CHAINTUM
RESEARCH

BLOCKCHAIN: THE SILVER BULLET TO DRIVE FINANCIAL INCLUSION IN AFRICA

A CHAINTUM RESEARCH WHITEPAPER
IN COLLABORATION WITH
THE BLOCKCHAIN ASSOCIATION OF KENYA (BAK)

FINANCIAL INCLUSION

David Otieno

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Realizing the Blockchain Potential in Africa

Chaintum Research's core objective has been to help realize the potential of blockchain and cryptocurrency in advancing overarching social and economic objectives across Africa. A genuine necessity exists to dispel the notion that blockchain is merely a "buzzword." it holds a transformative potential for the continent. Instead, the existing information must be more actionable or less technical for stakeholders to grasp. Consequently, our organization has been dedicated to ensuring that our research and insights are accessible and comprehensible to our members, bridging the gap between complex technology and practical understanding..

Thus, a genuine necessity exists to dispel the notion that blockchain is merely a "buzzword."

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Foreword - Prof. Bitange Ndemo

As technology continues to evolve, so too must our understanding of its potential to shape the future of finance, particularly in Africa. This White Paper explores the dynamic landscape of cryptocurrency and blockchain technology within the continent, presenting a comprehensive analysis of key areas where innovation intersects with financial inclusion, regulation, and security.

African governments stand at a critical juncture where they must define clear standards for the regulation of cryptocurrencies, ensuring that these emerging assets are integrated into existing financial frameworks with due diligence and transparency. Moreover, fostering research and development in this field is imperative to unlock the full potential of digital finance and mitigate associated risks.

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One promising avenue for enhancing financial inclusion is the utilization of mobile-based crypto solutions, leveraging USSD technology to reach underserved communities with limited access to traditional banking services. By harnessing the ubiquity of mobile devices, these solutions have the power to revolutionize financial accessibility and empower individuals across the continent.

Furthermore, the convergence of blockchain technology with digital finance trends such as QR code payment patterns and crypto asset-management wallets presents unprecedented opportunities to bridge the gap between traditional and decentralized finance. These innovative solutions have the potential to foster greater financial interoperability and efficiency on a global scale.

In parallel, the advent of Central Bank digital currencies (CBDCs) in select African countries represents a significant step towards addressing the challenges faced by cryptocurrency users, particularly in terms of depositing funds in local banks or mobile money providers. CBDCs offer a hybrid approach that combines the benefits of digital currencies with the stability and oversight of traditional monetary systems. Moreover, blockchain technology holds immense promise in providing secure digital identity solutions for individuals without traditional banking credentials, thereby facilitating greater financial inclusion and empowerment. By establishing robust and transparent cross-border payment channels, the integration of blockchain into financial infrastructures can further enhance security and efficiency in international transactions.

However, realizing the full potential of blockchain and cryptocurrencies in Africa necessitates a concerted effort to educate and raise awareness among stakeholders. Only through comprehensive education initiatives can we foster widespread adoption and ensure that the benefits of these technologies are equitably distributed across society.

This White Paper underscores the transformative potential of blockchain and cryptocurrency in shaping the future of finance in Africa. By embracing innovation, fostering regulatory clarity, and promoting education, we can harness the power of technology to build a more inclusive and resilient financial ecosystem for generations to come.

Foreword - David Otieno

I have witnessed the cryptocurrency and blockchain space grow in Africa. As an engineer, my knack for problem-solving drew me to this technology. I realized that blockchain's decentralization and transparency capabilities can eliminate some inherent issues that have been plaguing us for centuries. That is why I dedicated my time to research and contribute to thought leadership around the space.

The evolution of blockchain and cryptocurrencies in Africa reflects a significant transformation. Initially marked by government-issued ban notices, the narrative has shifted towards regulatory considerations, indicating a growing recognition of the technology's potential. Blockchain-based startups have proliferated, facilitating cross-border remittances, USSD-based money transfers, digital identification, circular economy initiatives, and loans/microloan services. Sectors such as agriculture and real estate have embraced blockchain implementations. Notably, a vibrant community of blockchain and crypto enthusiasts has emerged on platforms like WhatsApp, Telegram, Twitter, and Discord.

This represents a unique phenomenon where Africans exhibit not just a passion but a determined commitment to ensuring the success of blockchain on the continent.

This represents a unique phenomenon where Africans exhibit not just a passion but a determined commitment to ensuring the success of blockchain on the continent. Despite initial challenges, including crypto scams and misconceptions about crypto being synonymous with blockchain, the past decade has seen remarkable achievements. Various stakeholders, spanning policy development, community management, development, startup incubation, education, awareness, and research, have contributed to this positive trajectory, instilling hope for continued progress.
I have delved deeply into blockchain's profound social and economic potential within the continent through my contributions to numerous articles opinions in continental and regional news outlets, and advisory roles for international entities. In doing so, I have consistently conveyed my perspectives on how this technology is not only influencing but, in some cases, disrupting certain socio-economic facets for want of a more precise term.

Fast forward, the blend of experience and interest that has led to this research is nothing short of a beautiful journey of continual learning and unlearning. Truly, my initial anticipation of the technology's potential to positively transform Africa is gradually unfolding before us. Blockchain is not merely disrupting the status quo but strengthening our socio-economic systems.

Understanding the interweave between blockchain and socio-economic implications is my broader objective and that of Chaintum Research. This analysis is underpinned by solid evidence and findings revolving around the African crypto and blockchain space. It also uses selective quotes from industry leaders and professionals to support its claims. This research provides a crisp and targeted framework for insurgents and established players to comprehend the current change state.

Introduction

The United Nations G20 High-Level Principles for Digital Financial Inclusion (DFI) include:

- Promoting a digital approach to financial inclusion.
- Balancing innovation and risk for DFI.
- Establishing a proportionate regulatory and legal structure for DFI.
- Growing the digital financial services infrastructure ecosystem.
- Developing responsible digital financial practices for consumer protection.
- Improving digital and financial literacy and awareness.
- Identifying customers for Digital Financial Services.
- Monitoring digital DFI progress.[1]

In Satoshi's whitepaper: **Bitcoin: A Peer-to-Peer Electronic Cash System -** He denoted that Internet commerce depends significantly on financial institutions for electronic payments. However, this trust-based paradigm has inherent limitations, such as the inability to perform non-reversible transactions. Besides, mediation fees increase transaction size and reduce small casual transactions. Thus, he envisioned a blockchain that is based on a decentralized, transparent, and trustless system. The Bitcoin blockchain aimed to serve as a distributed ledger, recording all transactions immutably.

That said, CV VC in its 2021 report on "THE AFRICAN BLOCKCHAIN REPORT" reiterated that while the African blockchain ecosystem is booming and crypto usage is increasing, data and insights on blockchain-related activities are dispersed and inadequately disseminated.[2] While that is the case, there has been minimal information on how cryptocurrency and blockchain-based innovations can drive financial inclusion in Africa.

The report combines the UN's G20 High Level Principles for Digital Financial Inclusion (DFI) and Satoshi's vision with data from research papers, industrial publications, news outlets, and expert opinions. It aims to delineate how blockchain can empower both unbanked and underbanked communities across Africa.

Blockchain as the Silver Bullet to Drive Financial Inclusion in Africa

Based on this phenomenon, there are four research gaps that the paper wishes to address:

1. It discusses whether taxation should come before regulation and legitimization effects on market stability and overall economic development.
2. It examines whether blockchain-based financial solutions are accessible based on the need for mobile money integration, digital identities, and blockchain standardization to increase accessibility.
3. It investigates whether blockchain reduces transaction costs during remittances and cross-border payments and the need for stablecoins and CBDCs for intra-Africa trading.
4. It addresses whether virtual asset service providers (VASPs), the government, and industry stakeholders (blockchain associations, blockchain community groups, and NGOs have done enough to promote blockchain education and awareness.

First, the report offers core insights into Africa's policy position and roadmap on cryptocurrencies regulation. It suggests a golden approach to regulation while considering the implications of the status quo.

It also assesses accessibility-based factors affecting the adoption of blockchain-powered financial solutions. Thus, it examines the role of blockchain-based digital finance trends, alongside potential challenges.

Next, the study delineates affordability factors affecting financial inclusiveness of these platforms. This way, it investigates their impact from the perspective of cross-border payments, reduced costs, and intra-trading. Special focus is given to stablecoins and central bank digital currencies (CBDCs).

Lastly, the report analyzes education and awareness efforts to ensure the people understand the technology and its benefits. In this regard, it rationalizes the rapid adoption of the technology while appraising against governmental, institutional, and stakeholder educational programs. As a result, it highlights the initiatives' advantages and provides recommendations for better outreach.

Factually, blockchain and cryptocurrencies have actual potential to solve financial inclusivity issues. This report provides a premise for deeper understanding of this phenomenon.

Editorial

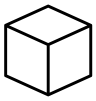
Chaintum Research is a continental research organisation that drives blockchain andWeb 3 transformation in Africa.

First, Chaintum's "Blockchain for Economic Impact" program examines blockchain's role in Africa's sectors like agriculture, energy, mining, supply chain, real estate, telecommunications and tourism. It researches how the technology can enhance transparency, reduce corruption, promote responsible practices, and address challenges in Africa's industries. Chaintum also focuses on blockchain integration into key economic activities and infrastructure management, aiming to contribute to Africa's socio-economic advancement through tailored research and applicability insights.

Second, Chaintum's "Blockchain & Web 3 for Social Impact" Program researches how blockchain and Web 3 technologies can significantly improve societies in Africa. The research focuses on financial inclusion, philanthropy, gender equality, education, and healthcare. It aims to determine how blockchain can overcome trust issues, provide alternative finance options, faster data access and enhance digital literacy.

