

Chapter 1

Introduction

1.1 Branch Operation and Core Banking

A branch operation means any business operations of a branch. Branch banking is a system of providing banking services through different offices of a bank that acts as the head branch. The idea is to expand the bank's business to cater to different locations and provide services to all its customers.

- Branch banking is a system of providing banking services through different offices of a bank that acts as the head branch. The idea is to expand the bank's business to cater to different locations and provide services to all its customers.
- The branch office will offer all the services that are offered by the main branch. The main branch controls the operations of the branch office.
- Each branch has a manager who is responsible for managing all the activities of that branch.

Account Opening

A bank branch consists of a staff who can guide you in choosing the account type that suits your needs. You will need to fill an account opening form with your details. For opening a current or savings account, you will usually need to deposit some money into the account.

Accepting Deposits

Another important function of branches is to accept deposits from the public, safeguard those deposits and provide interest on them. The different kinds of deposits are:

1. **Term deposits** refer to deposits made for a fixed period. The account holder won't be allowed to withdraw his money till the date of maturity. The interest rate on a term deposit is slightly higher than the interest rate on a savings account.
2. **A recurring deposit** allows us to invest a certain sum of money every month. We are free to choose the deposit's tenure and the monthly deposit amount based on our convenience. This account type is tailor-made for salaried individuals.

Lending

An important branch banking job involves offering loans to customers based on their needs. It provides loans to customers up to a certain limit with some interest charged on it. The customer has to repay the loan amount along with interest in the form of monthly instalments. Banks also lend money to businesses in the form of short-term loans and long-term loans.

Fund Transfer

A fund transfer is the movement of funds from one person to another through the banking system. Apart from the electronic transfer of funds, you can also transfer money from one account to another by check.

Keeping Your Money Safe

Safeguarding public wealth is another important function that a bank performs. Banks also provide a safe deposit locker facility. Customers can use them to store their valuables, gold, documents, and other things.

Demat Services

Opening and maintaining a Demat account (dematerialization account) is also a function of branches. The purpose of the account is to hold the shares and securities in an electronic format. A Demat account allows you to buy shares and keep track of your investments online.

CORE banking stands for Centralised Online Real-time Exchange. The back-end process connects all bank branches to a central server in core banking. It connects multiple branches of the same bank together to deliver operations like loan management, withdrawals, deposits and payments in real-time. CORE banking gives customers additional flexibility to do any bank transaction from anywhere.

1.2 Advantages of core banking

- It provides people, corporations, and companies with online/net banking services.
- It allows you to do financial transactions from anywhere in the world.
- People save time by not going to a bank branch to withdraw or deposit money.

- You can conduct all of your financial transactions in real-time.
- It gives you the convenience to open/close accounts, service loans, and process cash online, among other things.
- It's all about technology, innovation, and adapting to changing circumstances.

Types of core banking

The core banking system, which is about software processes, has two types. The first is the **traditional/legacy core banking system**, which most banks use today. The **next-generation cloud-based core system** is the second type.

The legacy core system is far more dependable and has a lower failure rate. This is because it's built to handle large numbers of real-time transactions, compute interest rates, and process currency, among other things. As a result, it is faster and has fewer outages due to regulatory repercussions.

The cloud computing solution for banks is extremely adaptable and is gaining steam in the financial industry. It is cost-effective and allows a bank to scale up or down its cloud services as market demand dictates.

1.3 Introduction and Evolution of Bank Management

A bank is a financial institution which accepts deposits, pays interest on pre-defined rates, clears checks, makes loans, and often acts as an intermediary in financial transactions. It also provides other financial services to its customers.

Bank management governs various concerns associated with bank in order to maximize profits. The concerns broadly include liquidity management, asset management, liability management and capital management.

Origin of Banks

The origin of bank or banking activities can be traced to the Roman empire during the Babylonian period. It was being practiced on a very small scale as compared to modern day banking and frame work was not systematic.

Modern banks deal with banking activities on a larger scale and abide by the rules made by the government. The government plays a crucial role with its control over the banking system. This calls for bank management, which further ensures

quality service to customers and a win-win situation between the customer, the banks and the government.

Scheduled & Non-Scheduled Banks

Scheduled and non-scheduled banks are categorized by the criteria or eligibility setup by the governing authority of a particular region. The following are the basic differences between scheduled and nonscheduled banks in the Indian banking perspective.

Scheduled banks are those that have paid-up capital and deposits of an aggregate value of not less than rupees five lakhs in the Reserve Bank of India. All their banking businesses are carried out in India. Most of the banks in India fall in the scheduled bank category.

Non-scheduled banks are the banks with reserve capital of less than five lakh rupees.

Evolution of Banks

Banking system has evolved from barbaric banking where commodities were loaned to modern day banking system, which caters to a range of financial services. The evolution of banking system was gradual with growth in each and every aspect of banking. Some of the major changes which took place are as follows –

- Barter system replaced by money which made transaction uniform
- Uniform laws were setup to increase public trust
- Centralized banks were setup to govern other banks
- Book keeping was evolved from papers to digital format with the introduction of computers
- ATMs were setup for easier withdrawal of funds
- Internet banking came into existence with development of internet

Banking system has witnessed unprecedented growth and will be undergoing it in future too with the advancement in technology.

1.4 Growth of Banking System in India

The journey of banking system in India can be put into three different phases based on the services provided by them. The entire evolution of banking can be described in these distinct phases –

Phase 1

This was the early phase of banking system in India from 1786 to 1969. This period marked the establishment of Indian banks with more banks being set up. The growth was very slow in this phase and banking industry also experienced failures between 1913 to 1948.

The Government of India came up with the banking Companies Act in 1949. This helped to streamline the functions and activities of banks. During this phase, public had lesser confidence in banks and post offices were considered more safe to deposit funds.

Phase 2

This phase of banking was between 1969 to 1991, there were several major decisions being made in this phase. In 1969, fourteen major banks were nationalized. Credit Guarantee Corporation was created in 1971. This helped people avail loans to set up businesses.

In 1975, regional rural banks were created for the development of rural areas. These banks provided loans at lower rates. People started having enough faith and confidence on the banking system, and there was a plunge in the deposits and advances being made.

Phase 3

This phase came into existence from 1991. The year 1991 marked the beginning of liberalization, and various strategies were implemented to ensure quality service and improve customer satisfaction.

The ongoing phase witnessed the launch of ATMs which made cash withdrawals easier. This phase also brought in Internet banking for easier financial transactions from any part of world. Banks have been making attempts to provide better services and make financial transactions faster and efficient.

1.4.1 Present Structure

The current banking framework in India can be broadly classified into two. The first classification divides banks into three sub-categories – the Reserve Bank of India, commercial banks and cooperative banks.

The second divides the banks into two sub-categories – scheduled banks and non-scheduled banks. In both of these systems of categorization, the RBI, is the head of the banking structure. It monitors and holds all the reserve capital of all the commercial or scheduled banks across the nation.

Commercial banks are the foundations that receive deposits from individuals and enterprises and lend loans to them. They generate credit. Commercial banks in India are regulate under the Banking Regulation Act of 1949. These banks are further categorized as –

- Scheduled banks
- Non-scheduled banks

Scheduled banks are banks which are listed in the 2nd schedule of the Reserve Bank of India Act, 1934. Non-scheduled banks are those banks which are not listed in the second schedule of the Reserve Bank of India Act, 1934.

Scheduled Banks

In India, for a bank to qualify as a scheduled bank, it needs to meet the criteria as underplayed by the Reserve Bank of India. The following is a list of the criterions

- The banks should carry all their business transactions in India.
- All schedule banks are bound to hold a capital of not less than rupees five lakhs in the Reserve Bank of India.
- In the year 2011, five lakhs rupees calculated in terms of dollars amounted to \$11,156.

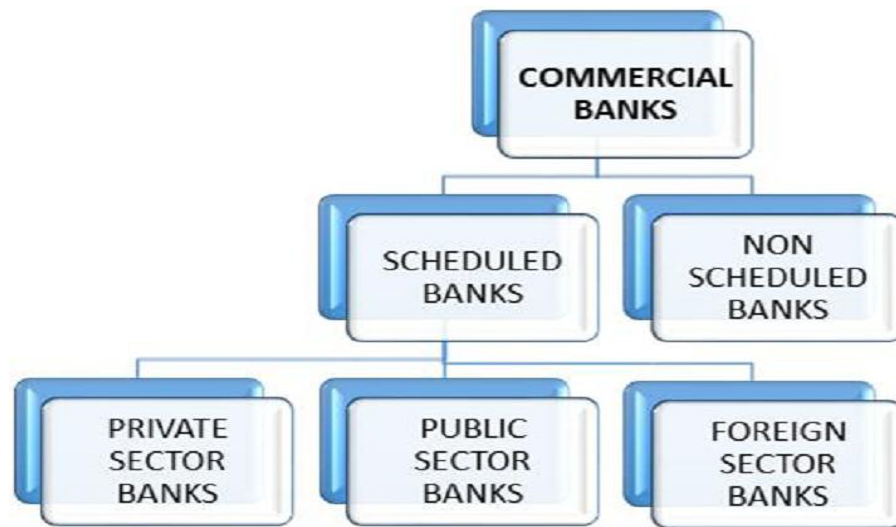
Thus, any commercial, cooperative, nationalized, foreign bank and any other banking foundation that accepts and satisfies these set conditions are termed as scheduled banks but not all schedule banks are commercial banks.

The scheduled commercial banks are those banks which are included in the second schedule of RBI Act, 1934. These banks accept deposits, lend loans and also offer other

banking services. The major difference between scheduled commercial banks and scheduled cooperative banks is their holding pattern. Cooperative banks are registered as cooperative credit institutions under the Cooperative Societies Act of 1912.

Scheduled banks are further categorized as –

- Private-sector banks
- Public sector banks
- Foreign sector banks



Private-Sector Banks

These banks acquire larger parts of stake or congruity is maintained by the private shareholders and not by government. Thus, banks where maximum amount of capital is in private hands are considered as private-sector banks. In India, we have two types of private-sector banks –

- Old Private-Sector Banks
- New Private-Sector Banks

Old Private-sector Banks

The old private-sector banks were set up before nationalization in 1969. They had their own independence. These banks were either too small or specialist to be incorporated in nationalization. The following is a list of old private-sector banks in India –

- Catholic Syrian Bank

- City Union Bank
- Dhanlaxmi Bank
- Federal Bank ING
- Vysya Bank
- Jammu and Kashmir Bank
- Karnataka Bank
- Karur Vysya Bank
- Lakshmi Vilas Bank
- Nainital Bank
- Ratnakar Bank
- South Indian Bank
- Tamilnadu Mercantile Bank

From the above mentioned banks, the Nainital Bank is an auxiliary or branch of the Bank of Baroda, which has 98.57% stake in it. A few old generation private-sector banks merged with other banks. For example, in the year 2007, Lord Krishna Bank merged with Centurion Bank of Punjab. Sangli Bank merged with ICICI Bank in 2006. Yet again, Centurion Bank of Punjab merged with HDFC in 2008.

New Private-sector Banks

Banks which started their operations after liberalization in the 1990s are the new private-sector banks. These banks were permitted entry into the Indian banking sector after the amendment of the Banking Regulation Act in 1993.

At present, the following new private-sector banks are operational in India –

- Axis Bank Development
- Credit Bank (DCB Bank Ltd)
- HDFC Bank
- ICICI Bank

- IndusInd Bank
- Kotak Mahindra Bank
- Yes Bank

In addition to these seven banks, there are two more banks which are yet to commence operation. They got the 'in-principle' licenses from RBI. These two banks are IDFC and Bandhan Bank of Bandhan Financial Services.

1.5 Committee Reports

The C Rangarajan Committee was formed to Review the Poverty Measurement Methodology presented its report to Union Planning Minister Rao Inderjit Singh. The report dismissed the Tendulkar Committee's estimate of India's poverty rate.

The Rangarajan committee estimation is based on an independent large survey of households by Center for Monitoring Indian Economy (CMIE). It has also used different methodology wherein a household is considered poor if it is unable to save. It was constituted by the government in 1993 for making recommendations in context with the disinvestment.

As per the report submitted by C Rangarajan Committee: Persons spending below Rs. 47 a day in cities should be considered poor, much above the Rs. 33/day mark suggested by the Suresh Tendulkar Committee. The Rangarajan Committee recommended that extending outreach on a scale envisaged under NRFIP would be possible only by leveraging technology to open up channels beyond branch network. Adoption of appropriate technology would enable the branches to go where the customer is present instead of the other way round.

1.6 Technological Impact in Banking Operations

Banking is the backbone of the economy for any country, including India. The banking industry of India is prolife rating along with increased customers base due to the improved and innovative **IT support** which have made the operations faster. Do you remember the banking process before information technology was induced in it? Well, that is history now. Probably the process which takes just a click to get complete now used to take months after months to reach the final step.

Thus, there is no doubt that IT security has brought the revolution in the banking sector of India. In today's era, we can't think our banking system without IT. Taken from enhancing the efficiency of the banking system to lowering the response time, the

information technology is playing the role of the new catalyst for the improved economy for a decade.

Some of the IT devices used in the Banking Sector:

The banking sector is going through a rapid transformation to meet the competition and challenges of the time. Needless to say, the **IT security** is the new differentiator in the performance of the banks. With the latest devices, technology has provided a new framework for the banking sector to cut the cost of global fund transfer.

Here is some of the information technology devices used in the banking sector:

- **Electronic Payment and Settlement System:** This is the most common media for clearing interbank cheques. Initially, the clearing process used to be done through cash and this device is the replacement of the money.
- **MICR Technology:** This device has helped the banks to overcome the limitations of clearing cheques within the working hours. The tool helps in the quick credit of money in the customers' accounts.
- **CTS:** This device is to eliminate the need for truncation of the physical instrument to the drawee branch by the drawer for the payments of cheques. The device has also reduced the cost of transit and the delays in the processing as well.
- **EFT:** Through the electronic fund transfer mechanism works for nation wide retail fund transfer between networked branches of banks in a secured way.
- **ATM:** This is probably the most revolutionary aspect of the new banking system after the information technology came upon. The plastic card and the magnetic strip together carry all the information of the customer and it has ensured the concept of Any Time Money.
- **Phone Banking:** The customers can access their accounts for non-cash related requirements through an automated voice recorder.
- **Internet Banking:** The internet banking helped the customers to do the transactions through the bank website with the help of an active internet connection. The customers can access to all the bank products from anywhere.

