



ENHANCING DIGITAL FINANCIAL SYSTEMS AND FINANCIAL INTEGRITY: ASSESSING THE COORDINATING ROLE OF THE BANK OF SIERRA LEONE

**Joseph Momoh Conteh¹ⁱ,
Musa Abdullah Kargbo²,
Mohamed Sahid Sesay³**

¹Peking University,
Beijing, China

²Fourah Bay College,
University of Sierra Leone,
Sierra Leone

³Rokel Commercial Bank Sierra Leone Limited,
Sierra Leone

Abstract:

Sierra Leone's financial sector is undergoing its most consequential transformation since independence. Mobile money has overtaken commercial banking as the principal channel of financial access; the National Payment Switch (Salone Pement Swich, SaPS) launched in May 2023 now routes domestic retail transactions, and the National Payment Systems Act 2022 has given the Bank of Sierra Leone (BSL) explicit statutory authority over the payment ecosystem. Digitalisation at this pace, in a cash-dominated economy with thin supervisory capacity, generates financial integrity risks that arrive faster than the institutions built to contain them. The study examines how the BSL coordinates Sierra Leone's digital financial ecosystem while simultaneously pursuing financial integrity, stability, consumer protection, inclusion, cybersecurity and compliance with anti-money laundering and counter-terrorism financing (AML/CFT) standards. It assesses institutional strengths, regulatory gaps and implementation constraints, and proposes an original governance framework. The study adopts an interpretivist qualitative design based on documentary, policy and comparative analysis. Sources comprise Sierra Leonean statutes, BSL directives and guidelines, the 2020 GIABA mutual evaluation and its follow-up reports, IMF, World Bank, BIS, FATF, AFI, GSMA and UNCDF publications, and peer-reviewed literature. Thematic content analysis is applied against nine comparator jurisdictions: Kenya, Ghana, Rwanda, Nigeria, South Africa, Singapore, Estonia, India and the United Kingdom. The BSL has built a credible enabling architecture, including an early regulatory sandbox, tiered know-your-customer rules and mandatory switch participation, but coordination remains fragmented across the Financial Intelligence Unit, the National Telecommunications Commission, cybersecurity

ⁱ Correspondence: email josephmconteh2004@yahoo.com

bodies and line ministries. Supervisory technology, data protection law, enforcement capacity and inter-agency data sharing lag behind market growth, leaving integrity risks concentrated in agent networks, fraud and weakly monitored digital channels. The paper specifies sequenced reforms for the BSL, government, industry and development partners, each costed against institutional capacity and political incentives. The paper offers the first integrated scholarly assessment of the BSL's coordinating role in digital finance and develops the Integrated Digital Financial Governance and Integrity Coordination Framework (IDFGICF). Sierra Leone can convert late-mover status into an advantage only if regulatory coordination, supervisory technology and integrity safeguards are institutionalised before transaction volumes outgrow them.

JEL: G00, H00, M40, M41, M48

Keywords: digital finance; financial integrity; central banking; Bank of Sierra Leone; financial inclusion; AML/CFT; payment systems; regulatory governance; mobile money; cybersecurity

1. Introduction

Digital technology has redrawn the boundaries of central banking. Payment systems that once cleared paper instruments among a handful of banks now settle instant transfers among banks, mobile network operators, fintech firms and government agencies, and the central bank sits at the centre of that network as operator, regulator, supervisor and catalyst at once (Bank for International Settlements [BIS], 2020; Feyen *et al.*, 2021). The global evidence on the inclusion dividend is substantial: 76 per cent of adults worldwide held an account in 2021, up from 51 per cent a decade earlier, with digital payments driving most of the gain in developing economies (Demirgüç-Kunt *et al.*, 2022). The evidence on the risk side is equally substantial. Digital channels compress the time between innovation and abuse; fraud, cyber intrusion, money laundering through rapid layering across wallets, and consumer exploitation scale with the same network effects that make the technology valuable (Financial Action Task Force [FATF], 2021; Chalwe-Mulenga & Duflos, 2022).

Sub-Saharan Africa is the region where this tension is sharpest. Mobile money account ownership rose from 21 per cent of adults in 2017 to 33 per cent in 2021, and in twenty economies more adults hold a mobile money account than a bank account (Demirgüç-Kunt *et al.*, 2022; GSMA, 2024). Kenya's M-Pesa demonstrated two decades ago that a telecommunications-led model could reach households that banks never would (Jack & Suri, 2014; Suri & Jack, 2016). The regulatory lesson that followed was less celebrated but more important: inclusion gains are durable only where the central bank builds the supervisory and integrity infrastructure to match, a lesson visible in Ghana's interoperability reforms, Nigeria's contested regulatory sequencing and Tanzania's levy-induced reversals (Ndung'u, 2018; Ozili, 2018).

Sierra Leone entered this transformation late and from a low base. Only about 29 per cent of adults held any account in 2021, against roughly 20 per cent in 2017, and bank account ownership stood near 16 per cent (Demirgüç-Kunt *et al.*, 2022; MFW4A, 2023). Two mobile money operators, Orange Money and Afrimoney, dominate digital access; agent numbers expanded from under 4,000 in 2021 to over 48,000 in 2022 (MFW4A, 2023). Since 2019 the state has assembled the legal scaffolding of a digital financial system in rapid succession: the Bank of Sierra Leone Act 2019, the Cybersecurity and Crime Act 2021, the National Payment Systems Act 2022, the Deposit Protection Act 2023, the launch of the National Payment Switch in May 2023, and directives in December 2024 requiring every licensed institution to route domestic transactions through the switch from 1 April 2025 (Bank of Sierra Leone [BSL], 2024; Government of Sierra Leone, 2021, 2022). The BSL was among the first African central banks to operate a fintech regulatory sandbox, launched in 2018 with the UN Capital Development Fund (UNCDF, 2018).

The research problem is that legal authority and market growth have outrun coordination and integrity capacity. The 2020 GIABA mutual evaluation found low effectiveness across most immediate outcomes of Sierra Leone's AML/CFT system and although five enhanced follow-up reports through 2025 record technical re-ratings, effectiveness in supervision, financial intelligence use and prosecution remains the binding constraint (GIABA, 2020, 2025). Sierra Leone still lacks a dedicated data protection statute; the Cybersecurity and Crime Act 2021 criminalises intrusion but does not regulate how financial data are processed (Council of Europe, 2023). Responsibility for the digital financial system is dispersed among the BSL, the Financial Intelligence Unit (FIU), the National Telecommunications Commission (NATCOM), the Ministry of Finance, the Ministry of Information, the National Cybersecurity Coordination Centre and the Directorate of Science, Technology and Innovation, without a statutory coordination mechanism equal to the task.

The research gap is equally clear. Scholarship on African digital finance concentrates on Kenya, Ghana, Nigeria and Tanzania; Sierra Leone appears, if at all, as a data point in cross-country regressions. No peer-reviewed study has examined the BSL's coordinating role across the full span of payment systems, integrity, inclusion, cybersecurity and consumer protection, and none has proposed a governance framework calibrated to a small, low-income, post-conflict economy with thin institutions. This study fills that gap.

The study pursues ten objectives: to trace the evolution of digital financial systems in Sierra Leone; to assess the BSL's statutory and regulatory responsibilities; to evaluate the effectiveness of digital financial regulation and supervision; to examine integrity challenges in digital financial services; to assess institutional coordination among financial sector stakeholders; to evaluate the contribution of digital finance to inclusion and development; to identify regulatory, technological, institutional and operational constraints; to compare Sierra Leone with selected African and international jurisdictions; to develop an integrated strategic framework; and to provide evidence-based policy recommendations. The corresponding research questions ask how digital finance has transformed the financial sector, what coordinating role the BSL performs, how effective

current regulation and AML/CFT measures are, what risks threaten integrity, how well institutions coordinate, what international lessons apply, and what reforms should govern the next decade.

The contribution is threefold. Theoretically, the study integrates institutional, regulatory governance, network governance and technology adoption theories into a single conceptual apparatus for small-state digital financial governance. Empirically, it assembles and analyses the full documentary record of Sierra Leone's digital finance reforms for the first time. Practically, it delivers the IDFGICF and a sequenced reform agenda addressed to named institutions with named responsibilities.

The paper proceeds as follows. Section 2 develops the theoretical framework. Section 3 reviews the literature and defines the gap. Section 4 sets out the Sierra Leone context. Section 5 explains the methodology. Section 6 presents results, analysis and discussion. Section 7 conducts the comparative analysis. Section 8 develops the IDFGICF. Section 9 presents policy recommendations, and Section 10 concludes.

2. Theoretical framework

No single theory explains a central bank coordinating a digital financial ecosystem; the phenomenon spans institutions, regulation, markets, technology and networks. This section examines the candidate theories critically and then integrates the serviceable elements into one conceptual framework.

Institutional theory explains why formal rules alone do not produce compliant behaviour. Organisations adopt structures for legitimacy as much as efficiency, and rules diverge from practice where enforcement is weak (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; North, 1990). The theory fits Sierra Leone precisely: the country has enacted modern financial statutes faster than it has built the supervisory routines that give them force, a pattern North (1990) would describe as formal institutions outrunning informal ones. Scott's (2014) regulative, normative and cultural-cognitive pillars supply the diagnostic categories used in Section 6.

Regulatory governance theory shifts attention from whether rules exist to how regulation is designed, legitimated and enforced in practice, including risk-based supervision, decentred regulation and the accountability of regulators themselves (Baldwin *et al.*, 2012; Black, 2008). Its value here lies in the concept of regulatory capacity as a scarce resource to be allocated by risk, which is the standard against which BSL supervision is judged. Its limitation is its silence on technology.

Financial stability and intermediation theories anchor the prudential dimension. Diamond and Dybvig (1983) and Diamond (1984) explain why deposit-taking and payment institutions are fragile and why delegated monitoring matters; Merton (1995) reframes the question functionally, asking which institutions perform payment, pooling and risk-transfer functions rather than what they are called. The functional view matters in Sierra Leone because mobile money operators now perform deposit-like and payment functions outside the banking perimeter, and regulation must follow function rather than form.

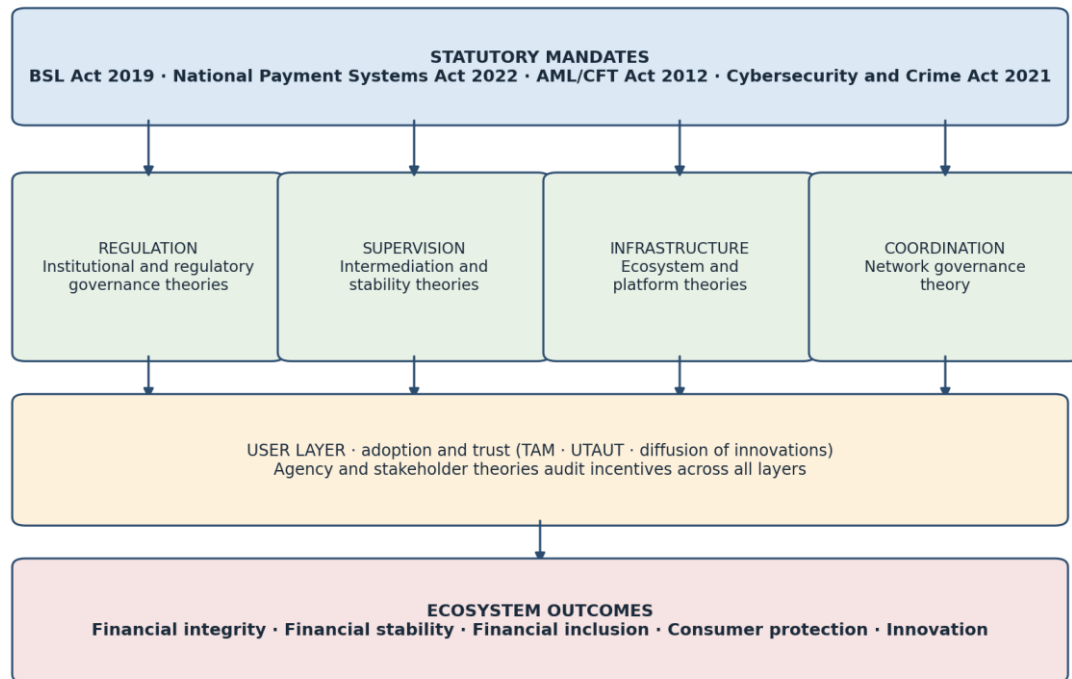
Agency and stakeholder theories illuminate the incentive structure. Agency theory (Jensen & Meckling, 1976) captures the divergence between mobile money operators maximising float and fee income and a regulator internalising systemic and integrity risk; it also captures the principal-agent problem inside the state, where the BSL supervises entities licensed by NATCOM. Stakeholder theory (Freeman, 1984) widens the accountability map to consumers, agents, donors and government, which is necessary in an ecosystem where the most numerous participants, rural agents and low-income users, hold the least power.

Systems and network theories supply the coordination logic. Systems theory (von Bertalanffy, 1968) treats the digital financial system as an open system whose behaviour emerges from interaction, not from any single component. Network governance theory sharpens this: Provan and Kenis (2008) distinguish shared governance, lead-organisation governance and network administrative organisations, and predict that lead-organisation governance succeeds where one actor holds legitimacy and resources the others lack. That prediction underwrites the paper's central institutional claim: the BSL must function as lead organisation of the digital finance network, with a formal coordination body as the administrative instrument. Digital ecosystem thinking (Adner, 2017; Moore, 1993) adds the insight that value in platform economies depends on complementors, so a switch without interoperable participants, or regulation without fintech entrants, delivers nothing.

