The Future of Payments and Banking in Tanzania and East Africa: An AI-Driven Transformation

Executive Summary

East Africa presents a unique and dynamic financial landscape, profoundly shaped by the pervasive influence of mobile money. This mobile-first environment, particularly strong in Tanzania and Kenya, sets a distinct stage for the adoption and impact of Artificial Intelligence (AI) in the banking and payments sector. While traditional banking infrastructure exists, it is the mobile platform that serves as the primary financial interface for a vast majority of the population, generating immense volumes of alternative data and driving financial inclusion metrics to high levels.

AI is beginning to make significant inroads, with key applications gaining traction. AI-driven alternative credit scoring, leveraging mobile transaction data, is emerging as a powerful tool to extend financial services to previously unbanked and underbanked segments. Advanced fraud detection systems powered by AI are crucial for maintaining trust and security within the digital ecosystem. Furthermore, AI is enhancing customer service through automated chatbots and enabling deeper personalization of financial products and advice. The potential impact is substantial: AI promises to deepen financial inclusion beyond basic access, drive significant operational efficiencies for financial service providers (FSPs), and create more engaging and tailored customer experiences.

However, the path to widespread AI adoption is fraught with challenges specific to the East African context. Data quality, accessibility, and governance remain significant hurdles, compounded by privacy concerns and the risk of algorithmic bias embedded in both traditional and alternative datasets. Foundational infrastructure limitations, including inconsistent connectivity and the need for substantial investment in computing power, constrain the deployment of sophisticated AI solutions. A persistent digital literacy gap among consumers and a shortage of skilled AI talent within the region further impede progress. Moreover, the high costs associated with AI implementation and evolving, often fragmented, regulatory frameworks create uncertainty. Ethical considerations, particularly ensuring fairness and transparency in AI-driven decisions, are paramount.

Key regulatory developments signal a move towards managing this new technological wave. Kenya's proactive National AI Strategy (2025-2030) provides a roadmap, while Tanzania's Fintech Regulatory Sandbox offers a flexible environment for testing innovations. These initiatives highlight the balancing act regulators face: fostering

innovation while mitigating risks and ensuring consumer protection.

Over the next 5-10 years, the trajectory of AI in East African finance will be characterized by the interplay between the established mobile money ecosystem, accelerating fintech innovation, and adaptive regulation. AI applications addressing core needs like credit access and security will likely mature, while personalized financial health tools gain prominence. Collaboration and competition between banks, Mobile Network Operators (MNOs), and fintechs will intensify, increasingly mediated by AI capabilities. Compared to other Sub-Saharan African regions, East Africa's journey will be uniquely defined by its mobile money dominance, presenting both unparalleled opportunities for data-driven innovation and specific challenges related to data governance and infrastructure within that mobile context. Ultimately, realizing AI's transformative potential hinges on a concerted multi-stakeholder effort to address these challenges and commit to responsible, inclusive, and ethical deployment.

1. The Evolving Financial Ecosystem in Tanzania and East Africa

The financial landscape of Tanzania and the broader East African region is undergoing a profound transformation, driven significantly by digital technologies, particularly mobile money. Understanding this unique context is crucial for assessing the potential integration and impact of Artificial Intelligence (AI).

1.1 Mobile Money Dominance

Sub-Saharan Africa (SSA) stands as the global epicenter of mobile money, and East Africa is its most vibrant region.[1] In 2024, Africa processed an estimated 65% of the global mobile money transaction value, amounting to $1.1 trillion, and accounted for nearly 74% of the transaction volume globally.[1] Within the continent, SSA hosts over 1.1 billion registered mobile money accounts, representing 53% of the global total of 2.1 billion accounts.[1] This dominance is not a recent phenomenon; the region has led the world in mobile money innovation, adoption, and usage for several years, with close to 40 SSA countries actively using the technology.[4]

East Africa, in particular, leads the continent in activity. In 2024, the region boasted 459 million registered accounts and processed a staggering $649 billion in transaction value across 52 billion transactions.[1] This scale establishes mobile money not merely as a payment mechanism but as the primary financial interface for a vast portion of the population. This reliance creates unique, large-scale datasets and infrastructure foundations that differ significantly from regions where traditional banking holds

sway.

Tanzania exemplifies this trend. As early as 2021, 45% of adult Tanzanians had a mobile money account, significantly higher than the SSA average of 33%.[5] By March 2023, this translated to 44 million open accounts, with an annual transaction value reaching US$56 billion in 2022.[5] Mobile money has been a primary engine for financial inclusion gains in the country and the region between 2014 and 2022.[2] Similarly, Kenya reported formal financial access reaching 84.8% in 2024, largely attributed to the proliferation of digital technology and mobile money, which has nearly closed the gender gap in formal access.[6] This high penetration in key East African markets indicates a populace accustomed to digital financial interactions via mobile devices, potentially smoothing the adoption pathway for new AI-driven mobile financial products compared to populations less familiar with digital finance.

While account registration and transaction values continue to climb [1], recent data suggests a moderation in the *rate* of growth compared to the peak years influenced by the COVID-19 pandemic.[10] However, usage patterns indicate deepening engagement. Daily mobile money usage in Kenya, for instance, more than doubled from 23.6% in 2021 to 52.6% in 2024, signifying increased integration into daily life.[8] This market maturation suggests a shift in focus from merely acquiring new users to enhancing engagement and expanding the utility of mobile money for existing users – an area where AI can offer significant value through personalization and new service offerings.

The utility of mobile money is indeed expanding. Globally, use cases now prominently include merchant payments ($105 billion in 2024), bill payments ($93 billion), international remittances ($34 billion), and bulk disbursements like salary payments ($97 billion).[1] Furthermore, providers, especially in SSA, are increasingly offering adjacent financial services such as credit, savings, and insurance.[1] Over 44% of providers globally offered loans in the past year, with 34% offering savings and 28% insurance.[1] However, challenges persist. In Tanzania, the adoption of merchant payments remains notably low; only 3% of adults made a mobile merchant payment in the month preceding a 2023 survey.[5] A strong preference for cash also endures, with 43% of Tanzanian users opting to immediately convert digital balances into physical currency.[5] This behavior is influenced by factors including trust, habit, and cost considerations, such as the negative impact of Tanzania's mobile money tax introduced in 2021, which significantly increased transaction fees and dampened transaction volumes before being partially reduced.[5] AI could potentially help bridge these gaps by enabling more compelling digital value propositions or enhancing trust

through improved security and transparency.

The mobile money ecosystem relies heavily on a vast network of agents who facilitate cash-in and cash-out (CICO) transactions, linking the digital and physical economies. Globally, there were 28 million registered agents in 2024, with 10 million active monthly – a significant increase in density, doubling the ratio of registered agents per 100,000 adults since 2021.[3] Tanzania has historically had high agent penetration.[11] While crucial for accessibility and inclusion, this agent network represents a significant operational cost layer and a potential point of friction that fully digital, AI-powered solutions might aim to integrate more seamlessly or eventually bypass for certain transactions.

1.2 Traditional Banking Infrastructure and Key Players

Parallel to the rise of mobile money, the traditional banking sector in Tanzania and East Africa has its own trajectory. Tanzania's banking sector underwent a major transformation from the early 1990s, shifting from a state-controlled mono-banking system to a liberalized, private, market-oriented structure.[12] Despite this reform and hosting a high number of banks for an African nation, Tanzania remains one of the least-banked countries globally in terms of traditional bank account penetration.[12] World Bank Findex data from 2014 indicated only 19% of adults had an account with a formal financial institution, although overall formal financial access, including mobile money, reached 76% by June 2023.[11] This historical context, characterized by a less developed traditional banking infrastructure, created fertile ground for mobile money to flourish and meet unmet demand for financial services.

The Tanzanian banking sector has historically been highly concentrated. The three largest banks – NMB Bank Plc, CRDB Bank Plc, and NBC (National Bank of Commerce) – accounted for a significant portion of total banking assets.[12] These institutions, along with other regional players like KCB Bank and Equity Bank (both headquartered in Kenya with regional presence), and international banks like Stanbic, remain key actors.[12] However, the most dominant financial players, particularly in terms of reach and daily transactions, are often the MNOs driving mobile money services: Vodacom Tanzania (M-Pesa), Tigo Tanzania (Tigo Pesa), and Airtel Tanzania (Airtel Money).[19]

The competitive dynamic is thus complex, involving traditional banks undergoing digital transformation, dominant MNOs expanding their financial service offerings, and a growing number of fintech startups carving out niches.[27] Banks are acutely aware of the need to digitize. Many are investing in mobile apps, online platforms, and partnerships to enhance their digital offerings and customer experience.[21] KCB Bank's

investment in advanced data center interconnect network infrastructure from Huawei, for example, underscores the commitment to building robust foundations for digital services and future AI integration.[25] NMB Bank and CRDB Bank are also actively engaged in digital transformation initiatives.[15] This push towards digitalization by traditional banks creates significant opportunities for integrating AI into their operations, risk management, and customer interfaces to compete more effectively in the evolving landscape.

