

Core modernisation: Enhancing the digital transformation of financial institutions

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Foreword

The rapid adoption of digital technology in the financial services sector has changed the way customers interact with banks and other financial services providers. Banks serve a diverse set of customer segments, with a focus on experience, simplification, cost and compliance. Today, the availability of large corpus of data with digital public infrastructure (DPI), adoption of cloud technology, availability of new age infrastructure and artificial intelligence (AI) has provided the right impetus for banks transform their customer experience delivery.

India is a vast and diverse nation and providing banking services for such a large population is a tremendous challenge. To ensure smooth operations throughout the customer acquisition lifecycle, banks need to invest in multiple technologies and platforms which are critical for providing hassle free services. Core banking is one such technological platform which controls the entire banking services ecosystem. Core modernisation has evolved as an important method for the digital transformation of both global and Indian banks.

This thought paper delves into the need-impact-roadmap of core modernisation, its importance for banks and how it can help them in addressing customer needs, meeting compliance requirements and aligning with their business goals.

We hope that you will find the paper to be an interesting and insightful read.



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Introduction

India has set ambitious growth plans to become a USD 35 trillion economy by 2047.¹ Since the banking and financial services industry plays a significant role in this growth, it needs to grow 20x to achieve the country's goals.² The financial services sector is currently experiencing rapid changes with digital transformation playing a key role in driving success for banks and financial institutions. Technological advancements (e.g. blockchain, artificial intelligence (AI), cloud and digital public infrastructure), changing customer expectations and regulatory developments are driving the financial services sector to reconsider traditional operational models and adopt new, innovative solutions. Central to this transformation is the need to modernise core platforms, which forms the foundation of a financial institution's IT infrastructure and enable seamless transaction execution, customer account management and financial service delivery.

Financial institutions are facing significant challenges related to their core system due to rapid growth in loan activity, expansion of client base and an increase in payment transaction volumes which reinforces the need for core modernisation of their systems. Banks are finding it difficult to innovate and quickly adapt to market needs due to inflexibility of legacy systems, high maintenance costs, and restricted scalability of outmoded infrastructure. As a result, new core solutions built on architectural principles are gaining popularity among financial institutions because they provide enhanced flexibility, robustness, scalability and security features.



^{1.} https://pib.gov.in/PressReleasePage.aspx?PRID=2007105

^{2.} https://economictimes.indiatimes.com/industry/banking/finance/financial-services-sector-must-grow-20x-for-india-to-reach-30-trillion-gdp-saysreport/articleshow/113114764.cms?from=mdr

Core modernisation is a strategic initiative which can improve a financial institution's capacity to compete in the digital era. However, the process requires a wellstructured change management plan since merely adopting technology will not suffice and the employees should be trained to operate the modern technological tools. Financial institutions can automate procedures, optimise operations and offer customised, real-time services to meet the evolving demands of modern, digitally savvy consumers and become more resilient and scale their operations for future business growth by adopting cutting-edge core systems and platforms. Furthermore, by enhancing cybersecurity measures and adhering to legal regulations, these contemporary solutions safeguard the institution's integrity and foster consumer trust.

Various strategies, including coreless architecture, hollowing out the core or externalising components, and upgrading the core banking system, can be used for core modernisation. Financial institutions have to reconsider their enterprise design and identify the main goals of modernisation. Since each bank will have different requirements, it is important to thoroughly consider the unique circumstances, strategic objectives and risk tolerance before adopting the core modernisation strategy.

This paper focuses on the intricacies of the financial services sector's digital transformation with a focus on the modernisation of key platforms and processes. It also discusses the current challenges, market dynamics behind modernisation efforts and the various approaches for implementing new core systems and platforms. By learning more about core modernisation, financial institutions can make informed decisions which can enhance their operational efficiency and set them up for long-term success in the digital era.

02

Digital transformation in the financial services sector

In the last decade, India's banking industry witnessed a substantial transition from offering traditional services to digital banking services. The advent of automated teller machines (ATMs) and internet banking, which significantly increased the accessibility of crucial banking services, marked the beginning of this shift. A another significant advancement was made with the launch of the unified payments interface (UPI), which allows instant, real-time inter-bank transactions via mobile devices. Furthermore, the growing cooperation between banks and FinTechs to pool resources and provide creative financial solutions. These collaborations are essential for growing operations for catering to a wider clientele and minimising costs. Figure 1 illustrates the loan consumption growth trends in India in FY18 and FY24.



