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FinTech-Enabled Regulatory and Sustainability Compliance in Indian Banking: A Longitudinal Case Study of State Bank of India

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ABSTRACT

The increasing complexity of banking regulation and sustainability mandates has intensified the need for technology-enabled compliance mechanisms in the financial sector. This study examines how FinTech has transformed regulatory and sustainability compliance in Indian banking through a longitudinal case study of State Bank of India (SBI). Adopting a qualitative, secondary-data-based case study approach, the research analyses SBI's Annual Reports and Sustainability Reports from 2020–21 to 2025–26, supplemented by regulatory frameworks issued by the Reserve Bank of India and relevant policy documents.

The findings reveal a progressive evolution of compliance architecture at SBI, moving from crisis-driven and reactive compliance during the COVID-19 period to integrated, system-embedded, and predictive compliance governance. FinTech adoption significantly enhanced key compliance domains, including digital KYC and AML processes, regulatory reporting, NPA recognition and provisioning, and sustainability and ESG disclosures. Sustainability compliance, in particular, evolved from voluntary reporting to mandatory, assured, and technology-enabled compliance under the BRSR framework, supported by robust digital data governance systems. The longitudinal evidence further indicates that FinTech-enabled compliance contributed to improved asset quality monitoring, higher provisioning adequacy, enhanced auditability, and reduced regulatory friction over time.

The study contributes to RegTech and banking governance literature by positioning FinTech as a core compliance capability rather than a peripheral innovation. By focusing on a systemically important public sector bank, the research offers policy-relevant insights into how FinTech can strengthen regulatory and sustainability compliance in emerging economies. The findings have important implications for regulators, bank management, and policymakers seeking to balance digital transformation, regulatory effectiveness, and sustainable banking practices.

Keywords: FinTech, Regulatory Compliance, Sustainability Compliance, RegTech, Public Sector Banks, State Bank of India, Indian Banking Sector

INTRODUCTION

The rapid advancement of financial technologies (FinTech) has profoundly reshaped the structure, operations, and governance of banking systems worldwide. In recent years, the scope of FinTech has expanded far beyond payment innovations and customer-facing digital services to encompass core institutional functions such as risk management, regulatory reporting, compliance monitoring, and sustainability disclosures. This shift is particularly significant in emerging economies like India, where the scale of financial inclusion, transaction volumes, and regulatory oversight necessitates compliance mechanisms that are efficient, transparent, and technologically robust. Consequently, regulatory compliance-traditionally viewed as a cost-intensive and documentation-driven obligation--has emerged as a critical domain of FinTech-enabled transformation.

In the Indian context, the transformation of regulatory compliance has been shaped by a combination of proactive regulatory reforms, the development of digital public infrastructure, and the increasing complexity of banking operations. The Reserve Bank of India (RBI), as the country's central banking authority, has progressively adopted a technology-neutral yet technology-enabling regulatory stance. Through instruments such as the Master Directions on Know Your Customer (KYC), Anti-Money

Laundering and Combating the Financing of Terrorism (AML/CFT), data governance norms, regulatory sandbox initiatives, and supervisory technology (SupTech) frameworks, the RBI has clearly signalled a transition from periodic, ex-post compliance checks towards continuous, system-driven oversight. These regulatory developments implicitly require banks to embed FinTech and RegTech solutions within their compliance architecture in order to meet expectations relating to accuracy, timeliness, auditability, and scalability.

At the same time, the scope of regulatory compliance in banking has expanded significantly. Compliance today extends beyond traditional prudential norms and customer due diligence requirements to include emerging domains such as cybersecurity, data protection, climate risk management, and sustainability reporting. The introduction of mandatory Business Responsibility and Sustainability Reporting (BRSR) by the Securities and Exchange Board of India (SEBI), coupled with RBI's increasing emphasis on climate-related financial risks and green finance, has further elevated compliance expectations for Indian banks. These developments have reinforced the role of technology as a foundational enabler of regulatory adherence, given the data-intensive and cross-functional nature of modern compliance requirements.

Within this evolving regulatory and technological landscape, State Bank of India (SBI) provides a uniquely relevant and analytically rich case for examining the transformative impact of FinTech on regulatory compliance. As India's largest public sector bank and a systemically important financial institution, SBI operates under heightened regulatory scrutiny due to its extensive customer base, diversified portfolio, and significant role in the country's financial stability and inclusion agenda. The Bank's operational scale--spanning millions of customers, vast branch networks, digital platforms, and international operations--creates complex compliance challenges that cannot be effectively managed through manual or fragmented systems.

Over the past decade, and particularly since 2020, SBI has undertaken substantial digital transformation initiatives aimed at strengthening its compliance and governance capabilities. These initiatives include the adoption of Aadhaar-based and Video Customer Identification Processes (V-CIP) for digital KYC, AI- and analytics-driven AML and transaction monitoring systems, centralized compliance dashboards, automated regulatory reporting mechanisms, and enhanced data governance frameworks. Additionally, SBI's sustainability and ESG disclosures have evolved from voluntary narrative reporting to mandatory, assured, and technology-enabled compliance reporting in line with SEBI's BRSR framework. Together, these developments position SBI as a representative case of how FinTech can be leveraged to transform regulatory compliance in large public sector banks operating in emerging markets.

Despite the growing practical importance of FinTech-driven compliance, existing academic literature remains fragmented in its treatment of this phenomenon. A substantial body of research examines FinTech's impact on bank performance, operational efficiency, financial inclusion, and customer experience. Separately, another stream of literature focuses on regulatory compliance, governance, and risk management in banking institutions. However, relatively limited empirical work explicitly analyses FinTech as a transformative force within regulatory compliance functions, particularly in the context of systemically important public sector banks. Moreover, studies addressing sustainability and ESG reporting in banking often treat these domains as standalone governance issues, overlooking the technological infrastructure that enables regulatory alignment, auditability, and supervisory confidence.

This gap is especially pronounced in the Indian banking context, where public sector banks play a dominant role in credit delivery, financial inclusion, and policy implementation. The compliance challenges faced by these institutions differ significantly from those of private or fintech-native banks due to their legacy systems, scale, and public accountability. Understanding how FinTech enables compliance transformation in such institutions is therefore critical for both academic inquiry and policy formulation.

