

# A Review on Distributed Systems and Online Banking

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**Abstract:** *In today's world of new emerging technologies, almost all the enterprises are depending more on internet for better businesses. Every one of us are moving towards the internet applications for our day-today needs, which helps internet to become more popular. Due to the emergence of online banking it become one of the main opponents to traditional banking. But in other hand it also has given more opportunities to traditional banking. In this rapidly developing world banking is a necessity, but also takes a lot of our time from our busy life. Depending on a bank branch, ATM or paying bills by cheques and mailing them out, and balancing cheque books are so much time consuming. Internet banking reduces almost all of these steps to few touches which saves a lot of time and money. Today online banking or internet banking become a powerful tool for all banks in order to gain new customers and to eliminates all the costly paper works and physical work. Now online banking is an increasingly competitive banking area.*

**Keywords:** Distributed Systems, Online banking, Key drivers, Distributed banking, Database Management System (DBMS).

## 1. Introduction

A distributed system is a system which contain a number of nodes which don't have any physical connection but linked together using a network. All the different nodes in the system communicate with each other and handle the processes in tandem. A small part of the distributed operating system software is contained in each of the nodes. Nodes in the distributed system can be arranged in the form of either client/server systems or peer to peer systems.

All banks must be able to access a customer's information from any branch in a fast manner. The requested information can be checking account balance, checking loan amounts, and checking credit card status. Distributed database system can separates business's data by business function or based on a geographical area. Now a days almost most of the banks use distributed database systems, because these systems are designed in a way to carry out specific business tasks in various locations while allowing these locations to make communication freely with each other. These type of systems offers many advantages over non distributed systems.

Today, the banking and financial markets have been totally changed due to the environment and globalization changes and competition of business services. Net Banking or Internet Banking is used to describe banking transactions through internet application. But there are many security issues like fake websites, fraudulent emails from banks, capturing user IDs and passwords, hacking personal bank accounts and ATM cards etc. In internet banking security and authentication of individuals is necessary. It has been improved by using bio metric verification techniques like fingerprints and with SMS service.

In today's time of emerging technologies, most of the banks and financial organizations are depending more on internet

for better businesses. In these days people are rushing towards e-commerce applications for their day-today needs, which makes the internet and internet banking more popular. With the arrival of online banking it gives both an opportunity and a challenge to traditional banking. In this fast growing world banking is inevitable, which consumes a lot of time and effort from our busy schedule. Visiting a branch of a bank or going to ATM's or paying bill by paper cheque and mailing them out, and balancing cheque books are all time consuming processes. By using online banking we can automate almost all these tasks, saving time and money. Currently for all banks, online banking become one of the most powerful tool to gain more customers while it also helps to eliminate costly paper works and manual teller interactions in an increasingly competitive banking environment. Financial institutions have spent generations for gaining trust of their customers. These days it is widely accepted that the information technology revolution will have a profound effect on the conduct of how business will be done as we move towards the new millennium. One of the most important. One of the most important developments in this area has been explosion of internet banking activity on the internet. By increasing in internet connectivity at an average of 10 cent per month, Internet proof to offer commercial business with more opportunities.

## 2. ROLE OF DISTRIBUTED SYSTEMS IN ONLINE BANKING

By the passage of time working of banks has been changed. Now the controlling hand is customer rather than bank. The new business model changes the traditional business transformation. In order to do this banking needs cloud computing that offers a business model that delivers innovative customer experiences, effective collaboration,

enhanced the speed to market. Online banking is a platform for optimizing the banking operations while delivering the innovative services to all the customer. Most of the banks are adopting this technology for the fast growth. In this paper, we have discussed the benefits of internet in banking sector over the traditional tedious process of banking. In above we also discussed the challenges associated with the present banking system and provide cloud as a solution with the various benefits of it. Also we explore the various applications that helps banks to increase the performance of the banking industry and gain agility.

A database management system or in short DBMS that used by banks in order to store financial data in a central location can be vulnerable to down time. Sometimes the central location may be inaccessible because of the problems in communication infrastructure, natural disaster or malicious attack. By using distributed system it lets banks access the data or information they need at any time, regardless of the up time status of a central system or a server. The main advantage of using a distributed database management system it allows banks to reroute their information requests around the inaccessible location to another site or server.

One of the main plus point of using a distributed database management system is that it relies on multiple processors distributed throughout the network. This distributed nature of the network possible to each of the processors to take part on the data access chores, rather than depending on a single processor to manage all the requests at once. This distributed system allows banks to access the data they require faster and more reliably than using a centralized database system.

When we implement distributed database management system in online banking it allows each bank branch to have its own copy of the latest customer data. By having the latest data of each customer's account allows the bank to record and process each transaction locally, rather than sending it to a central server. The ability of banks to process transactions locally reduce communication cost and time. If any problems occurs with any local system, it can be deals at the local level that also saves money and time.

When we use a centralized database management system it often lacks the flexibility to handle sustainable growth. When a centralized system needs to be expand its capabilities, then the banks have to afford new equipment, upgrade software or have to do both of this. But when banks use distributed database management system it supports modular growth. When a bank expands to more geographical areas or offers new banking services, then database managers can add new features to the existing distributed database system without affecting the existing system's functions

### 3. Key drivers for online banking

- **Globalization:** Today we are in the era of globalization. Multinational organizations worldwide have adopted globalization as their first tactical choice. Progress in technology has facilitated globalization too. Same holds factual for bank trade. Industrial progress, changes and innovations have always leveraged the values of mankind. By increase in globalization it also affects online banking sector or online financial sector in a positive way. By the arrival of online it gives a new magnitude to the world. It also changes the accessibility of trade. During the last two decade Information Technology (IT) has been a major dynamic force of world economies. Today the

world has factually shrunk to become a "global village".

