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CASE STUDY #133

BANK OF INDIA

Real-Time Payments Through Tanzania Instant Payments System (TIPS)

Abstract

The digital payment landscape is rapidly evolving, redefining customer demands for speed, interoperability and accessibility. In emerging economies, regulators and financial institutions are advancing real-time payment infrastructures, uniting diverse providers within a cohesive ecosystem. Tanzania's Bank of Tanzania launched TIPS as a national interoperable payment platform, enabling secure, real-time transactions across banking and non-bank institutions. Bank of India Tanzania integrated TIPS by extensively customising its Finacle Core Banking System to handle real-time payment requests, reversals, reconciliation and ISO8583 messaging. Java-based middleware strengthened socket connectivity and real-time processing, delivering secure, instant, customer-focused payment services and elevating operational efficiency and market position in Tanzania. The project highlights how cross-border banks can modernise legacy systems and effectively engage in regulator-led interoperable infrastructures through technology-driven, middleware-enabled, customer-centric payment innovation.

Introduction

Bank of India Tanzania joined the Tanzania Instant Payments System (TIPS) to stay aligned with the country's move toward open, real-time payments. Managed by the Bank of Tanzania, TIPS allows instant money transfers and payments between banks, mobile operators and other providers through a connected payments network.

The project required substantial customisation of the Bank's Finacle Core Banking System to process both inward and outward transaction requests in real time. Since Finacle 10.2.09 had limitations in handling outbound requests externally, the Bank developed a custom outbound processing mechanism using Java Sockets, integrated with TIPS middleware.

The system was designed to process outward transfers, inward credits, inward reversals, outward reversals and reconciliation workflows using ISO8583 messaging standards (a protocol for electronic transactions) and unique payer reference numbers issued by the Bank of Tanzania. The platform also incorporated customer consent-driven reversal mechanisms and lien-marking features (temporarily restricting access to funds during disputes) to enhance transaction security and customer protection.

By joining TIPS, Bank of India Tanzania improved customer service, sped up transactions, opened new revenue streams and stayed competitive in a fast-changing market. The project also prepares the Bank for more digital payment features such as government payments, Request-to-Pay and nicknames or mobile-based transactions.

The Problem Statement

The banking sector in Tanzania has undergone rapid digital transformation driven by increasing mobile penetration, digital financial inclusion initiatives and regulator-led payment modernisation programs. The Bank of Tanzania introduced TIPS to create an interoperable payment infrastructure connecting banks, mobile networks, e-money issuers and other financial service providers through real-time payment processing.

For Bank of India Tanzania, joining TIPS became vital to remaining relevant and competitive. Without TIPS, the Bank risked losing reputation, customers and its edge over banks already inside the system. The Bank also saw customer demand for fast, seamless and real-time digital payments. Traditional systems were slower, fragmented and less connected to mobile and non-bank providers. Customers preferred banks that offered instant payments linked to national payment networks.

Another challenge was technological compatibility. The Bank's Finacle 10.2.09 system could not handle outbound requests outside its ecosystem. This was a barrier to integration with external real-time networks, such as TIPS. The project also needed secure reversal mechanisms to protect customers in case of errors. Real-time systems require robust controls to prevent incorrect debits, reversals and reconciliations and to enable consent-driven fund recovery. These must not reduce transaction speed.

Bank of India Tanzania saw the need for an adaptable payment solution that links its core banking systems to TIPS. The goal: real-time payments with strong security, customer protection and reliability.

Solutions Stack

The first layer of the solution focused on outward payment processing. Since Finacle 10.2.09 lacked the capability to send outbound requests externally, the Bank developed a custom outward payment module integrated via Java Sockets with TIPS middleware. Branch users initiated outward transactions within CBS and after verification, requests were routed securely to the Tanzania TIPS network.

The second layer involved inward transaction processing. All incoming requests were accepted in ISO 8583 format and processed in real time. Beneficiary accounts were credited immediately upon successful processing of inward transactions, ensuring instant payment availability.

A major innovation within the solution architecture involved reverse management systems. TIPS required reversals to occur only after confirmation from the Bank of Tanzania and the concerned financial service provider. For inward reversal requests, the system automatically applied lien marking on customer funds (placing a temporary hold on the funds) until beneficiary confirmation was received. This ensured customer consent and prevented unauthorised reversals.

Outward reversal functionality also allows customers to reverse incorrect debits through controlled workflows tied to TIPS confirmation. The solution included strict transaction tracking. Every payment had a unique reference number from the Bank of Tanzania, making dispute resolution and reconciliation straightforward between financial providers.

The solution architecture also incorporated interoperability standards enabling transactions between banks, mobile networks and e-money issuers. This significantly expanded customer accessibility and digital payment reach.

Strategic Objectives

Bank of India Tanzania approached the TIPS integration project as a strategic modernisation initiative to align the Bank with Tanzania's evolving digital financial ecosystem. The project reflected a broader institutional commitment toward digital payments, interoperability and customer-centric banking innovation.

The Bank identified five strategic objectives. The first was participation in Tanzania's payment network. The second was improved customer experience via real-time services. The third was a larger customer base and more revenue from better infrastructure. The fourth objective was to ensure operational competitiveness and avoid reputational risks associated with exclusion from the national payment ecosystem. The fifth objective focused on building a scalable technological architecture capable of supporting future digital payment innovations.