1.3 Financial Inclusion Landscape

Mobile money has undeniably been the principal catalyst for increased financial inclusion across SSA, with East Africa leading the charge.[2] High formal inclusion rates, such as Kenya's 84.8% [7] and Tanzania's 76% [13], are largely attributable to mobile money account ownership. However, these headline figures mask persistent challenges. Significant portions of the population remain excluded, particularly rural youth who often lack the necessary identification documents or cannot afford a mobile phone – key prerequisites for accessing digital financial services.[6]

Furthermore, a critical gap exists between basic financial *access* and genuine *financial health*. The 2024 FinAccess survey in Kenya revealed that despite high inclusion, only 18.3% of adults were considered financially healthy (able to manage daily needs, cope with shocks, and invest in the future).[6] Worryingly, savings rates declined in Kenya for the first time since 2009, while debt distress among borrowers increased significantly, with 16.6% completely defaulting on loans in 2024, up from 10.7% in 2021.[6] This "inclusion paradox" – high access coupled with low financial well-being – suggests that while mobile money effectively addresses transactional needs (payments, transfers), it has not yet universally translated into enhanced economic resilience or empowerment for its users. This gap represents both a major opportunity and a significant risk for AI. AI-driven tools could potentially bridge this divide by offering personalized financial advice, enabling better risk assessments for productive loans, and facilitating access to suitable savings and insurance products. Conversely, poorly designed or irresponsibly deployed AI, particularly in lending, could exacerbate debt traps and deepen financial vulnerability.[30] Therefore, the responsible development and application of AI will be crucial in determining whether it helps resolve or worsen this inclusion paradox.

The dominance of mobile money in East Africa presents a unique foundation for AI development. It offers an unparalleled volume of alternative transactional data, a potential treasure trove for AI applications like credit scoring and behavioral analysis.[21] This data can help assess the creditworthiness of individuals outside the formal

banking system. However, this mobile-centricity also introduces specific hurdles. The data is often held within the silos of MNOs, potentially lacking the depth and breadth of traditional banking data. Its use, especially incorporating call data records or SMS content, raises significant privacy concerns that require careful navigation and robust governance frameworks.[30] Furthermore, the utility of this data is inherently tied to overcoming the infrastructure and digital literacy gaps prevalent in the mobile-first ecosystem.[35] Consequently, the initial wave of AI applications in East African finance may be more narrowly focused on optimizing existing mobile money services and leveraging associated transactional data, compared to regions where AI can draw more readily from mature traditional banking data infrastructure.

Table 1: Mobile Money Penetration and Usage - East Africa Snapshot (2024/2025 Estimates)

Metric	East Africa (Regional Aggregate)	Tanzania	Kenya	Key Use Cases (Regional/Global Prevalence 2024)	Sources
Registered Accounts	459 million	44 million (by Mar 2023)	High (part of 84.8% formal)	P2P Transfers, Bill Payments, Airtime Top-up	[1]
Active Monthly Accounts	149 million (12% YoY growth)	63% use >=2x/month (2023)	52.6% use daily (up from 23.6%)	Merchant Payments ($105bn global)	[1]
Transaction Volume	52 billion (25% YoY growth)	High, but impacted by tax [5]	High	Bill Payments ($93bn global)	[3]
Transaction Value	$649 billion (23% YoY growth)	$56bn annual (2022)	High	Intl. Remittances ($34bn global)	[1]

Credit/Savings/Insurance	Growing Uptake (44%/34%/28% providers globally)	~19% paid insurance via MM (2024)	Savings rate declined to 68.1% (2024)	Bulk Disbursements ($97bn global)	[1]
Merchant Payment Uptake	Growing ($105bn global)	Low (3% monthly use - 2023)	Moderate (part of daily use)	Digital Credit, Savings, Insurance	[1]

(Note: Data points are based on the latest available snippets, primarily reflecting 2023/2024 data reported in 2024/2025. YoY = Year-over-Year. MM = Mobile Money. Global values provided for context where regional specifics are limited.)

2. AI Integration in East African Payments and Banking

Artificial Intelligence is rapidly reshaping financial services worldwide, offering transformative potential in efficiency, risk management, and customer engagement.[37] Global banks could potentially unlock $1 trillion in incremental annual value through AI deployment.[38] East Africa is participating in this global trend, but the integration of AI is uniquely influenced by the region's dominant mobile money ecosystem, specific financial inclusion challenges, and developing infrastructure.

2.1 Overview of AI in Finance

AI encompasses a range of technologies, including Machine Learning (ML), Natural Language Processing (NLP), and predictive analytics, which allow systems to perform tasks typically requiring human intelligence.[37] In finance, these technologies are applied to analyze vast datasets, automate processes, enhance decision-making, personalize customer interactions, and create entirely new business models.[26] The falling costs of data storage and processing, coupled with increased connectivity, have accelerated AI adoption globally.[38]

2.2 Key AI Applications Relevant to East Africa

Several AI applications are particularly pertinent to the opportunities and challenges within the East African financial sector:

- **Credit Scoring & Risk Management:** This is arguably one of the most impactful AI applications for the region. Given the large populations lacking formal credit histories, AI algorithms are being used to analyze *alternative data* sources – such

as mobile money transaction history, utility bill payments, airtime top-up patterns, and even broader phone usage data – to assess creditworthiness.[21] This allows FSPs to extend credit to individuals and SMEs previously excluded from the formal financial system. Prominent examples include fintechs like Tala [44] and Branch [31], banks like Equity Bank which uses predictive analytics for smallholder farmers and micro-entrepreneurs [21], and early integrations by mobile money platforms like M-Pesa in Kenya.[31] Tausi Africa, a Tanzanian fintech, developed the Manka platform specifically using AI scoring focused on transactional patterns to mitigate bias.[30] Studies suggest AI models using alternative data can achieve significantly higher prediction accuracy compared to traditional methods (e.g., 90% vs. <80%) [32], leading to better credit risk management and reduced non-performing loans (NPLs), particularly benefiting smaller banks adapting these technologies.[47] This demonstrates AI's technical capability to make lending more efficient and viable for underserved segments.

- **Fraud Detection and Prevention:** In a rapidly digitizing environment, particularly one heavily reliant on mobile transactions, security and trust are paramount. AI and ML algorithms excel at identifying complex, subtle patterns and anomalies in vast streams of transaction data in real-time, offering a more sophisticated defense against fraud and financial crime than traditional rule-based systems.[26] This includes detecting previously unseen fraud types and suspicious relationships between entities.[37] The need is acute, given rising cyber threats and fraud incidents.[21] Vodacom Tanzania, for instance, explicitly mentions leveraging its Big Data capabilities for enhanced fraud detection.[49] AI's ability to analyze data at scale is seen as essential for managing risk in large populations.[30]
- **Customer Service & Experience (Chatbots, Personalization):** AI is transforming how FSPs interact with customers. AI-powered chatbots and virtual assistants, utilizing NLP, can provide instant, 24/7 customer support, handle routine inquiries, guide users through processes like account opening, and even offer personalized recommendations.[22] This improves operational efficiency by reducing the load on human agents and enhances customer satisfaction through immediate responses.[21] Vodacom's group-wide deployment of the TOBi chatbot, handling millions of chats, exemplifies this trend.[49] Beyond support, AI analyzes customer behavior and transaction data to enable deep personalization of product offerings, marketing messages, and overall user experience.[21] Vodacom employs ML for its Customer Value Management (CVM) platform to deliver personalized retention propositions.[52] This personalization is key to meeting rising customer expectations in the digital age [53] and driving the uptake of more complex financial products.
- **Personalized Financial Advice & Management:** Moving beyond basic

transactions, AI can analyze individual financial data to provide tailored advice on budgeting, saving, and investment strategies.[40] This directly addresses the need to improve financial health and literacy. Fintechs like Mipango in Tanzania focus on financial management services [20], while partnerships like Vodacom Tanzania's M-Wekeza with Sanlam Investments enable mobile-based access to collective investment schemes.[52] This application area holds significant potential for deepening financial inclusion meaningfully.

- **Operational Efficiency (Automation, Predictive Analytics):** AI automates numerous back-office and front-office tasks, including account management, transaction monitoring, compliance checks, and aspects of loan processing.[21] This reduces manual effort, minimizes errors, lowers operational costs, and increases processing speed.[21] Predictive analytics are also employed for functions like revenue forecasting and operational risk monitoring.[37] For example, AI-driven predictive maintenance can optimize the upkeep of physical infrastructure like ATMs or network equipment.[35]
- **Regulatory Compliance (RegTech):** Navigating complex financial regulations is a major operational burden. AI can assist by automating data collection, monitoring transactions for compliance with rules (like AML/CFT), generating reports, and adapting to regulatory changes more efficiently.[37] The Pan-African Payment and Settlement System (PAPSS), for example, utilizes an AI-enabled anti-money laundering regime.[56] Exploring dynamic compliance frameworks powered by AI is an emerging area.[54]

The prominence of AI applications focused on alternative credit scoring, fraud detection, and personalized customer experiences via mobile channels highlights a symbiotic relationship in East Africa. AI development is heavily reliant on the rich data generated by the dominant mobile money ecosystem.[21] In turn, AI enhances the value proposition of mobile financial services through features like accessible credit, improved security, and tailored interactions. This co-dependence suggests that the evolution of AI in East African finance will be closely tied to the continued growth, accessibility, and governance of mobile money data, a pathway distinct from regions where AI primarily leverages traditional banking data.

