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DIGITISATION OF RETAIL BANKING PRODUCTS

TECHNOLOGY IN RETAIL BANKING

- Retail banking, which caters to the **needs of individual customers, relies heavily on the seamless integration of advanced technologies to offer a diverse range of products and services.**
- Technology has revolutionized the **range of banking products available to customers.** From **online banking and mobile apps to digital wallets and contactless payments,** customers now have access to a plethora of convenient and user-friendly products.

IMPACT OF TECHNOLOGY IN RETAIL BANKING

Increased use of Data Analytics and Artificial Intelligence

- Banks use data analytics to analyze **customer transaction history and spending patterns to offer personalized product recommendations.**

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- AI algorithms help in **real-time risk assessment and fraud detection**, enhancing security and minimizing losses.

Self-learning Banking Systems

- AI-powered **chatbots and virtual assistants** handle complex **customer queries and continuously learn from interactions** to improve responses.
- **Robotic Process Automation (RPA)** automates routine tasks, leading to increased efficiency and reduced errors.

Open Banking and Embedded Finance

- Open Banking through **APIs enables third-party developers to build innovative financial products and services**, fostering competition and collaboration.
- **Embedded finance**, simply put, is when a **non-financial company offers financial products and services** through APIs and platforms.

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**INSTITUTE FOR DEVELOPMENT AND RESEARCH IN BANKING
TECHNOLOGY (IDRBT)**

- It is an **engineering training institution** exclusively focused on **banking technology** established by the **Reserve Bank of India (RBI)** in **1996**.
- The main focus of the institute is **conducting applied research and experimental development** in the area of **banking technology**.
- This institute focuses on **immediate and future needs** and requirements of the banking sector and **developing technologies to address them**.

FORMATION OF IDRBT

- The Reserve Bank of India constituted a **committee on "Technology Upgradation in the Payments System"** in the **year 1994** under the Chairmanship of Shri W. S. Saraf,
- **In its report submitted in December 1994,** the committee emphasized that an apex-level Institute is set up to undertake development and research in the area of

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Information Technology applied to the financial sector, with a specific focus on banking.

- Reserve Bank of India **approved this recommendation and established an Institute** with a brief to spearhead technology absorption in the banking and financial sector of the country.
- Accordingly, the IDRBT **started functioning on March 06, 1996.**

TECHNOLOGY DEVELOPED BY IDRBT

- Indian Financial Network (INFINET)
- Structured Financial Messaging System (SMS)
- National Financial Switch (NFS)
- Indian Banking Community Cloud (IBCC)

INDIAN FINANCIAL NETWORK (INFINET)

- It is a **secure, private, and closed user group communication network** established by the IDRBT in collaboration with the RBI.

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- It is specifically designed to cater to the **communication needs of banks and financial institutions in India.**
- INFINET serves as the **backbone for interbank communication and data exchange**, facilitating seamless and secure transmission of financial messages and transactions between participating banks.

The Advantages of (INFINET)

Secure Communication

INFINET provides a secure and closed user group network, **ensuring the confidentiality and integrity of financial data** and transactions **exchanged between participating banks.**

Reliable Infrastructure

The network operates on a dedicated infrastructure, **minimizing the risk of interruptions and ensuring high levels of reliability** for critical financial communication.

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Real-time Transactions

INFINET enables real-time electronic banking services, **facilitating quick and efficient interbank transactions**, including fund transfers and electronic clearing services.

Cost-effective

Utilizing INFINET **reduces the reliance on physical communication methods and manual processes**, leading to cost savings and increased operational efficiency for participating banks.

Efficient Interbank Communication

The network streamlines **communication between banks**, allowing them to **exchange financial messages and information seamlessly**, leading to faster decision-making and smoother operations.

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Supports RBI Monitoring

INFINET enables **secure communication** between the **Reserve Bank of India (RBI)** and **various banks**, assisting the RBI in **effectively monitoring the financial system** and ensuring regulatory compliance.