The positive impacts of IT Support on the Banking Sector:

- The biggest revolution of digitalization came after the information technology began in the banking system.
- The banking process has become more reliable and faster. The information technology even has made the retrieval and maintenance of documents much more comfortable and quicker than it was before.
- The information technology has improved the core banking system, and all the branches of a bank now are interconnected and can access to some common centralized data.
- The MICR cheque processing system has reduced the down time of cheque clearance, and now the customers can expect a faster clearance of their cheques and credit of funds to their accounts.
- The Unstructured Supplementary Service Data was launched so that the customers can access their account with the help of internet connectivity and without going to the bank.
- The internet banking service is offered by every bank to its customers. The customers can have complete access of their account can also make the transactions online with the help of internet connection without going to the physical bank.
- There is more transparency in every transaction done.
- There is better **risk management** of banking frauds through the use of passwords and two-way authentication during the online transactions.
- The information technology has also increased the competition between various banks, and which has led to better customer service.
- With the introduction of mobile banking, customers can have access to their account at any time from anywhere.
- The facilities like automatic chequebook printing, cash deposit machines, cheque deposit machines etc. all the banks are now able to provide better and faster services to their customers.

The negative impacts of IT Support on the Banking Sector:

- The loss of jobs is the major drawback of the IT support-induced banking system. The automation has replaced the number of openings in every bank
- The threat of cyber-attack is a significant loop hole in the information technology-driven banking system. Millions of data can be at risk and can be lost in just one blink if the security is managed correctly.

Information technology has two sides which impact the banking sector differently. The risks are high in both the ways but with **IT security**, the scopes of minimizing the threats are more than without it. In the current scenario, information technology has become the backbone of the banking sector.

Total Branch Computerization

In 1988, Reserve Bank of India set up a Committee on computerization in banks headed by Dr. C. Rangarajan. Banks began using Information Technology initially with the introduction of standalone PCs and migrated to Local Area Network (LAN) connectivity. Computer had a significant impact on the banking and financial services sector. The widespread usage of computers has made it easier for banks to manage their customers' accounts, track transactions and keep records.

Banks have also been able to reduce operating costs by automating processes that were previously manual and paper-based. With the help of computers, banks can process loan application forms more quickly, with less risk of human error.

As well as speeding up loan processing, computerization helps reduce the cost of lending by eliminating the expense of keeping paper records and reducing staff time spent on record-keeping tasks.

Computerization also makes it easier for people to bank from home or when they travel; this helps drive up customer satisfaction and reduces operating costs at branch locations.

1.6.1 Use of Computer in Banking

1. Electronic Banking

Online banking is a type of computer-based banking. Banking online allows customers to access their account information, execute transactions, and communicate with their bank using the internet.

Many banks provide online banking services to their customers, allowing anyone with internet access to bank from home or on the go. Online banking simplifies many banking tasks by allowing customers to view account information, transfer funds, and initiate other transactions from their computer or mobile device.

Although online banking has many advantages, it is important for customers to protect against cyber threats and other risks. Customers should use strong passwords, keep their computer virus-free, use two-step verification when available, and be careful about what information they share when using online banking.

2. Electronic Funds Transfer

Electronic funds transfer (EFT) is a computer-based money transfer. EFT refers to an automated process for sending and receiving money between accounts. This is often done through automated clearing house (ACH) networks.

ACH networks are networks of computers that process electronic transactions between financial institutions, such as when a customer uses a debit card to make a purchase. Types of EFT include automated clearing house (ACH) and direct deposit.

When banks provide EFT services to customers, they can use computers to request that a customer's employer or other payer make a payment to the bank. The banks then credit the customers' accounts with the amount of their payments. Banks also use computers to transfer money between accounts and to process payments to creditors.

3. Computerized Credit Analysis

Credit analysis is the process of determining whether to grant a customer a loan, at what interest rate, and what collateral to require. When banks were largely paper-and-manual-based, credit officers had to rely on their knowledge and experience to make these decisions.

With computerization, banks can use algorithms to help make credit decisions faster and more efficiently. Using computer algorithms, banks can collect and analyse large quantities of data about customers, their spending habits, and other financial information to make credit decisions more accurately and efficiently.

Credit scoring, a computerized method of credit analysis and one of the most common uses of computer technology in banking, is especially helpful for banks

because it allows them to process larger quantities of loan applications more quickly and efficiently.

4. Computerized Customer Relationship Management

Customer relationship management (CRM) refers to a business strategy that aims to manage relationships with customers to increase profitability. CRM systems are often computerized and include features such as databases, customer service software, and automated sales and marketing tools.

CRM software allows banks to better understand their customers' spending habits, identify potential opportunities for new business, and respond quickly to customer complaints. CRM can help banks drive up customer satisfaction by making it easier for customers to access their account information and receive customer service.

Customers who interact with computers to manage their accounts may find it easier to track their spending and resolve account issues. Banks may also benefit from CRM systems by being able to manage a larger number of customers with fewer employees.

5. Computerized Loan Processing

Computer-assisted loan processing (CALP) is a type of computer-based loan processing. CALP allows banks to automate several tasks in the loan processing process. For example, banks often use computers to calculate the monthly payments owed by customers who are applying for a loan, including how much money the bank should set aside for servicing the loan.

CALP allows banks to make better use of their employees, who were previously responsible for many of these tasks. CALP also helps banks make loans more quickly by reducing the time it takes to process loan applications.

Computerization has significantly reduced the cost and time of processing loans, which has helped increase customer satisfaction by making it easier to apply for and obtain a loan. CALP also helps banks capture larger quantities of customers by lowering the cost of lending.

6. Computerized Record Keeping

Computer-based record keeping enables banks to maintain accurate customer and transaction records, which is important for complying with government regulations and auditing practices.

Computer systems are especially helpful for recording information that would be time-consuming to write down and track manually, such as electronic payments and customer account balances.

Computerized record keeping also allows banks to record information in real time and stores it indefinitely, which is helpful if banks need to refer back to the information later. Computerized record keeping has reduced costs and made it easier for banks to comply with government regulations.

7. Remote ID Screening

New screening techniques are helping banks use remote ID screening (RIS) to verify accounts, verify transfers, and approve transactions remotely. That means they no longer have to hold accounts in “secured” or “suspended” status while they wait for customers to verify their information by mail.

This accelerates the process of getting accounts up and running, which is particularly important for new businesses and startups that often don’t have copious amounts of cash on hand to fund their operations. RIS has been around for a while, but it’s becoming increasingly common as technology evolves.

8. Real-time Fraud Detection

Fraudsters are always looking for new opportunities to exploit security gaps and steal money. Banks know this, which is why they’re always on the lookout for new ways to detect and prevent fraud. Real-time fraud detection tools are the block chain equivalent of the human eye. They’re programmed to look for suspicious activity and flag it for human review.

If a transaction seems fishy or out of the ordinary, it will raise a flag and ask an employee to look into it further. This helps banks protect themselves from fraud without inconveniencing legitimate customers.

9. Automated Customer Service Agents

Automated customer service agents (ACSA) aim to fix all that and provide a better customer experience while they’re at it. ACSA software is programmed to understand the most common customer questions and provide answers. It can also perform rudimentary checks on accounts and flag issues that require human intervention.

Some banks have even begun to integrate artificial intelligence (AI) into ACSA software, which means these programs have the ability to learn and get smarter over time.

10. Block chain-based Security

The block chain is an unbreakable digital ledger that keeps track of every single transaction ever made. It's considered impenetrable and tamper-proof, even by governments and hacker groups.

Banks have recently begun using the block chain to secure and protect sensitive customer data. When you go online to log into your bank account, block chain security will keep your information private and away from prying eyes.

1.6.2 Concept of Opportunities

In the banking industry, the concept of opportunities refers to various avenues and prospects that arise for banks to generate revenue, expand their customer base, and enhance their overall performance. These opportunities can arise from market trends, technological advancements, regulatory changes, and customer demands. Here are some key opportunities in banking:

1. **Digital Transformation:** The rapid advancement of technology has created opportunities for banks to embrace digital transformation. This includes offering online and mobile banking services, developing innovative financial products, adopting artificial intelligence and machine learning technologies, and leveraging data analytics for personalized customer experiences. Digital transformation allows banks to improve operational efficiency, attract tech-savvy customers, and compete with fintech startups.
2. **Open Banking:** Open banking initiatives provide opportunities for banks to collaborate and share customer data securely with third-party providers. By opening up their systems and APIs (Application Programming Interfaces), banks can offer enhanced services such as account aggregation, payment initiation, and access to financial products from multiple institutions. Open banking fosters innovation, encourages competition, and allows banks to offer personalized solutions to customers.
3. **Personalized Banking Services:** Customers increasingly demand personalized banking experiences. Banks can leverage customer data and advanced analytics to offer tailored financial products, customized recommendations, and targeted

marketing campaigns. Personalization improves customer satisfaction, strengthens customer loyalty, and increases cross-selling opportunities.

4. **Financial Inclusion:** Despite significant progress, there are still underserved segments of the population globally. Banks have an opportunity to address this gap by developing products and services that cater to the needs of unbanked and underbanked individuals. This includes offering low-cost banking options, facilitating access to credit, and leveraging mobile banking technologies to reach remote areas.
5. **Risk Management and Compliance:** The evolving regulatory landscape creates opportunities for banks to enhance their risk management practices and compliance frameworks. Banks can invest in technologies and systems that improve fraud detection, anti-money laundering (AML) processes, and cybersecurity measures. By proactively addressing risk and compliance challenges, banks can safeguard their reputation, maintain customer trust, and ensure regulatory compliance.
6. **Sustainable Finance:** With the growing emphasis on environmental and social responsibility, banks have an opportunity to promote sustainable finance. This involves offering green loans, financing renewable energy projects, supporting socially responsible investments, and implementing environmentally friendly practices within their own operations. Sustainable finance allows banks to align with evolving societal values, attract socially conscious customers, and contribute to a more sustainable future.
7. **International Expansion:** Banks can explore opportunities for international expansion to tap into new markets and diversify their revenue streams. This may involve establishing branches or partnerships in emerging economies, targeting expatriate populations, or providing cross-border financial services. International expansion allows banks to access new customer segments, benefit from economic growth in different regions, and reduce concentration risks.

1.6.3 Centralized banking

It refers to a banking system where a central bank or a few major banks hold significant control and influence over the financial system of a country or region. In a centralized banking system, the central bank acts as the primary regulatory authority and plays a key role in monetary policy, issuing currency, and regulating commercial banks.

Here are some key features and aspects of centralized banking:

1. **Central Bank Control:** In a centralized banking system, the central bank holds a significant degree of control over the financial system. It has the authority to set interest rates, regulate the money supply, and establish monetary policies to stabilize the economy. The central bank acts as the lender of last resort and provides liquidity to commercial banks during times of financial instability.
2. **Monetary Policy:** The central bank formulates and implements monetary policy to manage inflation, stabilize the currency, and promote economic growth. This includes adjusting interest rates, regulating bank reserves, and controlling the money supply through open market operations, reserve requirements, and other policy tools.
3. **Bank Regulation:** Centralized banking systems often involve strict regulations and supervision of commercial banks by the central bank. This ensures the stability, safety, and soundness of the banking sector. The central bank sets prudential regulations, conducts regular inspections, and imposes capital requirements to mitigate risks and prevent bank failures.
4. **Currency Issuance:** Centralized banking systems typically grant the central bank the authority to issue and control the national currency. The central bank is responsible for maintaining the integrity of the currency, managing its circulation, and ensuring its acceptance within the economy. It may also oversee the printing or minting of physical currency.
5. **Financial Stability:** Centralized banking systems aim to promote financial stability by supervising and regulating banks, monitoring systemic risks, and intervening in times of crises. The central bank plays a crucial role in managing liquidity, providing emergency funding, and maintaining the stability of the banking system.
6. **Deposit Insurance:** Many centralized banking systems implement deposit insurance schemes to protect depositors' funds. These schemes provide a safety net to depositors by guaranteeing a certain level of protection in case of bank failures. The central bank or a separate deposit insurance agency may administer and oversee these schemes.
7. **Policy Coordination:** Centralized banking systems often involve coordination and collaboration between the central bank and other government agencies, such

as finance ministries or regulatory bodies. This ensures alignment between monetary policy, fiscal policy, and overall economic objectives.

While centralized banking systems provide a strong regulatory framework and centralized control, they also face criticisms. Critics argue that concentrated power in the hands of a few institutions can lead to lack of competition, inefficiencies, and potential conflicts of interest. Additionally, centralized systems may be less responsive to local market conditions and individual banking needs.

1.7 Concept, Opportunities, Challenges & Implementation

Concept of Banking:

Banking refers to the industry and activities related to financial institutions that provide a range of financial services to individuals, businesses, and governments. These services include accepting deposits, granting loans, facilitating transactions, offering investment products, and providing various other financial solutions. The concept of banking revolves around managing and allocating funds, mitigating risks, and supporting economic growth and development.

Opportunities in Banking:

1. **Digital Transformation:** The advancement of technology offers opportunities for banks to undergo digital transformation. This includes adopting online and mobile banking platforms, utilizing artificial intelligence and automation for operational efficiency, and leveraging data analytics to provide personalized services and insights.
2. **Open Banking:** Open banking initiatives enable banks to collaborate with third-party providers, share customer data securely, and offer innovative financial services. This can lead to enhanced customer experiences, expanded product offerings, and improved competitiveness.
3. **Financial Inclusion:** Many individuals and businesses still lack access to basic financial services. Banks can capitalize on this opportunity by developing products and services tailored to underserved populations, such as affordable banking solutions, microfinance options, and mobile banking for remote areas.
4. **Sustainable Finance:** With growing awareness of environmental and social concerns, banks can seize the opportunity to promote sustainable finance. This involves offering green loans, supporting renewable energy projects, and

integrating environmental, social, and governance (ESG) factors into investment decisions.

5. **Emerging Markets:** Banks can explore opportunities in emerging markets with growing economies and increasing financial needs. Expanding operations in these markets can help banks tap into new customer segments, diversify revenue sources, and benefit from economic growth.

Challenges in Banking:

1. **Regulatory Compliance:** Banks operate in a highly regulated environment, which poses challenges in terms of compliance with various laws, regulations, and reporting requirements. Meeting these obligations can be complex and resource-intensive for banks.
2. **Cyber security Risks:** As banking becomes increasingly digitized, the risk of cyber threats and data breaches rises. Banks need to invest in robust cyber security measures and stay ahead of evolving threats to protect customer information and maintain trust.
3. **Changing Customer Expectations:** Customer expectations are continuously evolving, driven by advancements in technology and the rise of digital-native competitors. Banks must adapt to changing customer preferences for seamless, convenient, and personalized banking experiences.
4. **Economic and Market Volatility:** Banks are susceptible to economic and market fluctuations, including interest rate changes, economic recessions, and geopolitical events. These factors can impact credit quality, loan portfolios, and overall profitability.