Lastly, Chaintum's "Digital Asset Regulatory Roadmap in Africa Program" investigates anonymity implications and revenue potential on digital assets. The research delves into cryptocurrency and blockchain-based virtual asset transactions and how they should be treated for tax purposes. It also analyzes sustainable crypto mining, know-your-customer (KYC) and anti-money laundering (AML) practices to combat cryptocurrency crime.

Based on our aforementioned mission the research "**Blockchain as the Silver Bullet to Drive Financial Inclusion in Africa**" was conducted. Chaintum Research is excited to take the lead in Africa, representing our dedicated team's research efforts and collaborating with the exceptional ecosystem professionals and leaders. We are looking forward to partnering with local governments, corporations, industry leaders to actively leverage blockchain technology to improve our societies and economies. Together, we aim to capitalize on this opportunity and contribute to the positive impact of blockchain in the region.



David Otieno
Founder and Lead Blockchain Researcher at Chaintum Research

Policy

Blockchain Leads the Way while Regulations Play Catch-Up

This region showcases well-developed cryptocurrency markets driven by factors such as the need for financial inclusion, economic challenges, currency volatility, and cross-border transactions.

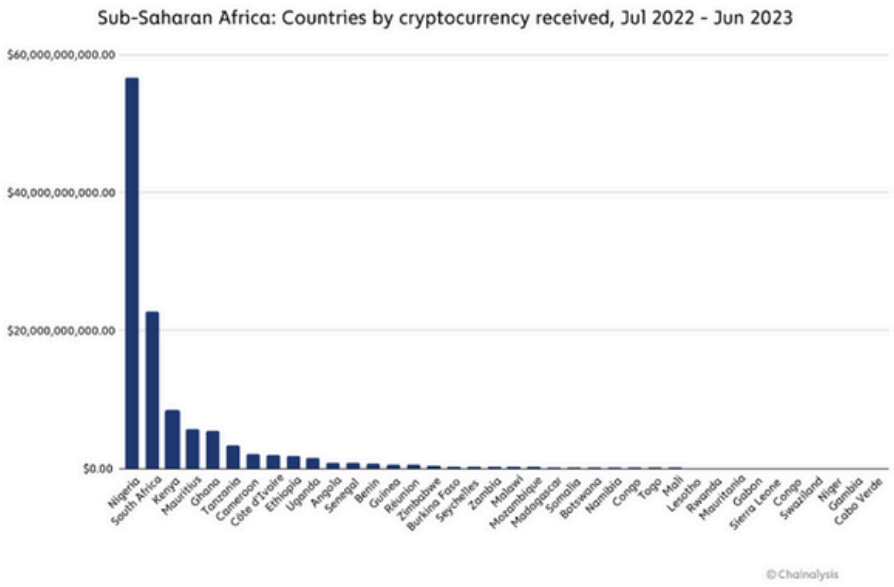
Mobile money and digital payment trends in Africa have boosted financial inclusion. The World Bank reported in 2019 that In Sub-Saharan Africa, 43 percent of adults have an account at a bank or with a mobile money service provider, up from 34 percent in 2014.[3] In the brave new world, cryptocurrency is an option to achieve financial inclusion. Chainalysis states that Sub-Saharan Africa accounts for 2.3% of global transaction volume between July 2022 and June 2023. During that period, the region received an estimated $117.1 billion in on-chain value.[4] This is meant to be exciting news!

Unfortunately, since the early 2010s, African central banks and regulators issuing circulars about cryptocurrency risks. Governments have warned citizens to participate in cryptocurrency at their own risk, citing fraud, money laundering, and consumer protection issues.

Despite the caution, cryptocurrency adoption continued to grow in Africa. Cryptocurrencies have gained notable adoption in African countries, particularly in Sub-Saharan Africa, as shown in Figure 1. This region showcases well-developed cryptocurrency markets driven by factors such as the need for financial inclusion, economic challenges, currency volatility, and cross-border transactions.[4] The region's vibrant peer-to-peer (P2P) trading and retail market and use of cryptocurrencies in everyday financial activities contribute to their rising popularity.

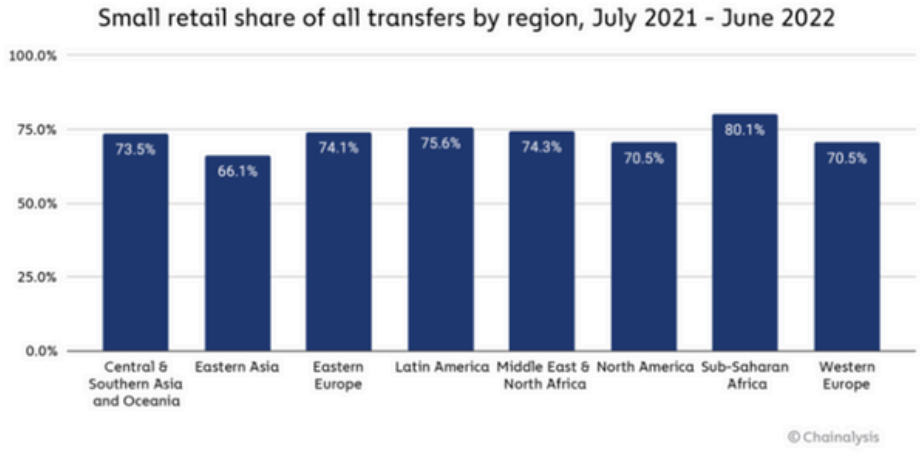
In Sub-Saharan Africa, the retail market and increasing utilisation of peer-to-peer (P2P) platforms set it apart from other regions. The huge P2P market helps investors circumvent bans on cryptocurrency usage and exchanges.[6] On the other hand, retail-sized transfers below USD 10,000 account for 6.4% of the transaction volume, surpassing any other area as shown in Figure 2. The prominence of retail transactions is further emphasised by the fact that they make up 95% of all transfers, and when [5] focusing specifically on small retail transfers under $1,000, their share rose to 80%, the highest among all regions.[5]

Figure 1: Cryptocurrency Received by Country in Sub-Saharan Africa



Source: Chainalysis, "Sub-Saharan Africa Crypto Adoption Trends and Analysis," Chainalysis, September 19, 2023, https://www.chainalysis.com/blog/africa-cryptocurrency-adoption/.

Figure 2: Transfer Share of Small Retail Transactions



Source: Chainalysis, "How Crypto Meets Economic Needs in Sub-Saharan Africa," Chainalysis, September 29, 2022, https://www.chainalysis.com/blog/sub-saharan-africa-cryptocurrency-geography-report-2022-preview/#:~:text=Sub%2DSaharan%20Africa.

The trajectory of rising cryptocurrency adoption is dynamic. In 2023, most African nations are experiencing economic hardships due to the Covid-19 effects and the Russia-Ukraine War. As a result, Chainalysis preempted that some Africans may be utilising cryptocurrency to hedge against inflation.[4] The breakdown we have in our financial systems, where the African currencies are rapidly losing value against the USD, means that digital assets have emerged as a sustainable mechanism for financial inclusion. Governments' interest in regulating digital assets and subsequent discussions on the same have sparked genuine interest among people. But let's also not forget the free publicity that Worldcoin (eyeball identity registration) has given the crypto space.[7]

The cryptocurrency adoption patterns in the continent depicts a new spirit where Africans push to adopt novel technologies. Because of prevalent mobile phone ownership and internet access, the digital world has provided us with possibilities we could never have imagined. The potential of this technology to boost social and economic outlooks is cataclysmic. Thus, there is a need for inclusive and secure policies that support crypto-based digitisation to achieve socio-economic development. This way, regulators can foster trust and boost widespread awareness of these technologies to empower African populations.

Taxation vs. Regulation: The New Dilemma

These assets are not as toxic as we think, [8]

Wycliffe Shamiah, CEO @CMAKenya denoted:

Policy development has become a watershed moment for the mainstream adoption of virtual assets. Figure 3 shows that over 50% of all transactions are processed on centralised exchanges. Centralised exchanges (CEXs) are cryptocurrency trading platforms that act as a central intermediary to enable digital asset exchange; for example, Binance, Coinbase, or Kraken. Sub-Saharan Africa's crypto sector is also more retail-driven than others, with more transactions under $1 million.[4] CEXs are widely used in Sub-Saharan Africa's retail-driven crypto sector, making them suitable for regulation. They facilitate high retail transaction volumes and have become taxation targets for most governments.

However, the paradox of governments prohibiting and advising against cryptocurrency trade or ownership while taxing such transactions needs to be revised. Thus, there is an ongoing debate about whether taxation should precede comprehensive regulations. The discussion in Africa reflects the need for balanced approaches to ensure governments can benefit from crypto-related economic activities without stifling innovation. The problem is rushing to tax even without equipping individuals with the right information to avoid getting scammed.[9]

"The aim of the legislation (cryptocurrency bill) was to create a regulatory framework to protect consumers, and the risk of money laundering is mitigated." [11]

Limpumbi Shiimi, Namibia's Minister of Finance and Public Enterprises.

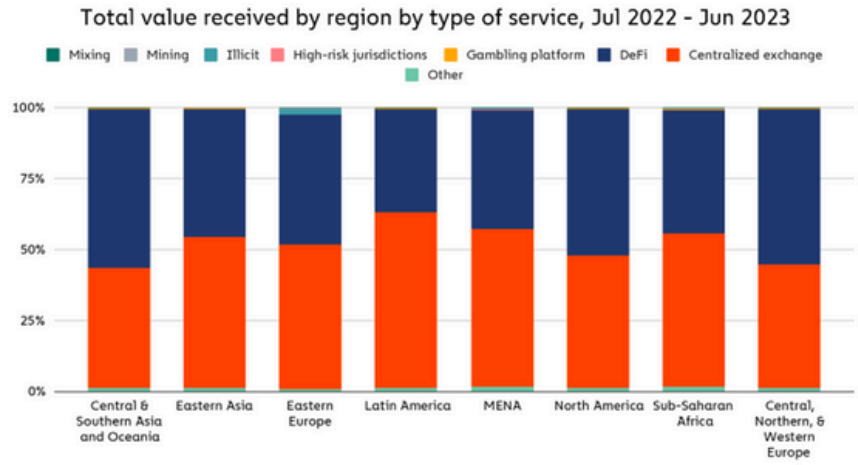
Digital assets are here to stay. The adoption rate of these assets in the continent is skyrocketing. It has not taken much time for lawmakers to take notice of them. The issue is that policymakers need to figure out how to begin taxing them. Technology is evolving faster than authorities can keep up with. Today, we are likely to wind up with the most ludicrous legislation. For example, on 26th June 2023, the Finance Act was amended in Kenya to include a three percent tax on profits derived from the sale of cryptocurrencies and non-fungible tokens (NFTs).[10]

It's not as if the virtual and digital asset ecosystem participants don't want to be regulated. The biggest challenge with crypto is to be understood. Regarding cryptocurrency trade, politicians only understand one language: money laundering. Sadly, this notion has undeniably stifled its growth.