Figure 1: Growth trends of key financial transactions in India (FY 18 and FY24)

Source: https://www.npci.org.in/PDF/npci/knowledge-center/partner-whitepapers/The-Rise-and-Evolution-of-India's-Digital-Finance.pdf



Digital retail payment transactions have experienced a dramatic increase from USD 15 billion in FY18 to an impressive USD 170 billion in FY24.³ This notable expansion can be attributed to developments in payment technologies and systems, which has significantly improved the effectiveness and scope of digital financial transactions. The Indian banking sector's total deposits reached approximately USD 2.1 trillion as of March 2024, which is a substantial increase from USD 1.8 trillion in March 2018.⁴ India's economic growth, digitisation, rise in unsecured loans, government initiatives, rising consumer spending and innovative financial products are the main drivers of the country's retail loan growth and for the increase in UPI transaction volumes from FY18 to FY24.

Key trends

Some of the key trends which are emerging in the Indian banking and financial institutions sector are:

01

Evolving customer expectations

The need for an integrated experience for the consumer through various channels (e.g. social media, web, mobile, branches, kiosks and online banking) gave rise to the demand for an updated and cohesive core banking infrastructure. Customers' expectations have changed over time which makes it necessary for banks to hyper-personalise their offerings to cater to a wide range of customers.

Evolving FinTech landscape

02

The FinTech sector in India is expected to grow at an average of 31% from 2024 to 2029 and will reach around USD 420 billion.⁵ The extensive use of digital loans, digital payment platforms and mobile wallets has urged banks to modernise basic banking systems in order to handle large volumes of transactions in real time, while the emergence of open banking and application programming interface (API) integration is encouraging a collaborative ecosystem, necessitating the need for flexible and scalable core infrastructure. Banks are collaborating with FinTech institutions to leverage their technological expertise and develop affordable products.

New products and channels

03

New financial products and services like buy now, pay later (BNPL), omnichannel experiences, self-service journeys, real-time payment infrastructure like UPI for non-smartphones, and super apps are gaining popularity. In India, UPI will account for a significant portion of digital payments, with a value of INR 455 trillion.⁶

API connectivity and cloud-based modular designs are making it possible for banks to work seamlessly with FinTech organisations to create a financial services ecosystem for introducing new services and products and scaling innovation without developing these solutions themselves.



^{5.} https://www.thehindubusinessline.com/economy/ondc-clocks-68-m-transactions-e-commerce-must-innovate-to-widen-reach-economicsurvey/article68431908.ece)

6. https://www.forbes.com/sites/rahulrai/2023/01/26/how-ocen-is-democratizing-credit-access-in-india/

Digital public infrastructure (DPI) and open banking

The exchange of financial data across institutions has increased the demand for providing clients with special services. Financial services institutions may now perform tasks including trade transactions, currency conversions, centralised account administration, and transactional data sharing with DPI and open banking. With the introduction of unified lending interface (ULI), Open Network for Digital Commerce (ONDC), Open Credit Enablement Network (OCEN) and Agri Stack, DPI has made tremendous progress in the rapidly changing financial services sector.

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Figure 2: Components of DPI

Source: PwC analysis

By establishing a consolidated platform for credit access, ULI improves the efficiency of lending. Through this platform, borrowers – including micro, small and medium enterprises (MSMEs) in rural areas – can quickly establish connections with various lenders by using integrated data sources like e-KYC and Aadhaar. ONDC has revolutionised e-commerce and facilitates over 68 million transactions by bringing buyers, sellers, and service providers together on a single network.⁷ When combined, these platforms offer solutions which facilitate inclusion, and enhance efficiency and transparency across a range of industries which can accelerate the country's economic growth.

Improving client experience and operational efficiency requires integration of cutting-edge technologies like blockchain, cloud computing and AI. However, the scalability, adaptability and integration capabilities of traditional core systems are limited. In order to efficiently meet the changing needs of the industry and keep up with technological improvements, it is essential to upgrade the architecture of banking systems. To adopt the right core modernisation strategy, the senior leadership of banks and financial services organisations should consider the following questions:



How are the risks brought on by the obsolescence of technology being managed?