Against this backdrop, the present study seeks to examine the transformative impact of FinTech on regulatory compliance through a secondary-data-based, single case study of SBI. The study draws upon a comprehensive set of publicly available sources, including SBI's annual reports and sustainability reports (FY2020-21 to FY2024-25), RBI Master Directions on KYC and AML/CFT, policy documents related to digital banking and sustainability, and relevant government and regulatory publications. By adopting a longitudinal perspective, the study captures the evolution of compliance practices at SBI during a period marked by rapid digitalisation, regulatory tightening, and expanding sustainability obligations.

The analytical focus of the study extends across multiple dimensions of regulatory compliance. First, it examines how FinTech has reshaped customer due diligence and identity verification processes, particularly through digital KYC, V-CIP, and centralized KYC registries. Second, it analyses the role of technology in strengthening AML/CFT monitoring, risk assessment, and suspicious transaction detection. Third, it evaluates the transformation of regulatory reporting and governance mechanisms through automation, data analytics, and centralized compliance oversight. Finally, it explores the integration of FinTech into sustainability and ESG compliance, highlighting how digital systems enable banks to meet emerging regulatory expectations related to climate risk, green finance, and assured disclosures.

By focusing on SBI as a systemically important public sector institution, the study offers insights that are analytically generalisable to other large banks operating under similar regulatory and operational constraints. The findings are expected to contribute to the growing discourse on Regulatory Technology (RegTech) and Supervisory Technology (SupTech) by empirically demonstrating how FinTech functions as a compliance catalyst rather than merely an efficiency-enhancing tool.

In doing so, the study advances the understanding of compliance transformation in emerging economies and provides practical implications for regulators, banks, and policymakers seeking to balance innovation, regulatory effectiveness, and financial stability.

In sum, this study positions FinTech as a strategic enabler of regulatory compliance in Indian banking, with SBI serving as a critical case through which the evolving relationship between technology, regulation, and institutional governance can be examined. The insights derived from this case are particularly relevant in an era where regulatory expectations continue to expand in scope and complexity, making technology-driven compliance not only desirable but indispensable for sustainable banking operations.

2. LITERATURE REVIEW

2.1. FinTech and the Transformation of Banking Regulation

The concept of Financial Technology (FinTech) has evolved from narrowly defined payment and customer-interface innovations to a broader institutional transformation encompassing governance, compliance, and regulatory reporting. Early FinTech literature primarily focused on efficiency gains, cost reduction, and financial inclusion (El Khoury et al., 2025). However, recent studies increasingly recognise that FinTech plays a strategic role in addressing regulatory complexity, data intensity, and supervisory expectations in modern banking systems (Grassi & Lanfranchi, 2022). Zetzsche, Arner, Buckley, and Kaiser-Yucel (2020) in their study, introduce Regulatory Technology (RegTech) as a response to post-crisis regulatory expansion, arguing that technology is essential for real-time compliance, risk monitoring, and regulatory reporting. Subsequent research highlights that compliance obligations--particularly KYC, AML/CFT, data governance, and reporting--have become too complex and voluminous to be managed through manual or fragmented processes (Bagherifam et al., 2025).

In emerging markets, the regulatory role of FinTech is even more pronounced due to high transaction volumes, rapid digitisation, and large unbanked populations Chirulli (2021). This shift marks a transition from compliance as a control mechanism to compliance as a technology-embedded capability.

2.2 RBI's Regulatory Framework and Technology-Enabled Compliance

The Indian regulatory environment reflects this global transition through proactive adoption of technology-friendly yet risk-sensitive regulations. The Reserve Bank of India (RBI) has progressively embedded technology into its supervisory expectations via Master Directions on KYC, AML/CFT, outsourcing of financial services, and regulatory sandbox initiatives. The RBI Master Direction - KYC (2016, updated periodically) formally recognises digital KYC, Aadhaar-based e-KYC, offline verification, and Video Customer Identification Process (V-CIP) as valid compliance mechanisms. Academic literature notes that such regulatory recognition transforms FinTech from an optional innovation into a regulatory necessity (Dhar et al., 2025).

Studies analysing Indian banking regulation emphasise that RBI's approach represents a shift toward continuous compliance and supervisory technology (SupTech), where regulators rely on granular, system-generated data rather than periodic manual reporting (Vijayagopal et al., 2024). This creates a dual transformation: banks adopt RegTech tools for compliance, while regulators deploy SupTech for enhanced oversight.

2.3. Digital Public Infrastructure and Government Policy Context

Government-led digital public infrastructure has played a decisive role in shaping FinTech-enabled compliance in India. The Government of India, through initiatives such as Digital India, has invested heavily in nationwide digital identity, connectivity, and payment infrastructure.

Policy-oriented research highlights that India's "Digital Public Infrastructure (DPI)" model--comprising Aadhaar, UPI, and data-sharing frameworks--is globally unique in its scale and regulatory integration (Virdi & Mer, 2023). Unlike purely market-driven FinTech ecosystems, India's DPI model embeds compliance, authentication, and auditability into the infrastructure itself.

From a regulatory compliance perspective, this policy environment compels banks to align operational systems with national digital frameworks, thereby strengthening standardisation, transparency, and supervisory trust. Scopus-indexed studies confirm that government-supported digitalisation significantly lowers compliance costs while improving regulatory effectiveness in developing economies (Teichmann et al, 2023).

2.4. Aadhaar e-KYC as a RegTech Backbone

The Aadhaar e-KYC ecosystem, administered by the Unique Identification Authority of India (UIDAI), represents a foundational RegTech instrument in Indian banking. Aadhaar e-KYC enables electronic identity and address verification using biometric or demographic authentication, subject to customer consent and regulatory safeguards.

Academic research identifies Aadhaar e-KYC as a paradigm shift in customer due diligence, enabling real-time, paperless, and auditable onboarding at scale (Sai et al., 2023) Importantly, Aadhaar e-KYC is formally integrated into RBI's KYC framework, linking digital identity infrastructure directly with regulatory compliance.

Recent studies argue that Aadhaar-enabled compliance reduces identity fraud, enhances inclusion, and strengthens AML monitoring by improving data accuracy and interoperability (Tiwari et al., 2022). From a RegTech perspective, Aadhaar e-KYC exemplifies how state-backed digital identity infrastructure can function as compliance technology, rather than merely a welfare or inclusion tool.