Noteworthy, digital assets are the new investment alternatives. Young people in Sub-Saharan Africa turn to cryptocurrencies out of necessity, using them to preserve and build wealth in the face of low economic opportunity.[4]

With proper regulation, virtual assets can help achieve financial inclusion due to improved stability and affordability of these exchange systems, which play an integral role in cross-border payments.

Figure 3: Total Crypto Value Received By Region Globally



Source: *Chainalysis, "Sub-Saharan Africa Crypto Adoption Trends and Analysis," Chainalysis, September 19, 2023, https://www.chainalysis.com/blog/africa-cryptocurrency-adoption/.*

The Golden Approach to Policy

With more standardised information and transparency, the market for digital currencies will become less "Wild West".[14]

Gita Gopinath, Deputy Managing Director of the IMF suggested:

In a broader perspective, there are subtle ways to approach this regulatory issue. The global consensus is against cryptocurrency bans, as denoted by the G20 Summit Declaration International Monetary Policy (IMF). The world's leading economies have agreed on a set of principles. A critical takeaway[12] principle is that legitimising cryptocurrencies like Bitcoin as legal money will likely compromise a nation's monetary policy. Hence, cryptocurrency asset issuers should be registered and licensed to promote financial stability by uniformly treating similar activities and risks. The IMF has emphasised the significance of digital assets in building a sustainable and prosperous global economy. Particularly, central bank digital currencies' (CBDCs) impact the global economy should be examined.[13]

In addition, broad principles that most countries have agreed upon should act as regulatory templates. For example, crypto assets should be differentiated based on speculative investment or payment usage.

Certain African nations have made notable moves towards crypto legislation. Nigeria, South Africa, Mauritius, and Kenya have led the way in cryptocurrency legislation, while others have taken the wait-and-see route. Here is an outlook on the regulatory landscape in these countries:

- **Nigeria:** Nigeria has experienced significant cryptocurrency adoption, with the government's regulatory efforts evolving in response, including introducing guidelines for digital asset service providers and launching the eNaira as a trial for a Central Bank Digital Currency (CBDC).[16]
- **Kenya:** Despite the initial reluctance expressed by the Central Bank of Kenya (CBK) in 2015, the country has since made strides in exploring the potential of Central Bank Digital Currencies (CBDCs) and has proposed a 3% tax on digital assets, indicating a shift towards acknowledging and regulating digital assets.[17]
- **South Africa:** South Africa has legalised cryptocurrencies, creating a vibrant community of enthusiasts and businesses. The government's collaborative efforts have created a regulatory framework that requires cryptocurrency service providers to follow anti-money laundering and counter-terrorist financing regulations while cryptocurrencies remain classified based on their digital value rather than legal tender.[18]
- **Mauritius:** Mauritius is one of the leading nations in Africa in cryptocurrency regulation and adoption, as depicted by the 2022 implementation of the Virtual Asset and Initial Token Offering Services Act (VAITOS Act), which established an extensive structure for international adherence and anti-money laundering measures despite cryptocurrencies not being legal tender.[18]

"When the associated risks that come with innovations such as virtual assets in the financial system are better managed, the bank will make the necessary assessments and pronounce itself on their acceptance." [21]

Kazembire Zemburuka, Spokesperson of the Bank of Namibia.

Recently, in July 2023, Uganda took a step to ensure virtual asset regulation. Thus, a private law suggested giving its Capital Markets Authority virtual asset regulation capacity.[19] Again, Namibia's Ministry of Finance implemented the Namibia Virtual Assets Act 2023, a groundbreaking bill that will establish a regulatory authority to oversee cryptocurrency exchanges and other virtual asset service providers.[20]

A vital consideration is to ensure that such digital asset policies align with a country's technological developmental goals. The Digital Transformation Strategy for Africa 2030 has digital ID as one of its components, and this will prove relevant for crypto fraud detection and prevention.[22]

With notable digital ID projects in Africa, their parallel use case should mitigate crypto frauds. Cryptocurrency platforms are known to have weak or non-existent know-your-customer (KYC) policies. Some also conceal their origin country information to navigate KYC compliance. Therefore, criminals and money launderers have thrived in this ecosystem. Agreeably, virtual asset service providers must have robust digital ID verification to transition mainstream. Governments will benefit from linking their citizen's personal information to a unique digital identity stored on a blockchain. This way, these exchanges will have a secure digital identification footprint for each user.

The preamble for such policies is to ensure that digital asset providers obtain comprehensive licenses to operate in the continent. A good regulatory model is the Markets in Crypto Assets (MiCA) adopted by the European Union.[23] After a discussion in April 2023, legislators mainly supported mandating crypto exchanges and wallet providers to receive EU licences. The strategy also requires stablecoin issuers tied to other assets to have sufficient reserves. Again, using the "travel rule," information about the asset's source and recipient must "travel" with the transaction and be kept on both sides of the transfer to track and prevent suspicious transactions. [24]

Crypto asset service providers must adhere to solid requirements to protect consumers' wallets and become liable if they lose investors' crypto assets.[25] On the contrary, most nations do not have specific crypto asset regulations. In this case, regulatory issues are handled based on existing regulations and mandates of central banks and affiliated regulatory institutions whose rulemaking in crypto-assets or digital assets is limited.

While that is the case, African countries should not find themselves in a position where they are forced to replicate regulations like MiCA since they don't have bespoke regulatory regimes that address their local needs. There is time to make everything right. Even developed governments like the United Kingdom (UK) have struggled to classify and quantify the benefits of crypto assets to the public.[26]

"I know regulations may sound about as exciting as watching paint dry, but let's face it: Ignoring the issue won't make it disappear." [31]

Allan Kakai, Blockchain Association of Kenya (BAK) Director Legal and Regulatory Affairs.

This is an opportunity to empower people and develop innovative strategies that foster digital value in economies and societies. A well-planned regulatory system will balance innovation and consumer protection appropriately. African governments should set the benchmark for crypto regulation. [27] As the regulatory authority with legal authority and resources, the government should set the tone with clear guidelines and frameworks.[28]

There should be robust regulatory frameworks for data privacy and safety in blockchain networks. The first measure is to establish stringent data protection laws and standards. These platforms should be transparent and accountable. They must have government-compliant encryption protocols and secure authentication methods. So, governments' oversight mechanisms should be appropriate. In other words, it should promote compliance while creating public awareness of data risks and encouraging responsible investment practices.

Therefore, the government and crypto stakeholders should not work in silos and expect positive outcomes. The convergence of public, corporate, and government interests is the foundation for any successful policy in the blockchain industry. Public engagement is necessary to understand pressing issues facing crypto traders, blockchain developers, and lobbyists. For example, the Kenya Financial Reporting Centre (FRC) launched a public survey on virtual assets. The move showed the importance of engaging crypto industry stakeholders in virtual asset policy implementation and decision-making.[29] The survey on crypto assets in Kenya aims to help ensure a vibrant, compliant, and safe financial environment for the public.

Aside from that, private entities in the space can bring their rich industry knowledge to help shape the ecosystem. For example, Binance and South Africa introduced Tax Assistance Tool for Crypto Transaction Reporting in South Africa. Users can easily remit their taxes to the government as they understand their taxation liabilities while using these platforms.[30] The tool indicates gains, losses, and revenue generated based on metrics such as acquisition date, sale date, sale proceeds, nominal costs, holding period, and transaction type.

The Constant Headache of Crypto Fraud and Consumer Protection

Because Africa is still struggling with cybersecurity awareness, it has become a hotbed of cryptocurrency scams. Interpol reported that approximately 90% of African firms lack cybersecurity standards, rendering them exposed to cyber threats.[32] Notably, African giveaways and investment scams have cost victims $1,834 and $995, respectively, while Non-Fungible Token (NFT) fraud cost users $462 each.[33] The crypto market is now highly unregulated. Thus, policymakers must establish proactive measures to ensure that their citizens are safeguarded.

Even the trusted platforms have, at some point, pulled a scam on their customers. The rise of the cryptocurrency exchange platform FTX, founded in 2019, culminated in a devastating collapse in November 2022 due to a significant fraud revelation where customer funds were diverted to accounts controlled by Alameda Research, resulting in billions of dollars in losses for customers and investors.[34] Binance, despite being a centralised exchange platform, some individuals now distrust it due to its former engagement with FTX.[35] Next, South Africa's Mirror Trading International (MTI) Bitcoin Ponzi Scheme solicited bitcoin deposits for membership in an unregulated commodities pool.[36] MTI and Steynberg's commodities pool allegedly traded retail currency off-exchange using a customised 'bot' or software program. As a result, many investors trade in such platforms at their own risk.

Globally, the authorities have constantly attacked these crypto platforms. The prevalent scandals have not done their reputation any good. For instance, Coinbase, the biggest cryptocurrency exchange in the U.S., was sued by the The Securities and Exchange Commission (SEC) for securities violations and in its complaint, the SEC said that Coinbase has never registered as a broker, national securities exchange, or clearing agency, circumventing Congress' securities market disclosure framework.[37] The SEC claimed Coinbase's inability meet registration requirements deprived investors of SEC protections against conflicts of interest and other risks.