Implementation in Banking:

Implementing opportunities and addressing challenges in the banking sector requires a proactive approach. Key considerations for successful implementation include:

1. **Strategic Planning:** Banks should develop a clear vision and strategy to capitalize on opportunities and mitigate challenges. This includes aligning technology investments, talent acquisition, and operational processes with the overall strategic objectives.

2. **Technological Adoption:** Banks need to invest in modern technology infrastructure, such as robust core banking systems, digital platforms, and data analytics capabilities. This enables them to provide seamless customer experiences, streamline operations, and leverage data-driven insights.
3. **Talent Development:** Banks should focus on attracting and retaining skilled professionals who possess expertise in areas such as digital banking, cyber security, risk management, and data analytics. Continuous training and development programs can help build a workforce capable of driving innovation and managing challenges.
4. **Collaboration and Partnerships:** Collaboration with fintech firms, technology providers, and other industry stakeholders can help banks leverage expertise and resources to implement new initiatives effectively. Partnerships can enable banks to accelerate digital transformation, expand service offerings, and enhance customer experiences.
5. **Risk Management and Compliance:** Banks need robust risk management frameworks and compliance programs to address regulatory requirements and mitigate operational, credit, and cyber security risks. Regular monitoring, internal controls, and audits are essential for maintaining a strong risk culture.

Chapter 2

Delivery Channels

2.1 Introduction

Delivery channels in banking refer to the various channels through which banks interact with customers and deliver their products and services. These channels have evolved over time, driven by technological advancements and changing customer preferences. Here are some common delivery channels in banking:

1. **Branches:** Physical bank branches have long been a traditional delivery channel for banking services. Customers can visit branches to conduct transactions, open accounts, apply for loans, seek assistance from bank staff, and access other banking services. Branches provide a personal touch and allow face-to-face interactions with bank representatives.
2. **Online Banking:** Online banking enables customers to access banking services and manage their accounts through the internet. This channel allows customers to perform various transactions, such as checking account balances, transferring funds, paying bills, and applying for loans, from the convenience of their computers or mobile devices. Online banking often includes features like secure login, transaction history, and account management tools.
3. **Mobile Banking:** Mobile banking refers to the use of mobile devices, such as smartphones and tablets, to access banking services. Mobile banking apps or mobile-optimized websites provide customers with the flexibility to conduct transactions, make payments, transfer funds, and perform other banking activities on the go. Mobile banking often includes features like biometric authentication, push notifications, and mobile deposit capture.
4. **ATMs:** Automated Teller Machines (ATMs) allow customers to perform basic banking transactions without visiting a branch. ATMs enable cash withdrawals, fund transfers, balance inquiries, bill payments, and account statement printing. Some advanced ATMs may also offer additional features like check deposit and currency exchange.
5. **Telephone Banking:** Telephone banking provides customers with the option to access banking services and information through phone calls. Customers can use interactive voice response (IVR) systems or speak with customer service

representatives to perform transactions, check account balances, and inquire about bank products and services.

6. **Video Banking:** Video banking combines the convenience of remote banking with the personal touch of face-to-face interactions. Through video conferencing or live chat, customers can connect with bank representatives who can assist them with various banking services, including account opening, loan applications, and financial advice.
7. **Chatbots and Virtual Assistants:** Banks are increasingly using chatbots and virtual assistants powered by artificial intelligence to interact with customers and provide support. These automated systems can handle customer inquiries, provide account information, offer basic banking services, and guide customers through processes.
8. **Point-of-Sale (POS) Systems:** POS systems enable customers to make purchases or payments directly from their bank accounts using debit or credit cards. Banks provide customers with payment cards that can be used at merchant establishments equipped with POS terminals.

The delivery channels used by banks may vary depending on the institution and its target customer segment. Many banks now offer an omni channel approach, integrating multiple channels to provide customers with seamless and consistent experiences across different touch points.

2.2 USSD (Unstructured Supplementary Service Data):

USSD is a communication protocol used by mobile phones to communicate with the service provider's servers via text messages. It allows users to access banking services and perform transactions using their mobile phones, even without an internet connection. USSD is commonly used for mobile banking services, including checking account balances, transferring funds, and paying bills.

USSD (Unstructured Supplementary Service Data) is a Global System for Mobile Communications (GSM) protocol that is used to send text messages. USSD is similar to Short Message Service (SMS).

USSD uses codes made up of the characters that are available on a mobile phone. A USSD message, which can be up to 182 characters long, establishes a real-time communication session between the phone and another device -- typically, a network or server.

USSD can be used for Wireless Application Protocol (WAP) browsing, mobile money services, prepaid callback service, menu-based information services and location-based content services.

With USSD, users interact directly from their mobile phones by making selections from various menus. Unlike an SMS message, during a USSD session, a USSD message creates a real-time connection. This means USSD enables two-way communication of information, as long as the communication line stays open. As such, queries and answers are nearly instantaneous.

How USSD works

Typically, USSD involves a query from a mobile phone user, such as a request for a bank account balance. Once the user sends the request, the USSD gateway forwards it to the user's USSD application, which responds to the request.

The process is then repeated in reverse, i.e., the response goes back to the USSD gateway, which displays the content of that response on the screen of the user's mobile phone. Generally, the responses, which contain a maximum of 182 alphanumeric characters, are sent in a format that's easy to display. The user sends and receives data by dialing a specific short code -- usually, five numbers.

USSD applications run on the network, not on a user's device. As such, they don't have to be installed on the user's phone, which is an advantage for users with feature phones that have limited storage space. USSD apps are instantly available to every subscriber the moment they're deployed to a network.

How USSD is used

USSD is used for several purposes, including the following:

- **Mobile banking.** Unlike banking apps that need internet access and smartphone functionality, USSD banking can work on any mobile device, including feature phones.
- **Network configuration and requests.** USSD is used to configure a user's mobile device on the network. It also provides a menu of service options a user can choose from for such things as buying airtime or requesting account balances.
- **Customers update requests.** USSD can integrate with enterprise resource planning (ERP) and customer relationship management (CRM) systems to

request updated customer information. This enables better customer service and data accuracy.

- **Marketing surveys.** USSD can be used for mobile marketing. For example, organizations can send basic marketing surveys that users can respond to immediately, enabling companies to get customer feedback in real time.
- **Callback services.** Service organizations, such as insurance providers and financial services companies, can use USSD to determine customers' interests by enabling them to request callbacks after they present their offers.
- **Order confirmations.** Food delivery providers can use USSD to enable two-way communication between customers placing orders and the vendors to alert customers when their orders are on the way.
- **Coupons and vouchers.** Retailers can use USSD to communicate special offers to customers, as well as send coupons and vouchers.

USSD payments

USSD payment processing is performed by sending a text message to a service provider. When the service provider receives the text message, it either charges the amount of the purchase to an online payment system or adds the amount to the user's phone bill.

The merchant then releases the goods or services, and the money is transferred to the company's account. The delivery of digital goods is often conducted by Multimedia Messaging Service (MMS) that enables files to be sent to users with SMS. If the user bought a physical item, the receipt can be sent via SMS or MMS. Most purchases made using USSD or SMS occur in Europe and Asia.

Technical details

Most GSM phones have USSD capability. USSD is usually associated with real-time or instant messaging (IM) services. USSD does not offer a store-and-forward capability, as is typical of other short message protocols, such as SMS.

USSD services use the existing architecture of GSM networks. A user dialing a USSD service code begins a dialogue with a USSD app on a mobile network. The network node can be a mobile switching center, visitor location register, home locator register or other network entity, such as an application platform, which has access to the specific USSD service.

Technically, USSD enables the mobile station user and a public land mobile network operator-defined application to communicate in a way that's transparent to the mobile station user and to intermediate network entities.

A typical USSD message begins with an asterisk (*) followed by digits that comprise commands or data. Groups of digits can be separated by additional asterisks. The message is ended with a hashtag (#).

Differences between USSD, MMI and SS codes

Every code that a user enters via the keypad on his mobile phone that contains * or # characters is a man-machine interface (MMI) code. Most of these MMI codes look similar, but they're classified into different groups and have different actions. Some are only used locally on the device, while some are sent to the subscriber identity module (SIM) and others are sent to the network.

The different type of MMI codes are the following.

Supplementary service (SS) codes

Those codes control call forwarding or number presentation. For instance, using *21*987654321# <SEND>, a user would direct his phone to ask the network to forward all his incoming calls to the phone number 987654321. However, this code isn't sent directly to the network, rather it's interpreted by the phone, which then constructs an Abstract Syntax Notation One (ASN.1) coded request to the network.

These codes, which are hardcoded into every GSM, Universal Mobile Telecommunications System (UMTS) and Long-Term Evolution (LTE) device in the world, can't be changed by a network operator.

USSD codes

If a user enters a code that at least ends in a hashtag -- and presses <SEND> -- but it isn't recognized by the phone's MMI interpreter, the code will then be sent to the network verbatim.

It then depends on whether the network supports this code. One of the most used cases is a code for prepaid cards that users can use to check their balances. Several networks use something similar to *#100#. However, the network operator really decides which code to use if it's not already taken.

Therefore, entering *20*1234# <SEND> or *21*1234# <SEND> would do two different things: The first code would be sent to the network to be processed further -- most likely returning an error -- while the phone would interpret the second code and send a structured request for activation of call forwarding to the network.

Manufacturer-defined MMI codes

These codes, which are specific to the phone models, have been built in by the manufacturers to activate service menus or reset devices, for example. These codes also contain * and # characters.

Because the codes aren't being sent to the network, a user doesn't have to press the <SEND> key at the end as the codes are executed as soon as the user enters the last digit or character. However, every manufacturer of GSM/UMTS/LTE phones must implement *#06#. This code shows a device's international mobile equipment identifier.

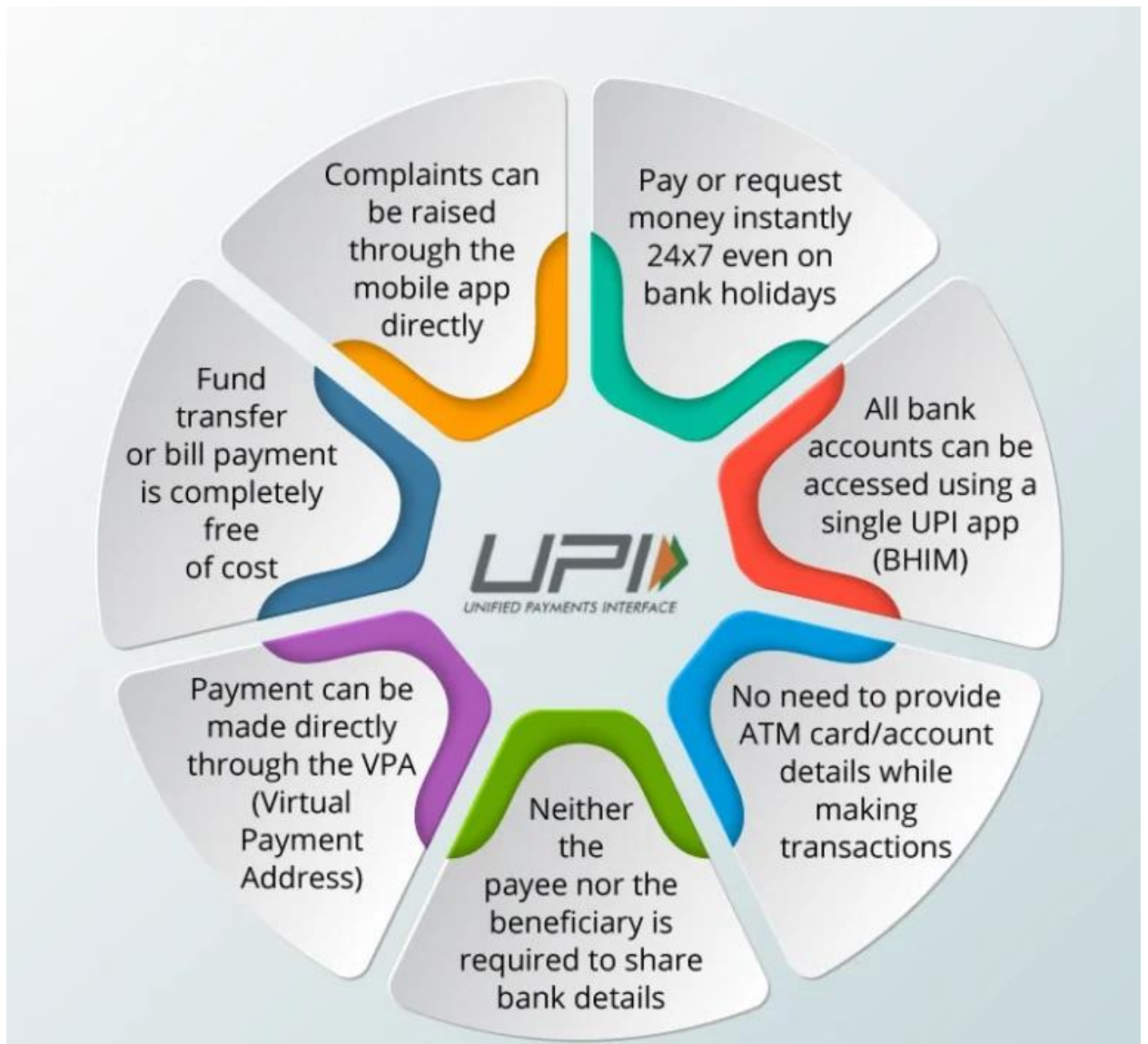
USSD gateway

Also called a *USSD center*, a USSD gateway service transmits USSD messages from the signaling network to a service application and vice versa.

A USSD gateway is based on the ability of the delivery agent or the source to send and receive USSD messages. USSD messages travel over GSM signaling channels and are used to query information and generate services. Unlike similar services, such as SMS and MMS, that are based on store-and-forward technology, USSD establishes a real-time session between a mobile handset and the application handling the service.

2.3 UPI (Unified Payments Interface):

UPI is a real-time payment system developed by the National Payments Corporation of India (NPCI). It enables users to link multiple bank accounts into a single mobile application and perform various transactions, including person-to-person payments, merchant payments, and bill payments. UPI offers a seamless and instant payment experience through mobile devices.