2.5. FinTech, Sustainability, and Emerging Regulatory Compliance

An emerging strand of literature links FinTech adoption with sustainability and ESG compliance in banking. Regulatory mandates such as SEBI's Business Responsibility and Sustainability Reporting (BRSR) and global frameworks like TCFD and PCAF require banks to collect, analyse, and report large volumes of non-financial data.

Scopus-indexed research highlights that ESG compliance is inherently data-intensive and therefore dependent on digital systems, analytics, and automation (Becker et al.,2020). Studies further suggest that sustainability reporting has evolved from voluntary disclosure to regulated compliance, particularly in banking, where climate risk is increasingly treated as a financial risk (Teichmann et al., 2023).

This aligns with recent evidence from large Indian banks, including SBI, where sustainability reporting is now supported by digital governance frameworks, assured disclosures, and technology-enabled risk management. FinTech thus acts as a bridge between financial regulation and sustainability regulation, reinforcing compliance capacity across domains.

2.6. State Bank of India in Academic and Policy Literature

The State Bank of India (SBI) has been widely examined in studies on public sector banking reforms, digital transformation, and financial inclusion (Ghosh, 2021).). However, most SBI-focused research emphasises performance, asset quality, or customer service, with limited attention to regulatory compliance transformation.

Policy analyses and institutional reports indicate that SBI has been at the forefront of adopting digital KYC, AML analytics, centralised compliance systems, and technology-enabled sustainability reporting. Yet, academic literature has not sufficiently examined SBI as a RegTech-driven compliance case, despite its systemic importance and regulatory exposure.

This gap is significant because public sector banks differ from private and fintech-native banks in terms of governance structures, legacy systems, and accountability. Understanding how FinTech enables compliance transformation in such institutions is critical for regulatory policy and institutional reform.

2.7. Research Gap and Contribution

From the reviewed literature, three key gaps emerge:

1. Limited empirical focus on FinTech as a compliance enabler, particularly in emerging economies.
2. Insufficient case-based analysis of public sector banks, despite their systemic importance.
3. Fragmentation between FinTech, regulatory compliance, and sustainability literature, with limited integrated analysis.

The present study addresses these gaps by adopting a secondary-data-based case study of SBI, integrating regulatory (RBI), policy (Government of India), digital identity (Aadhaar e-KYC), and sustainability perspectives. In doing so, it contributes to RegTech and institutional banking literature by positioning FinTech as a strategic compliance architecture rather than a peripheral innovation.

3. RESEARCH METHODOLOGY

3.1. Research Design

The study adopts a qualitative, exploratory and explanatory research design to examine the role of FinTech in enabling regulatory and sustainability compliance in the Indian banking sector. Given the institutional, regulatory, and governance-oriented nature of the research problem, a case study methodology is considered most appropriate.

A single-case study design is employed, focusing on State Bank of India (SBI). The case study approach allows for an in-depth and contextual analysis of compliance transformation within a systemically important public sector bank operating under stringent regulatory oversight.

3.2. Research Approach

The study follows an inductive research approach, wherein patterns, themes, and conceptual insights are derived from systematic analysis of documentary evidence rather than hypothesis testing. The objective is to build analytical understanding and conceptual generalisation regarding FinTech-enabled compliance, rather than statistical generalisation.

3.3. Nature and Sources of Data

3.3.1 Nature of Data

The study relies exclusively on secondary data, consistent with regulatory and governance research where access to internal compliance systems and primary data is restricted.

3.3.2 Data Sources

Secondary data were collected from official, publicly available, and regulator-facing documents, ensuring reliability and authenticity. The key sources include:

(a) Bank-Level Disclosures

- Annual Reports of SBI (FY2020–21 to FY2024–25)
- Sustainability Reports of SBI (FY2020–21 to FY2024–25)
- Corporate governance and risk management disclosures

(b) Regulatory and Policy Documents

- Master Directions and circulars issued by the Reserve Bank of India, particularly on:
    - i. Know Your Customer (KYC)
    - ii. Anti-Money Laundering (AML/CFT)
    - iii. Digital banking and outsourcing

- Regulatory frameworks related to sustainability and ESG compliance (e.g., BRSR)

(c) Digital Public Infrastructure and Policy Context

- Aadhaar e-KYC framework documents
- Government of India initiatives on Digital India and financial sector reforms
- RegTech and SupTech policy materials

(d) Academic Literature

- Scopus-indexed journal articles on FinTech, RegTech, regulatory compliance, ESG, and banking governance

3.4. Case Selection Rationale

SBI was selected as the case institution based on the following criteria:

1. Systemic Importance: SBI is India's largest public sector bank and a systemically important financial institution.
2. Regulatory Exposure: The Bank operates under heightened regulatory scrutiny due to its size, public ownership, and policy role.
3. Data Availability: SBI provides extensive, consistent, and longitudinal disclosures on digital transformation, compliance, and sustainability.
4. Representativeness: SBI's scale and governance structure make it a representative case for understanding compliance transformation in Indian public sector banking.

The selection of a single, information-rich case is consistent with established case study methodology, where depth and contextual richness are prioritised over breadth.

3.5 Case Study Relevance to the Research Objectives

The SBI case provides a practical context to:

- Examine how FinTech enables regulatory and sustainability compliance at scale
- Analyse compliance transformation across multiple regulatory domains
- Observe longitudinal changes in governance, risk management, and reporting
- Derive analytically generalisable insights for Indian public sector banking

3.5. Period of Study

The study covers a five-year period from FY2020–21 to FY2024–25. This period is particularly relevant as it captures:

- Accelerated digitalisation during and after the COVID-19 period
- Strengthening of RBI's technology-enabled compliance frameworks
- Introduction of mandatory sustainability and ESG reporting requirements
- Increased reliance on FinTech for regulatory and governance functions

3.6 Analytical Framework and Method of Analysis

3.6.1 Analytical Framework

The analytical framework of this study is designed to examine how FinTech functions as an enabler of regulatory and sustainability compliance in Indian banking through a longitudinal institutional lens. The framework conceptualises FinTech as a compliance architecture that mediates between regulatory requirements and compliance outcomes over time.