Regionally, SEC Nigeria declared Binance Nigeria Limited illegal, raising user concerns. Binance CEO CZ clarified that Binance Nigeria Limited was an impersonating entity, raising customer concerns.[35] The incident highlights the need for more robust security, due diligence, and collaboration between regulators and the crypto community.

SumSub shared internal statistics with BitKE indicating that:

- South Africa's cryptocurrency sector witnessed a 25% increase in fraud cases during Q2 2023, indicating a growing sophistication of fraudsters.
- Kenya experienced a doubling of crypto fraud cases, highlighting industry challenges.
- Tanzania saw a 250% increase in crypto fraud and more.
- Nigeria saw a 59% spike in IT services fraud and a 46% increase in fintech fraud.

SumSub's further analysis revealed that:

- A new threat in 2023: deepfake fraud accounted for 0.6% of fraud cases in Kenya and 2.2% in South Africa. This method creates genuine identities from legitimate papers, making verification providers' jobs difficult.
- In 2023, forced verification cases increased substantially in South Africa and Kenya, accounting for 6% and 7% of all fraud cases, respectively. Forced verification may indicate illegal activity.
- 41% of fraud cases in Tanzania used modified legal papers, including edited ID cards.
- A worrying 61% of fraud cases in Nigeria were caused by falsified ID cards, indicating the widespread use of counterfeit credentials.
- South Africa saw 18% of fraud instances related to visual deceit during Liveness inspections, with fraudsters using phone displays or identification document photos to deceive cameras.[38]

Regarding this phenomenon, any feasible policy implementation should ensure that customers' interests come first.

The Gray Areas in Privacy and Data Concerns

"The financial and digital identity platform (WorldCoin) has inherent cybersecurity risks and vulnerabilities including cyber-attacks, hardware security, computer fraud, data breaches, and identity spoofing, exploitation, amongst others." [42]

James Kimuyu, Director, National Computer and Cybercrimes Coordination Committee (NCCCC)).

But privacy and data protection are crucial. Digital asset exchanges and providers have become recent targets of cybersecurity breaches owing to the publicity and transaction volumes that they handle. In blockchain, the data entered can never be deleted and can only be changed by agreement among network participants. A CoinDesk review of the privacy policies provided by two dozen prominent crypto exchanges indicates the sector collects an extensive amount of user data.[39] Some reveal more about their practices than others. Data privacy is a top priority as more individuals enter the cryptocurrency space.[40]

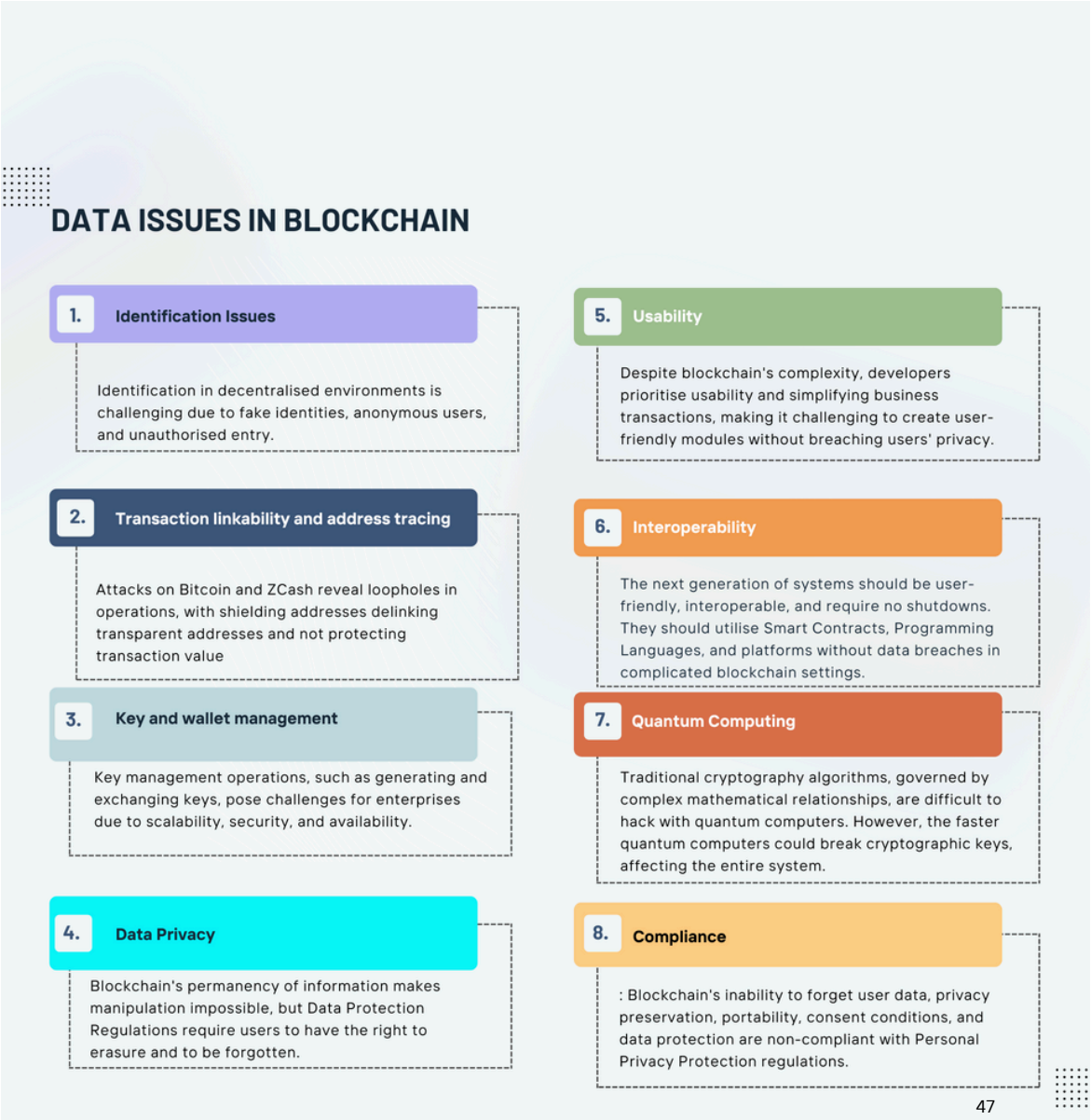
For example, Patricia (a leading Nigerian-based crypto exchange in the continent), in its tweet, communicated that it suffered a security breach that compromised its Bitcoin and naira assets; fortunately, its customer funds were unaffected. This phenomenon threatened almost 800k user accounts' privacy.[41] Besides, the suspension of WorldCoin (biometric cryptocurrency project) registration in Kenya raised concerns about data protection. Therefore, policymakers should address these issues as blockchain and crypto projects may involve the collection and storage of sensitive data.

The blockchain presents several data issues, as highlighted by Bansod and Ragha (2022):

- **Identification issues: I**dentification in decentralised environments is challenging due to fake identities, anonymous users, and unauthorised entry.
- **Transaction linkability and address tracing:** Attacks on Bitcoin and ZCash reveal loopholes in operations, with shielding addresses delinking transparent addresses and not protecting transaction value.
- **Key and wallet management:** Key management operations, such as generating and exchanging keys, pose challenges for enterprises due to scalability, security, and availability.
- **Data Privacy:** Blockchain's permanency of information makes manipulation impossible, but Data Protection Regulations require users to have the right to erasure and to be forgotten.
- **Usability:** Despite blockchain's complexity, developers prioritise usability and simplifying business transactions, making it challenging to create user-friendly modules without breaching users' privacy.
- **Interoperability:** The next generation of systems should be user-friendly, interoperable, and require no shutdowns. They should utilise Smart Contracts, Programming Languages, and platforms without data breaches in complicated blockchain settings.

- **Quantum computing:** Traditional cryptography algorithms, governed by complex mathematical relationships, are difficult to hack with quantum computers. However, the faster quantum computers could break cryptographic keys, affecting the entire system.
- **Compliance:** Blockchain's inability to forget user data, privacy preservation, portability, consent conditions, and data protection are non-compliant with Personal Privacy Protection regulations.[43]

Thus, crypto-exchange platforms should prioritise security measures and invest in cutting-edge technologies to safeguard their customers' data.



Implications

The Government is the Villain

"Office of the Data Protection Commissioner (ODPC) revoked our certificate yesterday evening, and no doubt this is of interest. They provided four reasons for the cancellation, and we respectfully think that cancellation was outside the normal process and the correct underlying facts." [47]

Scott Thomas, the Chief Legal Officer , WorldCoin,.

Clear regulations are essential in the cryptocurrency space. Today, either there are no clear-cut policies about crypto assets or poorly formulated laws. For example, Kamau Thugge, CBK Governor, reiterated that Kenya lacks policies to examine virtual assets (in response to the WorldCoin saga).[44] Therefore, he emphasised that crypto exchange is not outlawed since there are no regulations. The Central Bank of Kenya (CBK) does not license or regulate cryptocurrencies, although it has warned against its trading. This is the case in most African nations.

Governments will often struggle to regulate what they don't understand. Regulation must benefit companies and investors, not just tax entities. Fintech will always work if imposed taxation or fees don't discourage their adoption. Noteworthy, MTN Ghana, despite 42% YoY growth, blamed e-Levy for the 2022 mobile money earnings share decline.[45] Ghana's government imposed a 1.75% e-levy on mobile money and other digital transactions in November 2021. The 1.5% fee is applied to all electronic transactions, including mobile money and transfers.[46] This is similar to what such laws will do to an emerging technology like blockchain.

