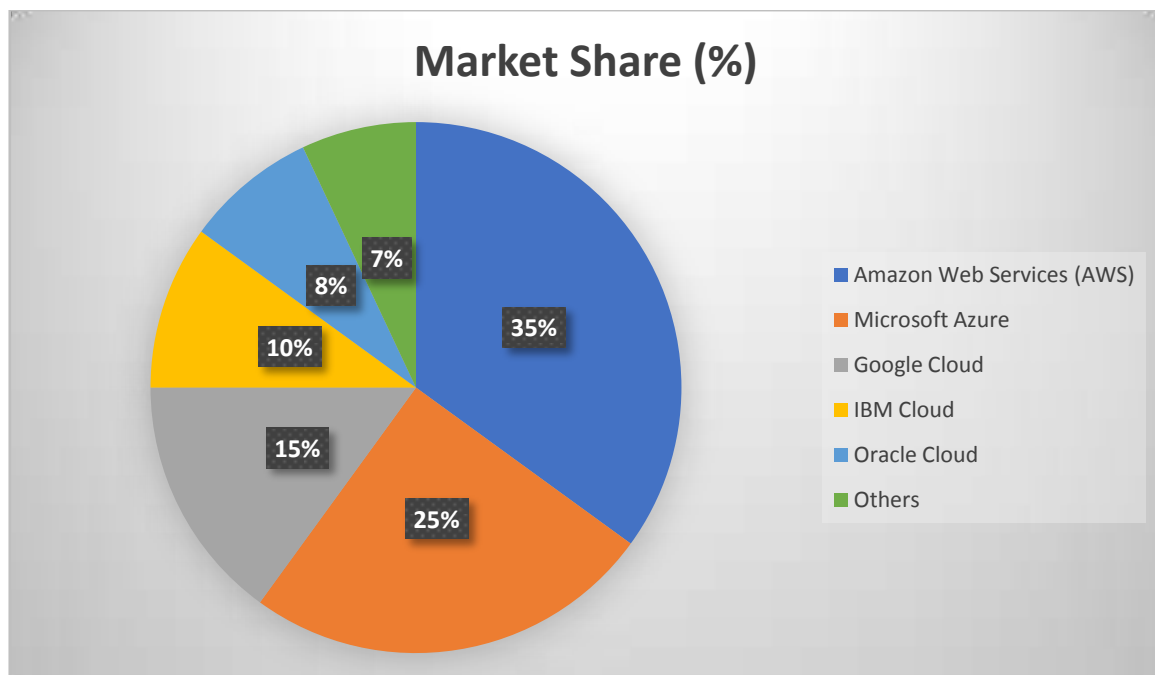


Figure 3. Market share of service providers

AWS stands at 35% for the same emphasizing the incumbency it enjoys owing to responsive and diverse service portfolio. Microsoft Azure is the second biggest player today, taking 25% of the market due to its tight connection with Microsoft's business platforms. 15% associate themselves with Google Cloud that has strong accents on analytics and Machine Learning, and is eligible for data-oriented organizations.

IBM Cloud and Oracle Cloud make 18% altogether, which means that the key markets are AI and database products. The rest 7% consists of other smaller providers who are addressing more niche markets' requirements. Such distribution emphasizes the need to observe provider selection according to the tactical concerns of financial organizations while minimizing position dependence.

IV. CONCLUSION

The findings stress the trans positive nature of cloud-first approaches to manage and process financial data. Cloud migration has become a trend in financial institutions due to reasons like; scalability, efficiency, and enhanced operational

flexibility. However, making the change in switching from one country to another is not free from dangers.

The emerging threats that need to be managed effectively include data loss, regulatory compliance, service disruptions, and technical lock-in solutions addressed by employing drastic security mechanisms, multi-cloud solutions, and compliance with the dynamic regulation systems.

The focus is put on the market characteristics that can involve AWS, Microsoft Azure, and Google Cloud being key market players. Hybrid cloud providers deliver numerous options that can benefit institutions, but they must first identify needs specific to their organization to secure the most while minimizing the risk.

The upward adoption trends and lessons from the tools such as the risk register suggest that a cloud first approach, if done right, provides unparalleled opportunity for firm growth and more importantly, firm survivability.

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