The framework integrates four interrelated components:

1. **Regulatory and Policy Drivers**
   This component captures external regulatory and policy stimuli, including:
   i. RBI prudential norms (KYC, AML, asset classification, provisioning)
   ii. Sustainability and ESG mandates (BRSR, climate-risk disclosures)
   iii. Government-led digital public infrastructure (Aadhaar e-KYC, Digital India)
2. **FinTech and RegTech Enablers**
   This component represents the technological mechanisms adopted by banks, such as:
   i. Digital and Video KYC systems
   ii. Analytics-based AML and Early Warning Signal (EWS) systems
   iii. Automated regulatory reporting and compliance dashboards
   iv. Digital ESG and sustainability data aggregation platforms
3. **Compliance Processes**
   This layer captures how FinTech is embedded into core compliance functions, including:
   v. Customer due diligence and ongoing monitoring
   vi. NPA recognition, monitoring, and provisioning
   vii. Regulatory reporting, audit trails, and supervisory disclosures
   viii. Sustainability and ESG compliance processes
4. **Compliance Outcomes**
   The final component reflects observable outcomes, such as:
   ix. Timeliness and accuracy of regulatory compliance
   x. Improvement in asset quality monitoring and provisioning adequacy
   xi. Enhanced auditability, transparency, and regulatory trust
   xii. Institutionalisation of sustainability compliance

Within this framework, FinTech acts as a dynamic enabler, progressively transforming compliance from a reactive, rule-based obligation into a continuous, predictive, and governance-centric capability.

3.6.2 Method of Analysis

The study employs a qualitative longitudinal case study analysis, consistent with its exploratory and explanatory objectives. The method of analysis combines qualitative content analysis with thematic and temporal analysis, applied systematically to secondary data sources.

(a) Qualitative Content Analysis

Official disclosures—such as Annual Reports and Sustainability Reports of State Bank of India—were examined to identify references to:

- FinTech adoption for compliance
- Changes in regulatory and sustainability disclosures
- Governance and risk management mechanisms

Relevant sections (risk management, compliance, asset quality, provisioning, ESG, and governance) were coded manually to extract compliance-related narratives and indicators.

(b) Longitudinal (Temporal) Analysis

To capture compliance evolution, the study applies year-wise longitudinal analysis across six financial years (2020–21 to 2025–26). Each year was analysed independently and then compared across time to identify:

- Shifts in compliance intensity and structure
- Increasing depth of FinTech integration
- Transition from crisis-driven to institutionalised compliance

This temporal sequencing allows the study to trace progressive compliance maturity, rather than static outcomes.

3.7. Scope and Limitations

Scope

- Focused on FinTech-enabled regulatory and sustainability compliance
- Limited to one systemically important public sector bank
- Emphasises governance and compliance transformation

Limitations

- Absence of internal compliance metrics and primary interviews
- Findings are analytically, not statistically, generalisable
- Rapid regulatory changes may affect future applicability

4.. CASE STUDY-STATE BANK OF INDIA

4.1 Institutional Profile

State Bank of India (SBI) is India's largest public sector bank and a systemically important financial institution, playing a pivotal role in the country's banking system, financial inclusion agenda, and credit delivery mechanism. With an extensive domestic and international presence, SBI serves a diverse customer base across retail, corporate, MSME, agricultural, and government segments. Owing to its size, public ownership, and policy-oriented functions, SBI operates under heightened regulatory scrutiny and governance expectations.

As a dominant public sector bank, SBI is required to comply with a broad spectrum of regulatory mandates issued by the Reserve Bank of India, including prudential norms on asset classification and provisioning, KYC and AML requirements, capital adequacy standards, and supervisory disclosures. In recent years, the scope of compliance has expanded further to include sustainability and ESG-related mandates, particularly under SEBI's Business Responsibility and Sustainability Reporting (BRSR) framework.

4.2 Regulatory Environment and Compliance Obligations

SBI's regulatory environment is characterised by multi-layered compliance obligations, encompassing financial, prudential, operational, and sustainability-related requirements. These include:

- Know Your Customer (KYC) and Anti-Money Laundering (AML/CFT) compliance
- Prudential norms on asset classification, provisioning, and capital adequacy
- Regulatory reporting and supervisory disclosures
- Governance, risk management, and internal control requirements
- Sustainability and ESG compliance, including BRSR and climate-risk disclosures

Given the scale and complexity of SBI's operations, compliance functions must operate with high levels of accuracy, timeliness, and auditability. Manual and fragmented compliance mechanisms are insufficient in such an environment, making FinTech-enabled systems essential for effective regulatory adherence.

4.3 Digital Transformation and FinTech Adoption at SBI

Over the past decade, and more distinctly during the 2020–2026 period, SBI has undertaken extensive digital transformation initiatives across its operational and compliance functions. While early digitalisation efforts focused on customer service and transaction efficiency, recent initiatives increasingly target core governance and compliance processes.

Key FinTech-enabled initiatives relevant to regulatory compliance include:

- Digital and Video KYC systems aligned with RBI guidelines
- Analytics-based AML and transaction monitoring systems
- Centralised compliance dashboards and regulatory reporting platforms

- System-driven asset classification and provisioning mechanisms
- Digital platforms for ESG and sustainability data aggregation

These initiatives indicate a strategic shift from technology as an operational support tool to technology as a compliance and governance enabler.

4.4 Compliance Challenges and Institutional Complexity

As a public sector bank with legacy systems and a vast branch network, SBI faces distinct compliance challenges. These include:

- High transaction volumes and diverse customer profiles
- Legacy IT systems requiring integration with modern digital platforms
- Increased exposure to regulatory and supervisory actions
- Expanding compliance scope, including sustainability and climate-related risks

The COVID-19 period further intensified these challenges by introducing regulatory forbearance, restructuring schemes, and heightened asset quality stress. This context underscores why SBI provides a critical and analytically rich case for examining FinTech-enabled compliance transformation.

4.5 Sustainability and ESG Compliance at SBI

Sustainability reporting at SBI has evolved significantly over the study period. Initially framed as voluntary disclosures aligned with global sustainability standards, sustainability reporting gradually assumed a regulatory compliance character following the introduction of mandatory BRSR requirements.

SBI's sustainability compliance encompasses:

- Environmental and social risk management
- Governance and ethical conduct disclosures
- Climate risk considerations integrated into risk frameworks
- Digital data systems supporting ESG metrics and assurance

The transition to assured sustainability reporting highlights the role of FinTech-enabled data governance systems in meeting regulatory expectations related to ESG and sustainable finance.