UPI is a payment platform that allows bank account holders to carry out low-value transactions up to Rs. 2 lakh. One can use UPI to transfer funds, make instant payments or request for money from any person. It is accessible through a smartphone or a feature phone.

The structure of UPI address is just like your email id and can be taken as your financial address. Similar to your bank account, this remains unique to every individual and will help you to transfer and receive funds instantly.

You do not need to transfer funds intrabank using old methods like NEFT, RTGS, and cheque. You can now send or receive money instantly throughout the day and even on holidays.

- The maximum UPI limit per day for normal transactions is Rs. 1 Lakh
- The UPI limit per day for ATM withdrawal using UPI app is Rs. 10,000
- A total of 20 UPI transactions can be done through bank UPI apps per day
- One can carry out a maximum of 10 transactions per day through third-party UPI apps.
- Per transaction limit for every UPI transaction is Rs. 1 Lakh
- For transactions related to capital markets, collections, insurance, and foreign inward remittances, the UPI limit is Rs. 2 Lakh per transaction
- The UPI limit for IPOs and retail direct scheme is Rs. 5 Lakh per transaction

Features of UPI:

UPI has enabled us to replace fund transfer up to Rs. 2 lakh through this platform. Following transactions and services can be performed through the UPI:

- Pay mobile bills, shopping bills, restaurant bills, etc.
- You can also use it online in utility apps to make payments or set it as a default payment method for payments.
- E-commerce giants have also started providing UPI payment options through BHIM app (Bharat Interface for Money).
- You can also use this app to transfer funds from one account of yours to the other.
- You can use this app to request money from others.

Generate UPI Pin:

To use UPI as a payment mode, one has to sign-up for the service through a UPI app. This can be done on mobile banking of your particular bank or a third-party UPI app. After that, here are steps to be followed to generate a UPI PIN:

Step 1: Go to the UPI app of your choice – iMobile, SBI YONO, BHIM, Google Pay, etc

Step 2: Scroll to the 'Bank Account' section on the app. This section shows all the bank accounts linked with this particular app

Step 3: Select the bank account for which you want to set a UPI PIN. You will see a 'SET' option in case you have never set a UPI PIN for the bank account

Step 4: Enter the 'Last six digits' and 'Expiry date' of your Debit/ATM card

Step 5: Now, you will receive an OTP from your bank on the registered mobile number. In the next screen, enter the OTP and the UPI PIN you want to set for the account and click 'submit'.

2.4 BHIM (Bharat Interface for Money):

BHIM is a mobile payment app developed by NPCI, based on the UPI platform. It allows users to make quick and secure payments using their mobile phones. BHIM supports various payment methods, including scanning QR codes, entering recipient mobile numbers, or using payment addresses. It aims to simplify digital payments and promote financial inclusion in India.

It is focused on the UPI (Unified Payments Interface) that enables you to use UPI to make quick, easy and fast money transfers. You can create transactions between two banks and pay the money using a mobile number or VPA (Virtual Payment Address). In 2016, BHIM was launched to promote online transactions.

Advantages of BHIM

- Through a VPA Account Number And IFSC code, Aadhar Number, or QR code, it enables them to transfer money.
- By accessing a Virtual Payment Address, users also can receive funds.
- By scanning a QR code, people can make payments and create a QR code to accept payments.
- It enables users to search the history of transactions and outstanding requests for UPI collection.
- You may file a complaint if a payment declines by tapping on the Report issue.

- The static QR code & payment addresses can be displayed, and the QR code can be exchanged via different communication apps such as Email, WhatsApp, etc.
- The connected bank accounts can be displayed, and the UPI PIN can be set or changed. users can, however, modify the bank account, view the status, and much more.
- To boost the customer experience, this application is compatible with 20 regional languages now.
- Users can block those who submit collection requests regularly.

Steps for using BHIM Application or installing it

- Download and install the BHIM application, which is available in Google Play Store/ Apple App Store.
- Open the application and choose a particular language.
- Enable SMS and phone calls to be managed by the application
- Individuals should be asked to confirm their mobile number registered with the bank account if they have a dual Sim telephone. For auto-confirmation, an SMS should be submitted.
- To log into the application and re-enter the passcode to confirm it, generate a specific four-digit password.
- Select your UPI activated bank from the provided list of banks.
- Set your UPI PIN by providing the last six digits of your debit card and the expiry date of the debit card. Thus, the bank account will be instantly retrieved and registered by providing debit card information.
- The BHIM app home page will appear after the account has been successfully added.
- The account has been registered already and will be ready for use.

2.5 Payment Gateways:

Payment gateways are platforms that facilitate the secure transfer of funds between customers and merchants during online transactions. They serve as intermediaries between banks and merchants, ensuring the secure authorization, processing, and settlement of payments. Payment gateways support various payment methods, including credit cards, debit cards, bank transfers, and digital wallets.

A payment gateway is a technology used by merchants to accept debit or credit card purchases from customers. The term includes not only the physical card-reading devices found in brick-and-mortar retail stores but also the payment processing portals found in online stores.

KEY TAKEAWAYS

- Payment gateways are interfaces used to collect consumer payment information.
- In physical stores, payment gateways consist of the point-of-sale (POS) terminals used to accept credit card information by card or by smartphone.
- In online stores, payment gateways are the “checkout” portals used to enter credit card information or credentials for services.
- Payment gateways are distinct from payment processors, which use customer information to collect payments on behalf of the merchant.
- There are also payment gateways to facilitate payment in cryptocurrencies like Bitcoin.

How Payment Gateways Work

The payment gateway is a key component of the electronic payment processing system, as it is the front-end technology responsible for sending customer information to the merchant acquiring bank, where the transaction is then processed.

With the development of chip technologies, the signature phase could be removed in favor of a personal identification number (PIN) entered directly into the payment gateway hardware. Today, contactless purchases are also available, with many customers now using their phones as a payment device instead of plastic credit cards.

The architecture of a payment gateway will differ depending on whether it is an in-store gateway or an online payment portal. Online payment gateways will

require application programming interfaces (APIs) that allow the website in question to communicate with the underlying payment processing network. In-store payment gateways will use a POS terminal that connects to the payment processing network electronically using either a phone line or an internet connection.

Main Types of Payment Gateways

There are generally three types of payment gateways:

On-site payments:

Large-scale businesses tend to use on-site payments handled on their own servers where the checkout experience and payment processing all work through your system. Now the advantages are flipped – you'll have more control and responsibility.

If you handle payments on-site, every variable counts and any improvement to the shopping experience can create dramatic changes in your bottom line – especially true for any retailer with a high sales volume.

Checkout on site, payment off-site:

Through this method, the front-end checkout will occur on your site, but the payment processing happens through the gateway's back end. Like redirected payment gateways, this method can simplify the payment processes while ensuring increased security on the back-end.

However, the downside is that you won't be able to control the user's entire experience through the payment gateways. If you decide to go this route, ensure that you are confident in the security of the payment gateway.

Redirects:

Redirects often include options for alternative payment methods, such as a company allowing the use of PayPal. When the gateway takes a customer to a PayPal payment page to handle the complete transaction, it becomes a Redirect.

A small business can use a Redirect gateway to incorporate the convenience and security of a larger platform. Redirects have the advantage of simplicity for the retailer, though they also mean less control for the merchant – and a second step for customers.

Payment Gateways Limitations

All payment gateways are not created equal. When choosing a payment gateway, you'll have to understand and accept some limitations – many of which are inherent to the payment gateway infrastructure. In more detail, consider the following:

Gateways rarely accept all types of cards/payments.

Although many payment gateway providers like to advertise the universality of their gateways, they typically won't highlight when they can't accept payments from specific card issuers and processing portals. Before selecting a payment gateway, ensure you understand what your customers need to use, where the limitations lie and what's excluded.

International shoppers may not have a payment option.

Merchants looking to capture a broad international audience need to ensure their payment gateway can work with different online stores and payment platforms. For example, in China, Alipay is much more popular than payment options that might be familiar to customers in the US.

International shoppers may also run into higher prices. Although many payment gateway providers charge fixed transaction fees for domestic and international commerce, some charge more for cross-border transactions.

Consider tools like Webinterpret that can plug into your ecommerce platform and provide a fully localized international checkout process enabling you to accept payment in 25 currencies.

Security flaws:

In an increasingly digital world, security must be of the utmost concern. According to a recent report, around two-thirds of consumers would stop shopping with a retailer previously hit by a security breach.

Although a high-quality payment gateway should be secure, there are some security vulnerabilities you'll have to keep in mind:

- **Data breaches:** TLS encryption helps most payment gateways handle confidential processing data like card information, but once the data is on a server, that server remains a risk.

- Mobile payment issues: You might control much of the security at the transaction, but you still don't control who has access to your customer's mobile device.
- Malware: Malware that reads passwords and infiltrates user accounts can send apparently-authentic transactions through secure payment gateways, even while the transaction itself is a fraud.

2.6 Card Technologies:

Card technologies refer to the various technologies used in payment cards, such as credit cards and debit cards, to enable electronic transactions. Common card technologies include:

1. Debit Cards

They allow the card holder to transfer money electronically from their bank accounts and can also be used as ATM cards to withdraw cash using the Automated Teller Machine. Keep in mind that you're not borrowing money using debit card, you are using the money deposited in the bank account linked to the card, whereas in credit cards, you borrow money to make payment. **Deferred Debit Card** allows the facility of payment being done a few days later from the date of purchase.

2. Credit Cards

Credit cards allow the user to borrow money from the bank and make purchases. Bank or companies issuing the credit card creates a revolving account and grants a line of credit to the cardholder, and then the user borrows money for payments or can also withdraw cash at times. Companies issuing credit cards also set a minimum repayment amount for the amount borrowed and also charge interest on delayed payments.

Following are some terms associated with credit cards-

- **Credit Limit** – represents the maximum balance on a credit card
- **Balance** – is the total amount you owe, including purchases, finance charges, and fees
- **APR or Annual Percentage Rate**– is the interest rate applied to the balance carried forward past the grace period of time.
- **Grace Period** – time allotted to pay your balance
- **Credit Card Fees**– annual or maintenance charges, late fee, and over-the-limit fee.

3. Magnetic Stripe Cards:

These cards have a magnetic stripe on the back that stores account information. When swiped through a card reader, the information is read and used for authorization.

4. EMV (Europay, Mastercard, Visa) Chip Cards:

These cards have an embedded microchip that stores and encrypts cardholder data. EMV chip cards provide enhanced security by generating dynamic transaction data for each transaction, reducing the risk of card cloning and fraud.

5. Contactless/NFC (Near Field Communication) Cards:

These cards use radio frequency identification (RFID) or NFC technology to enable quick and secure contactless payments. Customers can simply tap their cards on a contactless-enabled terminal to complete a transaction.

6. Forex Cards:

Forex Cards stands for Foreign Exchange Cards and are used for international travels to hold foreign currency. There are two main variants- single currency cards and multi-currency forex cards. Forex cards can also be used to withdraw the currency abroad.

7. Prepaid cards

Just as the name suggest in prepaid cards you can load the amount in advance and then use the money to make transactions, they are not linked to any bank accounts. Most common example is prepaid gift cards. RuPay in India also brought the prepaid cards in 2014 considering the huge opportunity in the untapped, unorganized, corporate gifting and other business space.

8. Electronic cards:

Electronic cards can be considered as debit cards issued in specific overdraft accounts that are in the nature of personal loan without any specific end-use restrictions. Banks have been permitted to issue electronic cards to natural persons having overdraft accounts so as to enable domestic digital transactions in such accounts. For all purposes like security, Additional Factor of Authentication (AFA), Merchant Discount Rate (MDR), etc., the instructions relating to debit cards are applicable on such electronic cards as well.

2.7 MICR (Magnetic Ink Character Recognition) Electronic Clearing:

MICR is a technology used for the processing of paper-based checks. MICR encoding involves printing special characters on checks using magnetic ink, which can be easily recognized and processed by high-speed MICR readers. The MICR code on checks contains information such as the bank code, branch code, and account number. MICR electronic clearing refers to the electronic exchange and processing of checks using MICR technology, allowing for faster and more efficient check clearing processes.

These technologies and payment gateways have revolutionized the way payments are made, enabling faster, more secure and convenient transactions for individuals and businesses alike.

The MICR on a check is the string of characters that appears at the bottom left of the check. It consists of three groups of numbers, including the bank routing number, the customer's account number, and the check number.

The MICR includes, from left, a nine-character routing number, a 12-character account number, and a four-character check number. It is called a magnetic ink character recognition line in reference to the print technology that is used to enable a machine to read, process, and record information.

- Magnetic ink character recognition is the string of characters at the bottom left of a personal check that includes the account, routing, and check numbers.
- MICR numbers are designed to be readable by both individuals and sorting equipment.
- They can't be faked or copied, due to the use of magnetic ink and unique fonts.
- The benefits of the technology include enhanced security against fraud and mechanization of check processing.
- MICR was developed in the late 1950s and is now in use globally.

How MICR Works

The magnetic ink character recognition line enables a computer to rapidly read and record numbers or other information from printed documents, such as a personal check. In this case, that information is a check number, routing number, and account number.

The system was developed by the American Bankers Association (ABA) in the late 1950s and was later recognized as an industry standard by the American National Standards Institute.

The MICR number, which is sometimes confused with just the account number, is printed on the check using magnetic ink or toner, less than an inch above the bottom of the document. The magnetic ink allows a computer to read the characters even if they have been covered with signatures, cancellation marks, bank stamps, or other marks.

MICR lines help facilitate automatic check-clearing when banks send their checks to central processing systems at the end of the day. They are designed to be easily read by people as well, so that check information can be communicated easily.