Technology adoption theories explain the demand side. The Technology Acceptance Model holds that perceived usefulness and ease of use drive adoption (Davis, 1989); UTAUT adds social influence and facilitating conditions (Venkatesh *et al.*, 2003); diffusion of innovations explains the S-curve and the role of observability and trialability (Rogers, 2003). These theories predict, correctly, that agent networks and USSD access matter more than smartphone applications in a low-literacy, low-smartphone market, and that trust, damaged by fraud, is the adoption variable that regulation most directly protects.

The theories are complementary rather than competing, but they carry different weights. TAM and UTAUT are individual-level theories and say nothing about regulators; stakeholder theory identifies interests but not mechanisms; systems theory describes without prescribing. The integrated conceptual framework therefore assigns each theory a specific layer. Institutional and regulatory governance theories govern the rules layer; intermediation and stability theories govern the prudential layer; network governance and ecosystem theories govern the coordination layer; adoption theories govern the user layer; agency and stakeholder theories run across all layers as the incentive audit. Figure 1 presents the resulting framework, in which the BSL's coordinating role converts statutory mandates into ecosystem outcomes (integrity, stability, inclusion, protection) through four transmission channels: regulation, supervision, infrastructure and coordination. The framework generates the analytical propositions tested in Sections 6 and 7: that outcomes fail where any channel is weak, and that in small states the coordination channel is the most fragile because it depends on inter-agency incentives no single statute controls.

Figure 1: Integrated conceptual framework of central bank coordination in digital finance



Source: Author

3. Literature review

3.1 Digital financial systems and inclusion

The economics of digital finance rests on a simple mechanism: digital rails cut the transaction costs of payments, savings and credit, and lower costs pull excluded households into the formal system (Aker & Mbiti, 2010; Beck *et al.*, 2007). The strongest causal evidence remains Kenyan. Jack and Suri (2014) showed that M-Pesa users smoothed consumption through shocks that pushed non-users into hardship, and Suri and Jack (2016) estimated that mobile money lifted roughly two per cent of Kenyan households out of extreme poverty, with the largest effects among female-headed households. Cross-country work confirms the association between digital payments and inclusion while cautioning that effects depend on infrastructure, identity systems and trust (Demirgüç-Kunt & Klapper, 2013; Demirgüç-Kunt *et al.*, 2022; Sahay *et al.*, 2020). Khera *et al.* (2021) find digital financial inclusion positively associated with growth in emerging economies, though measurement remains contested. Ozili (2018) supplies the necessary scepticism: digital finance benefits providers and states as much as users, and inclusion gains can coexist with new forms of exclusion and exploitation, a point Sierra Leone's fraud experience validates.

3.2 Mobile money, fintech and market structure

The mobile money literature has matured from adoption studies to market structure. Early accounts documented the agent economics and trust mechanics behind M-Pesa (Hughes & Lonie, 2007; Mas & Radcliffe, 2011); later work examined competition

between operator-led and bank-led models and the price effects of interoperability (Donovan, 2012; Mothobi & Grzybowski, 2017). The fintech literature frames these developments within a broader unbundling of finance (Gomber *et al.*, 2017, 2018; Philippon, 2016) and a regulatory response cycle running from forbearance through sandboxes to activity-based regulation (Arner *et al.*, 2016; Zetsche *et al.*, 2017). BIS work maps how bigtech and fintech credit alter intermediation and concentrate data power (Claessens *et al.*, 2018; Frost *et al.*, 2019), and Ehrentraud *et al.* (2020) taxonomise national policy responses, showing that enabling frameworks cluster in jurisdictions with strong supervisory capacity, which is exactly what small states lack.

3.3 Financial integrity, AML/CFT and RegTech

The integrity literature converges on three findings relevant here. First, digital channels change laundering typologies, enabling rapid micro-structuring across wallets and cross-border layering through remittance corridors, while simultaneously creating data trails that supervision can exploit if it has the tools (FATF, 2021). Second, poorly calibrated AML/CFT rules exclude the poor; risk-based, tiered customer due diligence reconciles integrity with inclusion, and digital identity is the hinge between them (FATF, 2020; Gelb & Clark, 2013). Third, RegTech and SupTech shift compliance and supervision from periodic reporting to data-driven monitoring, but adoption requires legal authority over data, technical skills and budget, which explains slow uptake in low-income jurisdictions (Arner *et al.*, 2017; Di Castri *et al.*, 2019; FATF, 2021). Consumer risk research documents rising fraud, over-indebtedness through digital credit and data misuse across African markets (Chalwe-Mulenga & Duflos, 2022), and cybersecurity scholarship records a widening gap between African digital adoption and protective capacity (Kshetri, 2019).

3.4 Payment infrastructure, CBDC and digital public infrastructure

The payments literature establishes that inclusive systems require both access rails and governance rails: the CPMI and World Bank's Payment Aspects of Financial Inclusion framework specifies legal certainty, interoperability, oversight and consumer protection as joint conditions (Committee on Payments and Market Infrastructures & World Bank, 2016, 2020). India's experience shows what a state-coordinated stack of identity, accounts and interoperable instant payments can deliver at scale (D'Silva *et al.*, 2019). Central bank digital currency research has moved from design taxonomies (Auer & Böhme, 2020) to adoption evidence, with surveys showing most central banks exploring CBDC while retail issuance remains rare and, in Nigeria's case, weakly adopted (Kosse & Mattei, 2023; Ree, 2023). Open banking and interoperability studies indicate that mandated data sharing and switch participation raise competition where enforcement is credible (BIS, 2019).

3.5 Digital identity, data governance and consumer protection

A younger strand of literature treats identity and data as the substrate of digital finance rather than an adjunct to it. Gelb and Clark (2013) established the development case for biometric identification; subsequent work on digital public infrastructure argues that

identity, payments and consented data exchange function as complementary rails whose joint provision explains India's inclusion acceleration better than any single intervention (D'Silva *et al.*, 2019). The FATF's digital identity guidance closed the standard-setting loop by permitting identity assurance frameworks to satisfy customer due diligence, which converts a national ID system into AML/CFT infrastructure (FATF, 2020). The critical literature is equally instructive. Identity-linked finance concentrates data in states and platforms whose protective law often lags collection, and African data protection statutes have diffused faster than the supervisory authorities needed to enforce them; the result in several jurisdictions is symbolic compliance of exactly the kind institutional theory predicts. Consumer protection research completes the picture: evidence across African digital credit and payments markets documents opaque pricing, aggressive debt collection, agent fraud and weak recourse, with losses falling disproportionately on new and low-income users (Chalwe-Mulenga & Duflos, 2022). Two design conclusions recur. Disclosure alone does not protect users with low literacy; conduct regulation must reach provider incentives, complaint handling and liability allocation. And redress must be measured to be managed, which links consumer protection back to the supervisory data theme running through the RegTech literature (Arner *et al.*, 2017; Di Castri *et al.*, 2019). For a country contemplating identity-linked eKYC without an enacted data protection law, as Sierra Leone currently is, this strand of literature reads less as background than as warning.

3.6 Critique and research gap

Three weaknesses run through this literature. Methodologically, causal evidence is concentrated in a few East African natural experiments; most other findings are associational, and cross-country regressions obscure institutional variation of exactly the kind that matters for policy. Geographically, small West African states are almost absent; Sierra Leone appears in Findex tables and GIABA assessments but not in scholarly analysis. Conceptually, the central bank's coordinating role is fragmented across the payments, integrity, inclusion and fintech literatures, each treating one function of an institution that must perform all of them simultaneously. The gap this study addresses is therefore specific: an integrated, theoretically grounded assessment of how a small-state central bank coordinates digital finance and integrity together, using Sierra Leone as the case, and a governance framework built for that setting rather than scaled down from Nairobi or Singapore.

4. The Sierra Leone context

4.1 Financial sector evolution

Sierra Leone's financial sector remains small, bank-dominated and concentrated in Freetown and the secondary cities of Bo and Kenema. Commercial banks held about 82.5 per cent of financial system assets at the end of 2022, pension funds 11.4 per cent, and all other institutions the residual; the number of BSL-regulated institutions rose from 230 in 2021 to 242 in 2022 (MFW4A, 2023). Seventeen commercial banks serve a population of

over eight million, yet bank account ownership reached only 16 per cent of adults in 2021, up from 12 per cent in 2017 (Demirgüç-Kunt *et al.*, 2022; MFW4A, 2023). The civil war (1991 to 2002) destroyed branch infrastructure and records; the Ebola epidemic (2014 to 2016) then demonstrated, through donor-driven digital payments to response workers, both the feasibility and the fragility of digital channels in the country. Structural constraints persist: low and volatile incomes, an economy around USD 5.4 billion with per capita GDP near USD 590, high informality, unreliable electricity, and literacy and connectivity gaps between Freetown and the provinces (International Monetary Fund [IMF], 2024; The Fintech Times, 2026). Macro-financial conditions shape the digital finance question in two further ways. Inflation and exchange rate depreciation through 2022 and 2023 eroded real balances and prompted the redenomination of the Leone, completed in December 2023, an operation the BSL executed competently and which simplified pricing and accounting across the economy. And the sector's concentration cuts both ways for policy: a system of seventeen banks and two mobile money operators is small enough for a determined regulator to know each institution individually, which favours supervision, but also small enough that any single large institution's non-compliance carries systemic and political weight, which raises the cost of enforcement and explains why credible early sanctions matter so much for the switch mandate examined in Section 6.

4.2 Emergence of digital financial services

Mobile money entered Sierra Leone around 2010 through operator-led offerings that consolidated into two dominant platforms, Orange Money and Afrimoney (Africell). Growth was slow until the 2017 to 2022 period, when tiered know-your-customer guidelines, agent guidelines and operator investment produced a step change: agents grew from 3,772 in 2021 to 48,087 in 2022, and combined account ownership reached about 29 per cent of adults in 2021 from roughly 20 per cent in 2017 (Demirgüç-Kunt *et al.*, 2022; MFW4A, 2023). Usage still trails access; fewer than 30 per cent of adults made or received a digital payment in 2021, and UNCDF's national baseline found only 15.1 per cent of adults fully served on a four-indicator definition of inclusion (MFW4A, 2023; UNCDF, 2025). Banks have followed rather than led, integrating wallet-to-account transfers over USSD and launching digital channels such as Sierra Leone Commercial Bank's Mi Yone suite (Borgen Project, 2026). Government payments are digitalising selectively; an emergency programme delivered cash transfers to 35,000 households through mobile wallets (Borgen Project, 2026).

Table 1 defines the study's key concepts. Table 2 summarises the evolution of digital finance in Sierra Leone.

Table 1: Definitions of key concepts

Concept	Working definition	Principal source
Digital financial services	Financial services accessed and delivered through digital channels, including payments, savings, credit and insurance	CPMI & World Bank (2020)
Mobile money	E-money issued against float held in trust, accessed through a mobile device and agent network	GSMA (2024)
Financial integrity	The condition in which a financial system is protected from money laundering, terrorism financing, fraud and abuse	FATF (2023)
Financial inclusion	Access to and use of affordable, quality formal financial services by all adults	Demirgüç-Kunt <i>et al.</i> (2022)
Financial stability	Resilience of the financial system to shocks such that intermediation and payments continue	Diamond & Dybvig (1983)
Interoperability	Technical and commercial arrangements enabling transactions across providers and instruments	CPMI & World Bank (2016)
RegTech / SupTech	Technology applied to regulatory compliance by firms and to supervision by authorities	Arner <i>et al.</i> (2017)
Regulatory sandbox	A controlled live-testing environment for innovative financial products under regulatory oversight	Zetzsche <i>et al.</i> (2017)
Digital public infrastructure	Foundational identity, payment and data-exchange systems operated as public rails	D'Silva <i>et al.</i> (2019)
CBDC	A digital liability of the central bank available for retail or wholesale use	Kosse & Mattei (2023)

Table 2: Evolution of digital finance in Sierra Leone

Period	Development	Significance
2009–2010	National ICT Policy; first mobile money launches	Entry of operator-led digital payments
2011	Credit Reference Act; AML/CFT Act 2012 drafted	Early integrity and credit infrastructure
2014–2016	Ebola response digital payments to workers	Proof of concept for G2P digital transfers
2015	BSL Guidelines for Mobile Money Services	First dedicated e-money regulatory regime
2017	Collateral Registry; NSFI 2017–2020; tiered KYC and agent guidelines	Inclusion strategy institutionalised
2018	BSL regulatory sandbox launched with UNCDF	Among the first sandboxes in Africa
2019	Bank of Sierra Leone Act 2019; National Innovation and Digital Strategy 2019–2029	Modernised central bank mandate; digital vision
2021	Cybersecurity and Crime Act	Criminal framework for cyber offences
2022	National Payment Systems Act; NSFI 2022–2026	Statutory payments authority for BSL
2023	National Payment Switch (SaPS) launched; currency redenomination; Deposit Protection Act	Interoperable retail rails; monetary simplification
2024	National Switch Directives; instant payment pilot	Mandatory routing through SaPS announced
2025	Full SaPS integration deadline (1 April); GIABA fifth follow-up report	Enforcement of interoperability; integrity re-ratings

Sources: BSL (2015, 2024); Government of Sierra Leone (2019, 2021, 2022); GIABA (2020, 2025); UNCDF (2018); MFW4A (2023).

