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From Policy Commitments to Digital Systems: Assessing Technical Infrastructure, Payment Architecture, and South Sudan Central Bank Readiness for the East African Monetary Union

Prof. Dr. Maxwell Adea [1, 2,3*] & Agai Agai Maluil Jok [4]

[1] Professor of Research Methodology, Ayii University, Juba, South Sudan.
[2] Visiting Professor of Stafford University, South Sudan.
[3] Deputy Principal of Graduate College, Supervisor and Examiner of Doctor of Philosophy Candidates, University of Juba, South Sudan.
[4] Director General, Currency and Bank Operations, Bank of South Sudan, Juba, Republic of South Sudan.
* Corresponding author: Prof. Dr. Maxwell Adea (dr.maxwelladea@gmail.com)

Abstract

The East African Community's pursuit of a single regional currency has intensified attention to the operational and technological foundations needed for a credible monetary union, especially in fragile and post-conflict settings. This study evaluates the Bank of South Sudan's readiness for East African Monetary Union integration by examining the interplay among policy commitments, technical infrastructure, payment architecture, and institutional capacity. Utilizing a mixed-methods case study design, the research integrates structured surveys of sixty Bank of South Sudan staff, in-depth interviews with policymakers, and comprehensive analysis of East African Community, International Monetary Fund, and World Bank documentation. Findings indicate that while the Bank of South Sudan has advanced in digital payment modernization, regulatory reforms, and workforce development, significant obstacles remain, including unreliable data systems, incomplete legal harmonization, leadership gaps, and insufficient institutional memory. Statistical analysis reveals that robust data management, technical expertise, and continuous staff training are the primary drivers of central bank readiness, surpassing the influence of external resource constraints. This study adds new empirical insight by demonstrating that bridging the gap between policy ambition and digital implementation relies on sustained investment in internal capacity and adaptive institutional learning. The research concludes that South Sudan's successful accession will require sequenced, context-specific reforms focused on digital infrastructure, human capital, and comprehensive regulatory alignment.

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Introduction

The East African Community's ambitious journey toward monetary integration continues to highlight the enduring divide between policy vision and institutional capacity. As the community advances implementation of the East African Monetary Union, current research and recent policy diagnostics underscore that the real test lies in the ability of central banks and national authorities to operationalize regional commitments (EAC, 2024; IMF, 2023; World Bank, 2023). The latest literature agrees that the foundations of a successful monetary union extend beyond macroeconomic convergence indicators. They encompass the systemic integration of robust technical infrastructure, digital payment systems, and institutional resilience (Mutesa & Ochieng, 2024; Uwizeye & Habonimana, 2023). Sustainable convergence, therefore, depends as much on institutional and technological modernization as on meeting headline economic criteria. This view is increasingly supported by current regional integration scholarship and multilateral assessments (UNDP, 2024; World Bank, 2023).

Institutional capacity and technical preparedness now stand at the forefront of discussions about readiness for monetary union. Recent empirical studies and regional policy reviews emphasize that durable monetary integration requires more than policy and legal harmonization. It also demands resilient technical infrastructure and adaptive institutional arrangements (Gatera & Mbabazi, 2023; EAC, 2024). Comparative analyses of the Eurozone and West African Economic and Monetary Union reinforce the point that failing to address institutional and infrastructural gaps can derail even the most promising integration projects. This insight is increasingly reflected in EAC policy frameworks and donor strategies (World Bank, 2023; IMF, 2023). Asongu (2014) provides compelling evidence that heterogeneous structural and institutional characteristics across countries give rise to different levels and patterns of financial intermediary development. His analysis of proposed African monetary unions reveals overwhelming lack of convergence in monetary, real, and fiscal policies. This finding underscores the critical importance of harmonizing cross-country differences in structural and institutional characteristics that hamper the effectiveness of convergence. As a result, EAC member states face growing pressure to harmonize policies alongside targeted capacity building, particularly in digital payments, data systems, and regulatory frameworks (EAC, 2024; World Bank, 2023). Central banks must realign legal mandates, upgrade payment architectures, and modernize statistical and supervisory systems to meet the operational standards of a prospective regional central bank. However, persistent disparities in institutional maturity, technical expertise, and digital infrastructure, especially among post-conflict or newer EAC members, present formidable obstacles (Mutesa & Ochieng, 2024; Uwizeye & Habonimana, 2023). Overcoming these challenges requires not only technical assistance but also sequenced, context-specific reforms that address both systemic and country-specific gaps (IMF, 2023).

South Sudan's experience as the EAC's newest member vividly demonstrates the complex interplay between policy commitments and infrastructural realities. Since joining in 2016, the country, emerging from conflict, has faced a convergence agenda complicated by fragile legal frameworks, a nascent digital payments ecosystem, limited institutional capacity, and macroeconomic instability (BoSS, 2024; IMF, 2023). For the Bank of South Sudan, operational and regulatory convergence with EAC standards requires a shift from paper-based reforms to concrete, context-sensitive strategies that strengthen institutions and modernize technical infrastructure (World Bank, 2023; Uwizeye & Habonimana, 2023). The theoretical underpinnings of monetary integration in the EAC context draw heavily from regional economic integration theory and institutional economics. The Optimum Currency Area framework emphasizes the necessity of macroeconomic convergence, labor mobility, and synchronized business cycles for a successful currency union (Mundell, 1961; McKinnon, 1963; Kenen, 1969). Recent African scholarship expands this view, arguing that a common currency's effectiveness also depends on central banks' institutional capacity, particularly their independence, technical readiness, and ability to coordinate policy across diverse economies (Kasekende & Brownbridge, 2022; Masson, 2018). The experience of other monetary unions, such as the Eurozone and WAEMU, underscores

the risks of proceeding without adequate institutional preparation and legal harmonization. Couharde, Coulibaly, Guerreiro, and Mignon (2013) demonstrate that while the CFA franc zone has maintained a currency union for several decades despite failing to meet many optimum currency area criteria, the sustainability of such arrangements depends on fostering internal and external balances and facilitating adjustments. Their behavioral equilibrium exchange rate approach shows that convergence processes toward equilibrium have been more successful in the CFA zone compared to other sub-Saharan African countries.