Furthermore, the strong initial focus on AI for alternative credit scoring [21] and sophisticated fraud detection [30] reflects the region's most pressing financial sector challenges: extending meaningful financial services to the vast unbanked and underbanked population, and building and maintaining trust in a rapidly digitizing, mobile-first environment. While improving operational efficiency and customer experience are undoubtedly important goals [21], the immediate, high-priority AI

applications appear to be those that directly address these fundamental needs for inclusion and security.

Table 2: Key AI Applications in East African Payments & Banking

Application Area	Description/Relevance to East Africa	Key Technologies	Examples/Players (Regionally Relevant)	Key Data Sources Utilized
Credit Scoring & Risk	Assessing creditworthiness for unbanked/underbanked using alternative data; reducing NPLs. Crucial for financial inclusion.	ML, Predictive Analytics	M-Pesa (KE), Equity Bank (KE/Reg.), Tala (Reg.), Manka (TZ), Fintechs	Mobile Money Txns, Phone Usage, Utility Bills, Alt. Data
Fraud Detection & Prev.	Real-time identification of complex fraudulent patterns & anomalies in high-volume mobile transactions. Essential for trust & security.	ML, Anomaly Detection	Vodacom (TZ/Reg.), MNOs, Banks, Fintechs	Transaction Data (Mobile & Bank), Behavioral Data
Customer Service & CX	24/7 automated support via chatbots; personalization of offers, communication, and experience based on user behavior.	NLP, ML, GenAI	Vodacom (TOBi), Banks (e.g., ADIB globally), Fintechs	Interaction Data, Transaction Data, Profile Data
Personalized Fin. Advice	Tailored recommendations for	ML, Recommendatio	M-Wekeza (TZ), Mipango (TZ),	Transaction Data, User Goals, Profile

	budgeting, savings, insurance, investments to improve financial health. Addresses inclusion paradox.	n Engines	Fintechs	Data
Operational Efficiency	Automating repetitive tasks (loan processing, compliance); optimizing resource allocation; predictive maintenance. Reduces costs.	RPA, ML, Predictive Analytics	Banks, MNOs (e.g., KCB infra upgrade)	Operational Data, Transaction Data, Sensor Data
Regulatory Compliance	Automating monitoring, reporting for AML/CFT and other regulations; adapting to changing rules. Reduces compliance burden.	ML, NLP	PAPSS (Regional), Banks, Fintechs	Transaction Data, Regulatory Rules

(Note: Txns = Transactions, Alt. Data = Alternative Data, Reg. = Regional, KE = Kenya, TZ = Tanzania. Examples are illustrative based on snippets.)

3. Assessing the Transformative Potential of AI

The integration of AI into East Africa's financial ecosystem holds significant transformative potential, promising advancements in financial inclusion, operational efficiency, and customer experience. However, realizing this potential requires careful consideration of the associated risks and challenges.

3.1 Impact on Financial Inclusion

AI's most profound potential impact on financial inclusion in East Africa lies in its ability to unlock access to credit for individuals and small businesses previously excluded due to a lack of formal financial history.[21] By analyzing alternative data sources like mobile money usage and utility payments, AI-driven credit scoring models can provide a more comprehensive assessment of creditworthiness. Early examples, such as M-Pesa's use of AI scoring in Kenya, demonstrated a significant increase in microloan access for informal workers.[31] Fintech companies are actively leveraging this capability to reach rural and underserved populations often overlooked by traditional banks.[31]

Beyond credit, AI can contribute to deeper financial inclusion by enabling personalized financial advice and product recommendations.[40] AI tools can analyze user behavior and financial situations to suggest appropriate savings plans, insurance coverage, or investment opportunities, potentially improving financial literacy and helping individuals manage their finances more effectively. This capability directly addresses the observed gap between basic access and financial well-being, aiming to improve financial health outcomes.

However, the potential benefits for inclusion are counterbalanced by significant risks. A primary concern is algorithmic bias. AI models trained on historical data, which often reflects existing societal inequalities, can perpetuate or even amplify discrimination, unfairly excluding certain demographic groups (e.g., based on gender, location, or ethnicity) from accessing financial services.[30] Furthermore, the increasing reliance on digital platforms for AI-driven services risks creating new divides, excluding those who lack digital literacy, affordable access to devices, or reliable internet connectivity.[35] There is also a tangible risk that hyper-efficient AI-driven lending, if not coupled with robust consumer protection and responsible lending practices, could lead to over-indebtedness and debt traps, particularly among vulnerable populations.[30] Therefore, the net impact of AI on financial inclusion is not inherently positive; it depends critically on proactive measures to ensure fairness, mitigate bias, protect consumers, and promote digital literacy alongside technological deployment.

While mobile money successfully *widened* the net of financial inclusion by providing basic payment and transfer capabilities to millions, AI offers the potential to *deepen* this inclusion. It can facilitate access to a broader and more sophisticated range of financial services – credit for productive purposes, tailored insurance, accessible savings and investment vehicles, and personalized financial guidance – for segments

previously cut off from the formal system.[31] This transition from basic access to meaningful participation and improved financial health is crucial for long-term economic empowerment. However, this deepening effect is contingent upon successfully navigating the inherent risks. If issues of algorithmic bias, data privacy violations, or the digital literacy divide are not adequately addressed [30], AI could inadvertently create new barriers or forms of exclusion, undermining its potential for positive impact. The success of AI in promoting *meaningful* financial inclusion is therefore not automatic but requires deliberate, responsible governance and design choices.

3.2 Impact on Operational Efficiency

AI technologies promise substantial gains in operational efficiency for financial service providers in East Africa. Automation of routine and data-intensive tasks – such as customer query handling via chatbots, document verification, data processing for compliance, and elements of loan application processing – significantly reduces the need for manual intervention.[21] This frees up human employees to focus on more complex, value-added activities, such as relationship management or strategic decision-making. AI-driven processes can also operate faster and potentially with higher accuracy than manual methods, improving turnaround times for services like loan approvals [30] and enhancing the overall quality of operational decisions.[37]

Furthermore, AI enhances the analytical capabilities of FSPs. By processing vast amounts of data, AI can uncover insights into market trends, customer behavior, and operational bottlenecks, leading to more informed strategic planning and risk management.[37] Predictive maintenance for physical assets like ATMs or network infrastructure can also reduce costly downtime and improve service reliability.[35] Investments in underlying infrastructure, like KCB's network upgrade, are often prerequisites for realizing these efficiency gains.[25] Studies in developing economies, including Tanzania and Uganda, suggest digital transformation initiatives incorporating such technologies can lead to measurable improvements in revenue, supply chain efficiency, customer response times, and service quality metrics.[65]

The significant operational efficiencies and cost reductions promised by AI [21] raise a critical question in the East African context: who ultimately benefits from these gains? Will they be passed on to consumers in the form of lower fees and more affordable services, reinvested into improving infrastructure and service quality, or primarily captured by FSPs as increased profits? Given that mobile money providers often rely heavily on customer transaction fees for revenue [3], and consumers already cite high costs as a major challenge [6], there is a potential risk that efficiency savings may not

automatically translate into benefits for end-users. Competitive market pressures and regulatory oversight may be necessary to ensure that the efficiency dividends of AI adoption are shared equitably and contribute to making financial services more affordable and accessible.

3.3 Impact on Customer Experience (CX)

AI has the potential to fundamentally reshape the customer experience in East African banking and payments. A key capability is hyper-personalization. By analyzing individual customer data, AI can enable FSPs to deliver highly tailored product recommendations, relevant communications, and customized service interactions.[21] This moves beyond generic offerings to meet specific customer needs and preferences, fostering stronger engagement and loyalty. Vodacom, for example, explicitly links its investments in AI and ML to providing a superior customer experience and building trust.[52]

AI-powered chatbots and virtual assistants further enhance CX by providing instant, 24/7 support for queries and transactions, reducing wait times and offering convenient self-service options.[26] The streamlining of processes, such as faster loan applications enabled by AI-driven credit scoring, also contributes significantly to customer convenience and satisfaction.[23]

Moreover, AI-driven insights allow FSPs to gain a deeper understanding of customer needs, pain points, and evolving expectations.[21] This understanding can inform the development of more relevant and user-centric financial products and services, shifting the relationship from purely transactional to potentially more advisory and value-driven. In a competitive landscape where customer expectations are increasingly shaped by seamless digital experiences in other sectors [53], leveraging AI to deliver superior CX can be a crucial differentiator for banks, MNOs, and fintechs alike.[37]

4. Navigating the Regulatory and Policy Landscape

The successful integration of AI into East Africa's financial sector is heavily dependent on the regulatory and policy environment. Governments and regulatory bodies across the region are grappling with how to foster innovation while managing risks associated with fintech and AI.