The government must adequately engage virtual asset service providers. The status quo shows that the government has something to prove against these platforms. That is, authorities look for every opportunity to thwart their advancement. In its report and recommendations, the ad-hoc Committee of Parliament examining WorldCoin's operations in Kenya concluded that the cryptocurrency project violated Kenyan laws, committed espionage, and threatened statehood. [47] It recommended that the government should disable the company's systems and disable its IP addresses. In what looked like a witch hunt, it was the government that won.

Eventually, stringent regulations will scare away investors in the crypto space. Not only international but also our very own. For instance, after struggling in Kenya, Flutterwave set its sights on Rwanda in July 2023.[48] The reason is that the new investment destination had better licensing systems. Kenya seemed unattractive due to the colossal lawsuits and allegations of money laundering against the company.

Again, Nigerian Fintech Vella Finance, launched in 2021, ended its crypto services due to compliance issues and shifted focus to SME banking. Banking necessitates compliance with stringent regulations that crypto-affiliated institutions cannot meet. The company now uses its existing user database to serve its new clients. The situation demonstrated how running banking and cryptocurrency in the continent is challenging. [49]

Crypto Asset Providers and Exchanges are Neither Angels

"Cryptocurrencies and blockchains could challenge the central bank's ability to control the money supply and implement monetary policy. The decentralised nature of cryptocurrencies could impact interest rates and reserve requirements."[42]

James Kimuyu, the National Computer and Cybercrimes Coordination Committee (NCCCC) Director.

Governments are concerned about Africa's rising crypto asset values. This interest is justifiable owing to the expected value on the economy and financial systems. Countries that accept this reality will be ahead of those who don't. Before that, every stakeholder must be on the same page. Tax avoidance is a pressing issue for authorities because crypto transactions are decentralised and difficult to trace. Evidently, there are grey areas that need addressing.

For example, biometric data like that for WorldCoin threatens national security. Conversely, crypto asset providers should be wholly-compliant. In this case, WorldCoin sent Kenyans' data to the WorldCoin Foundation, which was neither registered as a controller nor a processor.[47] Apart from that, Angola sought to ban Bitcoin mining (a process of creating cryptocurrencies on the blockchain).[50] The government did this to protect its national electricity reserves. If the government slacks, then it paves the way for structural and governance consequences.

Let's put this fallacy to bed, the government has not even entirely eradicated fraud and illegal activities in the traditional monetary systems. In fact, criminals still prefer conventional banks to crypto exchanges. Cryptocurrency is ailing from the already flawed financial fabric. You don't believe me! Kraken (United States–based cryptocurrency exchange) ceased taking South African deposits when its banking partner placed South Africa on an international money laundering blacklist.[51]

Robust anti-money laundering guidelines, notably from conventional banks, must be incorporated into exchange platforms.

Innovation should be ethical. These governments and crypto asset providers should work concurrently. Unfortunately, Innovation and regulation take place in separate rooms, resulting in this unnecessary competition. Because they are in these separate rooms, they neither understand nor communicate.

Technology-Neutral Approach

"Basically, we are telling [the] parliament: 'Look, Kenya has always branded itself as the Silicon Savannah; we are top three for digital assets [volume in Africa], and if we do not develop a clear licensing and regulatory framework, Nigeria, South Africa, Botswana, Namibia, Mauritius would take the lead, and the capital flow that would have come to Kenya would have flocked elsewhere." [52]

Allan Kakai, Blockchain Association of Kenya (BAK) Director Legal and Regulatory Affairs.

The best practice is to adopt a "technology-neutral" approach. This strategy means creating flexible, principles-based regulations that do not favour specific technologies or cryptocurrencies, allowing for adaptability, inclusivity, and a focus on risk mitigation while balancing innovation and security. For example, Kenya could lead Africa in digital asset regulation as the National Assembly's Departmental Committee on Finance and National Planning directed the Blockchain Association of Kenya (BAK) to design the first virtual asset service legislation.[52] This is the first time an industry stakeholder is doing so.

Classification

A proper classification of these assets will help impose the correct taxation. Crypto and other virtual assets should not be put under one umbrella. It's essential to distinguish between various types of digital assets, such as NFTs, security tokens, stablecoins, and utility tokens.

First, each category can have a unique taxation approach based on its characteristics and use cases:

- NFTs: Taxed at a flat rate when sold.
- Security Tokens: Subject to capital gains tax.
- Stablecoins: Taxed similarly to traditional currency transactions.
- Utility Tokens: Taxed when they generate utility (e.g., access to a service).

It is nothing like a standard regulatory template since each digital asset is different.

Think about it this way, taxation should align with the diverse purposes of digital assets, promoting fairness, clarity, and compliance.

Second, taxation should consider the specific use cases of digital assets. For instance:

- Investment and Trading: Apply capital gains tax when digital assets are sold at a profit.
- Payments: Tax digital assets used for everyday transactions similarly to traditional currency.
- Token Creation: Tax income generated from creating and selling tokens.

Think about it this way, taxation should align with the diverse purposes of digital assets, promoting fairness, clarity, and compliance.

Progressive Taxation

Progressive taxation is based on the duration of holding digital assets. Some digital asset owners hold them with speculation of them increasing in value in the future. For example:

- **Short-term holdings (less than a year):** Higher tax rates to discourage speculative trading.
- **Long-term holdings (over a year):** Lower tax rates to incentivize investment.

However, there are variations in exemptions and holding periods. Some countries, such as Portugal (one year) and El Salvador (none), have exemptions or favourable treatment for crypto gains, while India has implemented a specific tax regime for virtual digital assets.[53]

Loss Offset Considerations

Loss consideration mechanisms allow individuals and businesses to offset losses from one digital asset against gains from another within the same tax year. This prevents unfair taxation on individuals who may have experienced overall losses. For example, if someone incurs a loss from selling one cryptocurrency but makes a profit from selling another within the same tax year, they can offset the losses against the gains, reducing their overall taxable income. Thus, the strategy ensures that the government does not tax unrealized gains and acknowledges the inherent volatility in the crypto market.

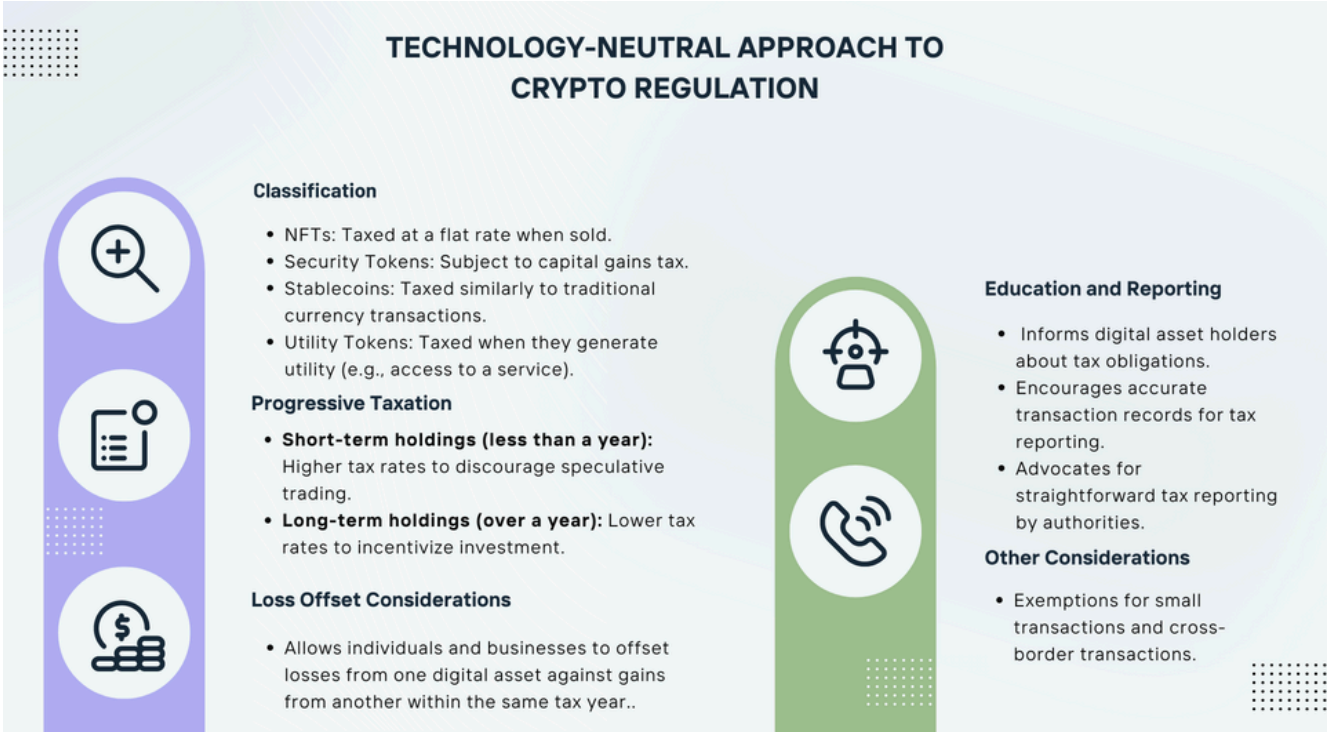
Education and Reporting

Comprehensive education informs digital asset holders about their tax obligations. Investors should be encouraged to keep accurate records of their transactions for tax reporting purposes. Besides, tax authorities should make tax reporting as straightforward as possible.

Other regulatory considerations can focus on exemptions for small transactions and cross-border transactions.

In summary, why the need for better regulation?

- **Consumer Protection:** Improved regulation helps safeguard the interests of cryptocurrency users, preventing fraud, scams, and unfair practices, ensuring that investors have confidence and protection in their digital asset transactions.
- **Market Stability:** Effective regulations contribute to market stability by addressing issues like money laundering and market manipulation, promoting fair competition, and reducing excessive volatility, which benefits both participants and the broader financial ecosystem.