Chapter 3

Back office Operations

3.1 Introduction

Back office operations in a bank refer to the administrative and support functions that are essential for the smooth functioning of the bank's operations. These activities primarily focus on the processing, record-keeping, and administrative tasks that support the front office and customer-facing operations. Here are some key back office operations in a bank:

1. **Account Maintenance:** Back office teams are responsible for account maintenance tasks, including opening and closing accounts, updating customer information, processing account changes (e.g., address updates, name changes), and maintaining account records.
2. **Clearing and Settlement:** Back office operations manage the clearing and settlement of various financial transactions, such as checks, electronic funds transfers, and securities trades. This includes reconciling transactions, verifying balances, and ensuring timely settlement.
3. **Transaction Processing:** Back office teams handle the processing of various banking transactions, such as deposits, withdrawals, fund transfers, loan disbursements, and loan repayments. They ensure accurate and timely processing while adhering to regulatory requirements.
4. **Documentation and Record Keeping:** Back office operations involve maintaining comprehensive documentation and records related to customer accounts, transactions, legal agreements, and compliance requirements. This includes managing physical and electronic documents, ensuring proper storage and retrieval, and maintaining data integrity.
5. **Compliance and Regulatory Reporting:** Back office teams play a crucial role in ensuring compliance with regulatory requirements. They monitor transactions for suspicious activities, report any suspicious transactions as per anti-money laundering (AML) guidelines, and prepare regulatory reports such as Know Your Customer (KYC) documentation and tax-related reporting.
6. **Reconciliation:** Back office operations perform various reconciliation activities to ensure that accounts and transactions are accurately recorded and balanced. This

includes reconciling cash balances, verifying transaction details, and identifying and resolving discrepancies.

7. **Customer Service Support:** While customer service activities are primarily handled by the front office, back office teams often provide support in resolving customer queries, investigating transaction issues, and handling complex customer requests that require deeper analysis or administrative actions.
8. **IT Operations:** Back office operations also include managing and supporting the bank's information technology infrastructure and systems. This involves maintaining servers, databases, network systems, and software applications, ensuring data security and privacy, and providing technical support to users.
9. **Risk Management:** Back office teams support risk management activities by monitoring and analyzing various risks associated with banking operations, such as credit risk, operational risk, and compliance risk. They assist in implementing risk mitigation strategies, conducting risk assessments, and ensuring compliance with risk management policies.

Efficient back office operations are critical for ensuring accurate and timely processing of transactions, maintaining compliance with regulations, and supporting overall operational efficiency in a bank. By streamlining processes, leveraging technology, and maintaining strong internal controls, banks can enhance their back office operations and improve customer experiences.

3.2 Bank back office management

It refers to the management and oversight of the various back office operations in a bank. It involves coordinating and supervising the activities of different back office teams to ensure efficient and effective processing, record-keeping, compliance, and support functions. Here are key aspects of bank back office management:

1. **Organizational Structure:** Establishing a well-defined organizational structure is essential for effective back office management. This includes clearly defining roles, responsibilities, and reporting lines within the back office teams. It ensures that tasks are allocated appropriately, promotes accountability, and facilitates smooth workflow and communication.
2. **Process Optimization:** Back office management involves continuously reviewing and optimizing processes to improve efficiency, accuracy, and productivity. This

includes identifying bottlenecks, streamlining workflows, automating repetitive tasks, and leveraging technology solutions to enhance operational effectiveness.

3. **Performance Monitoring:** Monitoring and evaluating the performance of back office operations is crucial. This involves setting key performance indicators (KPIs) to measure productivity, accuracy, and service levels. Regular monitoring and analysis of KPIs enable managers to identify areas for improvement, address issues promptly, and ensure that performance goals are met.
4. **Training and Development:** Providing ongoing training and development opportunities to back office staff is essential for their professional growth and for enhancing the overall performance of the back office operations. Training programs can focus on technical skills, process knowledge, compliance requirements, and customer service skills to ensure a well-rounded workforce.
5. **Risk Management and Compliance:** Back office management includes ensuring compliance with regulatory requirements and implementing robust risk management practices. This involves establishing and enforcing policies and procedures to mitigate operational, compliance, and security risks. Regular audits and internal controls help in monitoring and managing risks effectively.
6. **Technology Integration:** Leveraging technology solutions is crucial for efficient back office management. This includes implementing banking software systems, automation tools, data analytics, and document management systems to streamline processes, improve data accuracy, and enhance operational efficiency. Integration with other systems, such as core banking platforms, helps in seamless information flow and process synchronization.
7. **Communication and Collaboration:** Effective communication and collaboration among back office teams and other departments are essential for smooth operations. Regular team meetings, clear communication channels, and collaboration tools facilitate coordination, problem-solving, and knowledge sharing.
8. **Continuous Improvement:** Back office management involves fostering a culture of continuous improvement. Encouraging staff to identify process bottlenecks, suggest improvements, and provide feedback promotes innovation and efficiency gains. Regular reviews and performance assessments facilitate identifying areas for improvement and implementing necessary changes.

9. Vendor Management: Banks often work with third-party vendors for various back office services, such as IT infrastructure, software applications, and document processing. Back office management includes vendor selection, contract negotiation, and ongoing vendor relationship management to ensure quality service delivery and compliance with service level agreements.

By effectively managing back office operations, banks can optimize processes, enhance productivity, ensure regulatory compliance, and provide seamless support to the front office and customers. Strong back office management contributes to the overall operational efficiency, risk management, and customer satisfaction in a bank.

3.3 Inter branch reconciliation

Inter-branch reconciliation is a major activity for banks and financial institutions looking to create a balanced co-ordination between their various branches and their activities. TechMech offers inter-branch reconciliation services whereby our trained professionals cover every transaction, exchange of services and other interactions between different branches of a bank or subsidiaries of a company. Our experts ensure a keen attention to detail, covering every interaction in depth, so as not to miss out on any inherent flaws or discrepancy.

Inter-branch reconciliation can help the organisation discover any errors or negligence in transactions and make due changes. Our experts, with their detailed financial knowledge, can help to not only find errors but also facilitate in removing or minimizing them. We are trained to handle large volumes of financial data and have worked with companies of all scales. There are five primary types of account reconciliation:

- Bank reconciliation
- Vendor reconciliation
- Business-specific reconciliation
- Intercompany reconciliation
- Customer reconciliation

And they all help you keep your balances in order.

Bank Reconciliation

Bank reconciliation is the most popular type of account reconciliation. It compares transactions recorded in your ledgers to the monthly bank statements. Most transactions, including payments and earnings, are recorded by the bank. So,

reconciling bank accounts can help spot discrepancies in checks issued or missing transactions.

Performing bank reconciliation at the end of the month is valuable because it's when the bank sends the company a statement summarizing the starting balance, transactions from the month, and the final cash balance. Reconciling monthly transactions helps organizations discover problems promptly and resolve them faster.

Vendor Reconciliation

Reconcile the accounts payable records with statements provided by vendors and suppliers to ensure that the amount you paid for a product or service matches the amount received by the vendor. Unlike bank statements, vendors don't always send in their reports, so you may need to request them.

When reconciling your accounts payable records, you compare the vendor's statement to your ledger to determine if the charge matches the amount you paid. By helping to determine if the customer's and vendor's accounts are in sync, vendor reconciliation helps prevent conflict between a business and a vendor. When all records show the same transactions, it strengthens the relationship between you and your vendors.

Business-specific Reconciliation

For business-specific reconciliation, you compare internal records at the start and end of a financial cycle. You're looking to see if the goods sold or services provided match your internal records. Each business' need will dictate the specifics of this reconciliation. For instance, financial organizations are often required to produce frequent reconciliations of accounts with client-owned funds, one of the more demanding business-specific reconciliations.

Intercompany Reconciliation

Intercompany reconciliation is used by parent companies to unify all the accounts and ledgers from their subsidiaries. An intercompany reconciliation looks for mismatches within and between any two subsidiaries that may have resulted from billing errors involving loans, deposits, and payment processing activities. You can then rectify any errors in the company's financial statement.

Doing this ensures that your records accurately reflect the company's financial status. For example, most parent companies do this to confirm that there are no

mistakes in invoices or loan records. Another reason for intercompany reconciliation is to identify which assets belong to which subsidiary.

Customer Reconciliation

Businesses perform customer reconciliation by comparing invoices sent to their accounts receivable ledger records. This process is valuable for companies that offer credit terms and options to their customers. Accountants in these companies can compare the amounts received to the amounts unpaid.

The customer reconciliation statement reveals mistakes or anomalies in the accounting for customers. Customer reconciliation is typically done at the end of the month, just before a business releases its monthly financial statements, as part of the account closing process.

3.4 Treasury Management

Treasury management refers to the process of overseeing and controlling an organization's financial assets, liabilities, cash flow, and associated risks. It involves managing the financial resources of the organization to ensure optimal utilization, liquidity, and risk management. In the context of banking, treasury management specifically focuses on managing the financial operations of a bank. Here are key aspects of treasury management in banking:

1. **Liquidity Management:** Treasury management involves managing the liquidity position of the bank to ensure sufficient funds are available to meet obligations, manage day-to-day operations, and capitalize on investment opportunities. This includes cash flow forecasting, optimizing cash positions, maintaining appropriate liquidity buffers, and managing interbank borrowing and lending.
2. **Cash Management:** Cash management is a core component of treasury management. It involves monitoring and controlling the bank's cash flows, including incoming and outgoing payments, customer deposits, interbank transfers, and cash positioning. Effective cash management ensures that cash is efficiently allocated, interest costs are minimized, and excess cash is invested or utilized for lending purposes.
3. **Risk Management:** Treasury management includes identifying, assessing, and managing various financial risks faced by the bank. This includes interest rate risk, credit risk, liquidity risk, market risk, and operational risk. Risk

management strategies and tools are employed to mitigate risks, optimize risk-return trade-offs, and ensure compliance with regulatory requirements.

4. **Funding and Capital Management:** Treasury management encompasses managing the bank's funding sources and capital structure. This involves raising funds through different instruments, such as deposits, interbank borrowings, and capital market issuances. It also includes managing the bank's capital adequacy, optimizing capital allocation, and ensuring compliance with regulatory capital requirements.
5. **Investment Management:** Treasury management includes managing the bank's investment portfolio to generate returns while ensuring liquidity and managing risk. This involves identifying suitable investment opportunities, analyzing investment risks and returns, diversifying the portfolio, and monitoring investment performance. The investment portfolio may include government securities, corporate bonds, money market instruments, and other permissible investments.
6. **Foreign Exchange Management:** In the case of international banking operations, treasury management involves managing foreign exchange risks. This includes hedging strategies to mitigate foreign exchange rate fluctuations, managing currency exposures, executing foreign exchange transactions, and complying with regulatory requirements related to foreign exchange transactions.
7. **Relationship Management:** Treasury management involves building and maintaining relationships with various stakeholders, including banks, financial institutions, counterparties, and regulatory bodies. Effective relationship management enables access to diverse funding sources, better pricing terms, and cooperation in risk management activities.
8. **Technology and Systems:** Treasury management heavily relies on technology and systems to support efficient and effective operations. This includes treasury management systems (TMS), risk management systems, cash management systems, and other digital tools for cash forecasting, risk analytics, trade execution, and reporting.

Effective treasury management in banking enables banks to optimize their financial resources, manage risks prudently, ensure compliance with regulatory requirements, and enhance profitability. It requires a comprehensive understanding of financial

markets, regulatory frameworks, and internal processes to make informed decisions and strategies that align with the bank's objectives.

3.5 Forex Operations

Forex operations, also known as foreign exchange operations, refer to the activities and transactions involving the exchange of one currency for another. Forex operations play a crucial role in facilitating international trade, investment, and financial transactions. In the banking context, forex operations involve the buying, selling, and management of foreign currencies. Here are key aspects of forex operations in banking:

1. **Foreign Exchange Trading:** Banks engage in foreign exchange trading on behalf of their clients and for their own accounts. This involves buying and selling currencies in the foreign exchange market to take advantage of fluctuations in exchange rates. Banks act as intermediaries, matching buyers and sellers of currencies and executing trades.
2. **Spot Transactions:** Spot transactions are the most common type of forex transactions. They involve the immediate exchange of currencies at the prevailing spot exchange rate. Banks facilitate spot transactions for clients who need to convert one currency into another for immediate delivery.
3. **Forward Contracts:** Banks offer forward contracts to clients who wish to lock in an exchange rate for future currency conversions. Forward contracts allow clients to hedge against potential currency fluctuations and provide certainty in future transactions. Banks act as counterparties, entering into agreements to buy or sell currencies at a predetermined rate and date in the future.
4. **Currency Swaps:** Currency swaps involve the exchange of principal and interest payments in different currencies between two parties. Banks facilitate currency swaps for clients looking to manage their currency exposures or access different funding markets. Currency swaps can be used for hedging purposes or to take advantage of interest rate differentials.
5. **Risk Management and Hedging:** Banks provide risk management solutions to help clients mitigate currency-related risks. This includes offering hedging products such as forward contracts, options, and derivatives to protect against

adverse currency movements. Banks work with clients to develop tailored hedging strategies based on their specific risk profiles and requirements.

6. **Trade Finance:** Forex operations in banking also include providing trade finance services to facilitate international trade transactions. Banks offer services such as letters of credit, documentary collections, and trade financing options, which involve foreign exchange transactions to facilitate cross-border payments and manage currency risks.
7. **Regulatory Compliance:** Forex operations in banking are subject to regulatory frameworks and compliance requirements. Banks must adhere to anti-money laundering (AML) regulations, know-your-customer (KYC) requirements, and other regulatory guidelines to ensure transparency and prevent illicit activities in foreign exchange transactions.
8. **Market Research and Analysis:** Banks engage in market research and analysis to provide insights and forecasts on currency movements to their clients. They analyze economic indicators, geopolitical factors, and market trends to help clients make informed decisions regarding their forex operations.
9. **Technology and Trading Platforms:** Banks utilize advanced technology and trading platforms to execute forex operations efficiently. Electronic trading platforms provide real-time access to currency markets, facilitate trade execution, and offer tools for price analysis, risk management, and reporting.

Forex operations are integral to the global financial system and play a vital role in facilitating international commerce and investment. Banks leverage their expertise, market access, and risk management capabilities to provide forex services and meet the diverse needs of their clients in managing currency exposures and executing foreign exchange transactions.

Risk Management

Risk management involves identifying, assessing, and mitigating risks that could impact the bank's operations, financial performance, and reputation. This includes credit risk, market risk, operational risk, liquidity risk, and compliance risk. Risk management strategies and processes are put in place to minimize potential losses and ensure regulatory compliance.

Data Centre Management

Data centre management refers to the administration and maintenance of the bank's data centres, which house critical IT infrastructure and systems. It involves managing server hardware, network equipment, storage systems, and other components to ensure continuous availability, security, and efficient operation of the bank's data and applications.

Network Management

Network management involves overseeing the bank's computer networks, including local area networks (LANs), wide area networks (WANs), and internet connectivity. Network management aims to ensure the reliability, performance, and security of network infrastructure. It includes activities such as monitoring network traffic, troubleshooting connectivity issues, managing network devices, and implementing security measures.

