

RISK MANAGEMENT IN CLOUD BANKING

¹ Reena Raj

¹ Research Scholar

¹ MGR College, Hosur – 635 130

Abstract : Cloud computing is a technology used for storing the data over the internet. It helps the financial sector in many ways such as cost saving, greater scalability and flexibility, agility and managed backup. The major players in the cloud space are Google, Amazon and Microsoft. Despite its many advantages, cloud technology may expose banks to operational risks in respect of information security, business continuity, control and command of IT assets etc. Most of these risks are due to the specific characteristics of the technology and these technologies are developing and the information security tools are not necessarily mature. Banks need to manage the risk associated cloud services and also take preventative steps to mitigate them. Bank executives' need to remember that cloud computing is a journey and not a destination. Cloud will be viewed less as an option and more as a business imperative by the banking industry in no matter of time.

IndexTerms- Cloud, Cloud service providers, risk management.

I. INTRODUCTION

Cloud computing is a technology used for storing the data over the internet. In simple terms, cloud is a style of computing based on the Internet that allows customers to pay for exactly the resources and infrastructure they use. Its characteristics include lack of an up-front capital requirement, shared service delivery over the Internet and pay for use.

Wikipedia defines it: "Cloud computing is Internet-based computing, whereby shared resources, software and information are provided to computers and other devices on demand, like the electricity grid."

Cloud computing involves the delivery of various computing services like servers, storage, database, networking, software, and analytics. These services are provided by companies called as cloud providers and charge for the services they provide based on usage. This latest facility has become a boon to the banking and financial institutions as cloud computing has reduced their burden like interoperability, secure storage, 24*7 uptime etc.

Cloud computing is a computing that uses data stored on an external server, accessed via the Internet. It's defined as ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.¹ It is an evolutionary result of the improvements in digital networks and computing speed over the last decades. Banks use cloud computing for various purposes like card and mobile payment processing, online banking, electronic bill paying, human resource and talent management. It helps the financial sector in many ways such as cost saving, greater scalability and flexibility, agility and managed backup. The major players in the cloud space are Google, Amazon and Microsoft.

1. Service Models Offered By Cloud

Cloud computing offers services in three main forms:

(a) Software as a Service (SaaS)

It is a cloud service that is used for delivering software applications over the internet on demand and typically on a subscription basis. Most of the services provided under this method are end-user applications like accounting, customer relationship management, enterprise resource planning, invoicing, human resource management.

(b) Infrastructure as a Service (IaaS)

This service provides access to networking features, computers and data storage space. The clients can rent IT infrastructure which may be in the form of servers, networks, virtual machine storage, operating systems through IP-based connectivity.

(c) Platform as a Service (PaS)

Under this model, the cloud providers offer a computing platform which can be accessed through web browsers which could be an operating system, programming language execution environment, database or webservers.

2. Advantages of Cloud banking

- **Reduced Costs:** Banks are relieved of the costs incurred in hardware and software at data centers. They can focus more on the core banking functions.
- **Highly flexible:** Cloud computing enables the bank to respond quickly to technology, market changes and customer needs.
- **Faster Customer service:** It relieves the bank from the unnecessary time involved in stacking the data. Each task in the bank is handled by the software through cloud computing. Hence, it increases the productivity of the bank.
- **Good relationship between customer and bank:** The unlimited computing power allows the banks to develop systems that can provide better services to the customers.
- **Reliability:** Cloud computing gives a complete data backup to information which can be accessed at multiple redundant sites easily. The data saved in the cloud is encrypted which eliminates the security threats.