STRUCTURED FINANCIAL MESSAGING SYSTEM (SFMS)

- It is a **standardized messaging protocol** used in the financial industry to facilitate the **exchange of structured information** between financial institutions and other participants.
- It is designed to enable **efficient and reliable communication** of **financial messages, instructions, and transactions**.
- The SFMS was **Launched on December 14, 2001, at IDRBT**. It allows the definition of **message structures, message formats, and authorization** of the same for usage by the financial community.
- Banks can **link to the SFMS through** appropriate connectivity like Public Switched Telephone Network (PSTN) Integrated Services Digital Network (ISDN), or Leased Lines.

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Features Of SFMS

Standardization: SFMS provides a **standardized format for structuring financial messages**, ensuring that **all participants use the same message elements and codes** when transmitting information.

Types of Messages: SFMS supports a wide range of financial messages, including **payment instructions, securities trade confirmations, fund transfers, account statements**, and other types of financial transactions.

Interoperability: SFMS promotes interoperability among various financial systems and institutions, **allowing them to exchange messages efficiently regardless of their internal technology or systems.**

Security: SFMS incorporates **security features** to ensure the **confidentiality and integrity of transmitted** financial information, protecting sensitive data from unauthorized access or tampering.

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Flexible Architecture for Centralized or Distributed Deployment

The SMS is designed with a **flexible architecture** that enables both **centralized and distributed deployment options**, that suit their operational requirements.

Batch Message Exchange Messages can be grouped **together and exchanged as batches of files**, streamlining the process of message transmission and reducing overheads.

Smart Card-Based User Access The system employs smart card-based user access, adding an extra layer of security to ensure that only authorized personnel can access and process financial messages.

NATIONAL FINANCIAL SWITCH (NFS)

- It is a **centralized payment processing system** developed by the (IDRBT) for the Indian banking industry.
- It is an interoperable network that **enables seamless and secure electronic funds transfer and ATM transactions** across **different banks in India.**

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- NFS serves as the **backbone for ATM operations** and other electronic payment services in the country.

FEATURES

Evolution and Ownership of NFS ATM Network

- The NFS ATM network was launched by the Institute for Development and Research in Banking Technology (**IDRBT**) on **August 27, 2004**.
- On **December 14, 2009**, the National Payments Corporation of India (**NPCI**) took over the **ownership and operation of the NFS ATM network**.

Membership Subscription Fees

- Banks or financial institutions wishing to join the NFS network as members are required to pay a **one-time subscription fee of Rs. 3,00,000 plus applicable taxes**.
- In the **NFS sponsorship model**, the sponsor bank pays a one-time fee of **Rs. 6,00,000 plus applicable taxes**.

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Interchange Fees for ATM Transactions

- The **card-issuing member** (the bank that issues the debit card) pays an **interchange fee to the card-acquiring member** (the bank whose ATM is used) for each approved transaction.
- The current interchange fee for **Cash Withdrawals and card-to-card** fund transfers is **Rs. 17**, and for other non-financial transactions, it is **Rs. 6**.

Transaction Switching Fees

- Card-issuing members pay transaction **switching fees of Rs. 0.45 per approved transaction to NPCI**, along with applicable taxes.
- **NPCI handles the switching of transactions** between the issuing and acquiring banks, ensuring smooth and secure communication.

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SERVICES OFFERED BY NFS

Interoperable Cash Deposit allows customers to deposit cash at any participating bank's ATM.

Mobile Banking Registration enables customers to register for mobile banking services directly from the ATM.

Card-to-Card Fund Transfer allows customers to transfer funds from their debit card to another person's debit card within **the same bank or between different banks.**

Statement Request allows customers to request an account statement of their recent transactions from the ATM.

Aadhar Number Seeding enables customers to link their Aadhar number to their bank account directly from the ATM/CDM.

INDIAN BANKING COMMUNITY CLOUD (IBCC)

Cloud Computing

- It is a technology model that allows **users to access and use computing resources** over the internet on a **pay-as-you-go basis.**

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- Instead of **owning and maintaining physical servers and infrastructure**, businesses and individuals can leverage the resources and services provided by cloud service providers.

Community Cloud

- A **Community Cloud** is a type of **cloud computing model** where multiple organizations with **similar needs and shared concerns** use a common cloud infrastructure.
- It is designed to cater to a **specific community's needs** and may be managed by **one or more organizations** or a third-party service provider.