Knowledge Management (MIS/DSS/EIS)

Knowledge management involves capturing, organizing, and leveraging the bank's knowledge and information assets for decision-making and operational efficiency. Management Information Systems (MIS), Decision Support Systems (DSS), and Executive Information Systems (EIS) are tools and technologies used to collect, analyze, and present data and information to support decision-making at different levels within the bank.

Customer Relationship Management (CRM)

Customer Relationship Management focuses on managing and enhancing the bank's relationships with its customers. CRM systems and practices help banks understand customer needs, preferences, and behaviors to provide personalized services, improve customer satisfaction, and drive customer loyalty. It involves activities such as customer data management, segmentation, marketing campaigns, and customer service management.

These areas are focus in banking are crucial for effective risk management, efficient data and network infrastructure management, leveraging knowledge and information for decision-making, and building strong customer relationships. By implementing robust risk management practices, ensuring reliable data and network infrastructure, utilizing knowledge management tools, and implementing effective CRM strategies, banks can enhance operational efficiency, mitigate risks, and deliver exceptional customer experiences.

Chapter 4

Interbank Payment System

4.1 Interbank Payment System

An interbank payment system is a network or platform that enables the transfer of funds and settlement of transactions between different banks. It facilitates the movement of money and ensures the smooth functioning of financial transactions between banks. Here are some key aspects of interbank payment systems:

1. Real Time Cross Settlement (RTGS)
2. National Electronic Fund Transfer (NEFT)
3. Speed Clearing
4. Electronic Clearing Services (ECS)
5. Cash Management Service (CMS)
6. Automated Teller Machine (ATM)
7. Internet Banking
8. Mobile Banking

4.2 Real Time Cross Settlement (RTGS):

RTGS or Real-Time Gross Settlement is a system where the funds transfer requests from one savings account to another are processed in real-time, i.e., as soon as they are received from the remitting bank.

- Unlike in NEFT, the fund transfer instructions under RTGS are processed individually on an order basis.
- An individual can transfer funds from one bank to another within India on an immediate basis.
- It is ideally used for high-value transactions only.
- There is a minimum cap of Rs. 2 lakh on RTGS transactions. An individual will have to resort to NEFT for any value below that.

- Although almost every bank offers these facilities to its customers, these services are not available in every bank's branches.

Under the system of RTGS, one bank is able to make a payment electronically to another bank through the Reserve Bank of India. The paying bank sends a message to the RBI, based on which it debits the current account of the paying bank and credits the current account of the receiving bank without any time lag. Unlike the usual clearing system, there is no netting of transactions and each transaction is given effect separately, immediately after initiation of the transaction by the paying bank.

Hence, it is called Real Time Gross Settlement. Banks participating in the RTGS system have to maintain separate current accounts with the settlement bank for RTGS purpose. The entire transaction is completed within a short period of two hours. The transaction is completed under the Straight Through Process (STP), which means that the processing is based on the data entry at the remitting bank only. Once the remittance instruction is transmitted to RBI, the remitting bank cannot cancel or modify the remittance.

RTGS is widely used for inter-bank payments as a transfer transaction with the intermediation of RBI. This is done by interfacing the core banking system (CBS) of the two banks with the computer server of the Reserve Bank of India.

Though the system of RTGS is generally used for inter-bank payment, the customers of the bank are also allowed to transfer funds by using the system (presently minimum Rs 100,000) against payment of the prescribed charges. However, both the remitting branch and the beneficiary branch of the other bank have to be CBS enabled. The system is immensely beneficial to the customers for efficient funds management.

The below-mentioned table explains the difference between RTGS, NEFT, IMPS, and UPI:

Description	NEFT	RTGS	IMPS	UPI
Regulated By	RBI	RBI	NPCI	NPCI
Settlement Type	Half-hourly batches	Immediate settlement	Immediate settlement	Immediate settlement

Minimum Transfer	Rs. 1	Rs. 2 lakh	Rs. 1	Rs. 1
Maximum Transfer	No limit	No limit	Rs. 2 lakh	Rs. 1 lakh
Timings	In batches 24×7	24×7	24×7	24×7
Charges	No charges on online transaction	May differ from bank to bank	May differ	No charges

Benefits of RTGS:

- It is a safe and secure system of transferring funds.
- There is no upper capping on transactions/transfers of funds via RTGS.
- The service is available round the clock 24×7 and 365 days and funds are transferred to the beneficiary in real-time.
- There is no need of using a demand draft or a cheque at the time of processing RTGS.
- The remitter doesn't have to visit the bank to make a fund transfer.
- The charges on RTGS have been capped by RBI. However, it may vary from bank to bank.
- These transactions have legal backing.
- The remitter can initiate transactions from anywhere or at any time.
- There is no threat of funds being stolen.

4.3 National Electronic Fund Transfer (NEFT):

NEFT is similar to RTGS. It is National Electronic Fund Transfer from customer accounts of one bank to that of the other bank, through the RBI server, where settlement occurs on Net Basis instead of gross settlement in RTGS.

Every day, the RBI systems conduct three sessions of electronic clearing and, after completion of each session, the net amount is settled between the banks through their current accounts. The NEFT system is meant for effecting settlement of funds on behalf of the customers of the banks. The settlement is made within 24 hours and no specific amount is prescribed for NEFT. For NEFT, the two relative branches of both the banks have to be CBS enabled.

NEFT is a centralized nationwide payment method owned and controlled by the Reserve Bank of India (RBI). It easily transfers money between banks across India. A bank branch should be NEFT enabled to permit a customer to transfer the funds to another party.

Some of the points to be considered while transferring money through NEFT are.

- NEFT transaction timing on weekdays from 8.00 am to 6.30 pm and Saturdays from 8.00 am to 12.00 pm.
- There is no transaction limit, but Rs.50,000 is per transaction limit.

When an individual wishes to transfer money from his bank account to another person's bank account, he may do so through the NEFT process rather than withdrawing the money and then paying it in cash or issuing a cheque. NEFT has the primary benefit that it can transfer funds from any branch account to any other bank account at any given venue. The only condition is that both the sender and the recipient branches are NEFT-enabled. On the RBI website, you can check the list of NEFT-enabled bank branches, or call your bank's customer service to confirm the same. The NEFT process allows for the cross-border, one-way movement of funds from India to Nepal under the Indo-Nepal Remittance Facility Scheme.

Steps To Follow To Transfer Money Through NEFT

The Bank IFSC Code, along with other information such as the account holder's name, bank account number, bank branch and additional information, is a must for an NEFT transfer.

- Step 1-Use your user ID and password to sign in to your online banking account.

- Step 2-Go to the NEFT Fund Transfer page.
- Step 3- Enter the recipient name, bank account number and IFSC code.
- Step 4-You should initiate an NEFT transfer once the beneficiary is successfully connected. Enter the amount to be transferred and click the send button.

Advantages of NEFT System

- There is no need for the physical presence of any party to perform a transaction.
- No bank visit is required as long as an individual keeps a valid bank account.
- NEFT is efficient and straightforward. It can be done in less than a minute, and hardly involves any significant formality.
- Confirmation of a successful transaction can be viewed easily via email notifications and text messages.

Difference Between NEFT And RTGS

RTGS refers to Real-Time Gross Settlement. Under this scheme, the beneficiary bank provides direct instructions for the transfer. The payment is gross, so each transaction is performed individually. These payments are final, and cannot be withdrawn.

The main difference between NEFT and RTGS is that, unlike RTGS, the movement of funds occurs in batches. Hourly intervals are fixed for this reason, and the settlement is assigned to one such time slot.

How are NEFT Transactions Carried Out

NEFT is not an instantaneous process and fund transfer requests are processed in batches. Let us discuss the steps involved in the process of NEFT:

Step 1: An individual who wants to transfer funds will have to fill out an application form by providing details of the beneficiary such as the name of the beneficiary, the name of the bank's branch where the beneficiary has an account, IFSC of the branch, account type and number.

Step 2: The originating bank branch collects the data and sends a message to the NEFT service centre.

Step 3: The NEFT service centre then forwards the message to the NEFT clearing centre to be included in the next available batch.

Step 4: The clearing centre now sorts fund transfer transactions destination bank-wise and then prepares to account entries to receive funds from the originating bank and route the funds to the beneficiary's bank.

Step 5: The destination bank by this point receives the inward remittance messages from the clearing centre and processes the credit to the beneficiary customer's account.

4.4 Speed Clearing:

Speed clearing refers to collection of outstation cheques through the local clearing. It facilitates collection of cheques drawn on outstation core-banking-enabled branches of banks, if they have a net-worked branch locally. The collection of outstation cheques, till now, required movement of cheques from the Presentation centre (city where the cheque is presented) to Drawee centre (city where the cheque is payable) which increases the realisation time for cheques. Speed Clearing aims to reduce the time taken for realisation of outstation cheques.

A person who has an outstation cheque with him deposits it with his bank branch. This bank branch is called the Presenting branch. The cheque is sent for collection to the city where it is payable / drawn called Destination centre or Drawee centre. The branch providing the collection service at the Destination centre is called the Collecting branch. On receipt of the cheque, the Collecting branch presents it in local clearing to the Drawee branch or the Destination branch. Once the cheque is paid the Collecting branch remits the proceeds to the Presenting branch. On receipt of realisation advice of the cheque from the Collecting branch, the customer's account is credited. This, in short, is the process of Collection. When a cheque is accepted on a collection basis by a bank, it credits the customer's account only after realisation of its proceeds.

How does the Speed Clearing work?

Banks have networked their branches by implementing Core Banking Solutions (CBS). In CBS environment, cheques can be paid at any location obviating the need for their physical movement to the Drawee branch. The concept of Speed Clearing combines the advantages of MICR clearing with that of CBS. Cheques drawn on outstation CBS branches of a Drawee bank can be processed in the Local Clearing under the Speed Clearing arrangement if the Drawee bank has a branch presence at the local centre.

4.5 Electronic Clearing Services (ECS):

There are occasions when a large corporate, engaged mostly in utility services, have to pay or receive money from a large number of parties. Telephone companies and electricity distribution companies are the examples of such organizations. Companies accepting fixed deposits from the members of public have to pay periodical interest by issuing cheques (interest warrants) to the depositors spread all over the country.

Similarly, the companies with a large number of individual shareholders pay dividend by issuing cheques (dividend warrants) to the large number of shareholders. Physical issuance of individual cheques and mailing them to the beneficiaries all over the country, and clearing of the said cheques through the banking system, makes it a stupendous task. Similarly, the utility companies, viz., telephones, electricity, etc., have to collect their bill amounts from a huge number of customers.

Getting payments by cheques issued by the clients push up the volume of clearing cheques handled by the banking system. Technological development and mechanization of clearing operation has made the job much easier. It is realized by the banking system that the answer to the problem of huge volume of cheques to be handled for the transactions mentioned above, lay in encouraging electronic settlement of payment transactions and reducing the usage of cheques. The RBI has come up with the system of electronic clearing services in the centers directly managed by them as the settlement bank.

Depending upon the nature of the transaction, there are two types of ECS - Credit ECS and Debit ECS.

Companies, who are required to pay interest, dividend, etc., to a huge number of beneficiaries, collect the necessary data, viz., name of the beneficiary's bank, branch, nature of account and the account number and capture them in a compact disc (CD) or floppy and hand it over to the Reserve Bank of India through their banker. The RBI runs the CD in their computer and electronically passes on the data to the respective banks of the beneficiaries for credit of the amount in the account of the individual beneficiary. This is Credit ECS.

Similarly, the corporate houses collect the data regarding the customer's bank, branch, nature of account and the account number together with a mandate for debiting their respective account electronically for their periodical bills for the services rendered.

The data captured in a CD or floppy is handed over to RBI through their banker for debiting the accounts of the individual customers. This is Debit ECS.

The aggregate amount of credit ECS and Debit ECS is settled by the clearing settlement banks by debiting or crediting the respective settlement accounts of the banks presenting the CD or floppy. The settlement accounts of the beneficiary's banks or customer's banks are credited or debited separately. The greatest benefit of the ECS system is that the banks can settle a huge number of payments and receipts without physical handling of cheques and other instruments.

4.6 Cash Management Service (CMS):

Many companies and large corporate, especially those who are engaged in the business of fast-moving consumer goods (FMCG), have distributors or dealers scattered all over the country. The corporate consign their merchandise to these distributors or dealers and receive payments from them by cheques, drafts or other mode of payments. Due to the distance factor, a large amount of fund is always present in the pipeline of collection.

This increases the working capital requirement of the corporate, which otherwise could be avoided with efficient management of the collection process. This is the primary objective of CMS. CMS seeks to provide customised and efficient collection and payment services to the business clients.

As a matter of fact, the credit ECS used to pay a large number of beneficiaries is also a part of the CMS. At the same time, debit ECS also helps the bank's customer to collect the funds easily and quickly. This is also a part of CMS. Therefore, CMS can be called a combination of collection and payment services, customised and packaged to meet the needs of individual business clients.

With the help of technology and courier services, the banks have offered the product of CMS to the customers in order to give them a big relief from the hassle of collecting the upcountry cheques representing their sale proceeds from all over the country. Banks also offer the benefit of credit of the amount of cheque on the day of deposit itself, even before the cheque is collected.

Thus, an element of credit has also been clubbed in CMS. According to the arrangement with the customer, the credit is given to their account on the first day (0 day), second day, third day of deposit, depending on the clearing cycle at the centre. To speed up the cash flow of the customer, the banks offer to credit the amount of clearing

cheques on the date of deposits or the day after deposit. If any cheque is returned unpaid, the amount is recovered from the customer with interest.

4.7 Automated Teller Machine (ATM):

Conventionally, the member of the bank's staff handling cash in the counter of a bank is called the 'Teller'. The development in technology has enabled the banks to replace the human Teller by a machine that will perform the same function as that of the Teller. These machines are called ATMs or Automated Teller Machines.

When ATMs are installed within the branch premises, it is called on-site ATM, and when installed outside the branch premises of the bank, it is called off-site ATM. ATMs can be installed at a large number of locations and they also function round the clock. The customers can withdraw and deposit cash in their accounts through ATMs, and they need not visit the account-maintaining branch for this purpose.

Further up-gradation in the technology has enabled the customers to deposit cheques, pay orders, etc., and place orders for cheque books through ATMs. Customers can also check the balance in their accounts and transfer funds from one account to another through these ATMs. ATMs have been of great help to the banks for enhancing the customers' satisfaction by providing the convenience and service of cash withdrawal/deposit from a location close to their residence, workplace or any other place.