Within the EAC, national central banks face the complex task of aligning their legal mandates, monetary policy instruments, regulatory frameworks, and statistical systems to meet the requirements of a prospective regional central bank. While countries such as Kenya, Tanzania, and Uganda have made substantial progress toward macroeconomic convergence and harmonization of financial regulation, significant disparities persist across the region (EAC, 2024). These include differences in institutional capacity, depth of financial sectors, data quality, and resilience to external shocks. For newer or post-conflict members, achieving convergence is especially challenging and necessitates targeted technical assistance and policy reforms. Zhao and Kim (2009) found that domestic outputs of CFA franc zone countries are strongly influenced by country-specific shocks while regional shocks are far more important in European countries that joined the EMU. Their structural vector autoregression analysis suggests that CFA franc zone countries are structurally different from each other and thus are more likely to be subjected to asymmetric shocks. This finding has direct implications for the EAC, where similar structural heterogeneity may complicate the transition to a common currency. South Sudan's accession to the EAC in 2016 presented both significant opportunities and formidable challenges. As the newest member, and one recovering from years of conflict, South Sudan's macroeconomic landscape is marked by high dependence on oil, frequent exchange rate volatility, fiscal imbalances, and an underdeveloped financial sector.

The Bank of South Sudan, established after independence in 2011, is tasked with implementing the EAC convergence roadmap under particularly difficult circumstances. Structural constraints such as limited financial sector depth, poor data quality, and ongoing political instability complicate the Bank's readiness for deeper integration, despite government commitments to reform (IMF, 2023). Chol, Nthambi, and Kamau (2020) examined the ownership structure, bank stability, and financial performance of commercial banks in South Sudan. Their study of all twenty-nine commercial banks in the country revealed a statistically significant moderating effect of ownership structure on financial performance, highlighting the complex institutional dynamics that characterize the South Sudanese financial sector. Assessing the Bank of South Sudan's readiness for a common monetary policy framework is timely and crucial, especially given the EAC's planned adoption of a single currency. Institutional and technical readiness goes beyond meeting macroeconomic benchmarks. It requires strong central bank independence, robust governance and accountability structures, effective monetary policy transmission mechanisms, regulatory and supervisory alignment, sufficient foreign reserves, and harmonized statistical methodologies (World Bank, 2023; UNDP, 2024).

South Sudan's dynamic and fragile context underscores the need to evaluate these dimensions comprehensively. Recent research by Oyetade, Redda, and Muzindutsi (2024) on interest rate pass-through and monetary policy transmission in SADC and EAC countries provides important insights. Their panel autoregressive distributive lag model analysis, using monthly data from January 2000 to December 2022, found that complete interest pass-through to retail bank rates does not hold for either bloc. They also identified varying speeds of adjustment for banking rates in response to changes in policy rates. The incomplete interest-rate pass-through indicates the presence of banking market imperfections, weak banking asset quality, and information asymmetries, which are more pronounced in the EAC. This study evaluates the Bank of South Sudan's institutional and technical preparedness for accession to the monetary union, drawing on documentary analysis, recent policy assessments, and expert interviews (BoSS, 2024; IMF,

2023; World Bank, 2023). By integrating macroeconomic convergence analysis with a systematic assessment of institutional reforms, legal harmonization, and technical capacity, the research contributes to the growing literature on monetary integration in fragile and post-conflict economies (Kasekende & Brownbridge, 2022; UNDP, 2024). The findings are intended to provide actionable insights for EAC policymakers, national authorities, and development partners on the practical steps and sequencing needed to advance toward a single currency regime sustainably. The motivation for this study stems from the recognition that premature or poorly managed monetary integration can amplify vulnerabilities, as seen in other regional monetary unions (Masson, 2018).

The research addresses a timely question: To what extent is the Bank of South Sudan institutionally and technically prepared to meet the convergence criteria and operational benchmarks of the monetary union? By evaluating progress and persistent gaps, this study aims to inform national policy, regional planning, and development partner engagement as South Sudan navigates the complex path toward monetary union. The novelty of this research lies in its granular, institution-level analysis of central bank readiness in a fragile and post-conflict setting. While existing studies have examined macroeconomic convergence indicators or the broader political environment, few have provided detailed empirical evidence on the technical, operational, and institutional dimensions of central bank preparedness for monetary integration.

Literature Review

The literature on monetary integration in Africa has grown substantially in recent years, reflecting the continent's renewed interest in regional economic cooperation. This review critically examines the theoretical foundations and empirical evidence relevant to understanding central bank readiness for monetary union, with particular attention to the East African context and the unique challenges facing fragile and post-conflict states.

The Optimum Currency Area theory, pioneered by Mundell (1961) and expanded by McKinnon (1963) and Kenen (1969), sets out the foundational conditions under which it is optimal for a group of countries or regions to adopt a single currency. According to this theory, the most suitable candidates for a monetary union are those that demonstrate high levels of labor and capital mobility, synchronized business cycles, flexible prices and wages, robust fiscal integration, and effective mechanisms for risk-sharing and policy coordination. The theory also underscores that institutional compatibility and policy harmonization are essential for sustaining a stable currency area. For the East African Community, these criteria provide a structured analytical lens to assess whether member states possess the macroeconomic convergence, technical infrastructure, payment architecture, and institutional readiness needed for meaningful participation in a monetary union. However, the classical formulation of optimum currency area theory assumes ideal circumstances, such as seamless labor mobility and perfect market flexibility, that are rarely achieved, especially in fragile states. The theory also tends to minimize the complexities of institutional diversity, political realities, and technological disparities. These weaknesses can be mitigated by complementing optimum currency area analysis with contextual diagnostics and by integrating insights from institutional economics and digital systems research. Institutional economics, championed by North (1990) and Williamson (1985), highlights the pivotal role of institutions, legal systems, governance structures, and regulatory agencies in shaping economic outcomes and development trajectories. The theory argues that credible, adaptive institutions reduce transaction costs, foster trust, and enable smooth policy implementation, including policies that support regional monetary integration. For this study, institutional economics is vital in assessing how the Bank of South Sudan's institutional framework, including governance quality, legal autonomy, technical infrastructure, and human resources, enables or constrains the transition from paper commitments to digital systems and the broader agenda of monetary integration. The theory's relevance lies in its focus on the institutional and technical underpinnings of policy implementation. Macroeconomic convergence

is insufficient without robust, credible institutions that can support payment architecture modernization and central bank operational independence.

Regional economic integration theory, as developed by Balassa (1961) and Haas (1958), examines the processes, stages, and complexities of economic cooperation among neighboring countries. It charts the evolution of regional integration from preferential trading arrangements to customs unions, common markets, and ultimately monetary and political unions, acknowledging the interplay of political, social, and technical factors. The theory stresses the importance of sequenced reforms, regional commitments, and managing disparities among member states for integration to be successful and sustainable. The empirical literature on monetary integration in Africa provides valuable insights into the challenges and opportunities facing the EAC. Asongu (2014) assessed real, monetary, and fiscal policy convergence within the proposed West African Monetary Zone and East African Monetary Union zones. Using a dynamic panel generalized method of moments estimation with data from different non-overlapping intervals, the study found overwhelming lack of convergence. Initial conditions for financial development were different across countries.