4.3 The BSL's legal mandate and regulatory instruments

The Bank of Sierra Leone Act 2019 assigns the BSL price stability, financial system soundness and support for government economic policy, and modernised its governance and independence provisions (Government of Sierra Leone, 2019). The National Payment Systems Act 2022 is the decisive statute for this study: it empowers the BSL to license, regulate and oversee payment systems and service providers, addresses data protection and privacy within payments, anti-money laundering obligations, record retention and disclosure, and, through section 15(7), underpins the National Switch Directives; section 37 provides penalties for non-compliance (Government of Sierra Leone, 2022; Sierra Leone Monitor, 2024). Beneath statute sits an instrument layer: the 2015 Guidelines for Mobile Money Services, which require trust-account backing of e-money, traceable and auditable transactions and agent conduct standards (BSL, 2015); tiered KYC guidelines; agent banking guidelines; sandbox rules; and the 2023 and 2024 switch directives mandating that all licensed institutions become and remain SaPS participants and route domestic transactions through it from 1 April 2025 (BSL, 2024).

4.4 Payment infrastructure and the National Switch

SaPS, launched in May 2023 with support from development partners, links automated teller machines, point-of-sale devices, internet and mobile banking and mobile money across providers, and its instant payment service was piloted through 2024 with seven banks and both mobile network operators connected ahead of the April 2025 deadline (BSL, 2024; Finance for Development, 2025). The switch converts interoperability from a bilateral commercial negotiation into a regulatory obligation, the same structural move that GhIPSS executed in Ghana in 2018 and that India embedded in the Unified Payments Interface (D'Silva *et al.*, 2019). It also concentrates operational and cyber risk in a single national utility, which raises the supervisory stakes examined in Section 6.

4.5 Integrity, cybersecurity and data protection architecture

The Anti-Money Laundering and Combating of Financing of Terrorism Act 2012 established the Financial Intelligence Unit and the offence framework; an Inter-Ministerial Committee and Technical Committee provide policy coordination (GIABA, 2020). The 2020 GIABA mutual evaluation, adopted in December 2020, rated Sierra Leone's effectiveness low across most immediate outcomes, citing weak risk understanding, limited use of financial intelligence, negligible money laundering prosecutions and thin supervision of reporting entities; five enhanced follow-up reports through December 2025 record progress on technical compliance re-ratings while effectiveness gaps persist (GIABA, 2020, 2025). The Cybersecurity and Crime Act 2021, drafted with ECOWAS, European Union and Council of Europe support and aligned with the Budapest Convention, criminalises unauthorised access, interception, interference, computer fraud and identity theft, and establishes a national coordination centre (Council of Europe, 2023; Government of Sierra Leone, 2021). A dedicated data

protection law remains absent; a draft bill developed through the National Civil Registration Authority has circulated for validation but had not been enacted at the time of writing, leaving payments-sector data governed piecemeal by the NPSA and the cyber statute (Council of Europe, 2023). Table 3 maps institutional responsibilities.

Table 3: Institutional responsibilities in Sierra Leone’s digital financial ecosystem

Institution	Core mandate	Digital finance role	Coordination interfaces
Bank of Sierra Leone	Monetary policy; financial stability; payments oversight	Licenses banks, e-money issuers, PSPs; operates SaPS oversight; sandbox	FIU, NATCOM, MoF, banks, MMOs
Financial Intelligence Unit	AML/CFT intelligence and compliance	Receives STRs from banks and MMOs; typologies; guidance	BSL, law enforcement, judiciary, GIABA
NATCOM	Telecommunications regulation	Licenses MNOs; USSD access; quality of service	BSL, MNOs, fintechs
Ministry of Finance	Fiscal policy; financial sector policy	Legislative sponsorship; G2P digitalisation	BSL, Parliament, development partners
National Cybersecurity Coordination Centre	Cybersecurity coordination under 2021 Act	Incident response; critical infrastructure protection	BSL, NATCOM, police cyber unit
DSTI / Ministry of Information	Digital government strategy	Digital ID linkage; innovation policy	NCRA, BSL, MNOs
NCRA	Civil registration and identity	Foundational ID for KYC; data protection drafting	FIU, BSL, MMOs
Law enforcement and judiciary	Investigation and prosecution	Cyber and financial crime cases	FIU, AG’s office
Commercial banks and MMOs	Service provision	First-line AML/CFT controls; agent management	BSL, FIU, SaPS
Development partners (IMF, World Bank, UNCDF, AfDB, EU)	Finance and technical assistance	Switch funding; sandbox support; capacity building	MoF, BSL

Source: Author’s compilation from statutes and institutional documents.

5. Research methodology

The study adopts an interpretivist philosophy: regulatory coordination is a socially constructed practice whose meaning lies in documents, mandates and institutional behaviour rather than in variables awaiting measurement. The design is a single-country qualitative case study with embedded comparative analysis, appropriate where the phenomenon and its context are inseparable and where the objective is analytical rather than statistical generalisation (Yin, 2018). The approach is abductive, iterating between the theoretical framework of Section 2 and the documentary record.

Data sources are documentary and comprise four strata: Sierra Leonean primary law and regulation (the 2019 BSL Act, NPSA 2022, AML/CFT Act 2012, Cybersecurity and Crime Act 2021, Deposit Protection Act 2023, the 2015 mobile money guidelines and the

2023 and 2024 switch directives); official assessments and strategies (the 2020 GIABA mutual evaluation and follow-up reports to 2025, NSFI 2022–2026, IMF Article IV documentation, BSL publications); international standard-setter and multilateral sources (FATF, BIS, CPMI-World Bank, AFI, GSMA, UNCDF, World Bank Findex); and peer-reviewed literature. Comparator material covers Kenya, Ghana, Rwanda, Nigeria, South Africa, Singapore, Estonia, India and the United Kingdom.

Analysis proceeded in three stages. Content analysis extracted provisions, mandates and obligations from legal instruments into structured matrices. Thematic analysis, coded against the four transmission channels of the conceptual framework (regulation, supervision, infrastructure, coordination), organised the assessment in Section 6; themes were derived both deductively from the framework and inductively from the documents. Comparative policy analysis then benchmarked Sierra Leone against the nine jurisdictions on regulatory design, interoperability, integrity and innovation facilitation, selecting comparators purposively to span income levels, regulatory models and documented outcomes.

Reliability was pursued through an audit trail linking every claim to a cited document and through triangulation across independent sources; validity through reliance on primary legal texts over secondary commentary wherever possible, and through testing interpretations against the GIABA and IMF assessments as external referents. Ethical considerations are limited, as the study uses public documents and no human subjects; the analysis nonetheless names institutional weaknesses carefully and attributes them to systems rather than individuals. Limitations are material and stated plainly: the study conducts no interviews, so practitioner perspectives enter only through documents; quantitative data on Sierra Leonean digital finance are sparse and sometimes inconsistent across sources; and the reform programme analysed is recent, so effectiveness judgements on SaPS and the 2024 directives are necessarily provisional. These limitations bound the conclusions but do not undermine a study whose object is the documented architecture of coordination itself.

6. Results, analysis and discussion

6.1 Digital finance performance and inclusion outcomes

The headline result is asymmetric growth: access infrastructure has expanded far faster than usage or depth. The agent network multiplied nearly thirteenfold between 2021 and 2022, yet account ownership rose only nine percentage points between 2017 and 2021, digital payment usage remained below 30 per cent of adults, and full inclusion on a multi-indicator definition stood at 15.1 per cent (Demirgüç-Kunt *et al.*, 2022; MFW4A, 2023; UNCDF, 2025). Table 4 assembles the indicators. The pattern matches the adoption theories of Section 2: facilitating conditions have improved, but perceived usefulness is constrained by cash-dominated merchant ecosystems and trust is constrained by fraud, so wallets are opened and then used thinly for person-to-person transfers and airtime. Sierra Leone in 2025 resembles Kenya circa 2009 or Ghana circa 2015 on access metrics, which is an opportunity: the usage frontier is where policy pressure now belongs,

principally through government payments, merchant acceptance and the instant payment service.

Three drivers of the usage gap deserve separate treatment because each implies a different remedy. The first is the merchant acceptance deficit. A wallet is useful in proportion to what it can buy, and Sierra Leonean commerce remains overwhelmingly cash-settled; without acceptance among market traders, transport operators and utilities, wallets function as remittance termini rather than transaction accounts. The comparative evidence is unambiguous that acceptance follows pricing and simplicity, which is why India set merchant fees on UPI at zero and why interchange design on SaPS instant payments is a first-order policy variable rather than a technical afterthought (D'Silva *et al.*, 2019). The second driver is the cost and friction of cash-in and cash-out. Agent liquidity in the provinces is thin, and where an agent cannot pay out, the user's trust in the entire system, not merely that agent, is damaged; agent economics are therefore a supervisory concern, not only a commercial one (Mas & Radcliffe, 2011). The third driver is monetary context. The redenomination of the Leone, completed in December 2023, simplified accounting but also coincided with periodic physical cash shortages, and episodes of cash scarcity cut in both directions: they push some users towards digital balances while teaching others that balances they cannot readily encash are risky. The BSL's inclusion strategy has treated these usage constraints mainly through literacy campaigns; the analysis here suggests that pricing rules, agent liquidity monitoring and government payment digitalisation would move usage faster than education alone, because the binding constraints are structural rather than informational.

Table 4: Financial inclusion and digital finance indicators, Sierra Leone

Indicator	2017	2021	Latest available
Any account, adults 15+ (%)	~20	~29	32.9 (UNCDF baseline, incl. mobile money)
Financial institution account (%)	12	16	15.7 (UNCDF baseline)
Made or received digital payment (%)	n/a	<30	n/a
Mobile money agents (number)	n/a	3,772	48,087 (2022)
Regulated financial institutions	n/a	230	242 (2022)
Banking share of financial assets (%)	n/a	n/a	82.5 (end-2022)

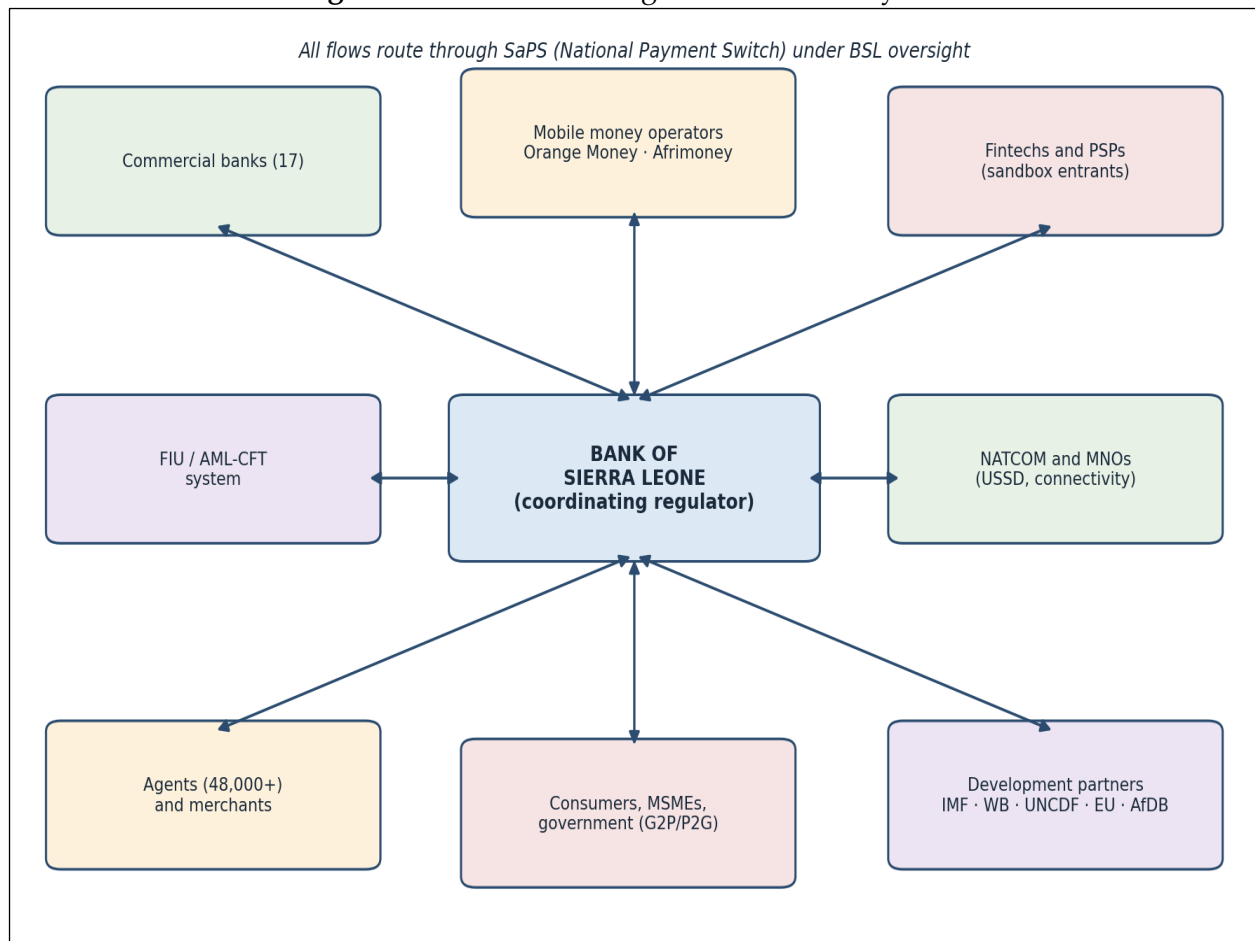
Sources: Demirgüç-Kunt *et al.* (2022); MFW4A (2023); UNCDF (2025). Figures marked approximate reflect source rounding.