An ATM is a small computer with a cash-dispensing mechanism attached to it and linked to a central computer, called Switch, through dedicated telephone lines. The switch is connected to the main server of the core banking system (CBS) of the bank and also the Host Security Module (HSM). The HSM verifies the authenticity of the customer using the ATM for service.

The customer is issued an ATM card by the bank, which is inserted to the ATM and the machine asks the customer to key in his Personal Identification Number (PIN). The customer has to memorise the PIN and, once in a month/quarter, the PIN should be changed for safety purpose. Once the PIN is accepted, the ATM will ask for the type of transaction, i.e., cash withdrawal, cash deposit or any other type of service the customer desires to avail of.

Types of Automated Teller Machines (ATMs)

Automated Teller Machines (ATMs) are mainly of two types. One is a simple basic unit that allows you to withdraw cash, check your balance, change the PIN, get

mini statements and receive account updates. The more complex units provide facilities for cash or cheque deposits and line of credit & bill payments.

There are also onsite and offsite Automated Teller Machines- the onsite ATMs are within the bank premises, unlike the offsite ones which are present in different nooks and corners of the country to assure that people have basic banking facilities and instant cash withdrawals if they can't go to a bank branch.

ATMs can also be categorized based on the labels assigned to them. Some of these labels are listed below-

- Green Label ATMs- Used for agricultural purposes
- Yellow Label ATMs- Used for e-commerce transactions
- Orange Label ATMs- Used for share transactions
- Pink Label ATMs- Specifically for females to help avoid the long queues and waiting time
- White Label ATMs – Introduced by the TATA group, white label ATMs are not owned by a particular bank but by entities other than the bank
- Brown Label Banks- Operated by a third party other than a bank

There are also a few biometric Automated Teller Machines that need fingerprints & eye scanners to be operated.

4.8 Internet Banking:

Netbanking, also known as internet banking, is a digital method to conduct banking transactions by the means of the internet. It is an electronic system, which any individual with a bank account can activate and use for their financial proceedings.

This is a mode of providing banking service to the customers by using the internet facility of the website. The facility enables a customer to get an access to his account at any time from any place. The customer can view his account and transfer funds from one account to another, provided both the accounts are connected through Internet.

The customer can also avail of the following other banking services through the Internet:

- (a) Make term deposits
- (b) Request for a demand draft
- (c) Pay utility bills (telephone, electricity, etc.), insurance premium, dues for using credit card, etc.
- (d) Order for a cheque book and request stop payment of a cheque
- (e) Booking air and rail tickets on line and
- (f) Shopping on line, etc.

The use of technology by the banks is multifaceted and more and more services or products are being added to the list with the passage of time.

The authenticity of the customer using the system is verified by a 'Customer ID' and a 'Password'. These two security devices are intimated by the bank to the customer initially and, thereafter, they are advised to change the password as frequently as possible. The customers are requested to exercise utmost caution so that the customer ID and the password are not disclosed to others.

How To Open A Netbanking Account Easily?

A netbanking account is a digital extension of your bank account. Opening a netbanking account, however, requires you to generate specific digital passwords that enable you to transact over the internet.

To open a netbanking account, you need to follow these four steps:

1. Approach Your Bank for a Netbanking Account

First step to begin a netbanking account is to approach your bank to enable an online banking facility for your existing bank account. Unless you request your bank to start your banking services online, you can't begin using these services, given the high security maintained in enabling you to transact digitally.

You must let your bank know your intent to begin netbanking for your account. Once the bank receives your request, it provides you two key codes that help you log in to your account online.

2. Collect Your User ID and Password

For netbanking to work, you need to know your User ID and password to log into your internet banking account. This User ID is different from your bank account number, which serves as the primary identity of your bank account.

You have to request your bank to generate a User ID and password. In the case of a new account, documents with a User ID and password are handed over at the time of opening the account.

3. Generate New User ID and Password

To generate your User ID, the bank initially provides you a unique set of numbers that have been generated from its end and a password is handed over in a concealed document to you. This password is used to log in once and the bank in most cases requests consumers to change this password after the first log in to maintain a high level of security of the account.

It is also advisable to change your User ID after you authenticate your first log-in to ensure you have a fresh set of User ID and password.

The method to change both the User ID and password is simple:

- Log in to your bank's website.
- Enter the User ID and password that has been provided by the bank.
- Then log out.
- Upon logging out, you'll see a tab on the bank's website that says "generate new User ID."
- Use that tab to generate a new User ID.
- When you request a new User ID, you'll be asked details such as your date of birth, your mobile number and other details that the bank already has secured from you via your KYC documents.
- Upon entering all your details, a one-time password will be sent to your mobile phone. This is the second stage of security and often instills the customer's faith in online banking.
- Enter this one-time password to create the new User ID.

- Then, follow the same steps to generate a new password.

4. Begin Transactions Online

You have now logged in to your bank account online and generated a new User ID and password. You can now begin your transactions online.

Uses of Net Banking

Once you start using a netbanking account, it changes your perspective toward using simple banking services, which you would otherwise have kept delaying, awaiting a scheduled visit to the bank. Netbanking is most frequently used for seven banking processes:

1. Using Netbanking to Transfer Funds

With your netbanking active, you can move funds within your own internal bank accounts, from one bank account to another, from your own account in one bank to another account in another bank or from your own bank account to someone else's bank account. You can use the provision of "Standing Instruction" to repeat transfers on a periodic basis.

2. Using Netbanking to Generate and Track Account Statements

You don't have to visit your bank or your bank ATM to keep track of debits and credits into your bank account. By a simple click, you can find out transactions done for specific periods of time and request for account statements to be delivered in your email inbox whenever needed.

3. Using Netbanking to Pay Bills

To make your busy everyday life easier, you can use netbanking to pay your bills, such as phone bills, electricity bills, water utilities bills and other bills that have an online network.

Most big corporations offering everyday services have a well-established digital infrastructure that enables consumers to avoid physical visits and enjoy the convenience of paying for the use of their services online.

4. Using Netbanking to Apply for Loans

Loans can be easily applied for online using netbanking. The process of getting personal loans in India and getting business loans is elaborate. Your netbanking

activation enables you to be KYC-compliant such that the time taken by loan companies to verify you and your credit score to grant a loan gets much shorter and less cumbersome for both stakeholders.

5. Using Netbanking to Pay Insurance Premiums

Payment of insurance premiums is one of the financial transactions that requires customers to adhere to strict timelines to avoid any penalties. With netbanking, customers can opt for “Standing Instructions” for specific future dates without worrying about missing a date or incurring a fine.

6. Using Netbanking to Pay EMIs

You can pay your electronic monthly instalments, or EMIs, using netbanking. One of the frequently used facilities of netbanking of the younger generation that has used internet banking since they first started banking is paying EMIs.

There is no cap on the kinds of EMIs you can pay via netbanking. From your credit card EMI to your rent EMI or your shopping EMIs, all can be paid digitally and securely using netbanking.

7. Using Netbanking to Apply for a New Debit Card and Cheque Books

With netbanking, you can apply for a new debit card and cheque books as and when needed without having to visit a bank. This is one of the easiest ways to apply for a new physical copy of a financial product of the bank that you’ve been using.

4.9 Mobile Banking:

Mobile Banking (also known as M-Banking, SMS Banking, etc.) is a term used for performing balance checks, account transactions and payments through a mobile phone. Mobile banking can be conducted via SMS or Mobile Internet.

Mobile Banking works on the ‘Text Messaging Facility’, and SMS compatibility that is available on mobile phones. This facility allows anyone to send a short text message from his mobile phone, instead of making a phone call.

The message travels from the user’s mobile phone to the SMS Centre of the Cellular Service Provider, and from there it travels to the bank’s systems. The information is retrieved and sent back to his mobile phone via the SMS Centre, all in a matter of a few seconds.

Mobile Banking via WAP (Wireless Application Protocol) is another form of electronic banking that enables the user to communicate interactively with the bank. This is the most convenient form of mobile banking service, taking full advantage of all the features offered by Global System for Mobile Communication (GSM) and the online systems of the bank.

Importance of Mobile Banking in India

Following points list the importance of mobile banking in India:

- Through mobile banking, customers would be able to conduct transactions safely
- You can transfer money digitally at any time and from anywhere
- Carry out unlimited transactions 24/7
- You can avail of a number of different banking services through internet banking
- Mobile applications save time and effort compared to traditional banking.
- Money transfers are done in a transparent way, with the source clearly defined through mobile banking.
- Mobile banking enables you to receive mobile notifications from time to time regarding the status of your account balances, money transfers, etc.
- mBanking facilitates larger transactions to be done within seconds.

Features and Benefits of Mobile Banking

Following are the features and benefits of mobile banking:

- Mobile banking enables you to pay your bills without the need to go out physically
- Allows you to view all your transactions clearly in one place so that you can keep a track of your finances
- There is no need to get your bank statements updated physically with internet banking
- You can get offers, discounts on purchases and transactions
- Internet banking works instantly, allowing you to conduct monetary transactions within seconds

- With 24/7 availability, mobile banking can be carried out anytime and anywhere
- You also get several value-added services with internet banking such as mobile recharges, bill payments, etc.
- You can also use mobile banking for investment purposes in the form of securities, pension accounts, etc.

Registration Process for Mobile Banking

Mobile banking registration is extremely simple and straightforward. Your bank or financial institution can be reached to learn more about the entire process. Let us know the basic steps involved in registering for internet banking.

1. The first step would be to download the internet banking app offered by your bank. Usually, banking apps are available for iOS and Android devices both.
2. For registering yourself, fill in the details required on the app. Check the accuracy of personal and account details twice before submitting them.
3. The app will generate a login ID and password on your mobile number and email ID.
4. Certain banks also employ OTPs for verifying user details and credentials. In such cases, you will need to enter the OTP received on your registered mobile number and email ID into the app to proceed forward.
5. Using the provided ID and password, log in to the app.
6. Using your credit card pin, enter into your account on the app.
7. You can now start using banking services available on the app.

Different Types of Mobile Banking Services

Following are the different types of banking services:

1. **Online Transactions:** First and foremost, internet banking's main purpose for most people is digital transactions. To transfer funds from one account to another, you do not have to physically go to the bank. With mobile banking, this can be done on your smartphone or any other smart device. Transactional services include:
 - Transferring funds to others

- Transferring funds to your own account/making payments to others
 - Transferring funds from one bank to another
 - Setting standing instructions for periodic transfer of funds
 - Payments or money transfer through UPI/NEFT/IMPS, etc.
2. **Investments:** Mobile banking also allows you to invest in several different programs and schemes such as fixed deposits, recurring deposits, mutual funds, shares, etc. It can also be used to avail portfolio management and other consultancy services.
3. **Account Details:** You can check the status of funds in your account with the help of mobile banking. This helps you to keep track of your expenses and incomes from the comfort of your home. You can check your account balance from time to time through your smartphone. Other facilities include:
- Viewing your transactional history
 - Digital account statements
 - Digital passbooks
 - Digital card statements
 - Viewing and downloading loan statements
4. **Additional Services:** There are several other additional services coupled with your mobile net banking facility. They are as follows:
- Locating nearby bank branches
 - Lodging a complaint regarding banking services
 - Applying for opening an account, FD, RD, etc.
 - Tracking applications regarding complaints, account opening, etc.
 - Applying for a new passbook
 - Applying for a new chequebook
 - To cancel a cheque issued by mistake

Mobile Banking via Applications

Mobile banking is most common with the help of banking applications. Banks and financial institutions develop high-end applications that assist customers in doing their banking tasks effortlessly. These applications can be easily downloaded online. The registration process for the same has been mentioned above.

Most mainstream banks offer personalised applications for their customers' ease of managing their accounts. Remote banking has made such apps more and more customisable as per their users' needs.

Mobile Banking via SMS

A lot of people still prefer SMS for doing their mobile banking activities. This is best suited for people who do not have smartphones and smart devices. Traditional mobile phones support SMS banking along with many perks and facilities.

- Enquiring account balances
- Receiving bank statements
- Receiving card statements
- Block existing debit/credit cards
- Receiving instant notifications regarding money transfer
- Receiving notifications for due bills and payments
- Receiving OTPs
- Tracking EMI due date

Mobile Banking via USSD

You can also avail of mobile banking services via Unstructured Supplementary Service Data or USSD. This facility allows people to conduct basic banking services only. There is no need for an internet connection or smartphone to avail of mobile banking via USSD. Other facilities under this include:

- Account balance inquiry
- Account statements
- Card statements

- Fund transfer
- Receive OTPs
- Change MPIN

Challenges with Mobile Banking

Despite being extremely helpful, mobile banking also poses certain challenges for its users. They are as follows:

- Challenging for people who are not that technologically savvy
- Subjected to digital fraud and several other risks due to rising digital frauds
- Virus and malware attacks are also common with mobile banking accounts.
- Most customers are still apprehensive about using mobile banking services. This lack of awareness is a major challenge in adopting this technique.

Important Tips for Safe Mobile Banking

Following are some important tips for conducting safe mobile banking activities:

- **Password Updates:** Make sure to update your password for the mobile banking account regularly. This gives you an added layer of security against fraudulent elements seeking to steal important information or even hack your account.
- **Secure Network:** Another important thing to remember is always to use a secure network to open your mobile banking account. Never use a risky or unreliable server to log in to your internet banking account.
- **Avoiding Risky Sources:** You must always avoid opening notifications or links from risky sources. Make sure to avoid such sources for any type of bank-related information. This is the most common source of fraud availed by unlawful elements.
- **SMS Notifications:** Always keep your SMS notification on for the purpose of monitoring your account activity. If any unknown transfer has happened in your account, you will be the first one to know about it. This way, issues can be rectified at the earliest.
- **Clear Browser History:** Make it a habit to regularly clear your mobile browser history and cache. Deleting temporary files and cookies from your system allows

you to be safe from viruses and malware. It also provides security against fraudulent sources.