Conclusion

Cryptocurrencies have gained popularity in Africa due to factors such as financial inclusion, economic challenges, currency volatility, and cross-border transactions. In Sub-Saharan Africa, the retail market and widespread use of peer-to-peer platforms set it apart from other regions. The P2P market allows direct transactions between buyers and sellers without centralized exchanges or conventional financial institutions. While that is the case, governments' interest in regulating digital assets has been a blessing in disguise as created the necessary attention to the space.

The global consensus is against cryptocurrency bans, as denoted by the G20 Summit Declaration International Monetary Policy (IMF). A few African nations have taken notable moves towards crypto legislation, with Nigeria, South Africa, Mauritius, and Kenya leading the way.

Therefore, African governments must set the standard for crypto regulation, focusing on research, development, virtual asset categorization, licensing, transparency, consumer education, risk mitigation, international collaboration, and periodic review. Strong data privacy and safety in blockchain networks are crucial, encompassing strict laws, transparent platforms, government-compliant encryption protocols, secure authentication methods, and oversight mechanisms. Cryptocurrency fraud and consumer protection are significant concerns in Africa due to a lack of cybersecurity awareness. Crypto-exchange platforms should prioritize security measures and invest in cutting-edge technologies to safeguard customer data.

Cryptocurrency regulation is essential in Africa, but many countries lack clear policies or rely on poorly formulated laws. Governments must engage virtual asset service providers and ensure they comply with regulations. A technology-neutral approach is crucial for regulating digital assets, allowing for adaptability, inclusivity, and risk mitigation. Proper classification of digital assets, progressive taxation, loss offset considerations, comprehensive education, and straightforward tax reporting are essential. Better regulation is necessary for consumer protection and market stability, safeguarding cryptocurrency users' interests and promoting fair competition.

Accessibility

Fulfilling the Promise

"Grassroots crypto adoption isn't about which countries have the highest raw transaction volumes – anyone could probably guess that the biggest, wealthiest countries are far ahead there. Instead, we want to highlight the countries where average, everyday people are embracing crypto the most." [55]

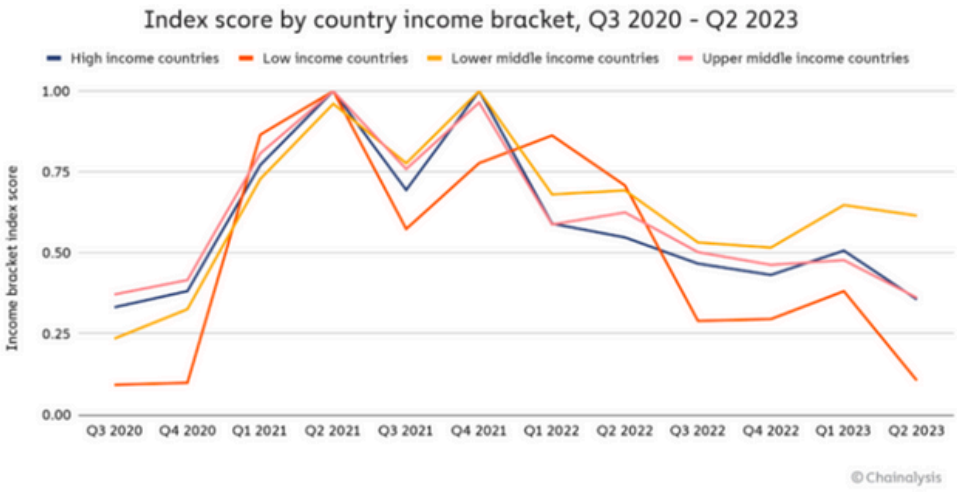
Chainalysis 2023 Global Crypto Adoption Index

The rise of cryptocurrencies raises the question of whether they will be more accessible than traditional money. Cryptocurrencies are borderless and decentralized. In contrast, conventional currencies are subject to the regulations and limitations of national governments and financial institutions. However, cryptocurrencies can be transferred and accessed by anyone with an internet connection, regardless of their location or socioeconomic status. This accessibility is especially beneficial for individuals in regions with limited access to traditional banking services. Hence, more people can participate in broader finance systems. They can also store value without the need for a traditional bank account. This provides financial inclusivity to the unbanked population.

The crypto adoption rates in some African countries are mind-boggling. Chapter 54 Survey reported that 1 in 5 Nigerians (20%) hold crypto assets.[54] Again, the Chainalysis 2023 Global Crypto Adoption Index indicated Nigeria and Morocco are among the top 20 nations globally with the highest crypto penetration.[55]

Many of the top countries on the Global Crypto Adoption Index, from Central & Southern Asia to Africa, are Lower Middle Income (LMI). These nations have witnessed the most significant grassroots crypto adoption resurgence over the previous year. LMI countries are the only ones whose grassroots adoption is above Q3 2020, before the last bull market.

Figure 4: Global Crypto Adoption Index



Source: Chainalysis, "Chainalysis: The 2023 Global Crypto Adoption Index," Chainalysis, September 12, 2023, https://www.chainalysis.com/blog/2023-global-crypto-adoption-index/.

The Role of Mobile Phones

Fortunately, mobile money users, particularly those using feature phones, can also transact using cryptocurrencies.

According to the United Nations Development Programme's (UNDP) "Cryptocurrency in Africa Alternative Opportunities for Advancing the Sustainable Development Goals?" report, mobile-based crypto solutions will likely minimise financial inclusion obstacles in conventional financial services if combined with digital and financial literacy.[56] In this case, mobile phones are used to register accounts to transfer, receive, spend, and convert cryptocurrencies. This process involves minimal transaction charges and collateral, regardless of account owners' gender or location.

Despite rising mobile phone adoption, half of the region's phones are feature phones. These devices cannot handle complex cryptocurrency apps like most smartphones. Fortunately, mobile money users, particularly those using feature phones, can also transact using cryptocurrencies. This is possible due to unstructured supplementary service data (USSD), short text codes that allow mobile transactions on feature phones and smartphones without the internet.[56] Therefore, crypto apps based on USSD solutions are a game changer since they operate on any phone. For example, Machankura, which operates in nine African nations (Kenya, Uganda, Malawi, Ghana, Nigeria, Namibia, South Africa, Tanzania, and Uganda) has created Bitcoin mobile wallets that rely on USSD codes and users' phone numbers.[57] Feature phone users follow prompts to make a Bitcoin wallet and deposit money by dialling, for instance, *920*8333# in Ghana.[58] Thus, the platform allows quick, inexpensive, and small Bitcoin transactions. It enables users to instantly transfer and receive Bitcoin and purchase airtime, power, and shopping coupons. Besides, Kenyan-based company Kotani Pay provides USSD-based cryptocurrency exchange for any mobile phone[59] It enables users to transfer and receive stablecoins and cash them out to the local bank and mobile money accounts.

The UNDP recommended designing cryptocurrency solutions with educational resources on digital finance and cryptocurrency, payment methods (online/offline, QR codes, etc.).[56] They should also incorporate interoperability with existing payment ecosystems, accessibility and utility expansion, and a network of merchants that accept cryptocurrency. This way, USSD-integrated crypto platforms will improve financial inclusion for individuals and businesses.

Africa Nenda denoted that cryptocurrency users in Africa cannot deposit their assets in local banks or mobile money providers like equities or foreign currency balances.[60] In response, Central Bank digital currencies (CBDCs) projects in some African countries aimed to solve the challenge above. CBDCs are digital forms of a country's fiat currency that are issued and regulated by the central bank, serving as legal tender and representing a digitised version of physical cash. However, there needs to be more overall public interest. For example, a lack of adoption and poor back-end technologies plague Nigeria's CBDC (eNaira). Only 8% of roughly one million wallets are active. The average transaction size is $115, which is above 50% of a middle-

income earner's monthly salary.[61] As a result, low-income Nigerians are unlikely to utilise it. The reason for the trend is unknown; however, it points to the Central Bank of Nigeria (CBN) increased oversight of the domestic money supply.

Blockchain-Based Digital Finance Trends

QR Codes

The SOMQR Code Standard will transform Somalia's payment environment with its low-cost, scalable, safe, and interoperable cashless solution.[62]

Abdirahman Mohamed Abdullahi, the Central Bank of Somalia Governor said:

QR Code payment patterns are widespread across the continent. Notable providers include Nedbank, Zapper, and Snapchat. Notably, Somalia introduced a QR code standard to boost financial interoperability. The Central Bank of Somalia Governor in Mogadishu said that the SOMQR Code Standard will transform Somalia's payment environment with its low-cost, scalable, safe, and interoperable cashless solution.[62] QR Code applicability in the Blockchain is still unexplored in the continent. However, away from Africa, the Chinese government has begun giving retailers QR codes to accept payments in the country's latest central bank digital currency (CBDC), the digital yuan (e-CNY), making it the largest crypto QR code user. [63] Crypto-based QR code solutions are also emerging. For example, US-based Bitpay facilitates various cryptocurrency services like transactions, storage, and payments, including a cashless QR code payment option accessible via both web browsers and their mobile app. [64]

Chat-Based Payments on the Blockchain

Blockchain-based financial solutions are now being incorporated into direct messaging apps. They offer a user-friendly and familiar interface for individuals with limited technological literacy. For example, telegram merchants can now accept cryptocurrency payments within the messaging platform.[65] Wallet, a TON blockchain-based service, extends its capabilities beyond traditional chat-centric payment methods. Locally, Zimbabwean identity startup FlexID has introduced FlexPay, a peer-to-peer service accessible through WhatsApp and integrated with the Algorand blockchain.[66] Users can link their bank accounts or debit cards to the wallet, enabling seamless money transfers, bill payments, purchases, and access to budget management tools and investment opportunities, all within the WhatsApp interface. Moreover, the integration with the Algorand blockchain opens up various cryptocurrency functionalities, including the creation and redemption of Algo/USDC voucher codes.