4.1 Fintech Regulation Overview (Tanzania & East Africa)

East African nations have established foundational regulatory frameworks for digital

financial services. Licensing regimes for telecommunications, payment service providers (PSPs), and fintech activities are in place, overseen by central banks and communications authorities (e.g., Bank of Tanzania (BOT) & Tanzania Communications Regulatory Authority (TCRA) in Tanzania; Central Bank of Kenya (CBK) & Communications Authority of Kenya (CA) in Kenya; Bank of Uganda (BoU), Uganda Communications Commission (UCC) & National Information Technology Authority – Uganda (NITA-U) in Uganda; Rwanda Utilities Regulatory Authority (RURA) in Rwanda).[67] Mobile money interoperability has been achieved in countries like Tanzania, facilitating seamless transactions across different providers.[19]

However, regulations often struggle to keep pace with rapid technological advancements. While basic mobile payments are generally covered, newer fintech activities like digital lending and cryptocurrency operations have faced evolving or sometimes unclear regulatory treatment. Tanzania, for instance, took a significant step by introducing its Fintech Regulatory Sandbox Regulations in 2023 (gazetted 2024), with applications opening in January 2025.[19] This sandbox allows eligible FSPs and fintech companies to test innovative solutions in a controlled live environment, temporarily exempt from certain BOT regulations for a testing period (initially 9 months, potentially extendable).[68] The aim is to facilitate innovation while allowing the BOT to gather insights for developing appropriate future regulations.[26] This "test and learn" approach is common globally for managing fintech innovation.[72] Notably, NMB Bank had launched its own sandbox initiative even earlier, in 2021.[20]

In contrast, Kenya adopted specific regulations for Digital Credit Providers (DCPs) in 2022, licensing 58 providers by mid-2024 and focusing on consumer protection, data privacy, and governance.[62] This followed a period where digital lending operated largely outside specific regulatory frameworks.[74] Uganda's approach is described as largely license-based and generally pro-innovation, though still evolving.[74] Tanzania had previously issued warnings against cryptocurrency trading due to its unregulated nature [74] but is now exploring the potential of a Central Bank Digital Currency (CBDC).[26]

Data protection is another critical regulatory area for AI. Kenya (2019), Uganda (2019), Tanzania (2022), and Rwanda (2021) have all enacted comprehensive Data Protection Acts.[19] These laws govern the collection, processing, storage, and cross-border transfer of personal data, establishing rights for data subjects and obligations for data controllers and processors. However, the effectiveness of these laws often depends on the maturity and capacity of the respective data protection authorities and the robustness of enforcement mechanisms, which can vary across the region. Concerns have been raised, for example, about the uncertainty surrounding the full

enforcement of Tanzania's Act.[19]

Finally, other regulations impact the operating environment for tech and fintech companies. Digital Services Taxes (DSTs) have been implemented in Kenya (1.5% on non-residents), Uganda (5% on non-residents), and Tanzania (2% on non-residents with no revenue threshold), while Rwanda applies standard VAT to digital services.[67] Additionally, Uganda and Tanzania have local ownership or public listing requirements for major telecommunications companies.[67] These varied fiscal and ownership regulations add layers of complexity for businesses operating across the East African region.

4.2 AI-Specific Policies and Government Initiatives

While general fintech and data protection regulations provide some relevant guardrails, specific policies addressing the unique aspects of AI are only beginning to emerge in East Africa.

Kenya stands out as a regional leader with the release of its first National Artificial Intelligence Strategy (2025–2030).[76] This comprehensive document outlines a vision for ethical, inclusive, and innovation-driven AI adoption, structured around pillars of governance, infrastructure, and data. It identifies strategic priority sectors, including financial services, healthcare, agriculture, and public administration.[76] The strategy emphasizes alignment with global norms, regional collaboration (referencing the AU's continental AI agenda and bodies like the EAC and Smart Africa), and future development of legal frameworks for AI governance and risk classification.[56] Kenya's participation in the International Network of AI Safety Institutes further signals its ambition in global AI governance.[77] This proactive strategy provides clearer direction but may also lead to earlier and potentially more stringent AI-specific regulations compared to its neighbours.

At the continental level, the African Union adopted a Continental AI Strategy in 2024, indicating high-level political recognition of AI's importance.[56] However, translating this into concrete national policies and regulations is an ongoing process across the continent, with only a few countries having established specific AI rules so far.[56] General recommendations for African governments include defining national AI visions, investing in foundational infrastructure and data governance, cultivating local talent, and utilizing adaptive regulatory tools like sandboxes.[78]

Analysis of early AI policy approaches in some African nations suggests a strong emphasis on economic growth and technological advancement, sometimes with less

initial focus on ethical considerations, equity, or broad stakeholder engagement beyond government and large tech players.[79] There is a growing call from researchers and civil society for more contextually relevant ethical frameworks, incorporating local values and addressing potential biases and inequalities proactively.[59]

Within the financial sector specifically, key regulators like the BOT and CBK are navigating AI's implications. While Tanzania's sandbox framework implicitly covers AI applications within fintech [68], and Kenya's CBK oversees technology use by licensed DCPs [62], explicit guidelines on responsible AI deployment – particularly concerning algorithmic bias in credit scoring, model transparency, and fairness – are largely absent.[26] Existing financial regulations tend to focus on broader principles of consumer protection, data privacy, market conduct, and financial stability.[73] There is an increasing recognition and call for central banks to issue more specific guidance on managing AI-related risks within the financial sector.[62] Regulatory sandboxes serve as valuable learning environments for regulators, but the transition to formal, AI-specific financial regulation is still in its early stages across East Africa.

The East African region currently displays a notable regulatory patchwork regarding fintech and AI. While foundational elements like data protection laws are becoming common [67], significant variations exist between Kenya, Tanzania, Uganda, and Rwanda in their approaches to licensing specific fintech activities [67], regulating digital credit providers [62], managing cryptocurrencies [74], imposing digital taxes [67], and formulating national AI strategies.[68] This regulatory fragmentation creates operational complexities and uncertainties for fintechs and AI solution providers aiming to operate across the region, potentially hindering the scalability of innovative solutions despite broader regional economic integration goals pursued through frameworks like the East African Community (EAC) and the African Continental Free Trade Area (AfCFTA).[9] Achieving greater regulatory coherence remains a challenge.

Furthermore, the contrasting approaches of Kenya and Tanzania illustrate different philosophies in governing emerging technologies. Kenya's development of a formal National AI Strategy [76] signifies a proactive, top-down approach, aiming to set a clear direction and signal intent to domestic and international stakeholders. This might attract investment seeking regulatory clarity but could also risk setting rules prematurely before the technology and its implications are fully understood. Tanzania's initial focus on a Fintech Regulatory Sandbox [68] represents a more reactive, bottom-up, "test and learn" methodology. This provides flexibility for innovators and learning opportunities for regulators in the near term but may prolong regulatory uncertainty regarding the eventual market rules. Both strategies aim to balance innovation promotion with risk mitigation, but they imply different timelines and

trade-offs for the development of the AI and fintech ecosystem.

Table 3: Regulatory and Policy Snapshot for AI & Fintech in East Africa (Tanzania, Kenya, Uganda, Rwanda) - 2025 Status

Regulatory Area	Tanzania	Kenya	Uganda	Rwanda
Fintech Licensing Authority	BOT, TCRA, BRELA [67]	CBK, CA [67]	BoU, UCC, NITA-U [67]	RURA [67]
Data Protection Act Status	Enacted (2022), enforcement uncertain [19]	Enacted (2019), operational [67]	Enacted (2019), operational [67]	Enacted (2021), operational [67]
Digital Lending Regs	General microfinance regs apply [73]; Sandbox for testing [68]	Specific DCP Regulations (2022), 58 licensed by mid-2024 [62]	Largely license-based, evolving [74]	Less specific detail available
Crypto Policy	Cautionary notices/ban previously [74]; Exploring CBDC [26]	Unregulated currently, proposals exist [74]	Less specific detail available	Less specific detail available
Digital Services Tax (DST)	2% on non-residents (no threshold) [67]	1.5% on non-residents [67]	5% on non-residents [67]	No specific DST, uses VAT [67]
AI Strategy/Policy	No dedicated national strategy yet; Focus via sandbox [68]	National AI Strategy (2025-2030) released [76]	Emerging use cases, policy developing [64]	Emerging use cases, policy developing [64]
Fintech Sandbox	BOT Sandbox launched (Apps	Less emphasis on formal sandbox, focus	Less specific detail available	Less specific detail available

	Jan 2025) [68]; NMB sandbox [20]	on licensing [62]		

(Note: Status based on latest available information in snippets, primarily reflecting 2023-2025 data/announcements. CBDC = Central Bank Digital Currency, DCP = Digital Credit Provider.)

5. Overcoming Barriers to AI Adoption

Despite the immense potential, the widespread adoption of AI in East Africa's financial sector faces several significant barriers that need to be addressed by policymakers, industry players, and development partners.