CLOUD SERVICE MODELS

Software as a service (SaaS): SaaS is an "on-demand software" service where the **required software is provided to the end users as an application** to run on their systems through the Internet.

Platform as a Service (PaaS): In PaaS, a computing environment is provided as a service to the **customers to build their own applications that run on the provider's infrastructure.**

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Infrastructure as a Service (IaaS): A pool of equipment including **servers, storage systems, network, data centres, etc.**, provided as a service to the customers where providers can handle **customers' application workloads** is referred to as **IaaS**. The customer can host their own software on the cloud infrastructure.

CUSTOMER ANALYTICS

It refers to the process of **collecting, analyzing, and interpreting customer data** to gain valuable insights into **customer behavior, preferences, needs, and characteristics**.

CUSTOMER ANALYTICS IN RETAIL BANKING

Enhancing Customer Engagement and Management Strategy

- Customer analytics integrated with the universal banking solution enables banks to **gain deep insights into customer behavior and preferences**.
- These insights can be leveraged to **create personalized and targeted marketing campaigns**, leading to improved **customer engagement and loyalty**.

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Institutionalization of Customer Relationships

- The use of customer analytics helps banks **institutionalize customer relationships** by understanding **customers' needs, preferences, and expectations.**
- By tailoring products and services **to meet individual customer requirements,** banks can foster **long-term relationships with their customers.**

Customer Attrition Scores

- Customer attrition scores help banks **identify customers at risk of leaving or closing their accounts.**
- Armed with this information, banks can take **proactive measures to retain valuable customers and prevent attrition.**

Profitability Scores

- Profitability scores assist banks in assessing the **profitability of individual customers or customer segments.**

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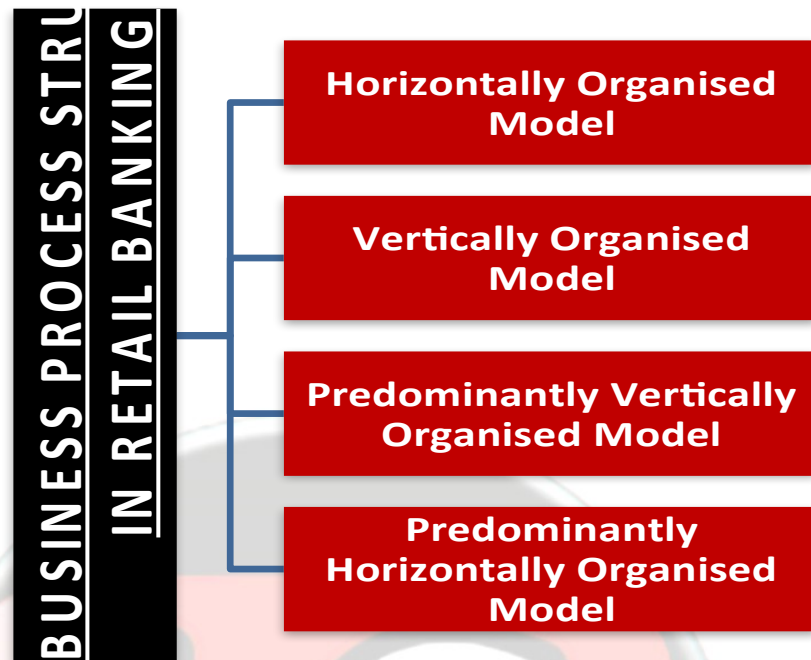
- This insight helps **prioritize high-value customers** and tailor offerings to maximize revenue generation.

Customer Segmentation

- Customer analytics enables banks to **segment their customer base based on various parameters** such as **spending patterns, demographics, and product usage.**
- Customer segmentation allows banks to **target specific customer groups with relevant and appealing offers.**

TECHNOLOGY PROCESSES IN RETAIL BANKING

A Boston Consulting Group Study conducted in 2003, "**Opportunities for Action in Financial Services - Transforming Retail Banking Processes**". Four distinct process models have emerged from their study.



Horizontally Organized Model

In this model individual process platform supports one product only. The sub-data in the model is not shared with other products and product platforms.