Crypto Asset-Management Wallets

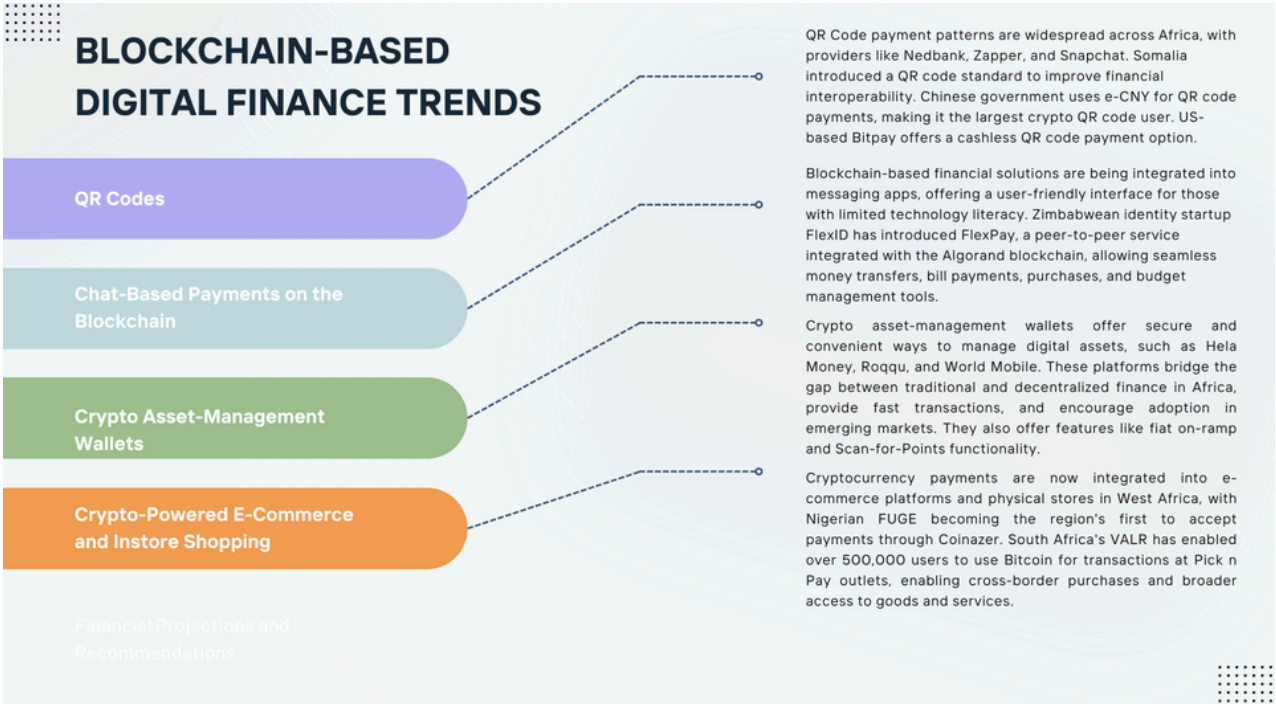
Crypto asset-management wallets provide individuals with a secure and convenient means to manage their digital assets. Users can store, transfer, and monitor their cryptocurrency holdings. For example, Hela Money, an African Crypto Neo Bank and DeFi wallet, is developing an all-in-one blockchain platform for payments, neobanking, tokenisation, decentralised finance, wealth management, and more to bridge the gap between traditional and decentralised finance in Africa.[67] Besides, Roqqu, a pioneering cryptocurrency platform in Ghana, provides a secure, user-friendly solution for fast cryptocurrency transactions. Roqqu offers a smooth interface and a variety of cryptocurrencies to encourage adoption in emerging markets.[68] Lastly, World Mobile, a decentralised cellular provider, launched a Google Play app with a Cardano wallet in Tanzania.[69] The app offers various features, including a fiat on-ramp, Scan-for-Points functionality, and a Cardano Wallet for handling digital assets like non-fungible tokens (NFTs) and Cardano Native Tokens (CNT) such as World Mobile Tokens (WMT).

Crypto-Powered E-Commerce and Instore Shopping

"We want to make it easier for our customers to purchase whatever they need from us and introducing cryptocurrency payment options is only one of our efforts to fulfil that promise." [70]

Rex Moses, Managing Partner of Fuge.

Integrating cryptocurrency payments into e-commerce platforms and physical stores is now a thing. For example, FUGE, a Nigerian e-commerce platform, has achieved a milestone in West Africa by partnering with Coinazer to become the region's first e-commerce business to accept cryptocurrency payments.[70] Customers can utilize the company's online store or mobile app for purchases using cryptocurrency. Besides, VALR, South Africa's largest cryptocurrency exchange in terms of trading volume, has enabled over 500,000 crypto users to utilize Bitcoin for transactions at all Pick n Pay outlets across the country.[71] This is facilitated through the VALR mobile app. Thus, customers can make purchases with Bitcoin at one of the major supermarket chains in sub-Saharan Africa. Nuzo, a Kenyan company, established the country's first crypto-based shop-to-earn eCommerce platform for small and medium-sized enterprises.[72] The Ecommerce Forum South Africa (EFSA) also intends to create a blockchain-based solution to tackle fraud in the industry.[73] While the application of blockchain is still in its early stages of acceptance in e-commerce, the potential benefits for Africa are enormous.[74]

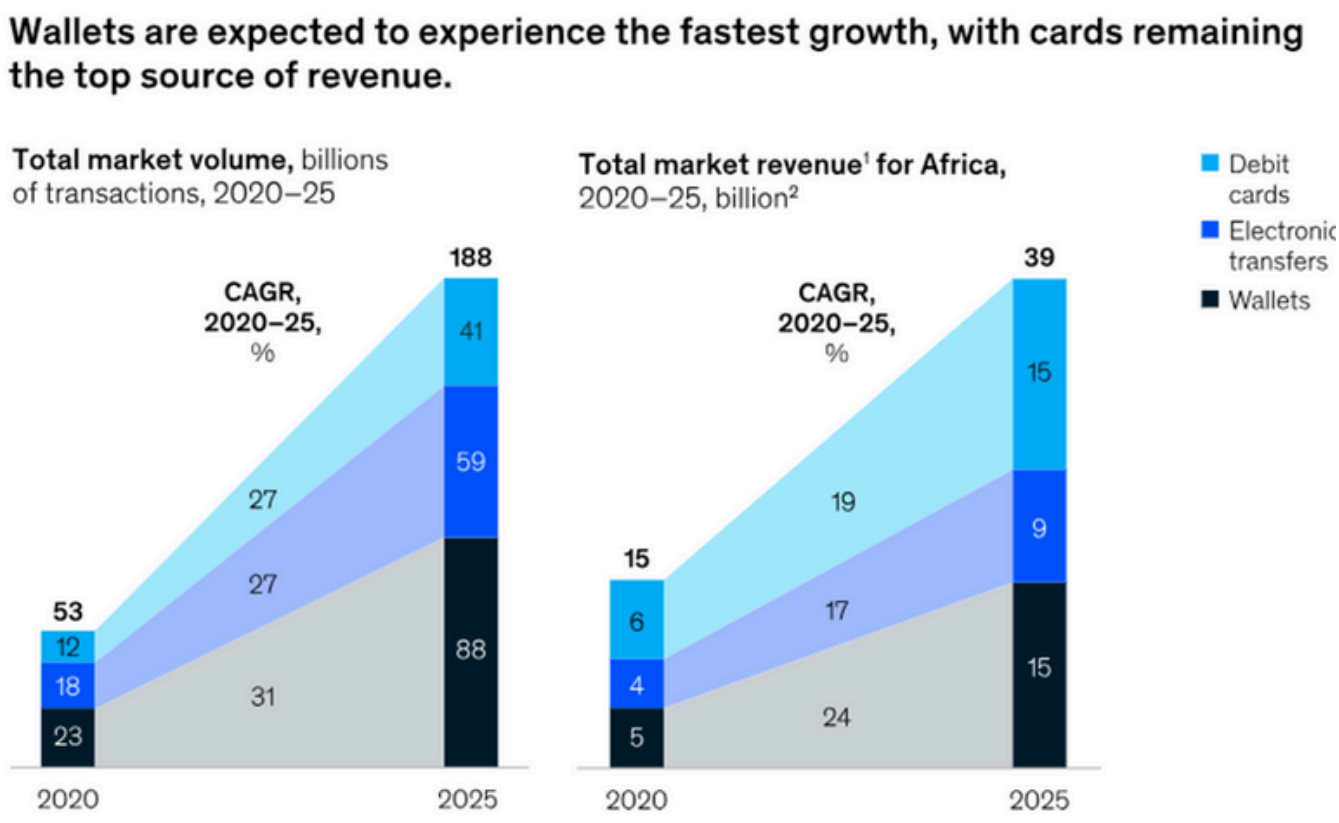


Challenges

Card, POS, and Wallet Alternatives

Notably, crypto platforms adapted for the African market, like CBDCs and USSD-powered, face challenges in reaching financial inclusion goals. Some countries rely on POS readers and card-based solutions (rather than feature phone-enabled solutions). Account-to-account transfers and credit cards dominate in Nigeria. In Kenya and Ghana, mobile money wallets dominate; in South Africa, it is cards.[75] However, these payment systems face cost and scalability issues. As of 2027, 165.8 million users (13%) are expected to enrol in the Mobile POS Payments market in Africa.[76] The problem is that most banks and mobile money service providers do not support crypto. Thus, interoperability with these systems will take a long time to materialize.

Figure 6: Crypto Payments for Informal Traders



Source: McKinsey, "The Future of Payments in Africa | McKinsey," www.mckinsey.com, 2022, https://www.mckinsey.com/industries/financial-services/our-insights/the-future-of-payments-in-africa.