5.1 Data Availability, Quality, and Governance

AI systems thrive on data, yet Africa faces substantial data deficits. This includes gaps in fundamental public statistics (like censuses and household surveys) and limited digitization of government and business processes, resulting in a scarcity of large-scale, African-centric datasets suitable for training AI models.[36] The quality and representativeness of available data are often questionable. Models trained on incomplete or skewed data risk producing inaccurate or biased outcomes.[30] Algorithmic bias is a major ethical and practical concern, as AI systems can inadvertently learn and perpetuate historical inequalities present in the data, leading to discriminatory practices in areas like credit scoring or loan approvals.[30] The lack of diverse datasets, particularly those reflecting the nuances of local languages, cultures, and economic activities, further compounds this issue.[59]

Compounding these issues are concerns around data privacy and security. AI applications, especially those leveraging alternative data like mobile money records or even social media activity, process vast amounts of sensitive personal information.[30] While data protection laws are now in place across East Africa [67], their effective enforcement, coupled with building public trust in how data is collected and used, remains a challenge.[19] High-profile incidents, such as the lawsuit filed against Vodacom Tanzania regarding alleged data sharing with ChatGPT, underscore the tangible risks and the critical need for robust data governance frameworks, clear consent mechanisms, and strong cybersecurity measures to protect user data and maintain confidence in digital financial services.[33] Establishing clear national data governance frameworks is seen as a priority action for governments.[56]

5.2 Infrastructure Limitations

Sub-Saharan Africa currently possesses the least developed AI-ready infrastructure globally.[36] Foundational digital infrastructure, particularly reliable and affordable internet connectivity, remains a significant barrier, especially in rural areas where penetration lags far behind urban centers.[36] This digital divide directly impacts the ability to collect comprehensive data and deploy AI-powered services that require stable connectivity.[36] Infrastructure constraints, including weak mobile and internet penetration, limited access to formal identification, and underdeveloped digital payment rails, restrict the total addressable market for many fintech and AI solutions.[82] Tanzania, for example, faces challenges with inadequate infrastructure and relatively low smartphone penetration, particularly hindering digital transformation in rural economies.[84]

Beyond basic connectivity, deploying sophisticated AI models requires significant computational power and specialized infrastructure, such as high-performance data centers equipped with Graphics Processing Units (GPUs) and Tensor Processing Units (TPUs).[36] Access to such resources is limited and costly in the region. Furthermore, many traditional banks are hampered by legacy IT systems that are ill-suited for real-time data processing and agile deployment of modern AI applications.[66] Significant investments are therefore required, not just to bridge the basic digital divide, but also to build the specific, high-capacity infrastructure needed to support a thriving AI ecosystem. Initiatives like KCB's network upgrade [25] and Vodacom's system modernization [86] reflect this necessity.

5.3 Digital Literacy and Skills Gap

Effective adoption of AI requires capabilities on both the supply and demand sides. On the demand side, a lack of digital literacy among the general population can hinder the uptake and effective use of AI-driven financial services.[19] Users need basic skills to navigate digital interfaces, understand the services offered, and protect themselves online. Data from Tanzania indicates women, for example, reported lower confidence and a greater need for assistance when using mobile money services [3], highlighting potential gender disparities in digital literacy that need addressing.

On the supply side, there is a critical shortage of local talent with the specialized skills required to develop, deploy, manage, and govern AI systems. This includes expertise in data science, machine learning engineering, data analytics, and AI ethics.[64] Existing education systems often require substantial reform to meet the demands of the rapidly evolving digital economy.[64] This skills gap forces many organizations to rely on expensive expatriate talent or off-the-shelf solutions that may not be optimally suited to the local context. Building a robust pipeline of local AI talent through targeted

education, vocational training, and research programs is essential for sustainable and locally relevant AI development.[78]

5.4 Implementation Costs and ROI

The implementation of AI technologies involves significant financial investment. This includes the costs of acquiring or developing AI software, upgrading necessary hardware and infrastructure, training personnel, and ensuring ongoing maintenance and system updates.[40] These high upfront and recurring costs can be a major barrier, particularly for smaller local banks, microfinance institutions, or fintech startups operating in resource-constrained environments.[66] Demonstrating a clear and timely return on investment (ROI) is crucial to justify such expenditures.

Furthermore, the economic context of many African markets, characterized by lower average disposable incomes compared to developed regions, makes customer monetization more challenging for FSPs.[82] Achieving profitability often requires innovative business models with lower customer acquisition costs and services tailored to specific affordability levels.[82] The economic viability and scalability of AI solutions must therefore be carefully assessed within these market realities.

5.5 Ethical Concerns and Trust

Ethical considerations are paramount for the sustainable adoption of AI in finance. As highlighted previously, algorithmic bias poses a significant risk of unfairness and discrimination, potentially deepening existing societal divides.[26] The opaque nature of many complex AI models – often referred to as "black boxes" – makes it difficult to understand how decisions are made, eroding trust and hindering accountability.[62] There is a growing need for Explainable AI (XAI) techniques that can provide insights into algorithmic decision-making processes.[81]

Concerns about data privacy, misuse of personal information, and lack of informed consent are also major trust barriers.[30] Building and maintaining customer trust is fundamental, particularly in regions where historical trust in formal financial institutions may already be low.[82] Ensuring that AI is developed and deployed responsibly, adhering to ethical principles adapted to the African context, is not just a compliance requirement but a prerequisite for long-term user acceptance and the overall success of AI in the financial sector.[63]

These barriers to AI adoption are not isolated issues but are deeply interconnected. For instance, inadequate infrastructure [36] directly limits the ability to generate and access the large, diverse datasets needed for training robust AI models, thereby

exacerbating problems of data scarcity and potential bias.[58] This lack of quality local data and reliable infrastructure, in turn, hinders the practical training and development of local AI talent, making it difficult to build contextually relevant solutions.[64] The high costs associated with AI [40] make it challenging to fund the necessary upgrades in infrastructure and skills development programs. Furthermore, weak data governance practices [19] fuel ethical concerns regarding privacy and bias, which erodes user trust [82] and potentially limits the willingness of individuals and institutions to share the data that AI systems need to function effectively. Addressing this complex web of challenges necessitates a holistic and coordinated strategy involving simultaneous interventions across infrastructure development, data governance reform, education and skills building, ethical guideline creation, and targeted investment, rather than attempting to tackle each barrier in isolation.

The confluence of local data scarcity [36], significant skills gaps [64], and a consequent reliance on global technology platforms and foreign investment [87] creates a tangible risk of what some scholars term "algorithmic colonization" in Africa.[87] This refers to the potential scenario where AI systems deployed within East Africa are predominantly developed and controlled by external entities, trained on non-local data, and optimized for priorities that may not align perfectly with local needs and contexts. Such systems could inadvertently embed external biases [59], fail to capture local nuances accurately, and result in economic value being extracted from the region rather than fostering local innovation ecosystems and capacity. Mitigating this risk requires a strategic focus on building indigenous AI capabilities – strengthening local data infrastructure and governance, nurturing domestic talent pools, and supporting local AI research and startups – to ensure that AI development is driven by African needs and contributes equitably to the continent's socioeconomic transformation.

Table 4: Major Barriers to AI Adoption in East African Finance

Barrier Category	Specific Challenges	Impact on AI Adoption	Potential Mitigation Strategies
Data	Scarcity of local, high-quality data; Data silos; Algorithmic bias; Privacy concerns	Limits model accuracy & relevance; Perpetuates inequality; Erodes trust	Invest in data collection & digitization [36]; Promote data sharing standards; Develop bias detection/mitigation

			tools [81]; Strengthen data protection enforcement [63]
Infrastructure	Poor/costly connectivity (esp. rural); Lack of compute power (GPUs/TPUs); Legacy systems	Limits reach & feasibility of AI services; Increases deployment cost; Hinders real-time processing	Invest in digital public infrastructure (DPI) [56]; Promote cloud adoption [49]; Support modernization of core systems [86]
Skills & Literacy	Shortage of local AI talent (data science, ML); Low digital literacy among users	Hinders local innovation & management; Limits user uptake & effective use	Reform education curricula; Invest in AI training programs [78]; Scale digital literacy initiatives [92]; Foster academia-industry links
Cost & ROI	High implementation & maintenance costs; Difficult customer monetization; ROI uncertainty	Barriers for smaller FSPs; Limits scalability & experimentation	Explore public-private partnerships (PPPs) for infra/skills [78]; Develop cost-effective AI models; Focus on clear value propositions; Seek concessional finance [78]
Ethics, Trust, Reg.	Lack of transparency (XAI); Fairness concerns; Weak regulatory oversight for AI; Trust deficit	Hinders user adoption & regulatory approval; Risks harmful outcomes & reputational damage	Develop context-specific ethical AI guidelines [63]; Mandate transparency & audits [62]; Foster multi-stakeholder dialogue [63]; Use regulatory sandboxes [68]

6. AI in Action: Case Studies from East Africa

While challenges exist, various players in the East African financial ecosystem are actively experimenting with and deploying AI solutions. Examining these initiatives provides concrete examples of how AI is being applied and the different strategies being pursued by MNOs, banks, and fintechs.

6.1 MNOs Leveraging AI

Given their dominance in mobile money and vast customer base, MNOs are strategically positioned to leverage AI.