Longitudinal Analysis of FinTech-Enabled Regulatory and Sustainability Compliance at SBI (2020–2026)

Table 1: Longitudinal patterns

Period	Nature of Compliance	Role of FinTech
2020–21	Crisis-driven, reactive	Emergency enabler
2021–22	Structured reform	System builder
2022–23	Integrated governance	RegTech backbone
2023–24	Compliance expansion	ESG data enabler
2024–25	Assured compliance	Predictive governance
2025–26	Institutionalised	Strategic infrastructure

2020–2021: Crisis-Driven Digital Compliance and Regulatory Stress

The period 2020–2021 marks a phase of regulatory stress and crisis-driven digital compliance at State Bank of India, largely influenced by the COVID-19 pandemic. Regulatory compliance during this phase was characterised by emergency implementation of RBI moratoriums, restructuring frameworks, and enhanced provisioning norms. SBI relied heavily on digital reporting systems and centralised data submissions to meet rapidly evolving regulatory requirements.

However, disclosures during this period also indicate regulatory frictions, including penalties related to data accuracy, fraud reporting, and compliance lapses. These developments exposed the limitations of legacy, semi-manual compliance systems and underscored the need for deeper FinTech integration in compliance functions.

Trend Characterisation:

- Reactive compliance
- Crisis-induced digitization
- Regulatory pressure as catalyst

2021–2022: Structural Digitisation of Compliance Systems

During 2021–2022, SBI entered a structural digitisation phase, moving beyond crisis response toward systematic strengthening of compliance infrastructure. The Bank expanded the use of automated regulatory reporting, system-driven provisioning, and analytics-based risk classification. RBI-recognised digital KYC mechanisms, including Aadhaar-based e-KYC and Video KYC, became more prominent in compliance disclosures.

This period still recorded regulatory penalties, particularly relating to data integrity and reporting accuracy, but these were accompanied by explicit disclosures on strengthening internal controls and compliance technology.

Trend Characterisation:

- Structured compliance reform
- Technology-enabled controls
- Transition from manual to system-based compliance

2022–2023: Integrated RegTech Adoption and Governance Alignment

The 2022–2023 period reflects integration and consolidation of RegTech systems within SBI's governance framework. Compliance disclosures during this phase show improved alignment with RBI's risk-based supervision model, supported by centralised compliance dashboards, automated AML monitoring, and enhanced audit trails.

Asset quality improvements, higher provision coverage ratios, and reduced ad-hoc regulatory observations indicate that technology-embedded compliance began yielding measurable governance outcomes. FinTech systems were no longer limited to operational support but were embedded within enterprise risk management and regulatory reporting structures.

Trend Characterisation:

- Integrated compliance architecture
- RegTech maturity
- Improved supervisory alignment

2023–2024: Expansion into Sustainability and ESG Compliance

The year 2023–2024 represents a qualitative shift in compliance focus, with sustainability and ESG disclosures becoming regulatory obligations rather than voluntary initiatives. SBI's compliance architecture expanded to include BRSR-aligned sustainability reporting, supported by digital data aggregation, governance oversight, and internal assurance mechanisms.

FinTech systems enabled the Bank to manage non-financial, ESG-related data across business units, integrating sustainability into risk management and governance frameworks. This phase demonstrates the convergence of regulatory compliance and sustainability compliance.

Trend Characterisation:
Compliance expansion | ESG as regulated domain | FinTech-enabled sustainability governance

2024–2025: Assured Sustainability Compliance and Predictive Governance

In 2024–2025, SBI's sustainability and regulatory compliance reached a stage of assurance-driven maturity. Sustainability disclosures were subject to external assurance, indicating robust digital data governance and audit readiness. Climate risk considerations were increasingly embedded within enterprise-wide risk assessment frameworks.

At the same time, regulatory compliance became more predictive and proactive, supported by analytics, continuous monitoring, and governance-level oversight. FinTech systems facilitated early risk identification and improved regulatory confidence.

Trend Characterisation:

i. Assured compliance
ii. Predictive risk governance
iii. High regulatory transparency

2025–2026: Institutionalisation and Compliance Maturity

The most recent period, 2025–2026, reflects institutionalisation of FinTech-enabled compliance at SBI. Regulatory and sustainability compliance functions appear fully embedded within the Bank's digital operating model, supported by stable governance structures, advanced analytics, and continuous compliance monitoring.

Reduced regulatory frictions, stabilised disclosures, and improved financial and governance indicators suggest that compliance has transitioned from a reactive obligation to an institutional capability. Sustainability compliance operates as an integrated extension of regulatory compliance, supported by the same FinTech infrastructure.

Trend Characterisation:

i. Compliance maturity
ii. Institutional resilience
iii. FinTech as core governance infrastructure

Year-wise Impact of FinTech on NPA Recognition, Monitoring, and Provisioning at SBI (2020–21 to 2025–26)

2020–21: Crisis-Era NPA Recognition under Regulatory Forbearance

During FY 2020-21, NPA recognition at State Bank of India was significantly influenced by COVID-19 related regulatory reliefs, including moratoriums and temporary suspension of asset classification norms. While FinTech systems were used for digital reporting and portfolio tracking, true asset stress remained partially masked due to regulatory forbearance.

Monitoring during this period relied heavily on manual reviews supplemented by system alerts, and provisioning was largely precautionary rather than fully risk-revealing. Gross NPAs remained elevated, and PCR levels were moderate, reflecting uncertainty and stress.

Impact Summary (2020–21):

i. Reactive NPA recognition
ii. Limited real-time monitoring
iii. Conservative provisioning

2021–22: Transition to System-Based Recognition and Enhanced Monitoring

In FY 2021–22, RBI restored standard asset classification norms, forcing banks to reassess stress accumulated during the moratorium period. SBI increasingly relied on system-driven NPA recognition, supported by:

- Automated overdue tracking
- Centralised borrower databases
- Analytics-based stress identification

Monitoring improved through early warning systems (EWS) and portfolio analytics, though governance still required manual validation. Provisioning increased, and PCR improved as FinTech-enabled systems enhanced accuracy and regulatory alignment.

Impact Summary (2021–22):

i. System-enabled recognition
ii. Structured monitoring
iii. Strengthened provisioning discipline

2022–23: Integrated NPA Surveillance and Risk-Based Provisioning

FY 2022–23 represents a turning point in NPA management maturity. FinTech systems were fully integrated into SBI's core banking and risk management architecture, enabling:

- Continuous NPA monitoring
- Automated classification across branches
- Borrower-level stress analytics

Provisioning became data-driven and risk-sensitive, aligned with RBI's prudential norms and IBC frameworks. This period saw a sharp improvement in asset quality indicators, including declining Gross and Net NPA ratios and rising PCR.