Fundamental characteristics such as common monetary policy initiatives and IMF-backed financial reform programs were implemented differently across countries. There was remarkable evidence of cross-country variations in structural characteristics of macroeconomic performance. Institutional cross-country differences could also be responsible for the deficiency in convergence within the potential monetary zones. The study concluded that member states should work toward harmonizing cross-country differences in structural and institutional characteristics that hamper the effectiveness of convergence in monetary, real, and fiscal policies. Umulisa (2020) used an augmented gravity model of trade to estimate the East African Community's trade effects, given the community's decision to participate in a monetary union. The study used the fixed effect filter estimator, which follows a two-step approach and outperforms the standard fixed effects estimator. The results indicated that the EAC has the potential to increase trade among partner states by 122 percent more than expected from normal trade levels. The study supported the ongoing East African Monetary Union process. However, to improve the likelihood of creating a more sustainable monetary union, the study recommended that these countries primarily focus on the full implementation of the customs union and common market steps. Carcel, Gil-Alana, and Madigu (2016) examined inflation rates in the five countries that belong to the East African Community and which recently signed a protocol outlining their plans for launching a monetary union within ten years. Their aim was to examine the persistence in inflation levels. As literature argues about monetary unions, countries hoping to form a union should present similar inflation patterns. Their study showed that the countries present non-mean reversion, confirming that shocks will not recover in the long run. Moreover, fractional co-integration relationships were found between all countries with the exception of Tanzania. This finding suggests that inflation dynamics in the region may not be sufficiently synchronized to support a common monetary policy without additional policy coordination. Mutesa and Ochieng (2024) examined the state of digital financial infrastructure and central banks' preparedness across East African Community member states for regional monetary integration.

Employing a mixed-methods approach, including policy analysis, interviews with central bank officials, and comparative benchmarking, the study focused on Kenya, Uganda, Tanzania, Rwanda, Burundi, and South Sudan. Their findings showed significant progress in digital payments and cross-border settlement systems in Kenya and Rwanda, while countries like South Sudan and Burundi lag behind because of infrastructural weaknesses and limited digital literacy. Despite improvements in some member states, the study identified persistent challenges in harmonizing payment standards, cybersecurity frameworks, and supervisory capacities. Mutesa and Ochieng noted the lack of interoperable systems as a major barrier to full integration and highlighted the need for targeted capacity-building in lagging countries. Uwizeye and Habonimana (2023) investigated the institutional and policy alignment of three EAC member states, Rwanda,

Tanzania, and Burundi, in anticipation of monetary union membership. Using document analysis, structured interviews, and legal framework reviews, the study assessed progress in regulatory harmonization, central bank autonomy, and macroeconomic convergence. The authors found that while Rwanda and Tanzania have made strides toward meeting benchmarks, Burundi continues to struggle with institutional inertia and inconsistent policy implementation. The study highlighted the importance of legal and regulatory reforms as prerequisites for regional monetary integration, but also pointed out that technical capacity and human resources remain unevenly developed across the three countries.

The World Bank's (2023) report provided a comprehensive analysis of the progress and challenges in establishing regional payment systems within the EAC. Through cross-country case studies, stakeholder workshops, and data analytics, the report evaluated EAC member states' technical, legal, and operational readiness for interoperable payment platforms. The findings indicated strong leadership in Kenya and Uganda, but pointed to considerable disparities elsewhere, especially in post-conflict environments like South Sudan. The report concluded that while regional initiatives such as the EAC Payment and Settlement Systems Integration Project have laid important groundwork, fragmented infrastructure, policy misalignment, and inadequate cybersecurity practices pose risks to seamless integration. The EAC Secretariat's 2024 Convergence Criteria Report reviewed the macroeconomic and technical progress of all partner states toward meeting the requirements for monetary union. Using quantitative data analysis, policy reviews, and country consultations, the report documented advances in inflation control, fiscal management, and legal harmonization. However, it underscored that technical infrastructure and payment architecture remain uneven across the region, with South Sudan and Burundi particularly affected by weak ICT infrastructure and unreliable data systems. The report stressed that achieving the vision will require not only macroeconomic discipline but also modernizing digital systems, harmonizing regulatory frameworks, and investing in human capital. The International Monetary Fund's 2023 working paper analyzed the institutional and technical barriers to monetary union in Sub-Saharan Africa, focusing on the EAC.

Utilizing econometric modeling, policy analysis, and case studies, the paper identified persistent obstacles in legal harmonization, central bank independence, and digital payment interoperability. The paper singled out South Sudan as facing acute challenges due to ongoing macroeconomic instability and weak institutional frameworks. The IMF found that, despite formal commitments to regional integration, significant gaps remain in technical infrastructure and payment system modernization, especially in fragile or post-conflict states. The study recommended a phased approach to integration, with special attention to institution-building and digital transformation.

The 2024 joint assessment by the Bank of South Sudan and the EAC Secretariat offered an in-depth review of South Sudan's technical and institutional preparedness for participation in the monetary union. Employing field surveys, institutional capacity assessments, and stakeholder interviews, the study documented ongoing efforts to upgrade payment infrastructure, strengthen legal frameworks, and build human capital within the Bank of South Sudan. The assessment found that, while significant reforms have been initiated, such as digitizing core payment systems and enhancing staff training, South Sudan still faces major obstacles, including unreliable ICT networks, limited supervisory expertise, and gaps in regulatory alignment with EAC standards.
Recent research on financial technology and monetary transmission in the EAC provides additional context for understanding the challenges of monetary integration. Ngong, Thaddeus, and Onwumere (2024) examined the causal relationship between financial technology and economic growth in the East African Community states from 1997 to 2019. Using autoregressive distributed lag modeling, they found a significant relationship between financial technology and economic growth. The findings showed bidirectional causality between automated teller machines and economic growth, with unidirectional causation from economic growth to point of sales and internet banking, mobile banking, and government effectiveness to economic growth.

The error correction term was negatively significant, demonstrating a long-term convergence between fintech measures and economic growth. These findings suggest that investments in financial technology infrastructure can contribute to economic convergence, which is a prerequisite for successful monetary integration.

Koomson, Martey, and Etwire (2023) examined the comparative link between mobile money and entrepreneurship in East Africa. Using nationally representative samples from Kenya, Tanzania, and Uganda, they employed a suite of quasi-experimental microeconometric techniques. Their preferred endogeneity-corrected result suggested that adopters of mobile money are 24.4 percentage points more likely to engage in entrepreneurship. This result was robust to alternative ways of conceptualizing mobile money adoption and different methods used in resolving endogeneity. The association between mobile money and entrepreneurship was stronger in Kenya compared to Uganda and not significant in Tanzania. The significant positive association was observed among women and rural residents and not for their male and urban-located counterparts. Digital savings and access to digital credit served as important channels through which fintech adoption influences entrepreneurship. These findings highlight the potential of digital financial services to promote economic activity and inclusion, which are important foundations for monetary integration. Osuma (2025) examined how financial inclusion influences economic growth and poverty reduction across three Sub-Saharan Africa regions, including East, West, and Southern Africa, spanning twenty-eight countries from 2016 to 2023.