6.2 The BSL's coordinating role in practice

Analysis of the documentary record shows the BSL performing five distinguishable coordinating functions. As rule-maker it has issued the e-money, tiered KYC, agent and switch instruments. As infrastructure steward it drove SaPS from procurement through launch to the mandatory-participation directives, using section 15(7) of the NPSA to convert a utility into an obligation. As innovation facilitator it operated one of Africa's earliest sandboxes, which signalled openness to fintech entry and gave the regulator early sight of new models (UNCDF, 2018). As inclusion strategist it authored and co-ordinates the NSFI 2022–2026 (BSL, 2022). As integrity gatekeeper it supervises reporting institutions alongside the FIU. Figure 2 maps the ecosystem; Figure 3 depicts the current coordination model; Figure 4 sets out the regulatory governance architecture.

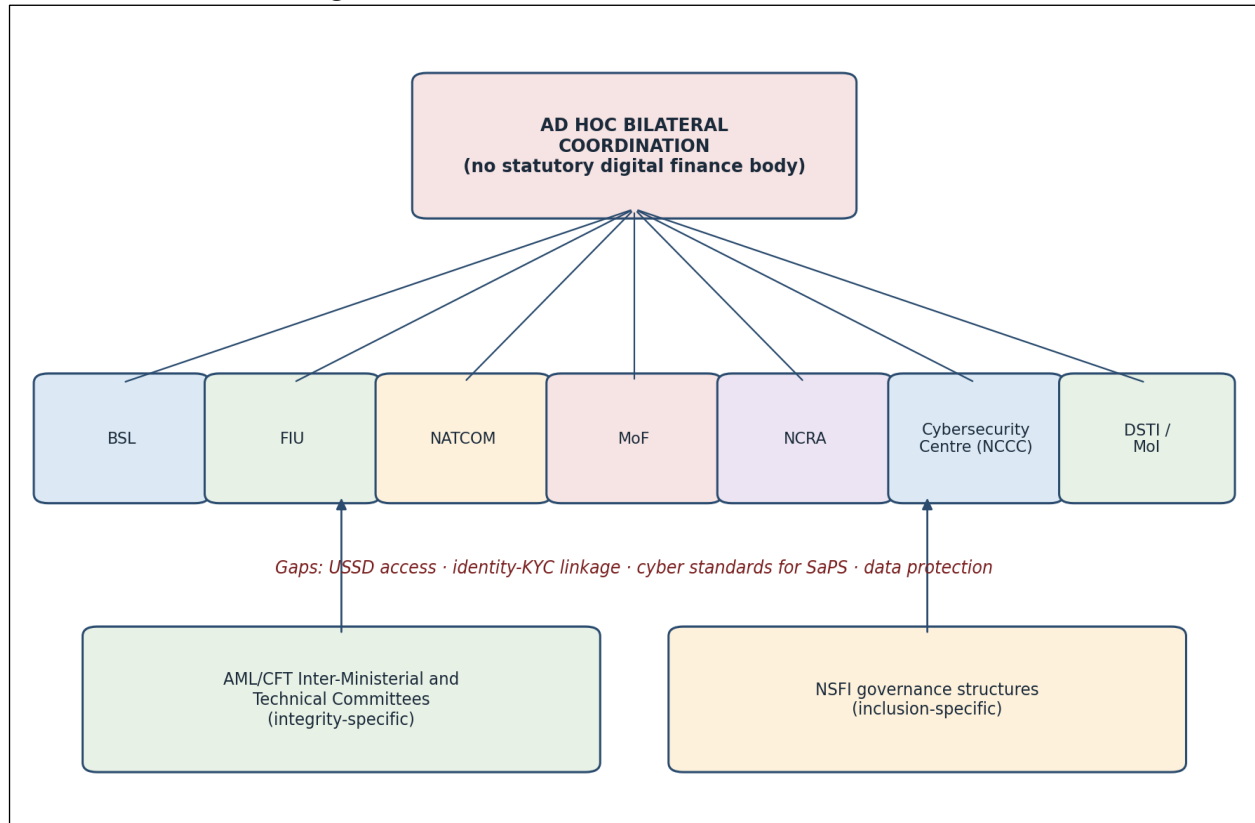
The strength of this record is sequencing of infrastructure and rules: law (2022), switch (2023), directives (2024), enforcement deadline (2025) is a coherent ladder, and mandating switch participation before volumes are entrenched avoids the bilateral hold-out problems that delayed interoperability elsewhere. The weakness is that four of the five functions depend on capabilities the BSL only partially controls. Enforcement of switch participation requires operational readiness in seventeen banks of uneven capability; sandbox graduation requires proportionate licensing categories that remain underdeveloped; integrity supervision requires FIU analytics and prosecutorial follow-through that GIABA assesses as weak; and every function requires skilled staff in an institution competing with donors and telecommunications firms for scarce digital expertise.

Figure 2: Sierra Leone's digital financial ecosystem



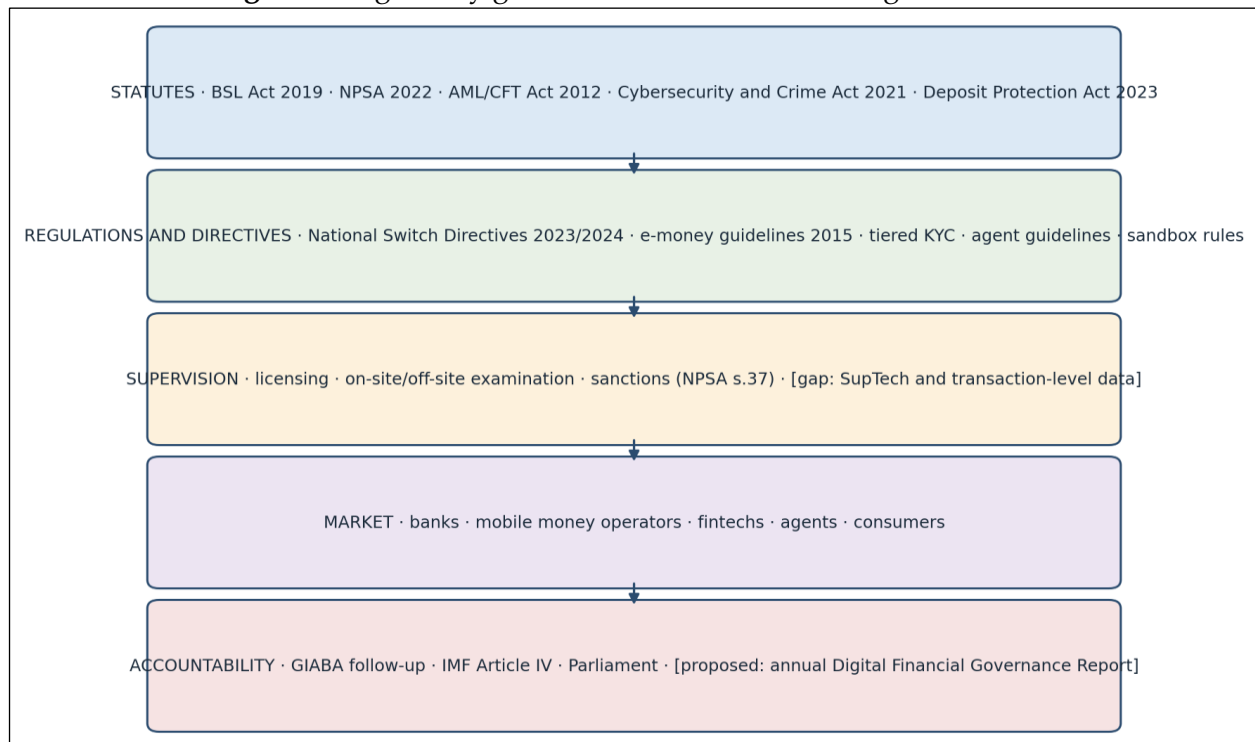
Source: Author.

Figure 3: Current institutional coordination model



Source: Author.

Figure 4: Regulatory governance architecture for digital finance



Source: Author.

Table 5 condenses the assessment of the BSL's coordinating position into a SWOT structure. The pairing that matters most strategically sits on the diagonal: the strength of infrastructure-first sequencing meets the threat of enforcement failure, because a mandated switch that the largest operators can defy without consequence would convert the programme's chief asset into a public demonstration of regulatory weakness.

Table 5: SWOT analysis of the BSL's coordinating role in digital finance

	Helpful	Harmful
Internal	<i>Strengths:</i> modern statutory powers (2019, 2022 Acts); early sandbox credibility; infrastructure-first sequencing of SaPS; authorship of the NSFI; convening legitimacy with donors and industry	<i>Weaknesses:</i> no SupTech or transaction-level data; scarce specialist skills and retention risk; manual trust-account and agent oversight; conduct regulation undeveloped; limited enforcement track record
External	<i>Opportunities:</i> late-mover adoption of proven models; identity-linked eKYC via NCRA; G2P digitalisation as anchor usage; regional payment integration; aligned donor financing	<i>Threats:</i> operator duopoly bargaining power; fraud-driven trust erosion; cyber-attack on concentrated SaPS infrastructure; stalled data protection legislation; fiscal pressure on supervisory budgets

Source: Author's analysis.

6.3 Regulatory effectiveness

Judged against the regulatory governance standard of Section 2, the framework is formally adequate and operationally thin. The NPSA 2022 gives the BSL modern powers, including over data, records and AML obligations within payments, and penalty authority under section 37. Three effectiveness gaps recur across the documents. Proportionality is incomplete: the regime still distinguishes institutions largely by legal form rather than function, so fintech firms that are neither banks nor mobile network operators face an uncertain licensing pathway despite the sandbox. Supervision is compliance-checking rather than risk-based: reporting is periodic and manual, and there is no evidence in the record of SupTech deployment, transaction-level monitoring or data-driven off-site supervision of the kind Di Castri *et al.* (2019) document elsewhere. Enforcement is untested: the April 2025 switch deadline and section 37 penalties will be the first real test of whether directives bind the largest operators, whose bargaining power derives from the state's dependence on their rails for inclusion targets. Table 6 presents the regulatory gap assessment.

The sandbox deserves a verdict of its own, because it is the instrument on which the BSL's innovation reputation rests. As signal, it succeeded: launching in 2018, among the first on the continent, it told entrepreneurs and donors that the regulator would engage with novelty rather than prohibit it, and government continues to credit it with enabling live testing of financial products (UNCDF, 2018). As pipeline, the record is thinner. The theory of sandboxes holds that their value lies in graduation, converting tested innovations into licensed businesses under proportionate rules, and in regulatory learning that feeds back into general policy (Zetzsche *et al.*, 2017). The Sierra Leonean record discloses no published cohort results, no graduation statistics and, decisively, no licensing ladder into which a graduate could step; a firm that completes testing faces the

same form-based regime it entered from. The comparative pattern is instructive: the United Kingdom and Singapore published cohort outcomes and paired their sandboxes with modular licensing, and Ghana followed with payment service provider categories, while sandboxes without exit regimes elsewhere in Africa became waiting rooms. The remedy is not to abandon the instrument but to complete it, which is why recommendations 2 and 3 treat the licensing regulations and the published graduation pathway as a single reform.

Table 6: Regulatory gap assessment

Domain	Current instrument	Gap	Consequence
E-money issuance	2015 Guidelines; NPSA 2022	Guidelines predate fintech era; trust-account monitoring manual	Float risk; slow product approval
Fintech licensing	Sandbox (2018)	No graduated licence categories post-sandbox	Innovation bottleneck; regulatory arbitrage
Supervision	On-site/off-site cycles	No SupTech; limited transaction data access	Late detection of fraud, float breaches
Data protection	NPSA s.21; cyber Act	No dedicated statute or authority	Weak consumer redress; donor and adequacy concerns
Consumer protection	Guidelines; NSFI pillar	No enforceable market-conduct regime for DFS	Fraud losses erode trust and adoption
Cyber resilience	Cybersecurity and Crime Act 2021	Criminal law, not supervisory standards; no sector CSIRT	SaPS concentration risk unsupervised
AML/CFT for DFS	AML/CFT Act 2012; FIU	Typologies and agent-level controls underdeveloped	Laundrying through wallets and agents
Cross-border payments	Remittance rules	Fragmented corridor oversight	Cost and integrity blind spots

Source: Author's analysis of instruments cited in Section 4.

6.4 Financial integrity, AML/CFT and fraud

The integrity assessment is the study's most sobering result. The 2020 mutual evaluation found low effectiveness in risk understanding, supervision, preventive measures, financial intelligence and prosecution; the follow-up record through 2025 shows genuine technical progress, with successive re-ratings, but re-rated laws are not investigated cases, and the effectiveness deficit identified in 2020 remains the operative constraint (GIABA, 2020, 2025). Digital finance sharpens this deficit in specific ways. Agent networks that grew thirteenfold in a year cannot have been risk-assessed at commensurate speed; agents performing cash-in and cash-out are the classic placement point for illicit funds. Tiered KYC, correctly designed for inclusion, depends for its integrity on transaction monitoring at the operator level and analytical capacity at the FIU, both of which the documentary record shows to be thin. Fraud, meanwhile, operates as a tax on trust: consumer-risk evidence across comparable African markets shows scams and agent fraud rising with adoption (Chalwe-Mulenga & Duflos, 2022), and Sierra Leone's cyber statute provides offences but the police cyber unit and courts lack demonstrated capacity to process digital evidence at volume (Council of Europe, 2023).