3. Risks Involved In Cloud Computing

Despite its many advantages, cloud technology may expose banks to operational risks in respect of information security, business continuity, control and command of IT assets etc. Most of these risks are due to the specific characteristics of the technology and these technologies are developing and the information security tools are not necessarily mature. The commonly found limitations are:

1. Secrecy and Privacy: When the client entrusts his personal data, the banks are required to ensure security and confidentiality of data.
2. Downtime outages: This is due to the disconnection from the internet. Banks incur huge losses if there is disconnection even if there is a disconnection for a few minutes.
3. Loss of data: If any data is lost, it may create huge financial and legal impact on the banks.
4. Vulnerability: The system is vulnerable to cyber-attacks which could affect the internet domain name servers, prevent access to clouds or directly affect cloud operations.
5. Migration of the system: Finance being one of the most regulated industries, banks fear to migrate their system into the cloud. Banks face unique problems when giving data, processes and application to third party cloud providers.
6. Cyber Security: Fearing the security of the data, many banks are hesitating to have a third party as a cloud provider for storing their data.
7. Data location: If the cloud providers are in other countries, the banks may be reluctant to store data with them due to strict regulations in their countries.
8. Risk in outsourcing: Since it is a third party service, banks have the risk of surrendering control over their operational, procedural, security and privacy terms.
4. Delay in migration: Most of the banks face delay in migrating to the cloud. Where an average project takes around 15 months, larger banks may take more time in migrating.

Risk Management in Cloud Banking

Despite the benefits and popularity cloud computing brings alone, it is still a cause of worry to the top executive in banks about the risks, current IT investment and the cost of writing off. Since security is a major concern, cloud computing providers are investing in capabilities that will allow them to adhere to higher standards of security and data protection. Banks need to consider the following points before adopting cloud computing.

1. Security and Privacy
The primary concern of any bank is to address the security and privacy risk which can be mitigated by implementing standards and best practices of security such as ISO27001, ISO27017, ISIRI cloud security framework for bank etc. In order to mitigate data sovereignty risks, banks should perform due diligence on cloud service providers (CSP) and physical region for storing data and virtual services to mitigate data sovereignty risks.
2. Interoperability and portability
To reduce the risk of vendor lock-in and provide flexibility for switching applications and data from CSP to another, the banks should have the capacity to migrate from one CSP to another.
3. Reliability and availability
Even though the capability of cloud is to have near 100 percent reliability and availability there could be breakdown of services due to power failure and other reasons. Banks should evaluate the service level agreement for durability and availability and authorize the redundancy levels of CSP.
4. Regulatory compliance
Banks should ensure that the cloud service providers are accredited with valid certification to address the regulatory requirements. They should also adhere to RBI recommendations.
5. Performance
Since network is a key component to access resources in public cloud, banks need to evaluate the performance from network, application and data retrieval aspects. They should also look at encrypting the traffic over the network between on-premises data center and cloud service provider location.

II Indian Banks and Cloud Computing

Banking industry has tremendous potential for growth due to its huge unbanked population. The recent financial inclusion schemes introduced by the Government like PradhanManthriDhan Jan Yojna (PMDJY) have helped majority of this section of population to enter the financial main stream. With these growth opportunities in the banking sector, Indian Banks need not only to accommodate the influx but also to provide better services to the customers.

Earlier, Indian banks had been quite conservative about cloud computing. Security issues and regulatory compliance have been the biggest blockades. Indian banks were reluctant to adopt cloud due to concerns about storing the sensitive financial data on global data centers outside India.

Security of data is not a big concern when established policies, standards and technology are in place now. Another major concern for the Indian banks is the strict compliance to guidelines with respect to cross border flow of banking data and geographical location of data centers. Earlier, most of the cloud data centers were located outside India. But now, this scenario is changing with many industry majors introducing data centers in India. Microsoft, IBM and Amazon Web services have already launched their data centers in India.

In recent years, cloud computing has been gaining momentum in the Indian financial markets. In 2014, Microsoft Azure has become the cloud service provider for ICICI Lombard which migrated its test and development environment for 17 key applications. The Microsoft cloud infrastructure has been adopted by HDFC Bank, ICICI Lombard, IDFC, and Kotak Mahindra Bank. Vertical cloud solutions like SaaS (software as a service) is being widely used in financial services in Indian

banks. National Bank for Agriculture and Rural Development (NABARD) has led one of the biggest IT transformation by enabling banking operations of 201 state and district co-operative banks to a single cloud- based core banking solutions. This facility has enabled the rural customers to access banking facilities such as SMS notifications, branch banking, NEFT, RTGS and access to ATMs. The new licenses Small Finance Banks and payment banks are using cloud computing for their core and surround banking solutions which enables them not only to reduce their capital expenditure but also aiding in flexibility to scale the infrastructure in future based on the growth of the business.