Financial inclusion was measured through the availability of automated teller machines and digital financial services, using a system generalized method of moments and quantile regression approach. The findings emphasized the pivotal role of digital financial services in expanding access to financial resources, particularly in East and Southern Africa, while highlighting ongoing disparities in West Africa. The quantile regression analysis revealed that inflation adversely affects GDP growth across all quantiles, whereas foreign direct investment consistently supports economic growth. Furthermore, the findings showed that digital financial services are more effective than automated teller machines in promoting financial inclusion, and infrastructure and digital literacy improvements were recommended to accelerate progress. Bilgili, Garang, Kassouri, and Kuşkaya (2026) evaluated the transition to the East African Monetary Union through monetary transmission mechanisms. Employing panel structural vector autoregression methodology, they explored the short- and long-term effects of the dynamics of monetary transmission mechanisms in East African countries including Kenya, Uganda, Tanzania, Rwanda, Burundi, and South Sudan from 1980 to 2018. Their empirical results proved that in the short run, the contemporaneous response of the interest rate to the output gap shock is positive, the immediate response of the inflation rate to the output gap shock is negative, and the response of the inflation rate to the interest rate shock is negative.

In the long run, the response of the exchange rate to output gap shock is negative, the response of the inflation rate to output gap shock is negative, the response of interest rate to exchange rate shock is positive, the response of inflation rate to exchange rate shock is negative, and the response of inflation rate to interest rate shock is negative. These findings shed light on the dynamics of monetary transmission mechanisms in East African countries and have important implications for policymakers seeking to stabilize the economy, foster sustainable growth, and fulfill their monetary policy objectives.

Ngepah and Udeagha (2018) investigated regional trade agreements in Africa using panel data spanning 1995 to 2014. Trade creation and diversion effects were assessed through a gravity model estimated using the Eicker-White robust covariance Poisson pseudo-maximum likelihood method. The findings suggested that regional trade agreements may enhance trade. The differences in effects could be matched with the effectiveness in implementation by respective member countries. The trade gains of regional trade agreements do not come at the expense of trade with non-members. By controlling for the duration within a regional trade agreement, they

also showed that a very small but significant share of the benefits occurs over time in the Economic and Monetary Community of Central Africa, Southern African Development Community, Southern African Customs Union, and West African Economic and Monetary Union. Trade benefits seem to decline over time in the East African Community. This finding raises important questions about the sustainability of integration gains and the need for continuous policy attention. The literature collectively demonstrates the complex interplay between policy, technical infrastructure, and institutional capacity in the EAC's transition from paper-based commitments to a truly digital, integrated monetary union. Each study identifies distinct research gaps, particularly regarding fragile states such as South Sudan, underscoring the need for further study and targeted, context-specific reforms. The present study addresses these gaps by providing a granular, institution-level analysis of central bank readiness that integrates quantitative and qualitative evidence on technical infrastructure, payment architecture, and institutional capacity.

Hypothesis Development

The theoretical and empirical literature reviewed above provides a foundation for developing specific hypotheses about the factors that determine central bank readiness for monetary union integration. This section develops four hypotheses that are tested in the empirical analysis. Each hypothesis is grounded in prior theoretical reasoning and empirical evidence, with explicit articulation of the expected relationships. The first hypothesis concerns the relationship between data management systems and central bank readiness. Reliable and timely data systems are foundational for effective monetary policy formulation, supervisory oversight, and regional coordination. Deng and Bekele (2022) warned about data quality challenges in fragile contexts, noting that unreliable information undermines decision-making and policy implementation. Uwizeye and Habonimana (2023) highlighted data quality, technical competence, and professional development as critical levers for digital transformation and institutional readiness. The EAC (2024) Convergence Criteria Report specifically identified unreliable data systems as a major obstacle to technical readiness in South Sudan and Burundi. These findings suggest that improvements in data management systems should be strongly associated with enhanced central bank readiness. The theoretical logic is straightforward: without reliable data, central banks cannot accurately assess economic conditions, design appropriate policy responses, or coordinate effectively with regional partners. Therefore, the following hypothesis has been developed:

H1: *Reliable and timely data management systems are positively associated with central bank readiness for monetary union integration.*

The second hypothesis concerns the relationship between staff technical expertise and central bank readiness. The literature consistently emphasizes the importance of human capital in successful institutional transformation. Gatera and Mbabazi (2023) found that technical assistance and staff development are key drivers of central bank modernization in the EAC. Odhiambo and Mugisha (2022) argued that ongoing, context-specific training is essential for effective implementation of digital payment architecture and technical upgrades. Mutesa and Ochieng (2024) identified limited digital literacy and technical capacity as major barriers to integration in lagging countries. The theoretical rationale draws from institutional economics, which emphasizes that organizational capacities and human resources shape the ability of institutions to implement policies effectively. Central banks with staff who possess strong technical expertise are better positioned to navigate the complexities of digital transformation, regulatory harmonization, and regional coordination. Therefore, the following hypothesis has been developed:

H2: *Staff technical expertise is positively associated with central bank readiness for monetary union integration.*

The third hypothesis concerns the relationship between continuous professional training and central bank readiness. The rapidly evolving nature of digital financial systems and regional

integration requirements means that initial qualifications are insufficient for sustained institutional effectiveness. Odhiambo and Mugisha (2022) emphasized that ongoing training is essential for effective implementation of digital payment architecture and technical upgrades. Gatera and Mbabazi (2023) cited technical assistance as a driver of central bank modernization, with continuous learning being a key component. The institutional economics perspective suggests that adaptive institutions are better able to respond to changing environments, and continuous training is a mechanism through which institutions build adaptive capacity. The practical logic is that staff who receive regular training are better equipped to implement new systems, comply with evolving regulatory standards, and contribute to organizational learning. Therefore, the following hypothesis has been developed:
H3: *Continuous professional training is positively associated with central bank readiness for monetary union integration.*

The fourth hypothesis concerns the relationship between resource constraints and central bank readiness. The literature identifies limited financial resources as a persistent challenge for central banks in fragile and post-conflict settings. Chikere and Wamalwa (2021) found that limited funding impedes digital upgrades and staff retention in post-conflict central banks. Mutesa and Ochieng (2024) noted that infrastructural weaknesses and limited resources contribute to the lag in digital readiness in countries like South Sudan. The theoretical expectation is that resource constraints should be negatively associated with readiness, as they limit the ability of central banks to invest in infrastructure, training, and other capacity-building activities. However, the empirical evidence on the relative importance of resource constraints compared to other factors is less clear. Some studies suggest that internal capacity factors may be more immediately actionable than resource constraints. The present study tests whether resource constraints have a statistically significant negative association with readiness, controlling for other factors. Therefore, the following hypothesis has been developed:
H4: *Limited financial resources are negatively associated with central bank readiness for monetary union integration.*

Methodology

To critically examine the transition from paper commitments to digital systems and its implications for technical infrastructure, payment architecture, and central bank readiness within the East African Monetary Union, this research adopted a contextually tailored mixed-methods design centered on the Bank of South Sudan. By synthesizing both quantitative and qualitative approaches, the study captured the full complexity of institutional transformation, specifically the shift from paper-based processes to digital financial systems, and the progress and obstacles encountered on the path to integration.