Vertically Organised Model

In this model, customer information is centralized. Centralized customer information builds common origination and servicing processes across all its retail banking products.

Predominantly Horizontally Organised Model

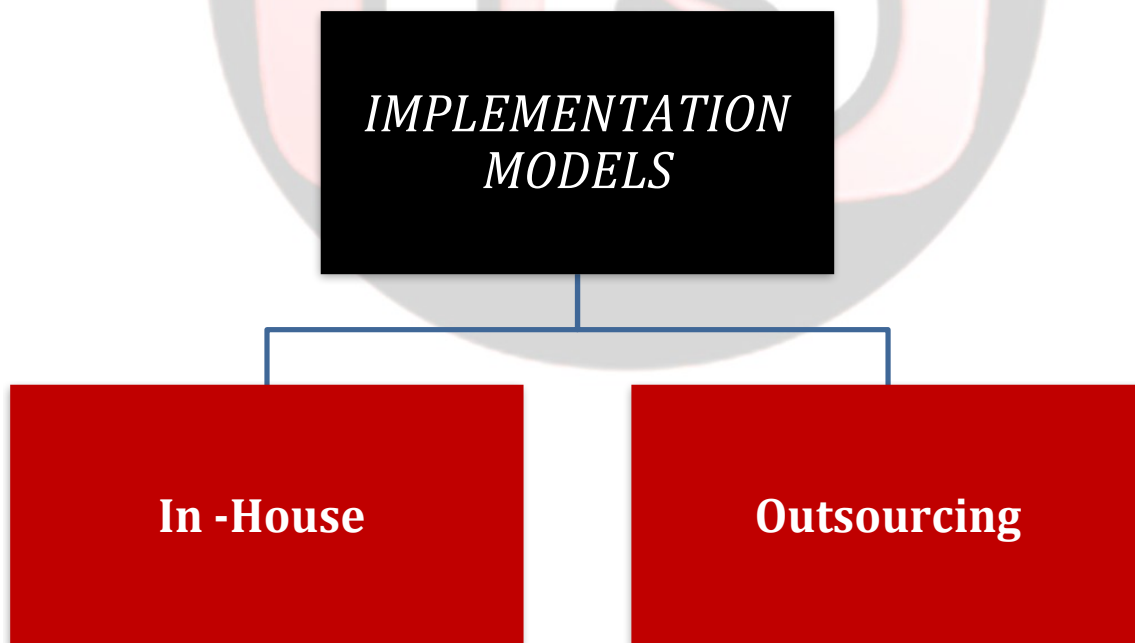
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It is mostly product-oriented with common customer information for some products. Customer data integration is available to a certain extent for other products.

Predominantly Vertically Organised Model

It is a hybrid model that offers common information for most of the related services. The basic information is available across products for common services to the various products.

TECHNOLOGY INITIATIVES IN RETAIL BANKING



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- The implementation model depends on the **product range, process requirements, technology preparedness, and delivery capabilities** including human resources and regulatory prescriptions.
- Most **PSBs use only in-house resources for retail banking.** Only for some activities like **ATM/ Credit Cards/Debit Cards, the issue part is outsourced due to a lack of in-house facilities.**
- In the case of **old private sector banks** also, the activities are carried out through **in-house resources only.**
- In the case of **new-generation private sector banks**, the model is a **balanced mix of outsourcing and in-house**, though a little skewed towards outsourcing. In some banks, the **asset side is outsourced** whereas the **liability side is not outsourced**, though centrally processed.
- In foreign banks, the implementation model is **mostly outsourced based on the business model.**

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WEALTH MANAGEMENT SOLUTIONS

It refer to comprehensive financial **services and strategies designed to help individuals and families** manage and grow their wealth, achieve financial goals, and secure their financial future.

DIGITAL LENDING

In this system the **entire process of credit including sourcing, credit and risk assessment, and disbursement** happens on the digital platform in a seamless manner within the shortest amount of time.

REGULATORY FRAMEWORK

- RBI has firmed up a new regulatory framework vide its notification dated Aug 10, 2022, titled "**Recommendations of the Working Group on Digital Lending-Implementation.**"
- It is based on the **principle** that **lending business** can be carried out only by entities that are either regulated by the Reserve Bank or entities permitted to do so under any other law.