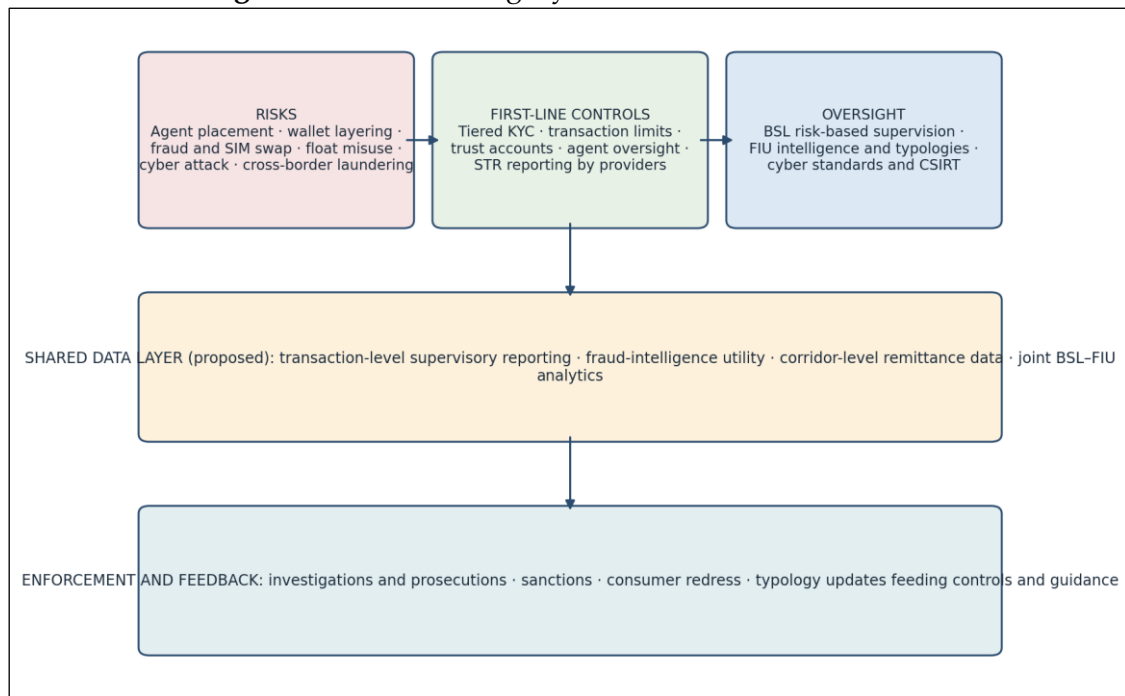
The pathway from technical compliance to effectiveness runs through the FIU, and the analysis suggests its constraint is positional as much as budgetary. An FIU generates value by transforming suspicious transaction reports into intelligence that investigators act upon; the quality of that transformation depends on the quality of incoming reports, which depends in turn on reporting entities understanding digital typologies, which depends on the FIU issuing guidance grounded in transaction data it does not currently receive at scale. The circle closes only when the FIU and BSL share analytical infrastructure rather than exchanging documents, which is the reasoning behind the joint analytics recommendation in Section 9. Digital channels, properly instrumented, favour the authorities here: unlike cash, every wallet transaction leaves a record, so the same digitalisation that multiplies laundering opportunities also multiplies detectable evidence, provided someone is equipped to read it (FATF, 2021). The effectiveness test GIABA will apply in the next evaluation round is concrete: investigations opened, assets restrained, prosecutions concluded. A small number of demonstrative digital-channel cases, competently investigated and publicly concluded, would do more for Sierra Leone's ratings and for market deterrence than a further round of statutory amendment. Table 7 sets out the risk matrix; Figure 5 presents the integrity framework linking risks to controls.

Table 7: Financial integrity risks in Sierra Leone's digital financial system

Risk	Channel	Likelihood	Impact	Existing control	Control adequacy
Agent-level placement of illicit cash	MMO agents	High	High	Agent guidelines; KYC	Weak monitoring
Wallet structuring/layering	P2P transfers	High	Medium	Transaction limits by tier	Limits static, not risk-scored
Consumer fraud and social engineering	USSD, SIM swap	High	High	Cyber Act offences; PIN sensitisation	Enforcement thin
Cyberattack on SaPS	Switch	Medium	Severe	Vendor security; cyber Act	No sector standards/CSIRT
Float mismanagement	Trust accounts	Medium	High	2015 Guidelines	Manual verification
Cross-border laundering via remittances	Corridors	Medium	Medium	AML Act; FIU	Corridor data gaps
Terrorist financing through mobile channels	Wallets	Low	Severe	CFT provisions	Typology work absent
Data breach and identity theft	Providers, NCRA linkages	Medium	High	Cyber Act; NPSA s.21	No DP authority

Source: Author's analysis drawing on GIABA (2020, 2025) and FATF (2021) typologies.

Figure 5: Financial integrity risk and control framework



Source: Author.

6.5 Institutional coordination

Coordination is where the network governance lens earns its place. The record shows at least ten institutions with overlapping mandates (Table 3) and only two standing coordination mechanisms: the AML/CFT Inter-Ministerial and Technical Committees, which are integrity-specific, and NSFI governance structures, which are inclusion-specific. No body coordinates digital finance as a whole; the BSL-NATCOM interface over USSD pricing and access, the BSL-NCRA interface over identity-based KYC, and the BSL-cybersecurity interface over payment infrastructure protection all operate through ad hoc arrangements. Provan and Kenis (2008) predict that such shared-governance arrangements fail as network size and task complexity grow, and the observed symptoms match: a data protection bill stalled between ministries, USSD access terms unresolved between the financial and telecommunications regulators, and integrity data fragmented between the FIU, BSL and operators. The lead-organisation solution, with the BSL as lead and a statutory council as the administrative organ, is developed in Section 8.

The USSD question illustrates why the coordination gap is not an abstraction. Feature-phone access over USSD is the channel through which most Sierra Leonean users reach financial services, and USSD is a telecommunications resource: NATCOM licenses it, mobile network operators control it, and the BSL's licensees depend on it. Where the financial regulator cannot secure non-discriminatory access and predictable pricing for fintech entrants, the incumbency of the two operator-led wallets is protected by infrastructure rather than by merit, and the sandbox's promise of contestability is quietly cancelled at the network layer. Nigeria and Kenya both fought protracted disputes over USSD pricing between banks and operators, disputes that a standing coordination mechanism with rule-making authority would have shortened. A second illustration is

identity. Tiered KYC becomes cheap and reliable only when provider systems can verify customers against the NCRA register, yet that linkage requires a data-sharing framework, a lawful basis and an accountable authority, which is to say it requires the Data Protection Act and an inter-agency agreement that no single institution can supply alone. In both cases the missing ingredient is not goodwill, which the documentary record suggests exists, but a forum with the standing, mandate and secretariat to convert goodwill into binding arrangements on a schedule. That is a governance design problem, and Section 8 treats it as such.

6.6 Cybersecurity readiness, technology and supervision

SaPS changes the cyber calculus. Before 2023, cyber risk in Sierra Leonean finance was distributed across institutions; the switch concentrates it in one utility whose failure would now halt domestic retail payments. The Cybersecurity and Crime Act 2021 is a criminal statute, not a supervisory one: it does not impose resilience standards, incident-reporting duties or testing regimes on financial infrastructure. International practice, from the CPMI-IOSCO guidance on cyber resilience for financial market infrastructures to sectoral CSIRTs in Rwanda and Singapore, indicates the missing layer (BIS, 2020). On the supervisory side, the absence of SupTech is not merely a modernisation gap; it is an integrity gap, because tiered KYC and agent-based models are only safe when someone watches the transaction data. The BSL's sandbox experience and its UNCDF partnership on the State of the Digital Financial Services Market reporting (Borgen Project, 2026) show the institution can absorb technical assistance; the constraint is sustained budget and retention of skills, not willingness.

6.7 Consumer protection and market conduct

Consumer protection is the quiet failure point of the current architecture. The 2015 guidelines oblige agents to sensitise customers on PIN confidentiality and require traceable transactions, and the NSFI 2022–2026 carries a consumer protection and financial literacy pillar, but no enforceable market-conduct regime exists for digital financial services: no binding disclosure standards for fees, no maximum resolution times for disputed transactions, no compensation rules for provider error, and no published complaints statistics against which providers can be compared (BSL, 2015, 2022). The consequence is predictable from adoption theory. Where a defrauded user has no reliable redress, the rational response is reversion to cash, and each publicised scam depreciates trust for every provider simultaneously; consumer risk is therefore a system externality, not a bilateral matter between a user and an operator (Chalwe-Mulenga & Duflos, 2022; Ozili, 2018). The redress problem also has a distributional edge: the users most exposed to USSD-based fraud and SIM-swap attacks are precisely the low-income, low-literacy users the inclusion strategy targets, and the complaint channels that exist presume literacy, airtime and persistence. South Africa's twin peaks settlement and the United Kingdom's outcomes-based conduct regime demonstrate the institutional point that conduct regulation requires its own rules, data and enforcement record even where it sits inside the prudential regulator; Sierra Leone need not copy the architecture to adopt the

discipline. A directive under the NPSA specifying disclosure, complaint-handling deadlines, provider liability for agent conduct and mandatory reporting of fraud and complaints data to the BSL would cost little and address the trust constraint identified in Section 6.1 directly.

6.8 Cross-border digital finance and remittances

Remittances are a first-order financial flow for Sierra Leone, and the corridor infrastructure that carries them is consolidating with digital wallets as termination points: international transfers now land directly in Orange Money and Afrimoney wallets, and card products linked to wallets, such as the Afrimoney prepaid Visa card launched with Ecobank in May 2026, blur the boundary between domestic e-money and cross-border payment instruments (City Hunter, 2026). The policy stakes run in both directions. On the cost side, Sub-Saharan Africa remains the most expensive region in the world to send money to, and digital termination is a proven cost reducer, so regulation should not obstruct wallet-terminated remittances (World Bank, 2023). On the integrity side, cross-border wallet flows are exactly where GIABA's identified weaknesses in corridor data and typology work bite: fragmented oversight among the BSL, remittance service providers and correspondent arrangements leaves the FIU without a corridor-level picture (GIABA, 2020). Regional developments compound the question. ECOWAS payment integration efforts and the African Continental Free Trade Area's Pan-African Payment and Settlement System create the prospect of regional interoperability for which SaPS is the necessary national on-ramp; a Sierra Leone that enforces domestic interoperability but cannot connect regionally will have built a well-governed island. The recommendation follows: corridor-level reporting into the supervisory data platform, joint BSL-FIU oversight of remittance service providers, and early technical engagement with regional switching initiatives so that standards are adopted rather than retrofitted.

6.9 Emerging technologies and future opportunities

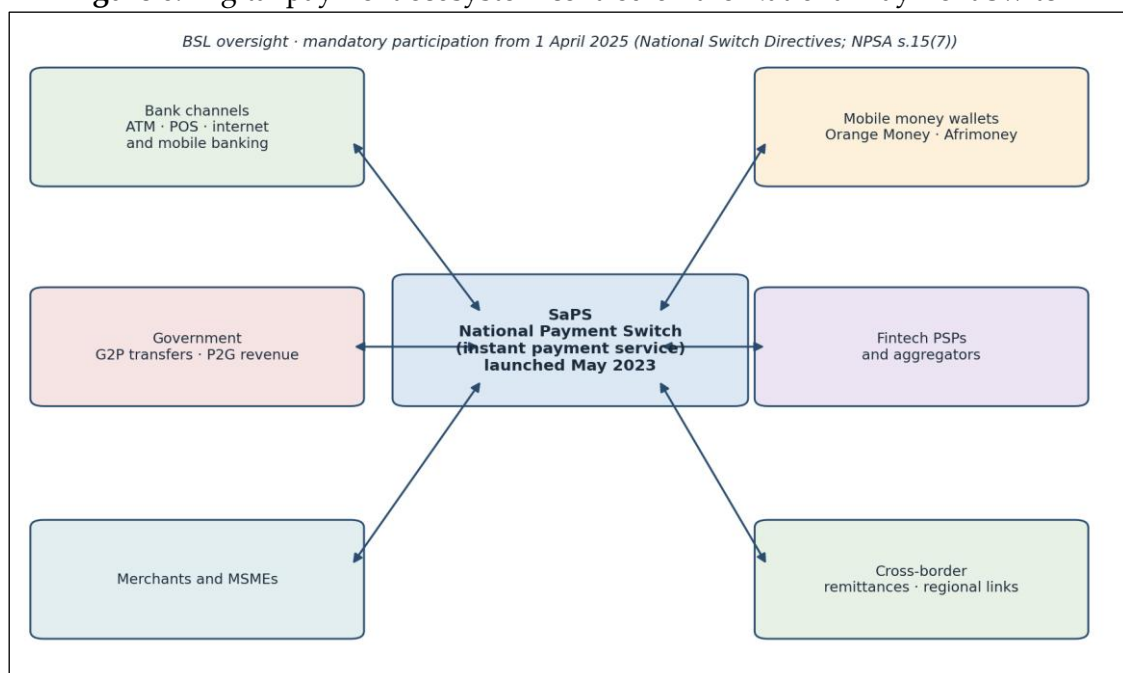
Four technology questions will confront the BSL within the framework's horizon, and the analysis supports a deliberate ordering. Artificial intelligence belongs first, because its supervisory application is immediate: machine-assisted transaction monitoring, anomaly detection over agent networks and complaints-data mining are the working content of the SupTech investment already recommended, and the same tools raise governance questions about explainability and data quality that the missing data protection statute must answer (Arner *et al.*, 2017; FATF, 2021). Open finance belongs second: once SaPS participation is universal and a licensing ladder exists, mandated, consent-based data sharing on the United Kingdom model would let new entrants build services on incumbent data, disciplining the two-operator mobile money duopoly; without the data protection statute it would be reckless. A retail CBDC belongs last, and the evidence justifies scepticism about urgency: most central banks are exploring CBDCs, yet Nigeria's eNaira, the nearest large-scale African precedent, achieved negligible adoption while the private instant payment rails it duplicated continued to grow (Kosse & Mattei, 2023; Ree, 2023). Sierra Leone's scarce implementation capacity is better spent making SaPS instant

payments universal, cheap and trusted; a CBDC decision should wait on evidence that some public objective cannot be met by the existing rails. Cloud computing is the cross-cutting enabler and constraint: provider migration to regional cloud infrastructure lowers cost and raises resilience, but data-localisation questions, concentration among a few hyperscale vendors and supervisory access to cloud-hosted records all require rules the current framework does not contain. The opportunity in each case is the same late-mover advantage identified throughout: Sierra Leone can adopt the second or third generation of each technology with the governance lessons of the first generation already written, provided the institutional machinery of Section 8 exists to read them.