- **Vodacom Tanzania (M-Pesa):** As a leading MNO and mobile money provider, Vodacom Tanzania is actively investing in AI and ML capabilities. Their stated goals are to improve service delivery, enhance security and data privacy for customers, and ultimately maintain trust.[52] Specific applications include using ML for advanced Customer Value Management (CVM) to deliver personalized offers and improve customer retention.[52] They also utilize their Big Data capabilities for sophisticated fraud detection.[49] While the group-wide AI chatbot, TOBi, is heavily used elsewhere [49], its specific integration level in Tanzania is evolving alongside core system upgrades. Vodacom is undertaking major modernization of its critical systems, including the Charging System and the M-Pesa platform itself, moving towards modern, cloud-native architectures designed to better support AI and ensure resilience.[86] This infrastructure upgrade is a crucial enabler for deploying more advanced AI functionalities. Vodacom is also using its platform to launch new financial services, partnering with Sanlam Investments to offer the M-Wekeza mobile investment product via M-Pesa.[52] However, the company has also faced scrutiny regarding data practices, highlighted by a lawsuit concerning alleged unauthorized sharing of user data with ChatGPT, emphasizing the critical importance of robust privacy safeguards in the AI era.[33] Vodacom's overall strategy appears focused on using AI to solidify its platform dominance by enhancing core services (CX, security, personalization) and expanding into adjacent financial offerings, leveraging its massive user base and transaction data pool.
- **Other MNOs (Tigo, Airtel):** Tigo Pesa and Airtel Money are significant players in the mobile money markets of Tanzania [19] and neighboring countries like Uganda.[40] In Uganda, both MTN Mobile Money (related to Vodacom group) and Airtel Money are reportedly embracing AI to drive financial inclusion and improve customer service, including the use of AI-powered chatbots.[40] While detailed specifics on AI initiatives by Tigo and Airtel *in Tanzania* are less prevalent in the provided

materials, the competitive pressures and opportunities presented by AI suggest they are likely pursuing similar strategies focused on enhancing their mobile money platforms, improving customer engagement, and bolstering security, mirroring trends seen with their regional counterparts and competitors like Vodacom. MNOs generally are recognized as key players shaping the fintech landscape through their mobile money operations.[93]

6.2 Banks Embracing Digital Transformation & AI

Traditional banks are increasingly integrating digital technologies and exploring AI to remain competitive and expand their reach.

- **NMB Bank (Tanzania):** Recognized as a pioneer in open banking within Tanzania, NMB launched its own fintech sandbox initiative back in 2021, predating the official BOT sandbox.[20] This early move signals a proactive stance towards innovation and collaboration with fintechs. NMB is actively involved in the national dialogue around digital banking transformation [15] and is frequently cited alongside CRDB as a major Tanzanian bank experimenting with digital strategies.[19] Their openness to sandboxing suggests a potential pathway for integrating AI solutions developed by third parties or through internal experimentation.
- **CRDB Bank (Tanzania):** As the country's largest financial service provider by some measures [16], CRDB plays a crucial role in the sector. The bank emphasizes its commitment to digital transformation and innovation as core to its strategy of serving stakeholders and transforming lives.[16] Like NMB, it is actively engaged in digital transformation efforts.[19] While specific AI deployments are not detailed, its market leadership position and focus on innovation imply that AI is likely part of its strategic considerations for enhancing efficiency, customer service, and risk management. Historical analysis noted instances where its e-banking terms might have disadvantaged customers, underscoring the ongoing need for robust consumer protection frameworks as digital services evolve.[17]
- **Equity Bank (Kenya/Regional):** Equity Bank provides a clear example of leveraging advanced analytics, likely incorporating AI/ML, for core banking functions to drive financial inclusion. The bank utilizes predictive analytics, analyzing alternative data sources such as mobile money transactions and potentially social media activity, to assess the creditworthiness of smallholder farmers and micro-entrepreneurs who may lack traditional collateral or credit scores.[21] This AI-driven approach streamlines loan processing, reduces approval times, and expands access to credit for underserved segments.[21] Equity has a strong focus on digital channels, offering services through its Equitel platform and mobile apps, and has received awards for mobile banking and product

innovation.[22] Their strategy demonstrates how banks can adopt AI not just for efficiency but as a core tool for achieving inclusion goals.

- **KCB Bank (Kenya/Regional):** KCB's recent significant investment in upgrading its Data Center Interconnect (DCI) network infrastructure using Huawei's advanced optical solutions highlights a different but equally crucial aspect of AI readiness.[25] This investment aims to handle massive data volumes securely and reliably, support big data mining and intelligent payment systems, and ensure the stability required for full digital transformation.[25] While not a direct AI application itself, this foundational infrastructure enhancement is a prerequisite for deploying sophisticated, data-intensive AI models effectively and at scale. It positions KCB to potentially leverage AI more powerfully in the future.

6.3 Fintech Innovators

A growing ecosystem of fintech startups is using AI to target specific gaps in the financial market.

- **Tala:** Operating across several emerging markets, potentially including East Africa, Tala exemplifies the use of AI for financial inclusion. The company leverages alternative data extracted from users' smartphones, combined with AI/ML algorithms, to generate credit scores and provide instant microloans to individuals lacking formal credit histories.[44] Tala also contributes to building formal financial identities by reporting positive repayment behavior to Credit Reference Bureaus.[45]
- **Manka (Tausi Africa - Tanzania):** This Tanzanian fintech startup developed an AI credit scoring platform explicitly designed to mitigate bias.[30] By focusing on transactional patterns and affordability metrics while consciously excluding potentially discriminatory metadata like gender or race, Manka demonstrates local innovation addressing the critical ethical challenges associated with AI in lending.[30]
- **Other Examples:** The region hosts numerous other fintechs applying AI and digital technologies. In Kenya, **Apollo Agriculture** uses AI for farmer creditworthiness assessment and delivering data-driven agricultural advisory services [35], while **Amini** leverages AI and satellite imagery for farm-level insights and climate adaptation strategies.[35] Other East African players mentioned include **Nala** (cross-border payments), **LipaLater** (buy-now-pay-later), and **ImaliPay** (gig worker financial services).[82] In Tanzania, fintechs like **Azampay** (payments), **Mipango** (financial management), and **Lokofin** (savings) contribute to the ecosystem.[20] This diversity indicates AI is being applied across various financial niches.

Observing these case studies reveals distinct strategic approaches to AI adoption. MNOs like Vodacom are primarily using AI to enhance and defend their dominant mobile money platforms, focusing on customer experience, retention, security, and launching adjacent services built upon their existing infrastructure and data.[49] Banks exhibit varied strategies: some, like Equity, are integrating AI into core functions like credit scoring to transform their business models and expand reach [21]; others, like KCB, are prioritizing foundational infrastructure upgrades necessary for future AI deployment [25]; while Tanzanian banks like NMB and CRDB appear focused on broader digital transformation and potentially leveraging sandboxes for innovation.[19] Fintechs, typically leaner and more focused, are using AI to disrupt specific market segments or address particular pain points, most notably alternative credit scoring.[30] This divergence suggests that AI's role and impact will be shaped by the specific strategic objectives, existing capabilities, and market position of each type of player within the East African financial ecosystem.

Furthermore, the significant investments being made by players like KCB [25] and Vodacom [86] in modernizing their core IT and network infrastructure underscore that realizing the full potential of advanced AI applications is not just about algorithms, but also requires substantial underlying technological foundations. Those institutions capable of making these significant infrastructure investments may gain a crucial advantage in deploying more sophisticated, real-time, and data-intensive AI capabilities faster than competitors reliant on older legacy systems [66] or smaller fintechs lacking the capital for such large-scale upgrades. Infrastructure readiness, therefore, emerges as a critical prerequisite and a potential key differentiator in the race to leverage AI effectively in East African finance.

7. Projecting the Future: AI-Driven Finance in East Africa (2025-2035)

Looking ahead over the next 5 to 10 years, the integration of AI into East Africa's payments and banking landscape is poised to accelerate, driven by the region's unique characteristics and evolving technological capabilities. Several key trends are likely to shape this future:

7.1 Continued Growth of Core AI Applications

The current focus areas for AI – alternative credit scoring, fraud detection, and customer service automation – are expected to see wider adoption and increasing sophistication. As FSPs gain more experience and data accumulates, AI models for credit scoring will likely become more refined, potentially incorporating a broader range of alternative data sources and improved techniques for mitigating bias,

especially as ethical awareness grows and regulatory frameworks mature.[62] The proven benefits of AI in expanding access to credit [21] and enhancing security [30] provide strong incentives for continued investment in these areas. Similarly, AI-driven fraud detection systems will become more advanced, adapting to new threats in real-time. Automation in customer service through chatbots and virtual assistants will likely become standard, handling a greater volume and complexity of interactions.

7.2 Rise of Personalized Finance and Financial Health Tools

As basic financial access through mobile money reaches saturation in key markets, the strategic focus is likely to shift towards leveraging AI to deepen financial relationships and improve customer financial health. This addresses the observed 'inclusion paradox' where high access doesn't necessarily equate to financial well-being [Insight 1.2, Insight 3.1]. We can anticipate significant growth in AI-powered tools delivered primarily via mobile channels, offering personalized financial advice, automated savings and budgeting features, tailored insurance products (micro-insurance), and accessible micro-investment platforms.[40] Examples like Vodacom's M-Wekeza [52] are early indicators of this trend. The success of these offerings will depend heavily on FSPs' ability to build user trust, ensure data privacy, and work alongside initiatives to improve overall financial and digital literacy levels across the population.