4.10 INFINET Interface with Payment system Network

INFINET (Indian Financial Network) is a secure, closed-user group communication network developed by the Institute for Development and Research in Banking Technology (IDRBT) in India. It is used by banks and financial institutions for secure communication and data exchange. When it comes to interfacing with payment system networks, such as the Real-Time Gross Settlement (RTGS) system or the National Electronic Funds Transfer (NEFT) system in India, the INFINET network plays a crucial role. Here's an overview of the interface between INFINET and payment system networks:

1. **Connectivity:** Banks and financial institutions connect to the INFINET network through dedicated leased lines or virtual private networks (VPNs). The network ensures secure communication between participating entities, facilitating data exchange and transaction processing.
2. **Messaging Standards:** Payment system networks typically follow specific messaging standards for the exchange of payment instructions and settlement information. In the case of India's payment systems like RTGS and NEFT, the messaging standards are based on ISO 20022. Banks using the INFINET interface need to adhere to these messaging standards to ensure interoperability and compatibility with the payment system networks.
3. **Transaction Initiation:** Banks connected to the INFINET network can initiate payment transactions through the respective payment system networks. For example, banks can send RTGS payment instructions for high-value, real-time fund transfers or NEFT payment instructions for batch processing of lower-value funds transfers.
4. **Confirmation and Settlement:** Once the payment instructions are received by the payment system network, they are processed, validated, and settled according to the rules and procedures of the specific payment system. The payment system network sends confirmation messages and settlement details back to the banks via the INFINET network, providing updates on the status of the transactions.

5. **Transaction Reconciliation:** Banks using the INFINET interface with payment system networks need to reconcile the incoming payment messages and settlement information with their internal systems. This ensures accurate and up-to-date records of the payment transactions, enabling proper accounting and reporting.
6. **Security and Authentication:** As an important aspect of financial transactions, security and authentication measures are crucial in the interface between INFINET and payment system networks. Robust encryption protocols, digital certificates, secure user authentication mechanisms, and other security measures are implemented to protect the confidentiality, integrity, and authenticity of the data transmitted over the network.

The interface between INFINET and payment system networks enables seamless and secure communication for banks and financial institutions in India. It ensures that payment transactions are properly initiated, processed, and settled within the defined rules and procedures of the payment system networks. By leveraging the INFINET interface, banks can participate in various payment systems and offer efficient fund transfer services to their customers.

4.11 Structured Financial Messaging System

The Structured Financial Messaging System (SFMS) is a messaging standard developed by the Institute for Development and Research in Banking Technology (IDRBT) in India. SFMS is specifically designed for the Indian banking and financial sector to facilitate secure and standardized communication and data exchange between banks and financial institutions. It enables seamless integration of various banking applications and systems, streamlining business processes and improving operational efficiency. Here are key features and benefits of the SFMS:

1. **Messaging Standard:** SFMS provides a standardized format and syntax for the exchange of financial messages between banks. It defines message types, data elements, and rules for message composition, ensuring consistency and interoperability across different banking systems.
2. **Secure Communication:** SFMS incorporates robust security measures to protect the confidentiality, integrity, and authenticity of financial messages. It utilizes encryption, digital signatures, and secure protocols to safeguard sensitive information during transmission.

3. **End-to-End Message Tracking:** SFMS enables end-to-end tracking of messages, allowing banks to monitor the status and progress of transactions throughout the message lifecycle. This helps in ensuring timely and reliable delivery of messages and provides transparency in transaction processing.
4. **Real-Time Messaging:** SFMS supports real-time messaging capabilities, allowing banks to exchange time-critical information and instructions instantly. Real-time messaging is particularly essential for high-value payment systems like Real-Time Gross Settlement (RTGS) where immediate settlement is required.
5. **Integration with Payment Systems:** SFMS integrates with various payment systems in India, including RTGS, National Electronic Funds Transfer (NEFT), and Centralized Funds Management System (CFMS). It facilitates the exchange of payment instructions, settlement details, and status updates between participating banks and the payment systems.
6. **Workflow Automation:** SFMS enables automated workflow processes within banks by providing structured messages for various banking transactions. It reduces manual intervention, enhances straight-through processing (STP), and improves operational efficiency.
7. **Message Validation and Compliance:** SFMS includes built-in validation rules to ensure the accuracy and compliance of messages. It checks the integrity and correctness of message data before transmission, reducing errors and rejections in the processing of financial transactions.
8. **Reporting and Audit Trail:** SFMS generates detailed audit trails and transaction reports, facilitating regulatory compliance, internal control, and audit requirements. Banks can track and review message activities, ensuring transparency and accountability in their operations.

The adoption of SFMS in the Indian banking industry has significantly enhanced the efficiency, security, and interoperability of financial messaging. It has standardized the communication protocols, improved data integrity, and streamlined the exchange of financial information among banks. By implementing SFMS, banks can achieve better automation, reduce processing time, and provide enhanced services to their customers.

4.12 Electronic Fund Transfer

Electronic fund transfer (EFT) refers to the electronic transfer of funds from one bank account to another, typically facilitated through electronic systems and payment

networks. EFTs provides a convenient, secure, and efficient way to transfer money, replacing traditional paper-based payment methods such as checks. An electronic funds transfer (EFT), or direct deposit, is a digital movement of money from one bank account to another. These transfers take place independently from bank employees. As a digital transaction, there is no need for paper documents. EFT has become a predominant method of money transfer since it is a simple, accessible, and direct method of payment or transfer of funds. As businesses increase their usage of EFT, paper checks become obsolete due to expense, slower expedition, and overall effort. Here are some key aspects of electronic fund transfers:

Electronic Checks

In this payment, a digital check is generated upon the payer's authorization. E-checks are commonly used for vendor payments.

Direct Deposit

With direct deposit, funds are automatically deposited into an account with little to no paperwork. This method is popular among employees. While the automatic deposit requires almost no work on a regular basis, the deposit needs to be set up, and this requires bank account information for the recipient, among other potential information for entry.

Phone Payments

This is a casual transaction, and it occurs during a phone call. Usually the payee will supply their information, typically a card number, to the recipient over the phone. The transaction will happen on the recipient's line. The payee does very little after verbal authorization. This is common for utility payments.

ATM Transactions

A global convenience, ATM transactions occur at electronic kiosks found throughout cities and banks all over the world. In this case, a person is withdrawing cash from their bank account by inserting their debit card into a machine, which will transmit information to the bank, and then process the request to dispense money. It is an instant transaction.

Card Transactions

During the point of sale phase of a transaction, a credit card or debit card is the most commonly used form of payment around the world, replacing cash. This can be in

person or online, and entails the swipe, dip, or entry of a card, during which account information is electronically received and a payment withdrawal is approved, then the payment is scheduled and processed within a day or two.

Internet Transactions

The internet version of tapping, swiping, or inserting a card involves manual entry into a point of sale field, followed by clicking a payment button. This process does the same as the above, processing an approval for payment, and then transferring funds for payment within a couple days.

Advantages of EFTs:

EFTs offer several benefits, including: a. Speed and Convenience: Funds can be transferred quickly, often within minutes or hours, eliminating the need for paper-based processes. b. Cost-Effectiveness: EFTs are generally more cost-effective compared to traditional payment methods like checks, reducing processing and handling costs. c. Security: EFTs employ robust security measures to protect against fraud and unauthorized access, enhancing transaction security. d. Accessibility: EFTs can be initiated and received electronically from anywhere, providing greater accessibility for individuals and businesses.

Electronic fund transfers have revolutionized the way money is transferred, providing a faster, more secure, and convenient alternative to traditional payment methods. They have significantly contributed to the efficiency and effectiveness of financial transactions, benefiting individuals, businesses, and financial institutions alike.

Chapter 5

Block Chain & Bit-coin

5.1 Contemporary Issues in Banking Techniques Block Chain and Bit - coin

Blockchain technology and cryptocurrencies, such as Bitcoin, have emerged as significant contemporary issues in the banking industry. Here's an overview of these technologies and their impact on banking:

1. **Blockchain Technology:** Blockchain is a decentralized and distributed digital ledger technology that allows multiple parties to maintain a shared record of transactions in a secure and transparent manner. Key aspects of blockchain in banking include:
 - a. **Improved Security:** Blockchain's cryptographic algorithms and consensus mechanisms provide enhanced security and integrity to banking transactions. It reduces the risk of fraud, tampering, and unauthorized access.
 - b. **Enhanced Efficiency:** Blockchain streamlines and automates complex banking processes, such as cross-border payments, trade finance, and Know Your Customer (KYC) procedures. It eliminates intermediaries, reduces paperwork, and accelerates transaction settlement.
 - c. **Smart Contracts:** Blockchain enables the use of smart contracts, which are self-executing agreements that automatically enforce the terms and conditions of a contract. Smart contracts have the potential to automate and streamline various banking operations, such as loan agreements, insurance claims, and supply chain financing.
 - d. **Improved Transparency:** The decentralized nature of blockchain allows for transparent and auditable transactions. Banks can leverage blockchain to enhance transparency in areas like asset management, regulatory compliance, and audit trails.

Bitcoin and Cryptocurrencies

Bitcoin is a digital currency that operates on a decentralized network called the block chain. It introduced the concept of cryptocurrencies and has spurred the development of numerous other digital currencies. Key aspects of cryptocurrencies in banking include:

- a. **Alternative Payment System:** Cryptocurrencies provide an alternative payment system outside the traditional banking system. They allow for peer-to-peer transactions

without the need for intermediaries like banks, resulting in faster and potentially cheaper transfers.

b. Financial Inclusion: Cryptocurrencies have the potential to enable financial inclusion by providing access to financial services for individuals who are unbanked or underbanked. They can serve as a medium of exchange and store of value for those without access to traditional banking services.

c. Regulatory Challenges: The decentralized and anonymous nature of cryptocurrencies poses regulatory challenges for banks and financial institutions. Governments and regulatory bodies are still developing frameworks to address issues related to money laundering, fraud, consumer protection, and taxation associated with cryptocurrencies.

d. Blockchain Adoption: While cryptocurrencies like Bitcoin have gained attention, banks are more focused on exploring the potential of blockchain technology. Banks are exploring the use of blockchain for cross-border payments, trade finance, identity verification, and improving the efficiency of back-office operations.

It's important to note that the adoption and integration of blockchain and cryptocurrencies in the banking industry are still evolving. Banks need to carefully assess the opportunities, risks, and regulatory considerations associated with these technologies before implementing them into their operations.

Blockchain technology has undeniably captured the imagination of the tech world and beyond, offering the promise of decentralized, transparent, and tamper-proof systems. From its inception with Bitcoin to the development of smart contracts, non-fungible tokens, and decentralized finance, blockchain has been hailed as a groundbreaking innovation with potential applications in numerous industries.

But along with blockchain's advantages come some significant challenges – and to reach its full potential as a game-changing technology, these issues will need to be overcome.

Scalability

Blockchain networks can be slow and inefficient due to the high computational requirements needed to validate transactions. As the number of users, transactions, and applications increases, the ability of blockchain networks to process and validate them in a timely way becomes strained. This makes blockchain networks difficult to use in applications that require fast transaction processing speeds.

Traditional blockchains like Bitcoin and Ethereum rely on consensus algorithms like proof-of-work and proof-of-stake, which can be slow and resource-intensive. As a result, these networks face limitations in transaction throughput, often leading to congestion and high transaction fees.

Energy Consumption

The process of validating transactions on a blockchain network requires a lot of computing power, which in turn requires a lot of energy. This has led to concerns about carbon emissions and the environmental impact of blockchain technology.

Security

Blockchain's security measures have often been touted as key strengths of the technology – but the security of blockchain networks is not without its challenges. There have been instances of security breaches and hacking attacks on blockchain networks, and these problems can result in monetary losses and damage to the integrity of the network.

To mitigate risks, companies are working to improve the security of blockchain networks and applications. Their security efforts include formal verification of smart contracts to help identify potential vulnerabilities and using multi-signature wallets for storing and managing digital assets.

Complexity

Blockchain is a complex technology that requires a high level of technical expertise to implement and maintain. Tech challenges may hinder the widespread adoption of blockchain technology and discourage potential users and developers from engaging with it. Blockchain's complexity can also lead to errors and inefficiencies in implementation.

Interoperability

Interoperability, or the ability of different blockchain networks to communicate and interact with each other, is another crucial challenge facing the industry. There are currently many different blockchain platforms – each with its own protocols and standards – and they often do not work well together.

This lack of interoperability can lead to inefficiencies, as individuals and companies may need to navigate multiple platforms and use a number of tokens or cryptocurrencies to interact with different networks. This fragmentation can also hinder

collaboration, stifle innovation, and prevent the seamless exchange of data and value between different blockchain ecosystems.

5.2 Crypto currency Analysis of Recent Core Banking Software

1. **Integration of Cryptocurrency Functionality:** With the growing popularity and acceptance of cryptocurrencies, there has been an increased interest in integrating cryptocurrency functionality into core banking software. Some banks and financial institutions are exploring the inclusion of features that allow customers to buy, sell, hold, or transact with cryptocurrencies within their existing banking accounts.
2. **Regulatory Compliance:** The regulatory landscape surrounding cryptocurrencies varies across countries, and compliance requirements can be complex. Core banking software providers need to ensure that their solutions comply with relevant regulations, such as anti-money laundering (AML) and know your customer (KYC) requirements. Integration with cryptocurrency exchanges or wallets may require additional compliance measures and partnerships.
3. **Security Considerations:** Cryptocurrencies have unique security considerations due to their digital nature and the risks associated with holding and managing private keys. Core banking software providers need to implement robust security measures to protect customers' cryptocurrency holdings, including secure storage, multi-factor authentication, and encryption techniques.
4. **Account Reconciliation:** When integrating cryptocurrency functionality into core banking software, one challenge is reconciling cryptocurrency transactions with traditional banking transactions. Core banking systems need to handle the accounting and reconciliation of cryptocurrency balances, ensuring accurate reporting and integration with existing banking processes.
5. **Scalability and Performance:** Cryptocurrencies, particularly those with large user bases, can experience high transaction volumes. Core banking software needs to be capable of handling the scalability and performance requirements of cryptocurrency transactions, ensuring fast and efficient processing without compromising system stability.
6. **User Experience and Interface:** As cryptocurrencies become more mainstream, users expect a seamless and intuitive experience when accessing cryptocurrency features through their banking accounts. Core banking software should provide

a user-friendly interface and a smooth integration of cryptocurrency functionalities, allowing customers to manage their traditional and digital assets in one place.

7. Partnership and Integration: Core banking software providers may need to form partnerships or integrate with cryptocurrency exchanges, wallets, or payment gateways to facilitate the seamless transfer of funds between traditional banking and cryptocurrency accounts. Integration with external systems may require standardized APIs or custom integrations.

It's worth noting that the adoption and integration of cryptocurrencies within core banking software can vary widely among financial institutions and may depend on factors such as regulatory environment, customer demand, and risk appetite. It's advisable to consult with core banking software providers or industry experts for the most up-to-date analysis and insights specific to your region and requirements.