Impact Summary (2022–23):

i. Continuous recognition
ii. Centralised surveillance
iii. High provisioning adequacy

2023–24: Predictive Monitoring and Supervisory Confidence

In FY 2023–24, SBI's NPA management evolved from reactive monitoring to predictive surveillance, supported by:

Consolidated Year-wise Impact Table

- Advanced analytics
- Portfolio stress testing
- Real-time dashboards

FinTech systems enabled early detection of slippages, reducing fresh NPAs and supporting timely resolution. Provisioning levels stabilised at high levels, reflecting improved confidence in asset quality data and regulatory compliance.

Impact Summary (2023–24):

i. Predictive recognition
ii. Advanced monitoring
iii. Stable, high PCR

2024–25: NPA Stability through Compliance Maturity

By FY 2024–25, FinTech-enabled compliance had reached a stage of institutional maturity. NPA recognition became fully automated and rule-based, with minimal manual intervention. Monitoring systems provided near real-time insights, and provisioning was consistently aligned with RBI and Basel III norms.

Gross and Net NPA ratios reached historically low levels, indicating that FinTech contributed not only to compliance but also to structural asset quality improvement.

Impact Summary (2024–25):

i. Automated recognition
ii. Continuous monitoring
iii. Robust provisioning

2025–26: Institutionalised, Predictive NPA Governance

In FY 2025–26, NPA management at SBI reflects institutionalised FinTech governance. Recognition, monitoring, and provisioning are embedded within the Bank's digital operating model. Systems support:

- Predictive risk identification
- Portfolio-level stress forecasting
- Dynamic provisioning decisions

Regulatory frictions related to asset quality reporting are minimal, indicating high supervisory trust. NPA outcomes remain stable, demonstrating long-term compliance effectiveness.

Impact Summary (2025–26):

i. Predictive governance
ii. Embedded surveillance
iii. Sustained provisioning strength

Year	NPA Recognition	Monitoring Mechanism	Provisioning Impact
2020–21	Moratorium-affected, delayed	Manual + basic system alerts	Conservative
2021–22	System-enabled restoration	Early warning systems	Improving
2022–23	Continuous, rule-based	Centralised analytics	High adequacy
2023–24	Predictive identification	Advanced dashboards	Stable & strong
2024–25	Fully automated	Real-time surveillance	Robust
2025–26	Institutionalised	Predictive governance	Sustained

5. FINDINGS AND CASE ANALYSIS

{Evidence from State Bank of India (FY2020–21 to FY2024–25)}

5.1 Transformation of Regulatory Compliance Architecture at SBI

The analysis of annual and sustainability reports reveals a clear transformation in SBI's regulatory compliance architecture over the study period. From FY2020–21 onwards, compliance functions at State Bank of India transitioned from fragmented, process-based mechanisms to technology-embedded, centralised compliance systems.

In the early years of the study period, compliance disclosures were largely descriptive and policy-oriented, focusing on adherence to RBI guidelines through internal controls and audits. However, from FY2022–23 onwards, SBI's disclosures increasingly emphasised system-driven compliance, supported by integrated IT platforms, centralised dashboards, and automated reporting tools. This shift indicates a move away from manual compliance verification towards continuous, real-time compliance monitoring.

The findings suggest that FinTech adoption at SBI did not merely improve operational efficiency but fundamentally altered the structure and execution of regulatory compliance, aligning it with RBI's evolving expectations of data-driven supervision.

5.2 FinTech-Enabled KYC and AML Compliance

One of the most prominent areas of compliance transformation at SBI relates to Know Your Customer (KYC) and Anti-Money Laundering (AML) processes. Across the analysed period, SBI progressively adopted digital KYC mechanisms, including Aadhaar-based e-KYC, offline KYC, and Video Customer Identification Process (V-CIP), in line with RBI's Master Directions.

The case analysis shows that:

- Customer onboarding increasingly shifted to paperless and digital channels
- KYC records were maintained and updated through centralised digital repositories
- AML monitoring relied on analytics-based transaction surveillance systems

From FY2023 onwards, SBI's disclosures explicitly linked KYC and AML compliance with risk-based customer categorisation, continuous transaction monitoring, and automated alerts. These developments demonstrate that FinTech tools enabled SBI to operationalise RBI's risk-based approach to compliance at scale, which would be difficult to achieve through manual processes given the Bank's vast customer base.

The findings indicate that FinTech transformed KYC and AML compliance from a static, onboarding-centric activity into a dynamic, continuous compliance function.

5.3 Digitalisation of Regulatory Reporting and Auditability

The study finds substantial evidence of digital transformation in regulatory reporting and audit processes at SBI. Annual reports from FY2021 onwards increasingly reference automated generation of regulatory returns, system-based provisioning calculations, and centralised compliance reporting.

Key developments observed include:

- Automation of regulatory disclosures and financial reporting
- Improved timeliness and consistency of compliance submissions
- Enhanced audit trails supported by digital data governance systems

By FY2024–25, SBI's reporting practices reflected audit-ready compliance, where data used for regulatory submissions, internal audits, and disclosures originated from integrated systems rather than manual consolidation.

This shift significantly enhanced transparency, traceability, and supervisory confidence.

The findings suggest that FinTech adoption strengthened SBI's ability to respond to regulatory inspections and audits, reducing compliance lag and improving data reliability.

5.4 FinTech-Enabled Sustainability and ESG Compliance

A key finding of this study is the evolution of sustainability reporting into a regulated compliance function, supported by FinTech systems. SBI's Sustainability Reports from FY2020–21 to FY2024–25 reveal a progressive shift from voluntary ESG disclosures to mandatory, assured sustainability compliance, particularly after the introduction of SEBI's Business Responsibility and Sustainability Reporting (BRSR) framework.

The analysis highlights that:

- Sustainability data collection became increasingly structured and metric-driven
- ESG governance responsibilities were institutionalised at board and senior management levels
- Digital systems were used to consolidate, monitor, and report ESG indicators

By FY2023–24, SBI's sustainability disclosures were supported by reasonable assurance, indicating the presence of robust digital data systems capable of meeting regulatory audit requirements. The integration of climate risk considerations into enterprise risk management frameworks further demonstrates how sustainability compliance became embedded within the Bank's broader regulatory compliance architecture.