The study used a case study methodology to generate an in-depth, context-specific analysis of the Bank of South Sudan's journey toward digitalization and regional monetary harmonization. Purposive sampling targeted stakeholders directly engaged in technical modernization, payment system development, legal and regulatory reforms, and policy implementation. Participants included ICT and payments specialists, central bank management, monetary policy staff, and policymakers from the Ministry of Finance and Economic Planning, ensuring firsthand insight into both infrastructural realities and policy ambitions. The sample consisted of sixty respondents who completed structured questionnaires. This sample size, while modest, is appropriate for an exploratory case study of a single institution and provides sufficient statistical power for the regression analysis conducted. Primary data collection involved structured questionnaires distributed to technical and administrative staff, and semi-structured interviews conducted with Bank of South Sudan leadership, ICT teams, and government officials. These instruments explored the evolution of payment architecture, the state of digital infrastructure, legal harmonization with EAC standards, and operational readiness for regional integration. Secondary data were drawn from up-to-date EAC convergence reports, IMF and World Bank diagnostics, and the Bank of South Sudan's internal policy and strategy documents, providing a

robust foundation for triangulation and comparative analysis. The dependent variable in the quantitative analysis was central bank readiness for monetary union integration. This variable was operationalized through a composite measure that captured respondents' assessments of the Bank of South Sudan's overall preparedness for integration, including its institutional capacity, technical infrastructure, and operational systems. The independent variables included reliable and timely data management systems, staff technical expertise, continuous professional training, limited financial resources, human resources constraints, technological limitations, regulatory and legal gaps, involvement in regional initiatives, regional policy commitments, cooperation with other EAC central banks, and adequate ICT and digital infrastructure.

All variables were measured using Likert-scale items ranging from one (strongly disagree) to five (strongly agree). Quantitative data were analyzed using descriptive statistics and regression techniques to examine how investments in digital systems and payment infrastructure influence central bank readiness for monetary union accession. The regression analysis included tests of model assumptions, including linearity, normality of residuals, and homoscedasticity. Qualitative data underwent thematic analysis, enabling systematic coding of responses related to the transition from paper-based to digital operations, the modernization of technical systems, and the challenges of regulatory and operational convergence. To ensure methodological rigor and credibility, the study incorporated expert review, instrument pre-testing, triangulation across sources, and peer validation of qualitative codes. The study strictly observed ethical considerations, including informed consent, confidentiality, and institutional approvals, throughout the research process.

Results and Discussion

The presentation of findings begins with the demographic profile of respondents, which provides context for interpreting the subsequent analysis. Table 1 presents the gender distribution of the sixty respondents. The data reveals that 68.3 percent of surveyed staff are male, with women representing only 31.7 percent. This skewed representation mirrors trends observed across EAC central banks, where male predominance may hinder organizational inclusivity and innovation (Odhiambo & Mugisha, 2022). As Gatera and Mbabazi (2023) noted, a lack of gender diversity can limit the breadth of perspectives vital for adaptive reform, particularly as institutions shift from legacy, paper-driven systems to more dynamic digital environments. Interview responses highlighted the need for targeted gender equity initiatives, both to model EAC values and to accelerate organizational resilience during digital transformation.

Table 1: Gender Distribution of Respondents

Gender	Frequency	Percentage
Male	41	68.3%
Female	19	31.7%
Total	60	100%

Table 2: Age Distribution of Respondents

Age Group	Frequency	Percentage
20–29	10	16.7%
30–39	28	46.7%
40–49	18	30.0%
50+	4	6.6%
Total	60	100%

Table 2 presents the age distribution of respondents. The data reveals a youthful workforce, with nearly half of Bank of South Sudan respondents in their thirties and a significant cohort under forty. This demographic structure is common in rapidly reforming or post-conflict states (Odhiambo & Mugisha, 2022). The prevalence of younger staff offers opportunities for digital adaptation and openness to change, as suggested by Uwizeye and Habonimana (2023), but also raises challenges around institutional memory and the sustainability of complex technical

reforms. Respondents acknowledged the energy and adaptability of younger staff but cited the need for mentorship and knowledge transfer to balance innovation with institutional continuity.

Table 3 presents the educational attainment of respondents. The data shows that Bank of South Sudan staff are highly credentialed, with over 95 percent holding at least a bachelor's degree and more than a third holding a master's degree. This high educational attainment is consistent with Gatera and Mbabazi's (2023) findings on the professionalization of EAC central banks. However, respondents emphasized a gap between formal qualifications and hands-on digital skills, echoing Odhiambo and Mugisha's (2022) argument that ongoing, context-specific training is essential for effective implementation of digital payment architecture and technical upgrades.

Table 3: Educational Attainment of Respondents

Qualification	Frequency	Percentage
Diploma	3	5%
Bachelor's	35	58.3%
Master's	22	36.7%
Total	60	100%

Table 4 presents the organizational positions of respondents. The data shows a typical institutional structure, with operational staff comprising the majority at 55 percent, a moderate share in middle management at 25 percent, and few at senior levels at 6.7 percent. This distribution may hinder leadership continuity and strategic oversight, which are critical for managing the transition to digital systems (Mutesa & Ochieng, 2024). Respondents stressed the need for succession planning and leadership development to build central bank readiness for monetary union, aligning with literature that underscores the importance of strong leadership pipelines in successful digital and institutional transformation.

Table 4: Organizational Position

Position	Frequency	Percentage
Operational Staff	33	55%
Middle Management	15	25%
Senior Management	4	6.7%
Other	8	13.3%
Total	60	100%

Table 5 presents the years of experience of respondents. The data indicates that most Bank of South Sudan staff have less than a decade of experience, with nearly half below five years. This pattern, also noted by Odhiambo and Mugisha (2022), is characteristic of institutions in flux, with high turnover and ongoing reforms. While new staff may bring energy and digital fluency, experience gaps can jeopardize project continuity and deep institutional knowledge, an ongoing risk for sustained technical and policy reforms (Mutesa & Ochieng, 2024).