Is my organisational architecture scalable and robust enough to meet the demands of the digital age for goods and services?

Is my present core platform aligned to current market trends and growth aspirations?

^{7.} Source: https://thehindubusinessline.com/economy/ondc-clocks-68-m-transactions-e-commerce-must-innovate-to-widen-reach-economicsurvey/article68431908.ece

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03

Core modernisation in banks and financial institutions: A strategic imperative

Legacy systems hinder the adoption of new technologies due to high maintenance costs and complicated, isolated design. Modernisation offers a workable long-term strategy by delivering adaptable, secure and user-friendly platforms which can satisfy the regulatory requirements and enhance customer satisfaction. Therefore, banks must upgrade or replace legacy systems through core modernisation to remain flexible and competitive in an evolving digital banking landscape. Figure 3 provides a detailed view of the key challenges for banks and financial institutions which can be addressed by adopting core modernisation.





Figure 3: Addressing five major challenges for Indian financial institutions through core modernisation



Source: PwC analysis



Traditional banks are under tremendous pressure to modernise their operations since legacy banking systems are interdependent which can lead to bottlenecks and cause delays in the introduction and development of new products. On the other hand, current cloud-native, standardised platforms enable efficiency and agility via DevOps and automated testing. Since old systems are incompatible with contemporary operating systems and programming languages and rely heavily on hard-coded business rules which complicate modern system integration, managing legacy systems becomes more and more challenging. Large technology and FinTech companies, which can provide new financial services and implement changes more quickly, are also putting pressure on traditional banks to modernise their processes. Furthermore, banks have to update their core systems to stay competitive and adhere to the regulations set by regulatory bodies. To highlight the importance of modernisation, the Reserve Bank of India (RBI) has established regulatory measures to improve transparency, centralise information and streamline banking operations and also publishes regulatory and compliance reports on regular basis. Figure 4 illustrates the four key components of the core modernisation process.

Figure 4: Key components of core modernisation



Source: PwC analysis

Core modernisation strategy

To stay competitive, boost operational efficiencies and deliver superior customer service, central banking systems need to upgrade their technology. Before banks choose the modernisation plan for their organisation, they must consider a few important points. Banks must conduct a comprehensive evaluation of their existing procedures. Banks should evaluate their current core systems, look at performance indicators, business processes, and conduct a strengths, weaknesses, opportunities and threats (SWOT) analysis to determine the benefits and drawbacks of their current systems. for establishing future strategies which incorporates innovative technological trends like blockchain, AI, cloud computing and quantum computing and is aligned to the bank's strategic objectives.

A phase-by-phase roadmap with specific objectives, design and architectural principles, timetables, resource allocation and key performance indicators (KPIs) must be developed to track the implementation programme's progress and success. Collaborating closely with specialists, regulatory bodies and technology providers can provide vital information and support.

Another crucial factor for core modernisation is choosing the right technology and architecture. Banks should take into account the scalability, resilience, flexibility, security and integration capabilities of technology while designing a modular, composable, microservices-based architecture which supports continuous and agile delivery methodologies. Many private, public and hybrid cloud solutions service providers offer scalable, cost-effective options for banks which they can choose from based on their organisational needs.





The foundation of core modernisation is an authentic, verifiable data repository. Therefore, data governance regulations must be implemented to ensure that the data is secure and that the data transfer process complies with regulatory standards, allowing for a smooth transfer of data.

An effective change management plan is essential for a seamless shift from legacy systems to a contemporary core. A comprehensive change management plan which incorporates stakeholder communication, training initiatives, and support systems can effectively manage cultural and operational changes. Some of the points which banks must consider while planning the core modernisation strategy are:





Enterprise architecture design

Developing a detailed banking architecture is important for implementing core modernisation. A robust architecture design not only facilitates ongoing operations but also establishes the groundwork for future expansion, adaptability and creativity. It provides flexibility to adapt to new requirements, alterations in regulations and developments in technology. Another crucial aspect to consider while redesigning the architecture is resilience, which guarantees catastrophe recovery and business continuity by reducing downtime and service interruptions. Furthermore, a strong architecture guarantees regulatory compliance and improves security to safeguard sensitive financial data. It also simplifies processes, reduces redundancies and enhances the overall effectiveness of the operations. Figure 5 provides an overview of the architecture for banks and financial institutions.