6.10 Discussion against the literature

Three findings speak back to the literature. First, Sierra Leone confirms the institutionalist prediction that formal convergence outpaces functional convergence: the country's statutes would satisfy a checklist review, while GIABA's effectiveness ratings expose the gap between parchment and practice, the same divergence Meyer and Rowan (1977) theorised and that Ehrentraud *et al.* (2020) observe in fintech regulation across low-capacity states. Second, the case qualifies the inclusion-integrity trade-off as usually framed: in Sierra Leone the binding constraint on both is identical, namely supervisory data capability, so investments in SupTech relax both constraints at once rather than trading one against the other, a point consistent with FATF (2021) but rarely operationalised. Third, the case extends network governance theory to financial regulation in small states: where a dozen agencies share a task none can perform alone, the choice of governance form is not administrative detail but the primary determinant of outcomes, which comparative experience in Section 7 corroborates. Figure 6 depicts the digital payment ecosystem centred on SaPS as it now stands.

Figure 6: Digital payment ecosystem centred on the National Payment Switch



Source: Author.

7. Comparative analysis

The nine comparators were selected to isolate different governance choices rather than to admire different endowments. Table 8 summarises; the text draws the lessons that survive translation to a small, low-income state.

Table 8: International comparison of digital financial governance

Jurisdiction	Defining feature	Interoperability model	Integrity/supervision approach	Transferable lesson for Sierra Leone
Kenya	Operator-led mobile money at scale since 2007	Late, negotiated interoperability	CBK test-and-learn, then tightening	Permissive entry builds scale, but late interoperability entrenches dominance
Ghana	GhIPSS interoperability mandate (2018); e-levy episode	State switch, mandatory	BoG dedicated fintech department	A fintech-specific licensing ladder after the sandbox; taxes on transactions suppress usage
Rwanda	State-led digitalisation; cashless policy	National switch (RSwitch)	Strong cyber institutions; sector CSIRT	Cyber resilience as supervisory, not only criminal, matter
Nigeria	Bank-led model; eNaira (2021); PSB licences	NIBSS instant payments	Heavy directives; weak CBDC uptake	Instant payment rails succeed where CBDCs may not; avoid abrupt policy reversals
South Africa	Twin peaks (2017); PayShap (2023)	Bank-centred fast payments	Prudential/conduct separation	Market conduct needs its own teeth, even inside one regulator
Singapore	MAS integrated regulator; sandbox (2016)	PayNow; Payment Services Act 2019	Activity-based licensing; SupTech	Activity-based licence tiers proportional to risk
Estonia	X-Road data exchange; e-ID	State digital infrastructure	Data protection embedded by design	Identity plus data-exchange rails multiply every financial service
India	India Stack: Aadhaar, UPI (2016)	Public-utility instant payments	RBI oversight; DPI governance	Public rails plus open participation drive usage, not access alone
United Kingdom	FCA sandbox (2016); open banking mandate	CMA9 open banking	Outcomes-based conduct regulation	Mandated data sharing disciplines incumbents where enforcement is credible

Source: Author's synthesis from BIS (2019, 2020), D'Silva *et al.* (2019), Kosse & Mattei (2023), Ndung'u (2018), Zetzsche *et al.* (2017) and national sources.

The African comparators repay closer reading than a table permits. Kenya's experience is usually told as a triumph of regulatory forbearance, and the inclusion outcomes justify part of that telling: the Central Bank of Kenya's decision to let M-Pesa operate under letters of comfort before legislation existed produced scale that a licence-first approach would likely have prevented (Jack & Suri, 2014; Ndung'u, 2018). The half of the story relevant to Freetown is what forbearance cost later. Interoperability arrived a decade after dominance was established, wallet-to-wallet pricing disputes consumed years of regulatory attention, and the market power accumulated by a single operator constrained every subsequent policy choice. Sierra Leone, mandating switch participation while the market is still forming, has priced in that Kenyan lesson; the analytical point is that the benefit only accrues if the mandate holds. Ghana offers the nearest structural analogue: a state-owned switch, a central bank that built a dedicated fintech and innovation office, and a graduated payment service provider licensing regime enacted in 2019 that gave sandbox graduates somewhere to go. Ghana also supplies the clearest negative lesson in the region: the electronic transactions levy, whose introduction visibly suppressed transaction values and taught users to route around formal channels; a small state rebuilding trust cannot afford to run that experiment. Nigeria demonstrates a different failure shape: abundant directives, an instant payment system of genuine quality in NIBSS, and a retail CBDC whose adoption remained negligible because it answered a question users had not asked, while abrupt policy reversals on cash and on fintech onboarding taught the market that the rules were unstable (Kosse & Mattei, 2023; Ree, 2023). Rwanda's contribution is institutional: cybersecurity treated as national infrastructure with a sectoral incident-response capability, and a state that sequenced identity, connectivity and payments deliberately, which is the closest African approximation to the coordination architecture proposed in Section 8.

The high-income comparators discipline the framework rather than flatter it. Singapore's Payment Services Act 2019 is the cleanest available template for activity-based licensing: a single statute, modular licence classes scaled to risk, and supervisory expectations published in advance, administered by an integrated regulator with the SupTech capacity to watch what it licenses. The United Kingdom contributes two mechanisms: the sandbox model that Sierra Leone has already borrowed and the open banking mandate, whose lesson is that incumbent data advantages yield only to compulsion backed by credible enforcement, never to exhortation. South Africa's twin peaks reform shows that market conduct requires dedicated machinery and a visible enforcement record even where prudential supervision is strong; the transferable element is the discipline, not the second peak. Estonia and India together define the destination state: identity, consented data exchange and instant public payment rails operated as public infrastructure, with the Estonian caveat that the entire edifice stands on enacted data protection law and the Indian caveat that governance of public rails, their pricing, access rules and accountability, is a permanent policy task rather than a launch event (D'Silva *et al.*, 2019).

Four lessons carry the argument. The first concerns sequencing: Sierra Leone has, unusually, adopted the Ghanaian-Indian sequence of building the public switch before

market positions hardened, which is the single strongest feature of its reform programme; the comparative record says the dividend is only collected if participation and pricing are enforced, since GhIPSS volumes grew when the Bank of Ghana compelled routing, and UPI grew on zero merchant fees and open APIs. The second concerns licensing: every successful comparator moved from sandbox to a graduated, activity-based licensing ladder (Singapore's Payment Services Act, Ghana's payment service provider categories, the UK's e-money regime); Sierra Leone has the sandbox but not the ladder, which caps the sandbox's value. The third concerns integrity architecture: Rwanda and Singapore treat cyber resilience and transaction monitoring as supervisory functions with dedicated institutions, while Nigeria demonstrates that directive-heavy regulation without analytical capacity produces friction rather than integrity. The fourth concerns what to avoid: transaction taxes of the Ghanaian e-levy type, and abrupt reversals of the Nigerian kind, both of which taught users that formal digital channels are unreliable or expensive, damage that took years to repair. The Estonian and Indian cases add the forward lesson that identity and data-exchange infrastructure, in Sierra Leone's case the NCRA identity system linked lawfully to KYC, multiplies the value of every payment rail; the qualifier, from Estonia, is that such linkage is only sustainable atop enacted data protection law.

8. The Integrated Digital Financial Governance and Integrity Coordination Framework (IDFGICF)

The IDFGICF answers the study's central finding: Sierra Leone's problem is no longer the absence of rules or rails but the absence of a governance system that makes thirteen institutions behave as one. The framework, presented in Figure 7 with the reform sequence in Figure 8, has five layers and one engine.

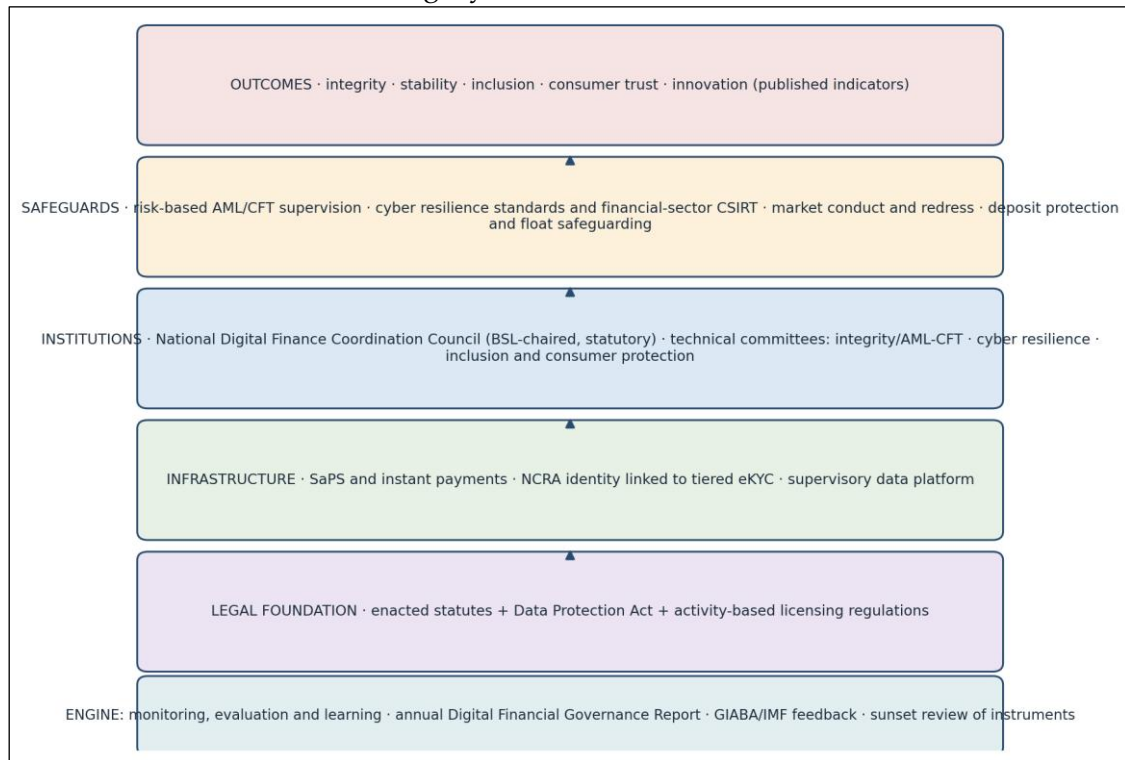
The foundation layer is legal and normative: the enacted statutes plus two missing instruments, a Data Protection Act with an independent authority, and activity-based licensing regulations under the NPSA. The infrastructure layer comprises SaPS and its instant payment service, the NCRA identity system linked to tiered KYC under data protection law, and a supervisory data platform receiving transaction-level reporting from all providers. The institutional layer is the framework's core innovation for Sierra Leone: a statutory National Digital Finance Coordination Council, chaired by the BSL Governor, with the FIU, NATCOM, NCRA, Ministry of Finance, cybersecurity centre and DSTI as members, meeting quarterly with a permanent secretariat inside the BSL; beneath it, three standing technical committees for integrity and AML/CFT, cyber resilience, and inclusion and consumer protection. This is lead-organisation network governance in Provan and Kenis's (2008) sense, chosen deliberately over shared governance, which has already failed, and over a new super-regulator, which the state cannot afford and Parliament would not pass. The safeguards layer specifies the control set: risk-based AML/CFT supervision using the data platform, cyber resilience standards and a financial-sector CSIRT, market conduct rules with enforceable redress, and deposit-protection and float-safeguarding regimes. The outcomes layer states the objectives

against which the system is monitored: integrity, stability, inclusion, consumer trust and innovation, each with published indicators.

The engine is a monitoring, evaluation and learning cycle: the Council publishes an annual Digital Financial Governance Report scoring each layer, GIABA and IMF assessments feed the same cycle, and regulations carry sunset-review clauses so that instruments are revised on evidence rather than accreted. The framework's realism lies in what it does not ask: no new ministry, no constitutional change, no technology Sierra Leone has not already piloted. Its demands are a Council provision insertable into an NPSA amendment, two statutes already drafted or draftable, and a sustained budget for supervisory technology and skills, the last being the genuine political test.