Table 5: Years of Experience

Years of Experience	Frequency	Percentage
Less than 5	27	45%
5–10	20	33.3%
11–15	8	13.3%
16+	5	8.4%
Total	60	100%

Table 6 presents respondents' assessments of institutional capacities. Most respondents agree that the Bank of South Sudan has a clear organizational structure, with a mean of 4.24. This finding supports Odhiambo and Mugisha (2022), who stressed the importance of clear structures for effective policy and reform. However, only half found decision-making efficient and transparent, with notable disagreement, reflecting enduring governance challenges. This perception aligns with Mutesa and Ochieng (2024), who argued that participatory decision-making and trust in

leadership are as vital as formal structures for digital modernization. Moderately positive scores on EAMU alignment and regional coordination suggest foundational progress but highlight the need for ongoing harmonization and reform momentum, as also seen in prior literature.

Table 6: Institutional Capacities (N = 60)

Statement	SA	A	N	D	SD	Mean	Std. D
Clear organizational structure	50%	35%	8%	5%	2%	4.24	0.98
Efficient and transparent decision-making	18%	32%	26%	16%	8%	3.36	1.11
Governance aligns with EAMU standards	15%	50%	20%	10%	5%	3.60	1.02
Policies promote regional coordination	22%	53%	13%	7%	5%	3.80	1.06

Table 7 presents respondents' assessments of technical capacities. The data shows positive perceptions of ICT capacity, with a mean of 3.96, and ongoing training, with a mean of 3.88. These findings mirror Gatera and Mbabazi (2023), who cited technical assistance as a driver of central bank modernization. Staff technical proficiency is rated favorably, but concerns about data reliability persist, with a mean of 3.56. This echoes Deng and Bekele's (2022) warning about data quality challenges in fragile contexts. Respondents called for more investment in data management, as reliable information is foundational for effective, timely decision-making and digital integration.

Table 7: Technical Capacities (N = 60)

Statement	SA	A	N	D	SD	Mean	Std. D
Adequate ICT/digital infrastructure	30%	50%	10%	6%	4%	3.96	0.99
Reliable/timely data management systems	20%	35%	28%	15%	2%	3.56	1.01

Table 8 presents respondents' assessments of institutional and technical challenges. Resource constraints are the most pressing challenge, with a mean of 4.16. This finding is consistent with Chikere and Wamalwa (2021), who found that limited funding impedes digital upgrades and staff retention in post-conflict central banks. Human and technological gaps further hinder the Bank of South Sudan's ability to deliver on commitments, while regulatory misalignment remains problematic. This echoes Odhiambo and Mugisha (2022) on the need for comprehensive legal modernization. Respondents emphasized that bridging these gaps will require strategic investment, capacity-building, and close coordination with EAC partners.

Table 8: Institutional and Technical Challenges (N = 60)

Statement	SA	A	N	D	SD	Mean	Std. D
Limited financial resources affect digital reform	45%	37%	10%	5%	3%	4.16	1.01
Human resource constraints hinder policy delivery	16%	40%	20%	14%	10%	3.38	1.18
Technological limitations impede coordination	22%	33%	25%	12%	8%	3.49	1.12
Regulatory/legal gaps slow EAMU integration	18%	42%	18%	15%	7%	3.49	1.07

Table 9 presents the model summary for the regression analysis. The data demonstrates that institutional and technical capacities explain over half, specifically 52.5 percent, of the variation in decision-making outcomes at the Bank of South Sudan. This effect size is consistent with Mutesa and Ochieng (2024), who found similar explanatory power for capacity variables in central banks across Africa. The adjusted R Square of 0.387 accounts for sample size and predictors, confirming moderate-to-strong model validity and predictive accuracy for social science research.

Table 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	0.724	0.525	0.387	0.920

Table 10 presents the analysis of variance results. The ANOVA confirms the regression model's statistical significance, with $F = 3.816$ and $p = .001$. This validates the relevance of institutional and technical factors as predictors for decision-making quality. This finding is consistent with Deng and Bekele (2022), who argued that investments in staff skills and digital systems yield measurable improvements in governance. Still, that unexplained variance remains, pointing to

the influence of softer factors such as leadership, culture, and external shocks (Gatera & Mbabazi, 2023).

Table 10: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.489	11	3.226	3.816	.001
Residual	32.131	38	0.846		
Total	67.620	49			

Table 11 presents the regression coefficients for the full model. Among the predictors, three variables were statistically significant. Reliable and timely data systems had a coefficient of B = 0.371 with p = 0.049. Staff technical expertise had a coefficient of B = 0.330 with p = 0.037. Continuous professional training had a coefficient of B = 0.409 with p = 0.009. The positive coefficients indicate that improvements in these areas are strongly and directly associated with better decision-making at the Bank of South Sudan. This supports Deng and Bekele (2022) and Uwizeye and Habonimana (2023), who highlighted data quality, technical competence, and professional development as critical levers for digital transformation and institutional readiness. Other factors, such as resource constraints and regulatory gaps, did not reach statistical significance in this sample. This suggests that while they remain important contextual challenges (Chikere & Wamalwa, 2021), the most immediate gains in central bank readiness for monetary union can be achieved by focusing on internal capacity building, specifically investing in data systems, technical skills, and ongoing training. This aligns with Odhiambo and Mugisha's (2022) view that operational improvements often precede, and may even catalyze, broader structural reforms.

Table 11: Regression Coefficients

Predictor Variable	B	Std. Error	Beta	t	Sig.
(Constant)	-0.380	0.901	--	-0.422	0.676
Reliable/timely data systems	0.371	0.182	0.301	2.033	0.049
Staff have strong technical expertise	0.330	0.153	0.313	2.159	0.037
Continuous professional training	0.409	0.148	0.378	2.755	0.009
Limited financial resources	-0.092	0.161	-0.081	-0.572	0.571
Human resources constraints	0.016	0.138	0.018	0.115	0.909
Technological limitations	-0.075	0.132	-0.083	-0.570	0.572
Regulatory/legal gaps	0.002	0.124	0.002	0.013	0.990
Involvement in regional initiatives	0.108	0.227	0.084	0.474	0.638
Regional policy commitments	0.015	0.201	0.012	0.073	0.942
Cooperation with other EAC central banks	-0.042	0.208	-0.034	-0.200	0.843
Adequate ICT/digital infrastructure	-0.042	0.171	-0.035	-0.248	0.805

The regression results provide support for the first three hypotheses. Hypothesis 1, which predicted that reliable and timely data management systems are positively associated with central bank readiness, is supported by the statistically significant coefficient for data systems. Hypothesis 2, which predicted that staff technical expertise is positively associated with readiness, is supported by the significant coefficient for technical expertise. Hypothesis 3, which predicted that continuous professional training is positively associated with readiness, is strongly supported by the significant and relatively large coefficient for training. Hypothesis 4, which predicted that limited financial resources are negatively associated with readiness, is not supported by the data, as the coefficient for resource constraints did not reach statistical significance. The qualitative data from interviews provides additional context for interpreting these findings. Respondents consistently emphasized that while resource constraints are real and persistent, the more immediate barriers to effective digital transformation and integration relate to internal capacity. One senior official noted that the Bank of South Sudan has received substantial technical assistance and funding from development partners, but the absorptive capacity of the institution limits how effectively these resources can be utilized. This perspective aligns with the regression findings, which suggest that internal capacity factors are more proximate determinants of readiness than external resource availability. Another respondent

highlighted the critical importance of data reliability, noting that decision-makers often lack confidence in the data available to them, which undermines both policy formulation and coordination with regional partners. The findings also resonate with the broader literature on monetary integration in Africa. The lack of convergence identified by Asongu (2014) and the structural heterogeneity documented by Zhao and Kim (2009) in the CFA franc zone context have parallels in the EAC.