These findings confirm that FinTech played a critical role in enabling SBI to manage the data-intensive and cross-functional nature of sustainability compliance.

5.5 Regulatory Alignment and Policy-Driven FinTech Adoption

The case analysis shows strong alignment between SBI's FinTech initiatives and regulatory and policy developments in India. RBI's progressive recognition of digital KYC, continuous monitoring, and data-centric supervision created an enabling environment for technology-driven compliance.

Simultaneously, government-led digital public infrastructure—such as Aadhaar e-KYC—provided the foundational tools necessary for scalable compliance implementation. SBI's adoption of these infrastructures demonstrates how policy-driven digital ecosystems directly influenced compliance transformation at the institutional level.

The findings suggest that FinTech adoption at SBI was not purely discretionary or innovation-driven, but regulatory-induced, shaped by evolving compliance mandates and supervisory expectations.

5.6 Compliance Outcomes and Emerging Governance Challenges

The transformation of compliance through FinTech yielded several observable outcomes:

- Improved scalability and consistency of compliance processes
- Enhanced transparency and auditability
- Greater integration of compliance with enterprise risk management

However, the case analysis also reveals emerging governance challenges. Increased reliance on technology heightened concerns related to data privacy, cyber security, system resilience, and third-party risk management. SBI's disclosures indicate growing emphasis on cyber risk governance, employee training, and data protection frameworks, suggesting recognition of these challenges.

Thus, while FinTech strengthened compliance effectiveness, it simultaneously expanded the scope of governance responsibilities.

5.7 Summary of Key Findings

The findings from the SBI case study indicate that:

- FinTech fundamentally transformed regulatory compliance from manual, fragmented processes to integrated, system-embedded functions
- KYC, AML, regulatory reporting, and sustainability compliance were the primary domains of transformation
- Sustainability compliance emerged as a regulated, technology-enabled extension of traditional banking compliance
- Regulatory and policy frameworks played a decisive role in shaping FinTech adoption
- Compliance benefits were accompanied by new governance and risk considerations

6. DISCUSSION OF FINDINGS

6.1 FinTech as a Structural Enabler of Regulatory Compliance

The findings of this study demonstrate that FinTech adoption at State Bank of India represents a structural transformation of regulatory compliance, rather than a marginal improvement in operational efficiency. This supports and extends the RegTech literature, which argues that post-crisis regulatory complexity necessitates technology-embedded compliance systems (Arner et al., 2017; Zetzsche et al., 2020).

Unlike earlier studies that treat compliance as an ancillary function supported by IT tools, the SBI case shows that FinTech has become integral to the design and execution of compliance itself. The transition from manual verification, periodic audits, and document-centric reporting to continuous, system-driven monitoring aligns with the shift from *ex-post* to *ex-ante* regulatory oversight discussed in SupTech literature. This finding reinforces the argument that modern banking compliance is no longer feasible without embedded digital architecture, particularly in systemically important institutions.

6.2 Digital KYC and AML: From Procedural Compliance to Continuous Surveillance

The study's findings on KYC and AML compliance corroborate prior research emphasising the role of digital identity systems and analytics in strengthening customer due diligence (Gelb & Metz, 2018; Rao & Nair, 2019). However, this study advances the literature by demonstrating how these technologies function within a public sector banking context, characterised by scale, legacy systems, and heightened regulatory scrutiny.

At SBI, digital KYC mechanisms such as Aadhaar-based e-KYC and Video KYC did not merely accelerate onboarding; they enabled the operationalisation of the risk-based approach mandated by the RBI. Continuous transaction monitoring and analytics-based AML systems transformed compliance from a one-time procedural requirement into an ongoing surveillance function. This finding aligns with regulatory theory that emphasises *continuous compliance* as a cornerstone of financial stability, especially in high-volume banking environments.

Importantly, the SBI case illustrates that FinTech adoption in KYC and AML was regulatory-driven rather than innovation-led, underscoring the role of the Reserve Bank of India as a catalyst for RegTech diffusion in Indian banking.

6.3 Regulatory Reporting, Auditability, and Supervisory Trust

The digitalisation of regulatory reporting and audit processes at SBI reflects a broader transformation in regulator–bank relationships. Prior studies note that regulators increasingly rely on granular, system-generated data to enhance supervisory effectiveness (BIS, 2018; Crisanto et al., 2021). The SBI case provides empirical support for this argument by showing how automated reporting and integrated compliance dashboards enhance audit readiness, transparency, and consistency.

The shift towards audit-ready compliance systems suggests a movement away from adversarial, inspection-driven supervision towards data-enabled supervisory trust. This has significant implications for large public sector banks, which traditionally face greater regulatory scrutiny. FinTech thus functions as a trust-building mechanism, reducing information asymmetry between banks and regulators while improving compliance outcomes.

6.4 Sustainability as an Extension of Regulatory Compliance

One of the most significant contributions of this study lies in its treatment of sustainability and ESG reporting as a regulated compliance function, rather than a voluntary governance practice. Existing literature often analyses sustainability reporting and FinTech adoption separately (Olawale et al., 2024). The SBI case bridges this gap by demonstrating how sustainability compliance has been absorbed into the broader regulatory compliance architecture through FinTech systems.

The evolution of SBI's sustainability disclosures—from narrative reporting to mandatory, assured BRSR compliance—highlights how ESG has become data-intensive, auditable, and regulator-driven. This transformation would not be possible without digital systems capable of aggregating, validating, and reporting non-financial data across business units. The findings thus support emerging arguments that climate and ESG risks are increasingly treated as financial and regulatory risks, requiring integration with core compliance systems.

6.5 Role of Policy and Digital Public Infrastructure

The discussion also underscores the importance of policy-driven digital public infrastructure in shaping FinTech-enabled compliance. Unlike purely market-driven FinTech ecosystems, India's model—anchored in Aadhaar e-KYC, Digital India initiatives, and interoperable payment systems—creates a compliance-ready digital environment.

The SBI case illustrates how state-backed digital identity infrastructure lowers compliance costs, enhances standardisation, and improves regulatory alignment. This finding resonates with development and institutional literature that highlights the role of government in shaping financial system architecture in emerging economies (Omarova, 2020). It also suggests that effective RegTech adoption requires institutional and policy support, not just firm-level innovation.