7.3 Increased Bank-Fintech-MNO Collaboration and Competition

The boundaries between traditional banks, MNOs, and fintech startups will continue to blur, leading to a complex interplay of collaboration and competition. Strategic partnerships leveraging complementary strengths – such as a bank's capital and license, a fintech's technological agility and niche focus, and an MNO's extensive reach and customer data – are expected to become more common.[28] These collaborations can accelerate innovation and expand market reach more effectively than players operating in isolation. At the same time, competition will intensify. MNOs may use AI to further expand into traditional banking territory (credit, savings, insurance) beyond basic payments.[1] Banks will counter by enhancing their digital platforms and using AI to improve customer experience and efficiency, aiming to rival the agility of fintechs.[27] Fintechs will continue to use AI to disrupt specific verticals. This dynamic environment may also drive further market consolidation through mergers and acquisitions, particularly among fintechs seeking scale or broader capabilities.[28]

7.4 Evolving Regulatory Landscape

Regulators across East Africa will face increasing pressure to adapt frameworks to the realities of AI-driven finance. The current phase of exploration, often facilitated by regulatory sandboxes like Tanzania's [68], will likely transition towards the development of more concrete guidelines and regulations specifically addressing AI.[26] Key focus areas will include data governance (privacy, security, cross-border flows), enhanced consumer protection measures tailored to digital risks, cybersecurity standards for AI systems, and requirements for algorithmic transparency and fairness, particularly in high-stakes applications like credit scoring.[62] Central banks are expected to issue specific guidance on the use of AI in regulated financial activities. While regional harmonization efforts through bodies like the EAC may progress slowly, driven by initiatives like the AfCFTA, national priorities and varying levels of regulatory capacity will likely ensure continued diversity in approaches across the region. Kenya's National AI Strategy provides a potential template that other East African nations might adapt.[76]

7.5 Infrastructure and Skills Development as Key Enablers

The pace and inclusivity of AI adoption in East African finance will be fundamentally constrained or enabled by progress in addressing foundational gaps. Sustained public and private investment in expanding affordable and reliable digital infrastructure – including broadband connectivity, especially in rural areas, and the development of local data centers and computing capacity – will be critical.[36] Equally important will be concerted efforts to build local AI talent pipelines through education reform, specialized training programs, and fostering stronger links between academia and industry.[64] Public-private partnerships are likely to be essential for mobilizing the necessary resources for both infrastructure and skills development.[56] Success in these areas will largely determine how quickly and effectively East Africa can harness the benefits of AI in its financial sector. Ongoing initiatives like the World Bank-funded Digital Tanzania Project [96] and collaborations like the Huawei/Vodacom DigiTruck for digital skills [92] represent steps in this direction.

The future evolution strongly suggests that the mobile money platform will serve as the central battleground and primary gateway for AI-driven financial services in East Africa. Building on its existing dominance and the current reliance of AI applications on mobile data [Insight 2.1], MNOs will inevitably use AI to defend their turf and expand into more sophisticated financial services. Banks will need to leverage AI either to seamlessly integrate with these mobile ecosystems or to build compelling digital alternatives that can compete effectively. Fintechs will continue to innovate using AI to exploit niches within or adjacent to the mobile money infrastructure.

Success in this future landscape will likely belong to those players who can most effectively utilize AI to enhance value, security, and user experience within this pervasive mobile-centric paradigm, while adeptly navigating the inherent challenges of MNO data access, interoperability, and regulation. For the vast majority of consumers, their primary interaction with AI in finance will occur through their mobile devices, making the mobile platform the critical interface shaping the future.

As AI becomes more deeply embedded in crucial financial decisions affecting individuals' access to credit, insurance, and economic opportunities, the imperative for responsible AI deployment will only intensify.[30] Early warnings about potential bias, data privacy breaches, or the risk of creating debt traps [30] are likely to catalyze greater regulatory scrutiny and demand for ethical governance frameworks. The future trajectory will involve a continuous negotiation between the drive for innovation and the need to ensure that AI systems are fair, transparent, explainable, and accountable. This is not merely a compliance issue but fundamental to building and maintaining public trust. Those countries and institutions within East Africa that successfully embed principles of responsible AI into their strategies and operations will likely build more sustainable, trusted, and ultimately more impactful AI-driven financial ecosystems, avoiding the pitfalls that could otherwise exacerbate inequalities or lead to systemic harm.

8. Regional Context: East Africa in the Sub-Saharan Landscape

While this report focuses on Tanzania and East Africa, understanding the broader Sub-Saharan African (SSA) context provides valuable perspective on the region's unique trajectory and shared challenges in adopting AI in finance.

8.1 Comparing Fintech/AI Adoption Drivers

The drivers and pathways for fintech and AI adoption vary across SSA's major regions:

- **East Africa (EA):** The defining characteristic is the exceptionally high penetration and usage of mobile money, particularly in Kenya and Tanzania.[1] This creates a unique foundation dominated by MNOs and generates vast amounts of alternative transaction data, making AI applications like alternative credit scoring and mobile payment innovation particularly prominent.[21] Kenya has also established itself as a leading regional tech hub with proactive government strategies, including a national AI policy.[35]
- **West Africa (WA):** This region, dominated economically by Nigeria, also experiences significant mobile money growth, although historically it started later than EA.[1] Nigeria is a major continental fintech hub, attracting substantial venture

capital investment, especially into payments and digital lending startups.[28] The sheer market size, a young, rapidly urbanizing population, and a vibrant, competitive startup ecosystem are key drivers. AI use cases are emerging, often linked to mobile money platforms (e.g., in Nigeria and Ghana [40]), and competition is notably fierce, with players like Wave challenging incumbents with disruptive pricing models.[27]

- **Southern Africa (SA):** This region generally features a more developed and mature traditional banking sector compared to EA and WA.[1] Consequently, mobile money adoption, while present, is lower as a larger portion of the population has access to formal bank accounts.[1] South Africa is the continent's most advanced economy and a major fintech hub.[82] Fintech growth here is often driven by addressing inefficiencies within the traditional banking system, enhancing digital payment options, and providing alternative lending solutions.[66] The interaction and competition between established banks and fintechs are central dynamics, and AI adoption trends are being closely monitored within the banking sector.[66] The availability of richer traditional banking data may offer different avenues for AI compared to the mobile-data focus in EA.

This comparison highlights that while AI is a continent-wide phenomenon, its specific manifestations and adoption pathways are shaped by the pre-existing financial infrastructure and market dynamics of each region. EA's journey is intrinsically tied to its mobile money legacy.

8.2 Regulatory Approaches and Challenges

Across SSA, regulators are navigating the complex task of overseeing fintech and AI innovation. Regulatory sandboxes have become a common tool for allowing experimentation in a controlled environment.[72] Efforts to regulate specific verticals like digital lending are underway in key markets like Kenya and Nigeria.[30] Data protection legislation is increasingly prevalent, although implementation effectiveness and enforcement capacity vary significantly.[19] Kenya's national AI strategy [76] represents one of the more formalized approaches on the continent thus far. Regional bodies are promoting harmonization, but progress is often slow due to differing national priorities and legal systems.[66]

Despite these efforts, common challenges persist across the continent. Foundational infrastructure gaps – including connectivity, power, and digital ID systems – remain a major constraint.[36] Data scarcity, poor data quality, and inadequate data governance frameworks hinder the development of effective and unbiased AI models.[36] A shortage of skilled AI professionals and broader digital literacy gaps impede both development

and adoption.[64] Access to funding, particularly for early-stage ventures, remains challenging and has faced volatility mirroring global trends.[28] Navigating fragmented and rapidly evolving regulatory landscapes creates significant operational hurdles for businesses, especially those aiming for pan-African scale.[28] Cybersecurity threats are a constant concern [82], and building and maintaining customer trust in digital financial services is an ongoing process.[82] Ethical considerations surrounding AI, particularly bias, fairness, transparency, and data privacy, are universal concerns requiring context-specific solutions.[30] While East Africa shares these broad challenges, its high reliance on mobile money presents unique nuances, particularly concerning MNO data governance and the specific infrastructure needs of a mobile-first ecosystem.

8.3 Investment and Innovation Ecosystems

Fintech consistently attracts the largest share of venture capital funding in Africa, although the sector experienced a significant contraction in investment volumes from 2022 onwards, reflecting global market corrections.[28] Nigeria, South Africa, Kenya, and Egypt typically dominate as the primary destinations for fintech investment.[82] There has been a noticeable shift in funding towards more mature startups and specific verticals like digital lending and non-commoditized payments (e.g., merchant acquiring, cross-border payments), which attracted the bulk of funding in recent years.[28]

Innovation hubs are clustered in these key markets. East Africa, particularly Nairobi, Kenya, is renowned for its pioneering role in mobile money (M-Pesa) and continues to foster a vibrant tech ecosystem.[4] West Africa, led by Lagos, Nigeria, boasts a highly dynamic environment with numerous startups tackling payments and lending at scale.[100] Southern Africa, centered around Johannesburg and Cape Town, has a mature fintech scene characterized by strong interactions with the established banking sector.[66] AI-driven innovation is emerging across these hubs, often tailored to address specific local challenges in sectors like agriculture, healthcare, and finance.[35] Increasingly, partnerships between different types of players (banks, MNOs, fintechs) and market consolidation through M&A are becoming prominent features of the landscape.[28] East Africa, while a significant innovation center, faces intense competition for investment and talent from Nigeria and South Africa. The nature of innovation also tends to reflect the regional starting points – heavily mobile-focused in EA, large-scale payment/lending solutions in WA, and often bank-integrated solutions in SA.