The present study suggests that addressing these challenges requires not only macroeconomic policy coordination but also sustained investment in the institutional and technical foundations of central banking. The emphasis on continuous training and data systems aligns with the institutional economics perspective, which emphasizes the importance of organizational capacities and learning in shaping economic outcomes. The findings on the relative unimportance of resource constraints, once other factors are controlled for, have important implications for policy and practice. While it would be naive to suggest that resources do not matter, the results suggest that the marginal returns to additional funding may be lower than the returns to investments in human capital and data systems. This finding supports a sequenced approach to capacity building, where foundational investments in staff skills and data infrastructure are prioritized before or alongside larger infrastructure investments.

The experience of the Bank of South Sudan in recent years, as documented in the joint assessment with the EAC Secretariat, suggests that significant investments have been made in payment system modernization and staff training. The challenge now is to consolidate these gains and address the remaining gaps in data management and technical expertise. The practical implications of these findings for the Bank of South Sudan and its partners are significant. The results suggest that targeted investments in data management systems and staff training should be prioritized. This could include the development of integrated data platforms, the establishment of data quality assurance protocols, and the expansion of training programs focused on digital skills and regional integration requirements. The findings also suggest that leadership development and succession planning deserve attention, given the demographic profile of the workforce. With many staff in their thirties and relatively few at senior levels, there is a need to build a pipeline of future leaders who understand both the technical and institutional dimensions of monetary integration. The findings on gender diversity, while not directly tested in the regression analysis, suggest that efforts to improve gender balance in the Bank of South Sudan could contribute to institutional resilience and adaptability. The literature on organizational diversity suggests that diverse teams are better able to identify and respond to complex challenges. As the Bank of South Sudan navigates the transition to digital systems and regional integration, a more diverse workforce could enhance its capacity to innovate and adapt.

Practical Applications

The findings of this study have several practical applications for the Bank of South Sudan, EAC policymakers, and development partners. First, the statistically significant relationship between data management systems and central bank readiness, as shown in Table 11, suggests that investments in data infrastructure should be prioritized. This finding aligns with Deng and Bekele (2022) and Uwizeye and Habonimana (2023), who emphasized data quality as a critical lever for digital transformation. The Bank of South Sudan could benefit from the development of integrated data platforms, improved data quality assurance protocols, and enhanced data-sharing arrangements with other EAC central banks. Such investments would not only improve decision-making within the Bank but also facilitate coordination with regional partners and enhance the credibility of South Sudan's participation in the monetary union. Second, the finding that staff technical expertise is significantly associated with readiness, as reported in Table 11, underscores the importance of human capital development. This aligns with Gatera and Mbabazi (2023) and Odhiambo and Mugisha (2022), who identified staff development as a key driver of central bank modernization. The Bank of South Sudan should invest in specialized training programs focused on digital payment systems, cybersecurity, data analytics, and regional integration requirements.

Partnerships with other EAC central banks, as well as with international organizations such as the IMF and World Bank, could provide valuable opportunities for knowledge exchange and skill development. The demographic profile of the workforce, as shown in Tables 2 and 5, suggests that there is a large cohort of young staff who could benefit from structured career development pathways that combine technical training with exposure to regional and international best practices. Third, the strong association between continuous professional training and readiness, as evidenced by the largest standardized coefficient in Table 11, highlights the need for sustained investment in learning and development. This finding supports the view that initial qualifications, while important, are insufficient for sustained institutional effectiveness in a rapidly evolving environment.

The Bank of South Sudan should establish a systematic approach to continuous training, including regular needs assessments, structured training calendars, and mechanisms for evaluating the impact of training on job performance and institutional outcomes. Mentorship programs and cross-departmental secondments, as recommended by several interview respondents, could complement formal training by providing opportunities for knowledge transfer and practical experience. Fourth, the finding that resource constraints were not statistically significant in the regression model suggests that the Bank of South Sudan should not delay action on capacity building while waiting for additional funding. While resources are undeniably important, the regression results indicate that internal capacity factors are more proximate determinants of readiness. This suggests that the Bank can make meaningful progress by reallocating existing resources toward data systems and training, and by leveraging partnerships with regional and international organizations. Development partners could support these efforts by providing targeted technical assistance rather than general budget support, and by focusing on building absorptive capacity within the institution.

Theoretical Applications

This study makes several theoretical contributions to the literature on monetary integration and central bank readiness. First, it extends Optimum Currency Area theory by demonstrating that, in fragile and transitional economies, internal operational capacity and digital readiness are as crucial as macroeconomic convergence for successful monetary integration.

The classical formulation of optimum currency area theory, as articulated by Mundell (1961), McKinnon (1963), and Kenen (1969), emphasizes macroeconomic criteria such as labor mobility, price flexibility, and synchronized business cycles. While these criteria remain important, the present study suggests that they are insufficient for understanding readiness in contexts characterized by institutional fragility and technological gaps. The finding that data systems, technical expertise, and training are significant predictors of readiness, even when controlling for resource constraints and regulatory gaps, supports an expanded conceptualization of optimum currency area criteria that incorporates institutional and technological dimensions. Second, the study advances institutional economics theory by empirically validating the pivotal role of continuous staff training and robust data systems in building institutional resilience. North (1990) and Williamson (1985) emphasized that institutions matter for economic outcomes, but the mechanisms through which institutional quality affects specific outcomes are often under-specified. This study provides evidence that investments in human capital and information systems are tangible pathways through which institutions can enhance their capacity to implement complex reforms. The finding that resource constraints were not significant, once other factors were controlled for, suggests that the quality of institutional investments may be more important than the quantity of resources available. Third, the study offers a contextualized application of regional economic integration theory, illustrating how targeted, country-specific reforms can complement regional policy frameworks during the digital transformation of central banks. Balassa (1961) and Haas (1958) emphasized the importance of sequenced reforms and managing disparities among member states for successful integration. The present study

provides empirical evidence on the specific factors that contribute to readiness in a fragile, post-conflict state. The findings suggest that regional integration initiatives such as the EAC's payment system integration project and convergence criteria monitoring should be complemented by country-level capacity building efforts that address the specific constraints facing each member state. Fourth, the study contributes to the growing literature on digital transformation in public sector institutions. While much of this literature has focused on developed countries, the present study provides evidence from a fragile African context. The findings suggest that the drivers of digital transformation in developing countries may differ from those in developed countries. In particular, the importance of data reliability and basic training may be more pronounced in contexts where institutional foundations are weaker and technological infrastructure is less developed.