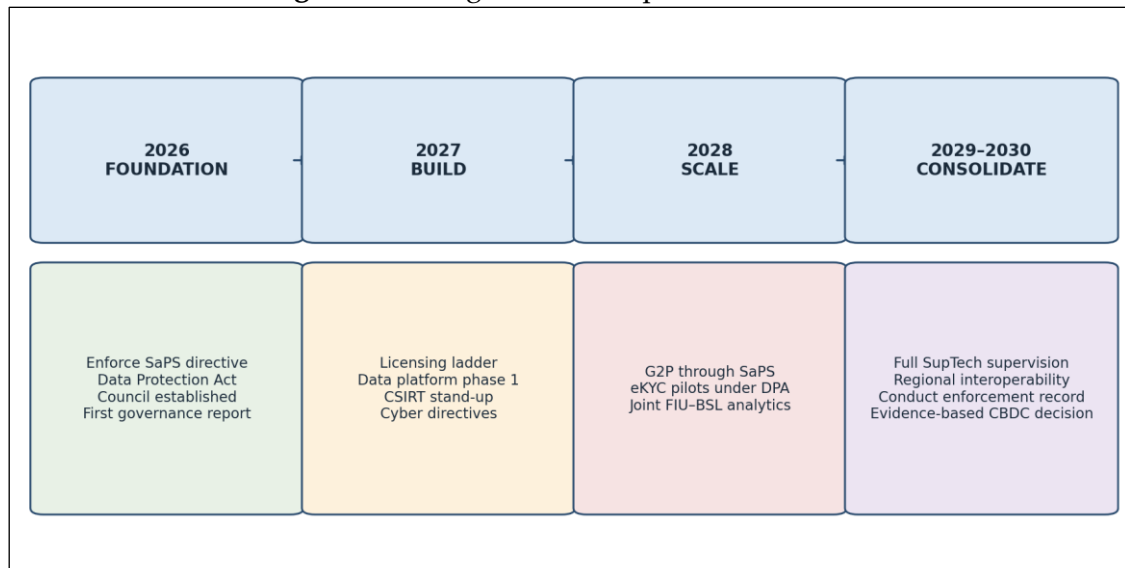
The framework's political economy deserves explicit statement, because coordination bodies fail for predictable reasons and the design anticipates them. Councils die when membership is delegated downward, so the statute should fix membership at principal level with named alternates and publish attendance. They drift when they lack an instrument, so the Council's core power should be narrow and real: to adopt binding inter-agency protocols on the specific interfaces this study has shown to be broken, USSD access, identity-KYC linkage, cyber standards for payment infrastructure and integrity data sharing. They are captured when industry sits inside them, so providers and consumer representatives should attend a consultative forum beneath the Council rather than the Council itself. And they starve when financing is annual, which is why recommendation 13 ties multi-year budget protection to the same legislative package. The incentive alignment is favourable if the sequencing is honest. The Ministry of Finance gains a single accountable structure through which to route donor finance and report to the IMF programme; the FIU gains the data access that its GIABA ratings require; NATCOM cedes nothing statutory while gaining a forum that resolves disputes it currently absorbs; the BSL accepts the visibility of an annual public report as the price of chairing the system. The framework asks each institution to trade a small amount of autonomy for a larger amount of capability, which is the only bargain small states can afford.

Figure 7: The Integrated Digital Financial Governance and Integrity Coordination Framework



Source: Author.

Figure 8: Strategic reform sequence, 2026–2030



Source: Author.

9. Policy recommendations

The recommendations are sequenced across three horizons and assigned to named institutions. Table 9 states priorities; Table 10 provides the implementation roadmap. Twenty-two recommendations follow.

9.1 To the Bank of Sierra Leone:

- Enforce the April 2025 switch-participation directive visibly, publishing compliance status and applying section 37 penalties to the first defaulter, because an unenforced deadline teaches the market that none will bind; expected outcome: full interoperable routing within twelve months.
- Issue activity-based licensing regulations under the NPSA creating tiers for payment initiation, e-money issuance, aggregation and remittances, with capital and conduct requirements proportional to risk.
- Convert sandbox graduation into a defined pathway to those licences, with published criteria and timelines.
- Establish a supervisory data platform requiring transaction-level reporting from banks and mobile money operators, beginning with float, agent and fraud data; sequence procurement through existing development-partner facilities.
- Issue cyber resilience directives for SaPS participants covering testing, incident reporting within defined hours, and recovery objectives, and stand up a financial-sector CSIRT jointly with the National Cybersecurity Coordination Centre.
- Modernise the 2015 mobile money guidelines, including dynamic, risk-scored transaction limits and daily automated trust-account reconciliation.
- Publish an annual Digital Financial Governance Report as the accountability instrument of the proposed Council.
- Negotiate USSD access and pricing rules jointly with NATCOM so that fintech entrants reach feature-phone users on non-discriminatory terms.

9.2 To the Ministry of Finance and Parliament:

- Enact the Data Protection Act with an adequately funded independent authority; every identity-linked KYC and data-sharing reform in this paper is conditional on it.
- Amend the NPSA to establish the National Digital Finance Coordination Council in statute, with duties, membership and reporting specified.
- Digitalise government payments, salaries, social transfers and revenue collection through SaPS rails, because government is the anchor client that shifts usage, as the Indian and Ghanaian cases show.
- Refrain from transaction levies on digital payments; the Ghanaian e-levy episode demonstrates the elasticity of trust. (13) Protect multi-year budget lines for BSL and FIU supervisory technology and specialist pay, since single-year funding guarantees attrition.

9.3 To the Financial Intelligence Unit and law enforcement:

- Develop digital finance typologies with the BSL and operators, and issue red-flag guidance to agents and providers within twelve months.
- Build a joint analytics capability with the BSL over the supervisory data platform rather than a duplicate system.

- Prioritise a small number of demonstrative money laundering prosecutions arising from digital channels, coordinated with the police cybercrime unit and judiciary training programmes, to convert GIABA technical re-ratings into effectiveness evidence.

9.4 To NATCOM and the cybersecurity institutions:

- Issue binding quality-of-service and USSD-access rules for financial traffic, harmonised with BSL directives.
- Designate SaPS and major mobile money platforms as critical national information infrastructure under the 2021 Act, activating protection and reporting duties.

9.5 To providers, industry and professional bodies:

- Banks and mobile money operators should fund a shared fraud-intelligence utility exchanging scam and mule-account data under Council oversight.
- Operators should invest in agent supervision proportionate to network growth, with liability rules that make principals answerable for agent conduct.
- Universities, notably Fourah Bay College and the Institute of Public Administration and Management, and professional bodies should establish taught programmes in financial technology, supervision and cyber risk, co-designed with the BSL to a published skills framework.

9.6 To development partners:

- Align IMF, World Bank, AfDB, EU and UNCDF support behind the Council's single results framework rather than parallel project structures, financing the data platform, CSIRT and skills programme as one sequenced package.

Table 9: Policy reform priorities

Horizon	Priority reforms	Principal institutions
Immediate (2026)	Switch enforcement; Data Protection Act; Council amendment; typology guidance	BSL, Parliament, MoF, FIU
Medium (2027–2028)	Licensing ladder; supervisory data platform; cyber directives and CSIRT; G2P digitalisation	BSL, NCCC, MoF
Long (2029–2030)	Full SupTech supervision; identity-linked eKYC at scale; regional payment integration; CBDC assessment on evidence	BSL, NCRA, ECOWAS partners

Table 10: Strategic implementation roadmap

Phase	Actions	Responsible	Expected outcome	Indicator
Foundation (2026)	Enforce SaPS directive; enact DPA; establish Council; publish first governance report	BSL, Parliament, MoF	Governance system operational	Compliance rate; Act in force; Council meetings held
Build (2027)	Licensing regulations; data platform phase 1 (float,	BSL, NCCC, partners	Risk-based supervision begins	Providers reporting; incidents handled

	fraud, agents); CSIRT stand-up			
Scale (2028)	G2P through SaPS; eKYC pilots under DPA; joint FIU-BSL analytics	MoF, NCRA, FIU	Usage and intelligence deepen	Digital payment share; STR quality
Consolidate (2029–2030)	Full SupTech; conduct enforcement record; regional interoperability; CBDC decision	BSL, ECOWAS	Trusted, inclusive system	Inclusion >50%; effectiveness re-ratings

Source: Author.

10. Conclusion

This study set out to assess how the Bank of Sierra Leone coordinates a digital financial system while protecting its integrity, and to propose a governance architecture equal to the next decade. The findings are direct. Sierra Leone has built, in six years, a legal and infrastructural platform that many larger economies took two decades to assemble: a modern central bank statute, a payments act, a national switch with mandated participation, an early sandbox, tiered KYC and a written inclusion strategy. The binding constraints are no longer legislative. They are a coordination system that leaves a dozen institutions loosely coupled, a supervisory model without the data and technology to watch the market it licenses, an integrity system whose technical re-ratings have yet to become investigations and prosecutions, and a missing data protection statute on which identity-linked finance depends.

Theoretically, the study contributes an integrated framework in which institutional, regulatory governance, network governance and adoption theories occupy specified layers, and it extends network governance theory by showing that in small states the choice of network governance form is the primary determinant of digital finance outcomes. Practically, it contributes the IDFGICF and a sequenced, institution-specific reform agenda whose demands are calibrated to Sierra Leonean budgets and politics. For policy, the message is uncomfortable but useful: the inclusion agenda and the integrity agenda share a single binding constraint, supervisory data capability, so the customary framing of a trade-off between them misdirects scarce resources.

The limitations stated in Section 5 qualify these conclusions: the analysis is documentary, the reforms assessed are recent, and effectiveness judgements on SaPS enforcement are provisional. Future research should test the framework empirically once post-2025 data accumulate: econometric work on switch mandates and usage, interview-based studies of Council-type coordination bodies across small African states, typology research on digital laundering in West African corridors, and evaluation of the sandbox's graduation record. Sierra Leone's late start is recoverable; its window for building governance before volume is not indefinite, and the years 2026 to 2028 will decide whether the country's digital financial system is governed by design or by accident.

Creative Commons License Statement

This research work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0>. To view the complete legal code, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode.en>. Under the terms of this license, members of the community may copy, distribute, and transmit the article, provided that proper, prominent, and unambiguous attribution is given to the authors, and the material is not used for commercial purposes or modified in any way. Reuse is only allowed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

Conflict of Interest Statement

The authors confirm that no conflict of interest exists in relation to this work. None of the authors has received financial assistance, employment, consultancy engagements, shareholdings, honoraria, or remunerated expert testimony from any organisation holding a financial stake in the subject of this study. Every source of funding is acknowledged in the acknowledgements section. The study was carried out with full independence, and no commercial, financial, or personal association shaped its findings or compromised the integrity of the manuscript.

About the Author(s)

Joseph Momoh Conteh is likewise a PhD candidate in Theoretical Economics at the Institute of South-South Cooperation and Development (ISSCAD), Peking University, Beijing, China (<https://www.isscad.pku.edu.cn/>). He is the ICT/Administrative Director at the Justice Sector Coordination Office (<https://jsco.gov.sl>), where he has served for 16 years. His research addresses national development, spanning aid and development, international cooperation, trade, information and communication technology for development, administration, policy development, and finance. His doctoral work is directed at advancing economic theory while generating practical insights capable of informing sustainable development policy throughout the Global South. His academic profiles: <https://ufl.academia.edu/JosephConteh>, <https://orcid.org/0009-0004-1690-508X> and https://www.researchgate.net/profile/Joseph-Conteh-6?ev=hdr_xprf.

Musa Abdullah Kargbo, BSc, MFA, FCCA, FCA(SL), is a Chartered Accountant with more than fifteen years in banking and government service. As Head of Finance at the Ministry of Information and Civic Education, he oversees budgets, financial reporting, treasury and compliance. A Fellow of ACCA and of the Institute of Chartered Accountants of Sierra Leone, he is reading for an MPhil in Accounting on foreign direct investment in Sierra Leone and writes on public finance, governance and development.

Mohamed Sahid Sesay, FCCA, is a finance and risk management professional with over 24 years of experience in financial accounting, auditing, compliance, strategic management, and enterprise risk management. He currently serves as Senior Manager for Enterprise Risk Management at Rokel Commercial Bank Sierra Leone Limited. A Fellow of the Association of Chartered Certified Accountants (ACCA-UK) and the

Institute of Chartered Accountants of Sierra Leone, his research interests include financial governance, banking regulation, internal controls, and corporate strategy.