These regional differences suggest potentially divergent pathways toward AI maturity in the financial sector across Sub-Saharan Africa. East Africa's trajectory appears

deeply intertwined with leveraging its unique mobile money infrastructure and the associated alternative data. West Africa, particularly Nigeria, seems driven by the scale of its market and the dynamism of its fintech sector focusing on payments and lending solutions for a large, rapidly digitizing population. Southern Africa's path likely involves a more direct interplay between its established banking sector and fintech innovators, possibly leveraging richer traditional data sources alongside digital advancements, contingent on overcoming legacy system challenges. While all regions grapple with similar macroeconomic headwinds and structural challenges like infrastructure and skills gaps, these distinct starting points and ecosystem characteristics imply that the speed, focus areas, and specific manifestations of AI adoption may differ across these major regions in the coming years.

Consequently, while all SSA regions share vulnerabilities – infrastructure deficits, human capital constraints, funding volatility [28] – their primary opportunities for leveraging AI in finance appear differentiated. East Africa's standout opportunity lies in deeply embedding AI within its world-leading mobile money ecosystem to create sophisticated, mobile-first financial services that deepen inclusion beyond basic payments. West Africa's major opportunity stems from the sheer scale of its markets (especially Nigeria) and the potential for AI to enable its dynamic fintech sector to deliver payment and lending solutions efficiently to millions. Southern Africa's opportunity may reside in leveraging its more mature banking infrastructure and potentially richer data sets (both traditional and digital) to deploy complex AI applications, potentially leapfrogging certain developmental stages if incumbents can successfully modernize and collaborate effectively with fintechs. Recognizing these shared vulnerabilities alongside differentiated opportunities is key to understanding the comparative landscape of AI in finance across the continent.

Table 5: Comparative Overview of AI in Finance - East vs. West vs. Southern Africa

Characteristic	East Africa (esp. KE, TZ)	West Africa (esp. NG, GH)	Southern Africa (esp. ZA)
Dominant Financial Infra	Mobile Money (Very High Penetration) [1]	Mobile Money (Growing), Large Unbanked Pop. [1]	Traditional Banks (Higher Penetration), Mobile Money (Lower) [1]

Key Fintech Hubs	Nairobi (KE) [35]	Lagos (NG) [82]	Johannesburg, Cape Town (ZA) [82]
Primary AI Drivers	Leverage Mobile Money Data, Financial Inclusion [21]	Market Scale, Payments/Lending Innovation, Inclusion [100]	Bank Modernization, Efficiency, Fintech Competition [66]
Key AI Focus Areas	Alt. Credit Scoring, Mobile CX, Fraud (Mobile) [31]	Payments, Digital Lending, Scale Operations [30]	Bank Process Automation, Risk Mgmt, Fintech Integration [66]
Regulatory Maturity	Evolving; KE AI Strategy [76]; TZ Sandbox [68]	Evolving; NG/KE Lending Regs [30]; Active Fintech Reg. [100]	More Mature Banking Regs; Evolving Fintech/AI Regs [66]
Major Challenges	Infra Gaps (Rural), Data Governance (MNO), Skills [36]	Scale vs. Infra, Funding Volatility, Regulation [28]	Legacy Systems, Skills Gap, Bank-Fintech Dynamics [66]

(Note: Pop. = Population, Alt. = Alternative, Mgmt = Management. Examples based on regional generalizations from snippets.)

9. Strategic Recommendations and Conclusion

The integration of Artificial Intelligence holds immense promise for revolutionizing the payments and banking sector in Tanzania and East Africa, offering pathways to deepen financial inclusion, enhance operational efficiency, and deliver superior customer experiences. However, realizing this potential requires strategic action from all stakeholders to navigate the significant challenges inherent in the region's unique context.

9.1 For Financial Service Providers (Banks, MNOs, Fintechs):

- **Prioritize Data Governance and Quality:** Invest in robust systems for collecting, managing, and governing data, particularly the alternative data derived from mobile platforms. Ensure data accuracy, address potential biases proactively, and implement strong privacy-preserving techniques to build user trust.
- **Develop Local AI Talent:** Address the skills gap by investing in internal training

programs, partnering with local universities and technical colleges, and creating initiatives to attract and retain AI professionals within the region.

- **Embrace Strategic Collaboration:** Recognize that no single player type holds all the keys. Foster partnerships between banks, MNOs, and fintechs to leverage complementary strengths – combining capital, licenses, reach, data, and technological agility – to accelerate innovation and market access.[28]
- **Embed Responsible AI Principles:** Adopt ethical AI frameworks from the outset of development and deployment. Focus on fairness, transparency (explainability), accountability, and robust consumer protection, particularly in sensitive areas like credit scoring and automated decision-making.[63]
- **Modernize Core Infrastructure:** Banks and MNOs must continue investing in upgrading legacy systems and building scalable, resilient infrastructure capable of supporting data-intensive AI applications and real-time processing.[25]
- **Focus on Local Needs:** Tailor AI solutions to address the specific challenges and opportunities within the East African context, particularly focusing on bridging the financial health gap and designing services accessible to populations with varying levels of digital literacy.

9.2 For Policymakers and Regulators:

- **Develop Clear and Adaptive Frameworks:** Move towards clear national AI strategies (like Kenya's [76]) and fintech regulations that provide certainty while remaining flexible enough to adapt to rapid technological change. Balance enabling innovation with mitigating risks like bias and consumer harm.[63]
- **Invest in Digital Public Infrastructure (DPI):** Prioritize and fund the development of foundational DPI, including universal, affordable broadband connectivity (especially rural), robust digital identity systems, and interoperable payment platforms, as these are critical enablers for AI.[36]
- **Strengthen Data Protection and AI Governance:** Ensure effective enforcement of existing data protection laws and develop specific guidelines for the ethical use of AI in finance, addressing data privacy, security, and algorithmic transparency.[62]
- **Promote Digital and Financial Literacy:** Implement large-scale programs to enhance digital and financial literacy across the population, empowering users to engage safely and effectively with AI-driven financial services.[64]
- **Foster Ecosystem Collaboration:** Create platforms and incentives for collaboration between industry players, academic institutions, and government agencies to build a cohesive AI ecosystem, share knowledge, and address common challenges.
- **Address Algorithmic Bias:** Actively promote and potentially mandate measures to address algorithmic bias, such as requiring regular audits of AI models used in

financial decision-making, promoting diverse data sets, and encouraging the use of fairness-aware algorithms.[62]
- **Support Regional Harmonization:** While respecting national sovereignty, work through regional bodies like the EAC to harmonize regulations where feasible, particularly concerning data flows, licensing, and consumer protection standards, to facilitate cross-border fintech and AI deployment.[9]

9.3 For Investors:

- **Adopt a Long-Term Perspective:** Recognize the significant long-term growth potential of AI in East African finance, looking beyond recent global funding slowdowns and macroeconomic headwinds.[28]
- **Identify Emerging Opportunities:** Look beyond basic payments and explore investment opportunities in AI applications driving deeper financial inclusion, such as alternative lending, insurtech, personalized financial management, and RegTech.
- **Assess Responsible AI Practices:** Evaluate potential investees not only on their technology and market potential but also on their commitment to responsible AI principles, robust data governance, ethical practices, and local talent development.
- **Support Foundational Elements:** Consider investments that contribute to strengthening the underlying ecosystem, including infrastructure development, data analytics capabilities, and AI skills training initiatives.

9.4 Conclusion

East Africa stands at a pivotal moment. The region's unparalleled leadership in mobile money provides a unique springboard for leveraging Artificial Intelligence to address persistent challenges in financial inclusion and market efficiency. AI offers the potential to move beyond basic access towards genuine financial health, streamline operations, enhance security, and create highly personalized customer experiences.

However, the path forward is complex. Successfully harnessing AI's benefits requires navigating a minefield of challenges: bridging significant gaps in data quality and governance, overcoming infrastructural limitations, building critical digital and AI skills, managing implementation costs, and establishing robust ethical frameworks to ensure fairness and maintain trust. The mobile-first nature of the ecosystem presents both distinct advantages in terms of data availability and specific hurdles related to MNO dominance and connectivity.

The next 5 to 10 years will be crucial. The trajectory will be shaped by the strategic

choices made by banks, MNOs, and fintechs as they compete and collaborate, and by the ability of policymakers and regulators to create an enabling environment that fosters innovation while safeguarding against risks. A concerted, multi-stakeholder effort – involving investment in infrastructure and skills, commitment to responsible innovation, and adaptive regulation – is essential. If East Africa can successfully navigate these complexities, it has the potential not only to transform its own financial landscape but also to offer valuable lessons in leveraging AI for inclusive development in a mobile-first world. The future of finance in the region will undoubtedly be intelligent, but ensuring it is also inclusive, ethical, and sustainable requires deliberate action today.

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