Policy Applications

The findings of this study have important implications for policy at both the national and regional levels. For South Sudanese policymakers, the results suggest that the Bank of South Sudan should prioritize investments in data systems and staff training as foundational steps toward monetary union readiness. The Ministry of Finance and Economic Planning could support these efforts by ensuring that adequate budget allocations are made for these purposes and by coordinating with the Bank on broader public sector digitalization initiatives. The finding that continuous training is the strongest predictor of readiness suggests that the Bank should establish a dedicated training budget line and develop a comprehensive training strategy that addresses both technical skills and knowledge of regional integration requirements.

For EAC policymakers, the findings suggest that regional initiatives should be designed to accommodate the specific needs of fragile and post-conflict member states. The EAC's peer learning mechanisms and technical assistance programs could be strengthened to provide more targeted support to countries like South Sudan. The finding that regional coordination variables were not significant predictors of readiness in the regression model suggests that regional initiatives alone may be insufficient to address deep-seated capacity gaps. Instead, regional initiatives should be complemented by intensive country-level support that addresses the specific constraints identified in this study.

For development partners, including the IMF, World Bank, and bilateral donors, the findings suggest that technical assistance should be sequenced carefully to address the most binding constraints first. The results indicate that support for data systems and staff training may yield higher returns than large-scale infrastructure investments in the short term. Development partners could also support the establishment of regional training programs that allow staff from the Bank of South Sudan to learn alongside counterparts from other EAC central banks, fostering both technical skills and regional networks. The finding that gender diversity may contribute to institutional resilience suggests that development partners should incorporate gender considerations into their capacity building programs. The study also has implications for the design of monetary union accession criteria. The EAC Convergence Criteria Report (2024) identified technical infrastructure and payment architecture as areas where South Sudan and Burundi lag behind other member states. The findings of this study suggest that the criteria for evaluating technical readiness should include specific indicators related to data management systems, staff training, and technical expertise. Such indicators would provide a more granular assessment of readiness than general measures of institutional capacity and would help target technical assistance to the most critical gaps.

At the operational level, the Bank of South Sudan could use the findings of this study to inform its strategic planning and resource allocation decisions. The Bank's strategic plan should include specific, measurable targets for improving data quality, expanding staff training, and enhancing technical expertise. Regular monitoring of progress against these targets would help the Bank track its readiness for monetary union and identify emerging gaps. The Bank could also use the

findings to make the case to government and development partners for increased investment in human capital and information systems.

Conclusion

This study concludes that the Bank of South Sudan's journey from paper commitments to digital systems is fundamentally shaped by the institution's internal technical capabilities, data infrastructure, and commitment to continuous staff development. While external challenges, such as limited financial resources and regulatory misalignment, remain significant, the findings demonstrate that improvements in reliable data systems, technical expertise, and ongoing professional training are the most immediate and impactful levers for enhancing decision-making efficiency and readiness for East African Monetary Union integration. This insight advances the current literature by empirically confirming that, in fragile and post-conflict contexts, investing in operational capacity and digital infrastructure can deliver measurable governance and policy dividends even before broader structural reforms are fully realized. The study makes several contributions to knowledge. First, it provides granular, empirical evidence on the specific factors that drive central bank readiness for monetary union in a fragile context. While previous studies have identified capacity constraints as barriers to integration, few have quantified the relative importance of different factors or provided detailed evidence on the mechanisms through which capacity affects readiness. The finding that data systems, technical expertise, and continuous training are significant predictors of readiness, while resource constraints are not, has important implications for policy and practice. Second, the study demonstrates the value of mixed-methods research in understanding institutional transformation. The qualitative data from interviews provided context and meaning that would not have been apparent from the quantitative analysis alone, while the quantitative analysis provided the statistical rigor to identify significant relationships. The study's findings also highlight the importance of leadership and institutional memory in navigating complex reforms.

The demographic profile of the Bank of South Sudan workforce, with many younger staff and relatively few in senior positions, suggests a need for deliberate efforts to build leadership pipelines and transfer institutional knowledge. This is consistent with the broader literature on capacity building in post-conflict states, which emphasizes the importance of leadership development and succession planning. For South Sudan and similar emerging economies, the study points to a pragmatic roadmap. Prioritize digital and human capital development as foundational steps toward a secure, interoperable, and future-ready central banking system for the monetary union era. The findings suggest that while external support and regional cooperation are important, the most immediate gains will come from internal investments in data systems, staff skills, and continuous learning. This is not to underestimate the challenges facing the Bank of South Sudan. The institution operates in a difficult environment, marked by economic instability, political uncertainty, and limited resources. But the evidence suggests that meaningful progress is possible, even under difficult circumstances, if the right priorities are identified and pursued.

Limitations and Future Research Directions

This study has several limitations that should be acknowledged. First, the study is based on a single case study of the Bank of South Sudan, which limits the generalizability of the findings to other central banks or countries. Future research could employ comparative case study designs across multiple EAC member states at different stages of digital transformation, which would help identify which strategies are most effective in which contexts. Such research could also examine whether the factors that drive readiness in a fragile state like South Sudan differ from those that are most important in more stable countries. Second, the sample size of sixty respondents, while appropriate for an exploratory case study, limits the statistical power of the regression analysis. Future research could employ larger samples, potentially including staff from multiple central banks or multiple departments within the same institution, to increase statistical power and allow for more detailed subgroup analyses. Longitudinal designs could track changes in readiness

over time, providing stronger evidence on causality than the cross-sectional design used in this study. Third, the study relies on self-reported perceptions of readiness and capacity. While these perceptions are valuable, they may not fully align with objective measures of institutional capacity. Future research could incorporate objective indicators, such as the presence and functionality of specific data systems, the number of staff who have completed specific training programs, or the results of technical assessments. Combining subjective and objective measures would provide a more complete picture of readiness. Fourth, the study focuses on the supply side of central bank readiness, examining the capacity of the Bank of South Sudan to meet integration requirements. Future research could also examine the demand side, investigating what regional institutions and other member states need from South Sudan to ensure successful integration. This could include studies of the interoperability of payment systems, the harmonization of regulatory frameworks, and the coordination of monetary policy in practice.

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