- **Rapid growth of internet:** The growth of internet drastically increased in the last decade compared to the past decades. Today each person have access to internet. This helps in increasing the popularity of online banking. This give users more power in all the financial sectors.
- **Pace of technology change:** In the past few years the pace of technologies changes increases. Each technology become outdated within few years. Because of the fast development of technologies online banking also become more reliable and accessible.
- **Customer's perceptive:** All the above mentioned key drivers result in change of customer's perspective. By the passing of time, due to the growth of internet and increased financial transactions changes the mind of customers. Toady rather than going to a physical branch of a bank or visiting an ATM customers prefer online banking. So customer's perspective is also a key driver for the growth of online banking.

### 4. Online banking operation overview

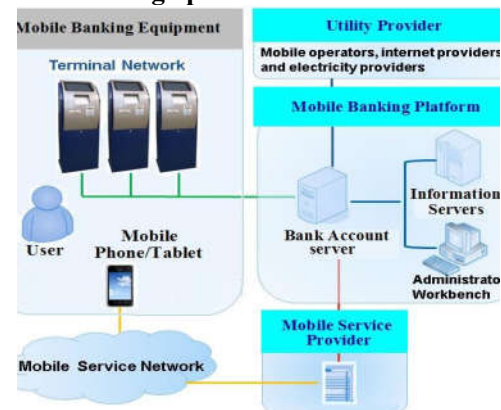


Fig 1

Online banking is a service that offered by banks or financial organizations to customers in order to conduct financial transactions with the help of internet and devices like mobile phones, laptop or personal computers etc. The architecture of online banking through mobile banking is shown in figure 1 that shows the main functional components, their roles and needs within the system. The mobile phone which is equipment is what is at the end-user's hand to access the information and services provided by the banks through the system. The online banking application in the mobile displays the menu and performs different operations in secure and short message creation and transmission based on customer's selection. The mobile banking system can be split into two different functional blocks that is separated and operated by the service providers and the network providers. In mobile banking the mobile banking platform sends the short messages received from the mobile device into conformant commands of a selected banking protocol. Multilevel dialog supports the interaction between user and service provider systems. The banking support is provided by the account server which is a part of the system. The bank account server receives the instructions to provide the important functions to be performed on the bank accounts and transfer the result and status back to the mobile banking platform. This platform supports communication with other

servers, like Internet Information Servers. All these participate in the environment and contribute other services and information to improve the service offering to the customers.

Some of the banks provides several other services to the customers besides viewing account balances and detailed account history, they are transferring money between accounts, pay bills, cheque exchange rates and use the built-in currency calculator, receive secure messages from the bank and send requests from the mobile devices.

### 5. Advantages and Disadvantages

It is very important that a bank must be able to access any customer's information from any branch of the bank at a moment's notice. This information requests can consist checking account balances, loan amounts and credit status. By using distributed database system separates any business data by business function or geographical area. Banks and financial organizations often use distributed database system, because these type of systems are configured to carry out specific business tasks in many different geographical locations while allowing these locations to freely communicate with each other. These type of systems offers banks several advantages over non distributed systems.

#### 6.1. Advantages

- **Longer Uptime:** Banks and financial organizations use distributed system instead of centralized system there is a less chance to stop the banking services when a server goes down. In centralized database system all data is stored in a centralized location so it is vulnerable to downtime. But in distributed database system the data is spread across different databases. So it is less vulnerable to any kind of faults.
- **Faster performance:** By depending distributed database system the data is spread across different sites or servers. Due to this the banking transaction becomes more faster.
- **Lower costs:** A distributed database system distribute all the data among different servers or sited so when a new data is entered in one branch of a bank the data will be available to all the other branch of the banks. There is no need of human interventions required in it. This will saves a considerable amount of money.

#### 6.2. Disadvantages

- **Complexity:** The main problem of implementing distributed database system in online banking is that the data may be replicated among different servers. So this replication have to be hide from customer's this is one of the difficult task and huge disadvantage.
- **Security:** In distributed system it uses internet as a medium to connect all the different nodes together. With the use of internet there will be considerable security issues have to be addressed like hackers. This security issue can be overcome by providing more advanced security features to customers by banks.
- **Integrity control more difficult:** Database integrity refers to the validity and consistency of stored data. Integrity is expressed in terms of constraints, which are consistency rules that the database is not permitted to violate. Enforcing

integrity constraints generally requires access to a large amount of data that defines the constraints. In a distributed DBMS, the communication and processing costs that are required to enforce integrity constraints are high as compared to centralized system.

### 7. Conclusion

Online banking is changing the banking trade and is having the majoreffects on banking relationships. The net banking, thus, "now are more of a norm rather than an exception in many industrial countries" due to the fact that it is the cheap way of providing banking trade. Banking is now no longer restricted to the conventional brick and mortar twigs, where one has to be at the branch in person, to withdraw money or deposit a cheque or request a statement of accounts. There is need to scan and analyze the market and respond to the needs of customers and to generate awareness regarding advantages of online banking.

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