Business strategic direction Strategic Vision Mission objectives Target enterprise architecture blueprint Technology **Current state** trends **Enterprise architecture** Business Application Integration Regulatory changes Programme Data and governance Infrastructure Security information framework IT service IT delivery model IT capabilities catalogue **Business** IT organisational IT governance IT sourcing and IT structure model roadmap and IT processes implementat ion plan Historic/existing technology roadmaps

Figure 5: A suggested approach for the enterprise architecture of banks and financial institutions

Source: PwC analysis

The core modernisation model chosen by the organisation must be aligned with the architecture of the bank so that they can seamlessly work in unison. To guarantee that modernisation initiatives result in measurable commercial value, the architecture must be in sync with the bank's strategic goals, which may include boosting customer experience, increasing operational effectiveness and developing digital capabilities across various functions.

Whether modernisation is achieved by core version upgrades, core hollowing, or coreless techniques, the architectural design should be developed in a manner which can facilitate all of these models. The architecture should support upgrades with minimal disturbance and a modular design with strong middleware is necessary to integrate specialised platforms and detach non-core functions to hollow out the core.



Approaches for implementing core modernisation

Some of the strategies which can be incorporated into a bank's overall goals to implement core modernisation and ensure that all legacy systems are upgraded within the budget set aside for this endeavour are:



Core refresh/upgrade

In order to derive the best possible outcomes of business endeavours, it is important to upgrade the current core with the latest core version. An advantage of this approach is that it protects current system investments and reduces disturbances since the existing workflows and processes are intact. It also enhances data security and improves the performance of the bank's operations. However, there are still issues with this strategy such as reliance on the vendor's upgrade cycle and capabilities and the inability to address all the issues of the legacy system. The two approaches for implementing core refresh/upgrade are:

01 The big-bang approach

This method involves a thorough update of the complete core system in a single, well-planned event which is usually planned during scheduled downtime. Comprehensive simulation runs are necessary before implementation to identify possible problems and ensure that the system is ready. A complex fall-back plan which includes rollback procedures, data back-ups and a task force which manages the important task of handling emergencies is essential for the big-bang approach. Customer data safety is of the utmost importance and strong encryption, strict access rules and real-time monitoring is necessary to prevent data breaches. In-depth testing, including stress and security assessments, is also necessary to guarantee that the new system can manage real-time data with the highest level of efficiency and security.

02 Phased approach

According to this strategy, the core system should be upgraded gradually, in segments, either by branch, line of business (LoBs), or client. By limiting modifications to more manageable, smaller units, this strategy reduces risks and simplifies problem identification and resolution. A bank may, for example, start with one branch or one LoB, carefully track the results and gradually roll out the update to additional branches or business units. Since maintaining the integrity of consumer data is crucial, each stage of the phased approach should include strong encryption, strict access controls and frequent audits. By allowing ongoing feedback and iterative modifications, this phased rollout helps in minimising disruptions and ensures a more seamless transition. It also facilitates an incremental training programme for employees and clients which makes it easier for them to adapt to the new ways of working.

These approaches offer distinct pathways for core modernisation, each with its own set of advantages and challenges. The selection of the appropriate strategy for each organisation is based on the organisation's risk tolerance, resource availability and specific modernisation goals.







Hollowing/externalisation

Moving specific functions and high-volume processes outside the core system to specialised external systems is known as hollowing or externalisation. In this approach, the core system experiences less change which can reduce the risks since it focuses on specific functions and improves the performance and scalability of the overall system. It also facilitates easier integration of new technologies and services since it provides flexibility of only moving specific functions outside the core system. However, issues related to strong integration skills and the possibility of managing numerous systems persist in this model.

Externalisation of multiple functionalities

This method aims to lessen the load of and the reliance on the core for core modernisation. Examples of functionalities which can be externalised include reporting, customer information files (CIFs) and general ledgers (GLs). An example of this architecture is the hollowed-out core, which retains only the essential functions under the core banking system (CBS), including batch processing, lending, current account savings accounts (CASAs) and transaction banking.