References

- Adner, R. (2017). Ecosystem as structure: An actionable construct for strategy. *Journal of Management*, 43(1), 39–58. <https://doi.org/10.1177/0149206316678451>
- Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. *Journal of Economic Perspectives*, 24(3), 207–232. <https://doi.org/10.1257/jep.24.3.207>
- Arner, D. W., Barberis, J., & Buckley, R. P. (2016). The evolution of fintech: A new post-crisis paradigm? *Georgetown Journal of International Law*, 47(4), 1271–1319. <https://doi.org/10.2139/ssrn.2676553>
- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech, RegTech, and the reconceptualization of financial regulation. *Northwestern Journal of International Law and Business*, 37(3), 371–413. Retrieved from <https://scholarlycommons.law.northwestern.edu/njilb/vol37/iss3/2/>
- Arner, D. W., Buckley, R. P., Zetsche, D. A., & Veidt, R. (2020). Sustainability, FinTech and financial inclusion. *European Business Organization Law Review*, 21(1), 7–35. <https://doi.org/10.1007/s40804-020-00183-y>
- Auer, R., & Böhme, R. (2020). The technology of retail central bank digital currency. *BIS Quarterly Review*, March, 85–100. Retrieved from https://www.bis.org/publ/qtrpdf/r_qt2003j.htm
- Baldwin, R., Cave, M., & Lodge, M. (2012). *Understanding regulation: Theory, strategy, and practice* (2nd ed.). Oxford University Press. <https://doi.org/10.1093/acprof:osobl/9780199576081.001.0001>
- Bank for International Settlements. (2019). Big tech in finance: Opportunities and risks. In *BIS Annual Economic Report 2019* (pp. 55–79). BIS. Retrieved from <https://www.bis.org/publ/arpdf/ar2019e3.htm>
- Bank for International Settlements. (2020). Central banks and payments in the digital era. In *BIS Annual Economic Report 2020* (pp. 67–95). BIS. Retrieved from <https://www.bis.org/publ/arpdf/ar2020e3.htm>
- Bank of Sierra Leone. (2015). *Guidelines for mobile money services*. BSL. Retrieved from <https://bsl.gov.sl>
- Bank of Sierra Leone. (2022). *National strategy for financial inclusion 2022–2026*. BSL.
- Bank of Sierra Leone. (2024). *National switch directives* [and public notice of 17 December 2024 mandating full integration by 1 April 2025]. BSL.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, 12(1), 27–49. <https://doi.org/10.1007/s10887-007-9010-6>
- Black, J. (2008). Constructing and contesting legitimacy and accountability in polycentric regulatory regimes. *Regulation & Governance*, 2(2), 137–164. <https://doi.org/10.1111/j.1748-5991.2008.00034.x>

- Borgen Project. (2026, March). *Digital banking in Sierra Leone expands financial inclusion*. <https://borgenproject.org/digital-banking-in-sierra-leone/>
- Chalwe-Mulenga, M., & Duflos, E. (2022). *The evolution of the nature and scale of DFS consumer risks: A review of evidence*. CGAP. Retrieved from <https://www.cgap.org/research/reading-deck/evolution-of-nature-and-scale-of-dfs-consumer-risks-review-of-evidence>
- City Hunter. (2026, May 29). *Afrimoney and Ecobank launch prepaid Visa card to expand financial inclusion*.
- Claessens, S., Frost, J., Turner, G., & Zhu, F. (2018). Fintech credit markets around the world: Size, drivers and policy issues. *BIS Quarterly Review*, September, 29–49. Retrieved from https://www.bis.org/publ/qtrpdf/r_qt1809e.htm
- Committee on Payments and Market Infrastructures, & World Bank. (2016). *Payment aspects of financial inclusion*. BIS and World Bank.
- Committee on Payments and Market Infrastructures, & World Bank. (2020). *Payment aspects of financial inclusion in the fintech era*. BIS and World Bank.
- Council of Europe. (2023). *Octopus cybercrime community country profile: Sierra Leone*. Council of Europe.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation in use of financial services across and within countries. *Brookings Papers on Economic Activity*, Spring, 279–340. Retrieved from <https://www.jstor.org/stable/23594869>
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). *The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19*. World Bank. <https://doi.org/10.1596/978-1-4648-1897-4>
- Di Castri, S., Hohl, S., Kulenkampff, A., & Prenio, J. (2019). *The supotech generations* (FSI Insights No. 19). Bank for International Settlements. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4232667
- Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies*, 51(3), 393–414. <https://doi.org/10.2307/2297430>
- Diamond, D. W., & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*, 91(3), 401–419. <https://doi.org/10.1086/261155>
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160. <https://doi.org/10.2307/2095101>
- Donovan, K. (2012). Mobile money for financial inclusion. In *Information and communications for development 2012* (pp. 61–73). World Bank. Retrieved from <http://hdl.handle.net/11427/19272>
- D'Silva, D., Filková, Z., Packer, F., & Tiwari, S. (2019). *The design of digital financial infrastructure: Lessons from India* (BIS Papers No. 106). Bank for International Settlements. Retrieved from <https://www.bis.org/publ/bppdf/bispap106.htm>

- Ehrenttraud, J., García Ocampo, D., Garzoni, L., & Piccolo, M. (2020). *Policy responses to fintech: A cross-country overview* (FSI Insights No. 23). Bank for International Settlements. Retrieved from <https://www.bis.org/fsi/publ/insights23.htm>
- Feyen, E., Frost, J., Gambacorta, L., Natarajan, H., & Saal, M. (2021). *Fintech and the digital transformation of financial services: Implications for market structure and public policy* (BIS Papers No. 117). Bank for International Settlements. Retrieved from <https://www.bis.org/publ/bppdf/bispap117.htm>
- Finance for Development. (2025). *Sierra Leone launches instant payment switch*.
- Financial Action Task Force. (2020). *Guidance on digital identity*. FATF.
- Financial Action Task Force. (2021). *Opportunities and challenges of new technologies for AML/CFT*. FATF.
- Financial Action Task Force. (2023). *International standards on combating money laundering and the financing of terrorism and proliferation: The FATF Recommendations* (updated ed.). FATF.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman. Retrieved from https://books.google.ro/books/about/Strategic_Management.html?id=4PUJAQAAMAAJ&redir_esc=y
- Frost, J., Gambacorta, L., Huang, Y., Shin, H. S., & Zbinden, P. (2019). BigTech and the changing structure of financial intermediation. *Economic Policy*, 34(100), 761–799. <https://doi.org/10.1093/epolic/eiaa003>
- Gelb, A., & Clark, J. (2013). *Identification for development: The biometrics revolution* (Working Paper 315). Center for Global Development. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2226594
- GIABA. (2020). *Anti-money laundering and counter-terrorist financing measures: Sierra Leone, second round mutual evaluation report*. GIABA. Retrieved from <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/910731468299072008>
- GIABA. (2025). *Sierra Leone: 5th enhanced follow-up report*. GIABA. Retrieved from [https://www.giaba.org/mutualevaluation/3593_sierra-leone-\(2025\)-5th-enhanced-follow-up-report.html](https://www.giaba.org/mutualevaluation/3593_sierra-leone-(2025)-5th-enhanced-follow-up-report.html)
- Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of Management Information Systems*, 35(1), 220–265. <https://doi.org/10.1080/07421222.2018.1440766>
- Gomber, P., Koch, J.-A., & Siering, M. (2017). Digital finance and FinTech: Current research and future research directions. *Journal of Business Economics*, 87(5), 537–580. <https://doi.org/10.1007/s11573-017-0852-x>
- Government of Sierra Leone. (2011). *Credit Reference Act, 2011*.
- Government of Sierra Leone. (2012). *Anti-Money Laundering and Combating of Financing of Terrorism Act, 2012*.
- Government of Sierra Leone. (2019). *Bank of Sierra Leone Act, 2019*.
- Government of Sierra Leone. (2019). *Sierra Leone national innovation and digital strategy 2019–2029*. Directorate of Science, Technology and Innovation.

- Government of Sierra Leone. (2021). *Cybersecurity and Crime Act, 2021*.
- Government of Sierra Leone. (2022). *National Payment Systems Act, 2022* (Act No. 8 of 2022).
- Government of Sierra Leone. (2023). *Deposit Protection Act, 2023*.
- GSMA. (2024). *The state of the industry report on mobile money 2024*. GSMA. Retrieved from https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/gsma_resources/state-of-the-industry-report-on-mobile-money-2024/
- Hughes, N., & Lonie, S. (2007). M-PESA: Mobile money for the “unbanked”: Turning cellphones into 24-hour tellers in Kenya. *Innovations: Technology, Governance, Globalization*, 2(1–2), 63–81. <https://doi.org/10.1162/itgg.2007.2.1-2.63>
- International Monetary Fund. (2024). *Sierra Leone: Article IV consultation staff report*. IMF.
- Jack, W., & Suri, T. (2014). Risk sharing and transactions costs: Evidence from Kenya’s mobile money revolution. *American Economic Review*, 104(1), 183–223. <https://doi.org/10.1257/aer.104.1.183>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Khera, P., Ng, S., Ogawa, S., & Sahay, R. (2021). *Is digital financial inclusion unlocking growth?* (IMF Working Paper WP/21/167). International Monetary Fund. Retrieved from <https://www.imf.org/en/publications/wp/issues/2021/06/11/is-digital-financial-inclusion-unlocking-growth-460738>
- Kosse, A., & Mattei, I. (2023). *Making headway: Results of the 2022 BIS survey on central bank digital currencies and crypto* (BIS Papers No. 136). Bank for International Settlements. Retrieved from <https://ideas.repec.org/b/bis/bisbps/136.html>
- Kshetri, N. (2019). Cybercrime and cybersecurity in Africa. *Journal of Global Information Technology Management*, 22(2), 77–81. <https://doi.org/10.1080/1097198X.2019.1603527>
- Mas, I., & Radcliffe, D. (2011). Mobile payments go viral: M-PESA in Kenya. *Journal of Financial Transformation*, 32, 169–182. Retrieved from <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/638851468048259219>
- Merton, R. C. (1995). A functional perspective of financial intermediation. *Financial Management*, 24(2), 23–41. <https://doi.org/10.2307/3665532>
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363. <https://doi.org/10.1086/226550>
- MFW4A. (2023). *Sierra Leone country profile*. Making Finance Work for Africa. <https://www.mfw4a.org/country/sierra-leone>
- Moore, J. F. (1993). Predators and prey: A new ecology of competition. *Harvard Business Review*, 71(3), 75–86. Retrieved from https://www.researchgate.net/publication/13172133_Predators_and_Prey_A_New_Ecology_of_Competition

- Mothobi, O., & Grzybowski, L. (2017). Infrastructure deficiencies and adoption of mobile money in Sub-Saharan Africa. *Information Economics and Policy*, 40, 71–79. <https://doi.org/10.1016/j.infoecopol.2017.05.003>
- Ndung'u, N. (2018). The M-Pesa technological revolution for financial services in Kenya: A platform for financial inclusion. In D. Lee & R. Deng (Eds.), *Handbook of blockchain, digital finance, and inclusion* (Vol. 1, pp. 37–56). Academic Press. Retrieved from <https://doi.org/10.1016/B978-0-12-810441-5.00003-8>
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press. Retrieved from https://books.google.ro/books/about/Institutions_Institutional_Change_and_Ec.html?id=oFnWbTqgNPYC&redir_esc=y
- Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329–340. <https://doi.org/10.1016/j.bir.2017.12.003>
- Philippon, T. (2016). *The fintech opportunity* (NBER Working Paper No. 22476). National Bureau of Economic Research. <https://doi.org/10.3386/w22476>
- Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of Public Administration Research and Theory*, 18(2), 229–252. <https://doi.org/10.1093/jpart/mum015>
- Ree, J. (2023). *Nigeria's eNaira, one year after* (IMF Working Paper WP/23/104). Retrieved from <https://www.imf.org/en/publications/wp/issues/2023/05/16/nigerias-enaira-one-year-after-533487>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press. Retrieved from <https://doi.org/10.4324/9780203710753-35>
- Sahay, R., von Allmen, U. E., Lahreche, A., Khera, P., Ogawa, S., Bazarbash, M., & Beaton, K. (2020). *The promise of fintech: Financial inclusion in the post COVID-19 era* (Departmental Paper No. 20/09). International Monetary Fund. Retrieved from <https://www.imf.org/en/publications/departamental-papers-policy-papers/issues/2020/06/29/the-promise-of-fintech-financial-inclusion-in-the-post-covid-19-era-48623>
- Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). Sage. <https://doi.org/10.22439/cjas.v32i2.4764>
- Sierra Leone Monitor. (2024, December 17). *Bank of Sierra Leone issues national payment switch directives*. Retrieved from <https://www.sierraleonemonitor.com/bank-of-sierra-leone-issues-national-payment-switch-directives-for-2024/>
- Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, 354(6317), 1288–1292. <https://doi.org/10.1126/science.aah5309>
- The Fintech Times. (2026). *Rebuilding financial services through fintech in Sierra Leone*.
- UNCDF. (2018). *Sierra Leone becomes the second country in Africa to launch the sandbox framework to test FinTech innovations*. UN Capital Development Fund. Retrieved from <https://www.uncdf.org/article/3486/sierra-leone-becomes-the-second-country-in-africa-to-launch-the-sandbox-framework-to-test-fintech-innovations>
- UNCDF. (2025). *National digital and financial literacy baseline survey: Sierra Leone*. UN Capital Development Fund. Retrieved from

<https://www.uncdf.org/article/8994/national-digital-financial-literacy-baseline-survey-sierra-leone>

- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications*. George Braziller. Retrieved from https://books.google.ro/books/about/General_System_Theory.html?id=N6-woQEACAAJ&redir_esc=y
- World Bank. (2023). *Remittance prices worldwide* [database]. World Bank. Retrieved from <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099053025160039576>
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage. Retrieved from https://books.google.ro/books/about/Case_Study_Research_and_Applications.html?hl=it&id=6DwmDwAAQBAJ&redir_esc=y
- Zetsche, D. A., Buckley, R. P., Arner, D. W., & Barberis, J. N. (2017). Regulating a revolution: From regulatory sandboxes to smart regulation. *Fordham Journal of Corporate and Financial Law*, 23(1), 31–103. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3018534