Institutionally, the project represented a significant shift from traditional isolated banking systems toward ecosystem-based financial interoperability. By participating in TIPS, Bank of India Tanzania positioned itself within a broader, multi-institutional digital payment environment that connects banks, mobile wallets, clearing systems and government payment infrastructure.

The initiative also aligned with broader financial inclusion goals in Tanzania by enabling customers to transact seamlessly across multiple financial service providers, regardless of institutional boundaries. The TIPS integration project was built on a specialised technological and operational architecture that combined middleware integration (using software that links systems), ISO 8583 messaging standards (a protocol for financial message exchange), real-time transaction processing and customer-centric reversal systems.

Implementation Journey

The project formally commenced in January 2023 with the objective of integrating Bank of India Tanzania into the TIPS ecosystem.

The first phase involved detailed requirement analysis and coordination with the Tanzania team and the Bank of Tanzania. The Bank identified technological gaps in Finacle 10.2.09 and assessed the middleware integration requirements for real-time interoperability.

The second phase focused on technological customisation and development. The Bank designed custom outward processing modules using Java Socket connectivity while simultaneously building inward transaction handling and reversal processing systems based on ISO8583 messaging standards.

During the third phase, User Acceptance Testing (UAT), integration testing and regulatory validation were conducted. Senior leadership and project teams coordinated continuously with Tanzania-based stakeholders to ensure operational compliance and platform readiness.

Following successful testing and approval, the system was deployed for live operations supporting outward transfers, inward credits, reversals and reconciliation workflows.

Post-implementation, the Bank continued monitoring transaction performance while preparing for Phase II enhancements involving government payments, Request-to-Pay systems and alias-based payment capabilities.

Implementation Challenges

One of the most significant challenges involved the technological limitations of Finacle 10.2.09 in processing outbound requests outside the CBS environment. This required the Bank to develop alternate middleware connectivity solutions using Java Socket architecture.

Another challenge involved integrating real-time interoperability with secure reversal management. Since reversals required confirmation from multiple stakeholders, including customers and financial service providers, the Bank needed to create secure lien-marking and confirmation workflows without compromising transaction speed.

Maintaining operational reliability within a real-time transaction environment also required robust reconciliation and monitoring mechanisms. The Bank therefore ensured that all payment transactions carried unique reference identifiers for traceability and audit purposes.

The project additionally required coordination between teams across geographies, including Bank of India's central technology teams, Tanzania operations and regulatory stakeholders. Continuous coordination and monitoring were essential to ensure timely deployment and compliance readiness.

A further operational limitation identified post-implementation was the dependency on branch-level initiation for outward transactions, since outward transaction menus remained branch-based within the existing system architecture.

Highlights

- Bank of India Tanzania integrated with the Tanzania Instant Payments System (TIPS) to enable secure, real-time and interoperable payments across banks, mobile operators and financial service providers in Tanzania.
- The project addressed challenges such as fragmented payment systems, slow transactions, limited interoperability and legacy core banking limitations by customising the Finacle CBS and introducing Java-based middleware with ISO8583 messaging support.
- The solution enabled real-time outward and inward payments, secure reversal management, reconciliation workflows, customer consent-based fund recovery and lien-marking mechanisms to improve transaction security and customer protection.
- Implementation followed a phased approach involving regulatory coordination, middleware development, testing and deployment, while ensuring operational reliability, audit traceability and compliance with Bank of Tanzania requirements.
- The initiative improved customer convenience, strengthened Bank of India Tanzania's competitiveness, expanded digital payment capabilities and created a scalable architecture for future innovations such as government payments, Request-to-Pay systems and alias-based transactions.

Outcomes

The TIPS integration project generated significant operational, customer-centric and strategic outcomes for Bank of India Tanzania. The most important outcome was the successful integration of the Bank into Tanzania's interoperable national payment ecosystem, enabling it to participate in the country's real-time digital payment network.

Customers gained access to fast, real-time payments across multiple financial institutions and service providers, significantly improving transaction convenience and the customer experience. The project also enhanced customer protection and trust through secure reversal systems, beneficiary consent frameworks, lien-marking controls and transaction traceability mechanisms.

Institutionally, the initiative strengthened Bank of India Tanzania's competitiveness within the Tanzanian banking sector while helping avoid reputational risks associated with exclusion from the national payment network.

The interoperable platform additionally created opportunities for revenue enhancement and customer acquisition through digital payment services and cross-network transaction capabilities.

Strategically, the project established a scalable payment architecture capable of supporting future innovations, including Government Electronic Payment Gateway integration, Request-to-Pay systems and alias-based payment ecosystems.

Conclusion

Bank of India Tanzania's implementation of the Tanzania Instant Payments System represents an important example of digital payment modernisation within emerging financial ecosystems. By integrating legacy banking systems with a regulator-led interoperable payment infrastructure, the Bank successfully enabled real-time, secure and customer-centric digital transactions across financial institutions and service providers.

The initiative demonstrates how technological adaptability, middleware innovation and interoperability standards can help banks overcome legacy system constraints while participating effectively in modern digital payment ecosystems. The project also highlights the growing importance of real-time payments, customer protection and cross-institutional connectivity in contemporary banking transformation.

Most importantly, the TIPS initiative establishes a scalable framework for future digital payment innovation. As interoperable payment ecosystems continue to evolve globally, the Bank's approach provides a model for integrating traditional banking systems with modern instant payment infrastructures that support financial inclusion, operational efficiency and ecosystem-wide digital transformation.

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