Figure 6: Core modernisation models





Coreless system

A completely coreless system is powered by events for data integration and APIs and is driven by templatised microservices and core configurations/functionalities. It is based on concepts which are product, channel, core and customer service point agnostic. The coreless architecture is based on the low-code/no-code design philosophy which makes scalability of the coreless system easier. The high flexibility and scalability of this method facilitates innovation and adaptation, enhances fault tolerance and resilience and makes it easier to adopt cloud-native applications and technologies.

While creating the procedures for the core modernisation process, banks should take into account a few important design principles as they work to build more scalable, robust and flexible technological capabilities. Figure 7 depicts the process of unbundling the core.

Figure 7: Core modernisation pattern – unbundling the core



Banks can select any approach based on their requirements and organisational goals. The maturity of the bank's readiness to adopt core modernisation can also help the organisations in selecting the right approach and some banks can even directly transition to a fully coreless approach.



Change management

Change management ensures seamless transition and effective integration of state-of-the-art technologies and processes. For core modernisation, the journey originates with a strategic phase-wise evaluation and implementation where banks evaluate their existing systems to understand the areas where change management is most needed. Some of the measures which banks can consider for evaluating and understanding these areas are stakeholder engagement for requirement gathering, performing a gap analysis to identify inconsistencies between existing capabilities and future goals, and charting a comprehensive roadmap which highlights the objectives, timelines, milestones and the resources needed.

The effective transformation of core banking systems depends on the success of pivotal activities in change management. Robust governance and leadership advocacy are key factors and senior leadership should play an active role in ensuring that the change management plan is aligned with the organisation's strategic goals. A well-defined vision and objective must be effectively and clearly communicated, and stakeholders must be made aware of the benefits of the change management process.

Assessing the progress of the implementation of core modernisation though key performance indicators (KPIs) and conducting recurring assessments can be some of the ways to determine the effectiveness of the change initiative. Proactively managing obstacles by identifying potential hazards and putting mitigation plans into action can help in the seamless implementation of the change management programme. The long-term success of the programme depends on integrating the change with the organisation's culture and encouraging the workforce through rewards and recognition. Figure 8 provides an overview of the key change management activities which organisations must consider for their core modernisation process.

Figure 8: Key change management activities for core modernisation



Source: PwC analysis



04

Key benefits

Modernising core banking platforms has many benefits which can improve a bank's customer service, operational efficiency and enhance their position in the highly competitive banking landscape. Some of the key benefits of core banking platform modernisation are:

- · resilience, scalability and flexibility
- · accelerated business outcomes
- deep-tier digitisation (innovation and competitive advantage)
- · enhanced operational efficiency
- regulatory compliance and security.





Figure 9 highlights the key benefits of a modernised core for banks and financial institutions.

Figure 9: Key benefits of a modernised core for banks and financial institutions

Resilience

The modernised platform enables modular de-coupled architecture and events-driven interactions, thereby enabling scalability, flexibility and adility.



Accelerated business outcomes

Clearly defined processes, prioritisation of critical resources to support key business KPIs, and flexibility around time to-market for new products benefit the enterprise.



Deep-tier digitisation

Digitising core processes unlocks the architecture to support digitisation across the board, e.g. omnichannel, STP of journeys, hyper-personalisation through dual core or modernised core.



Operating efficiency

Core modernisation with clear objectives and value metrices can help in the reduction of technical debt, simplify processes and provide avenues for cloud adoption and shape the base for restructuring the banking ecosystem for the future.



Having an agile and scalable technology core which is 'always-on', ensures adherence to regulations and customer experience standards. With specific modular business blocks (e.g. payments, wealth) that can be outside the core, each can be managed in a secure and efficient manner.



Source: PwC analysis

To ensure that all products and services are aligned with the new methods of operation, banks must establish a clear roadmap for core modernisation's implementation. Core modernisation process must be periodically monitored and evaluated and seasoned professionals, consultants and stakeholders from the bank must conduct this review process to ensure that the transformation process can be completed seamlessly.



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