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HIGHLIGHTS OF THE REGULATORY FRAMEWORK

Customer Protection and Conduct Issues

- All **loan disbursements and repayments** are required to be executed only between the **bank accounts of borrower and the Regulated Entity**.
- **Any fees, charges, etc., payable to the LSPs** in the credit intermediation process **shall be paid directly by RE and not by the borrower**.
- A **standardized Key Fact Statement (KFS)** must be **provided to the borrower** before executing the loan contract.
- **Automatic increase in credit limit without explicit consent** of borrower is prohibited.
- A **cooling-off/ look-up period** during which the borrowers can exit digital loans by **paying the principal and the proportionate APR without any penalty** shall be provided as part of the loan contract.
- REs shall ensure that they and the LSPs engaged by them shall have a suitable **nodal grievance redressal officer** to deal with FinTech/ digital lending-related complaints.

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- As per extant RBI guidelines, if any complaint **lodged by the borrower is not resolved by the RE** within the stipulated period (**currently 30 days**), he/she can lodge a **complaint under the Reserve Bank - Integrated Ombudsman Scheme.**

Technology and Data Requirements-

- DLAs should only **collect the minimum amount of data** necessary to evaluate creditworthiness and assess the risk of lending to a borrower.
- DLAs should maintain a **clear record of the data they collect**, when it was collected, and for what purpose it was used.
- Before collecting any data from borrowers, **DLAs must obtain explicit consent from them.**
- DLAs should provide borrowers **with the option to accept or deny consent for the use of specific data.**
- Borrowers should have the **right to revoke the consent** they previously granted at any time.
- DLAs must offer borrowers the **option to request the deletion of their data** from the app's records.

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Regulatory Framework

- All loans provided through **Digital Lending Apps (DLAs)** must **be reported to Credit Information Companies (CICs)** by the entities responsible for lending (REs), **regardless of the loan's type or duration.**
- When financial institutions **introduce new digital lending products**, especially those offered over merchant platforms involving short-term credit or deferred payments, **they must report these products to CICs.**

ROLE OF AI AND TECHNOLOGY IN RETAIL BANKING

ARTIFICIAL INTELLIGENCE (AI)

- It is a **branch of computer science** that focuses on creating machines and systems that **can perform tasks that typically require human intelligence.**
- These tasks can include learning from experience, understanding natural language, recognizing patterns, reasoning, problem-solving, and making decisions.

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AUTOMATION

- Automation basically means making **software or hardware which is capable of automatically doing things** and that too without any form of human intervention.
- The primary goal of automation is to increase efficiency, accuracy, and productivity while **reducing the need for human labor in repetitive or time-consuming task.**

DIFFERENCE BETWEEN ARTIFICIAL INTELLIGENCE (AI) AND AUTOMATION

Basis	Artificial Intelligence (AI)	Automation
Meaning	AI refers to machines or systems that can mimic human intelligence and perform tasks that typically require	Automation refers to the use of technology to perform tasks and processes with minimal or no

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	human cognition.	human intervention.
Functionality	AI systems can learn from experience, adapt to new data, and make decisions based on patterns and rules.	Automated systems perform predefined tasks according to fixed rules or algorithms without learning or decision-making capabilities.
Intelligence	AI possess human-like intelligence and can understand, reason, learn, and solve complex problems.	Automation does not possess intelligence; it follows preprogrammed instructions or rules.
Flexibility	AI is flexible and can handle a wide range of tasks and adapt to changing circumstances.	Automation is often rigid and designed for specific tasks, lacking adaptability.
Examples	Virtual assistants (e.g.,	Robotic arms in

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	Siri, Alexa), Image recognition, Natural language processing, Autonomous vehicles, Deep learning.	manufacturing, Automated software testing.
Decision-making	AI can make decisions based on data analysis and learning from past experiences.	Automation follows pre-programmed rules and executes tasks without making decisions.
Complexity	AI systems are generally more complex and require sophisticated algorithms and computing power.	Automation can be relatively simple, often involving basic rule-based operations.