6.6 Benefits and Emerging Governance Challenges

While the findings confirm that FinTech enhances compliance effectiveness, they also reveal emerging governance challenges. Increased reliance on digital systems introduces new risks related to data privacy, cyber security, model risk, and third-party dependence. This duality aligns with recent literature cautioning that RegTech solutions can shift, rather than eliminate, compliance risks (Zetzsche et al., 2020).

SBI's emphasis on cyber risk governance, employee training, and data protection indicates institutional awareness of these challenges. The discussion therefore supports a balanced view of FinTech-enabled compliance as a risk-redistributing mechanism, rather than a risk-neutral solution.

6.7 Theoretical and Practical Implications

From a theoretical perspective, the study contributes to RegTech and institutional banking literature by repositioning FinTech as a compliance architecture, not merely a technological tool. It also extends sustainability governance literature by empirically linking ESG compliance with digital compliance systems in banking.

From a practical standpoint, the findings offer insights for:

- Regulators seeking to design technology-compatible compliance frameworks
- Public sector banks managing large-scale compliance obligations
- Policymakers aiming to integrate sustainability into financial regulation

6.8 Summary of Discussion

In summary, the discussion confirms that FinTech adoption at SBI has enabled a fundamental transformation of regulatory and sustainability compliance. Compliance has evolved into a continuous, technology-embedded, and governance-centric function, shaped by regulatory mandates, policy infrastructure, and institutional scale. The SBI case thus provides compelling evidence that FinTech is not merely complementary to regulation, but increasingly constitutive of modern regulatory compliance in Indian banking.

7. CONCLUSION

This study examined the role of FinTech in enabling regulatory and sustainability compliance in the Indian banking sector through a secondary-data-based case study of State Bank of India. Drawing on longitudinal evidence from SBI's Annual Reports and Sustainability Reports (FY2020–21 to FY2024–25), along with regulatory and policy frameworks, the study provides robust empirical insights into how technology has reshaped compliance functions in a systemically important public sector bank.

The findings demonstrate that FinTech adoption at SBI has led to a structural transformation of compliance architecture. Regulatory compliance functions—traditionally characterised by manual verification, periodic audits, and documentation-centric processes—have evolved into integrated, system-embedded, and continuously monitored functions. Core compliance domains such as KYC, AML, regulatory reporting, and audit processes are now executed through digital platforms, analytics, and centralised dashboards, enhancing scalability, consistency, and supervisory transparency.

A key contribution of this study lies in its treatment of sustainability and ESG compliance as an extension of regulatory compliance, rather than as a voluntary or reputational exercise. The evolution of SBI's sustainability disclosures from narrative reporting to mandatory, assured compliance under the BRSR framework highlights the increasing regulatory significance of ESG and climate-related risks. FinTech systems enabled SBI to manage the data-intensive and cross-functional requirements of sustainability compliance, integrating ESG considerations into governance, risk management, and regulatory reporting structures.

The study also establishes that FinTech adoption for compliance at SBI was largely regulatory-induced, shaped by evolving frameworks issued by the Reserve Bank of India, SEBI, and the broader policy environment. Government-led digital public infrastructure, particularly Aadhaar e-KYC and Digital India initiatives, provided the foundational ecosystem that made scalable, standardised, and auditable compliance possible. This reinforces the view that effective FinTech-enabled compliance is the outcome of institutional alignment between regulators, policymakers, and banks, rather than firm-level innovation alone.

Overall, the SBI case illustrates that FinTech has moved beyond being an efficiency-enhancing tool to become a core compliance capability in Indian banking. Regulatory and sustainability compliance are no longer peripheral obligations but are embedded within the digital operating model of the bank, reshaping governance practices and regulatory relationships.

8. IMPLICATIONS OF THE STUDY

8.1 Theoretical Implications

The study contributes to the RegTech and institutional banking literature by empirically demonstrating that FinTech functions as a compliance architecture, rather than merely as a technological support system. It extends existing research by integrating regulatory compliance and sustainability compliance into a single analytical framework, thereby bridging gaps between FinTech, governance, and ESG literature. The findings also support emerging theoretical perspectives that conceptualise compliance as a continuous, technology-embedded process shaped by regulatory expectations and institutional context.

8.2 Managerial Implications

For bank management, particularly in public sector institutions, the findings highlight the necessity of viewing FinTech investments as strategic compliance infrastructure rather than discretionary innovation projects. Senior management must prioritise digital governance, data integrity, cyber resilience, and cross-functional integration to ensure that compliance systems remain robust and audit-ready. The SBI case also underscores the importance of aligning sustainability and ESG initiatives with core compliance and risk management functions to meet expanding regulatory obligations efficiently.

8.3 Policy and Regulatory Implications

From a policy perspective, the study underscores the effectiveness of India's regulatory and digital public infrastructure in enabling FinTech-driven compliance. Regulators may draw lessons from the SBI case to further promote technology-compatible regulation, encourage RegTech adoption, and strengthen SupTech capabilities. The integration of sustainability into regulatory compliance also suggests the need for continued regulatory clarity and standardisation in ESG and climate-risk disclosures to support consistent and comparable reporting across the banking sector.

9. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite its contributions, the study has certain limitations that provide scope for future research. First, the analysis is based exclusively on secondary, publicly available data, which limits access to internal compliance metrics and system-level performance indicators. Second, the study focuses on a single public sector bank, which, while analytically rich, restricts statistical generalisation across the banking sector. Third, the rapidly evolving regulatory and technological landscape implies that compliance practices may continue to change beyond the study period.

Future research may address these limitations by adopting comparative multi-bank case studies, including private sector banks and fintech-native institutions, to examine variations in compliance transformation. Primary research involving interviews with compliance officers, regulators, and technology providers could provide deeper insights into implementation challenges. Additionally, future studies could explore the quantitative impact of FinTech adoption on compliance costs, regulatory outcomes, and sustainability performance, as well as the role of emerging technologies such as artificial intelligence and blockchain in next-generation regulatory compliance.

10. CONCLUDING REMARK

In conclusion, this study demonstrates that FinTech has become an indispensable enabler of regulatory and sustainability compliance in Indian banking. Through the case of SBI, the research shows how technology, regulation, and policy infrastructure jointly shape a new compliance paradigm—one that is continuous, data-driven, and governance-centric. These insights are particularly relevant for regulators, public sector banks, and policymakers navigating the complexities of digital transformation and sustainable finance in emerging economies.

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