III Risk Mitigation Strategies for Cloud

Banks need to manage the risk associated cloud services and also take preventative steps to mitigate them. They should take the following steps to assess and mitigate the risks of cloud computing.

- (a) Assess the appetite for risk in the cloud
The banks need to understand their appetite for risk. Banks with conservative risk appetite may decline profitable but highly uncertain loans.
- (b) Use of Zero trust models to reduce risk
Zero test is an IT strategy where a user or system has to be validated before connecting to tis systems. The cloud service providers provide logical access to the minimum set of rights in line with job function requirements.
- (c) Learn from IT failures in the news
Banks need to learn from the industry news related to cloud failures which could help them to mitigate their risks. There are many high profile incidents going wrong due to the complex nature of cloud and each incident could be a lesson.
- (d) Rethink avoidance as a risk mitigation strategy
Banks should realize that hacking and security are not the only risk to consider in cloud computing. Cloud has changed the business and operating paradigm for many organizations.

IV CONCLUSION

Banks which have adopted cloud computing are able to improve profitability and also transferring their customer engagement model. Cloud computing enables the banks to cut down the cost by providing unlimited software and hardware resources on a “pay-as-you-go basis over the internet. Banks are able to respond quickly to changing market customer and technological needs. Bank executives’ need to remember that cloud computing is a journey and not a destination. Cloud will be viewed less as an option and more as a business imperative by the banking industry in no matter of time. Security being a serious concern, banks can also opt for private cloud for sensitive data through which banks can accrue the benefits of security. Banks on cloud computing are better prepared to face economic uncertainties, environmental changes and shift of customer expectations.

REFERENCE

- [1] MrunalModak, Anil Walke, (2013), Issues Faced By Banking Sector In The World Of Cloud-Based Computing To Achieve High Performance: A Survey, International Journal of Advances In Computer Science and Cloud Computing, ISSN: 2321-405, Volume- 1, Issue- 1, May-2013.
- [2] AbdelrafeElzamly, BurairahHussin, Samy Abu Naser, Khalid Khanfar, Mohamed Doheir, and Ali Selamat, Abdullah Rashed (2016) “A New Conceptual Framework Modelling for Cloud Computing Risk Management in Banking Organizations” International Journal of Grid and Distributed Computing Vol. 9, No. 9 (2016), pp.137-154.
- [3] BogdanNedelcu, Madalina-Elena Stefanet, Ioan-FlorentinTamasescu, Smaranda-Elena Tintoiu, AlinVezeanu (2015) “Cloud Computing and its Challenges and Benefits in the Bank System” Database Systems Journal vol. VI, no. 1/2015 45-58.
- [4] Supervisor of Banks: Proper Conduct of Banking Business (07/17) [1] Cloud Computing Page 362-1Directive 362— Cloud Computing
- [5] Dou El KefelMansouri, Mohamed Benyettou, A study of risk management in cloud computing bank, University of sciences and technologies Mohamed Boudiaf, USTO Oran, Usto, Algeria.
- [6] David Vohradsky, Cloud Risk—10, Principles and a Framework for Assessment CGEIT, CRISC ISACA Journal, Archive 2012, Vol 5.
- [7] FilipBlazheski, Banking Analysis Cloud banking or banking in the clouds? (2016), BBVA Research, US Economic Watch (2016).
- [8] FAQs on cloud adoption for Indian Banks, ‘Overview, Technology, Risks and Challenges, Institute for Development and Research in Banking Technology, IDRBT Publication Aug 2017.