The Francophone Effect

Cryptocurrency has yet to take off in former French colonies in Africa compared to their British counterparts. In Madagascar, West and Central French-speaking Africa, the legal framework for cryptocurrencies remains unclear.[77] Although the Bank of Central African States (BCAC) has made some promising attempts in the Central African region, the current legislative infrastructure and economic conditions suggest potential obstacles rather than opportunities for the widespread adoption of cryptocurrencies. A notable systemic barrier is the fact that most Francophone countries use French as the official language. Unfortunately, English is the language of tech in Africa. As a result, these countries have flown under the radar when it comes to startup funding.[78]

Considerations

Digital Identity

"Together, we can overcome infrastructure, ecosystem and governance challenges and create an enabling environment for growth." [79]

Lacina Koné, Director General of Smart Africa, during his keynote speech at the opening ceremony of Assises de la Transformation Digitale en Afrique - ATDA 2023.

Blockchain technology can provide a secure and verifiable digital identity. These IDs help establish creditworthiness to access financial services. Notably, Sierra Leone's president aimed to make the nation the first 'Smart Country' in October 2017.[80] The initial phase of this plan was to create a countrywide economic identity service to provide all Sierra Leoneans with digital credentials and improve government services and financial inclusion. Besides, after a two-month test period, Kenya's President Ruto stated that Kenyans will be able to use iris scans and fingerprints for digital ID transactions in December 2023.[81] Digital IDs linked to blockchain-based financial services will enhance the transparency and traceability of transactions. Thus, users can build reliable credit profiles. This will enable individuals without traditional banking credentials to access various financial services, such as loans, insurance, and savings. As a result, there will be greater participation in the formal economy.

Financial Services for SMEs

Small and medium-sized enterprises (SMEs) often face challenges in accessing financial services. The decentralised and transparent nature of blockchain technology makes blockchain-based SME financing promising for credit gap reduction.[82] Benefits include decreased information asymmetry, better financing, credit evaluation, and financial inclusion. FinTech emerged to support African SMEs, but long-term funding is yet untapped. Peer-to-peer lending on blockchain offers a bankable alternative for SME financing, connecting firms directly to interested lenders in their locality and across continents. For example, Debitum has a worldwide network of lenders, borrowers, and financial experts using the Ethereum blockchain.[83] The company aims to become the platform for SME lending to businesses that banks are unwilling to serve.

Interoperability

Interoperability will enable seamless communication and data exchange between different blockchain networks and traditional financial infrastructures. The AU High-Level Panel on Emerging Technologies (APET) encourages African countries to standardise their interoperable blockchain systems into existing frameworks.[84] This entails incorporating new blockchain technology within African trading and customs processes. As a result, all security and verification procedures are tied to a single technical and operational framework. For example, decentralised ledger technology (DLT) systems allow small-to-medium farmers and other upstream players to use their digital IDs on the blockchain. These IDs provide African firms with trustworthy transactional histories, minimise banking risks, and increase financing access.

For example, Ghana uses blockchain technology to improve business and operational system interoperability. Ghana's Central Bank established a regulatory sandbox for banks, enterprises, and government agencies to test their blockchain-based merchant payments and remittance solutions. This platform solves the system interoperability problem and improves compatibility.

Conclusion

Cryptocurrencies are becoming more widely available. Borderless and decentralised, they are easier to access for Internet and non-internet users. Regions without traditional banking services will benefit from this accessibility. Thus, crypto enables global financial transactions and value storage for more individuals without a bank account. In this case, mobile crypto solutions integrated with USSD help reduce financial inclusion barriers in conventional financial services. Thus, feature phone users can register to send, receive, spend, and convert cryptocurrency. These solutions provide low transaction fees and collateral regardless of account owners' socioeconomic background or location.

Again, Central Bank digital currencies (CBDCs) projects in various African countries aim to alleviate the problem of cryptocurrency users not depositing their digital assets in local banks or mobile money providers. However, there has to be more public interest and improved back-end technology that doesn't encourage surveillance. Notably, blockchain-based digital finance trends include QR code payment, chat-based payments, crypto-powered e-Commerce, crypto asset-management wallets, and crypto exchange agents. These technologies aim to bridge traditional and decentralised finance in Africa by making digital asset management and transfer secure and convenient.

Unfortunately, financial inclusion goals will likely remain unmet, with some countries relying on card, POS, and wallet alternatives. The Francophone impact also hinders cryptocurrency growth in former French colonies in Africa, where English is the tech language. Also, Madagascar, West and Central French-speaking Africa, and most Francophone countries utilise French as their official language and have unclear cryptocurrency laws. The Bank of Central African States (BCAC) has made promising efforts in Central Africa, but the legal infrastructure and economic realities suggest barriers to widespread implementation.

From a positive standpoint, blockchain technology helps establish creditworthiness and access financial services by providing a safe and verifiable digital identity. This consideration improves transaction transparency and traceability, allowing non-banked to access loans, insurance, and savings.

Besides, blockchain technology provides a bankable option for SME funding, improving financial services. Small-to-medium farmers and other upstream participants can use their digital IDs on the blockchain with decentralised ledger technology (DLT), providing African ventures with trustworthy transactional histories, reducing banking risks, and expanding funding availability. Blockchain interoperability further enhances this, allowing smooth communication and data exchange between blockchain networks and traditional financial infrastructures.

Affordability

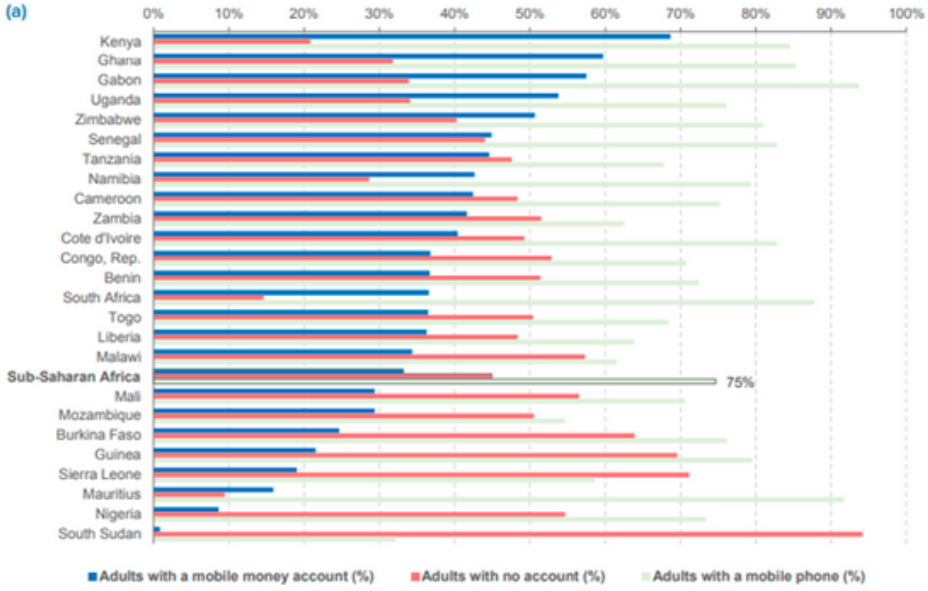
Inclusive Prosperity

The high mobile phone penetration rate, strong smartphone connection growth, and growing mobile money account ownership allow for comparatively low transition costs and lay the groundwork for Sub-Saharan Africa's emerging adoption of cryptocurrencies.

Affordable blockchain-powered financial solutions are crucial for achieving financial inclusion in Africa. The region is diverse and comprises marginalized populations. Offering cost-effective and accessible financial services will help bridge the gap for individuals who lack access to traditional banking infrastructure. Less costly blockchain solutions enable people to participate in the formal financial sector. Thus, they can conduct transactions, save, invest, and access credit, all without the barriers of high fees or the need for physical banks. This fosters economic empowerment and opens up opportunities for the unbanked and underbanked individuals. Ultimately, these innovations will reduce poverty and enhance financial resilience across the continent.

Digitalization has increased financial inclusion in the region in recent years. Figure 2 shows that adult mobile phone penetration has increased, with 75% regional coverage on average. Statistically, smartphone connectivity in the area will account for 61% of all mobile phone connections by 2025, up from 44% in 2019 and 49% in 2021.[56] Besides, the rise in adult mobile money accounts provides more unbanked or underserved persons access to finance. The high mobile phone penetration rate, strong smartphone connection growth, and growing mobile money account ownership allow for comparatively low transition costs and lay the groundwork for Sub-Saharan Africa's emerging adoption of cryptocurrencies. This phenomenon will improve financial inclusion and access to goods and services for the unbanked/underserved and micro and small businesses.

Figure 7: Sub-Saharan African Nations' Financial Inclusion and Mobile Phone Ownership



Source: Ankun Liu , Orria Goni , and Aiaze Mitha, "Cryptocurrency in Africa Alternative Opportunities for Advancing the Sustainable Development Goals?," 2022, https://www.undp.org/sites/g/files/zskgke326/files/2023-01/UNDP-DFS-Cryptocurrency-in-Africa.pdf.

Reduced Transaction Costs

This innovation will benefit consumers since investors receive greater value for their money, and financial services are automated and cheaper

Blockchain technology cuts transaction costs, simplifies decentralised systems, and provides distributed trust.[85] It has unique characteristics that allow institutions to operate faster, cheaper, and with fewer error rates, leading to reduced risks and capital requirements. This innovation could benefit consumers since investors receive greater value for their money, and financial services are automated and cheaper.[87] The continent has the world's largest unbanked population, quickest growth, and significant microbusiness penetration. Africans are considering blockchain-based financial services to lower remittance costs and invest in cryptocurrencies like Bitcoin.[88] One significant advancement in the financial industry is the potential implementation of a digital payment system. Therefore, blockchain or other DLT-based systems might be administered by private parties, governments, or similar synergies.

Similar to mobile money, blockchain enables more individuals to engage in financial activities like e-commerce and remittance. According to PWC research, a sample of 12 blockchain-powered payment systems in the United States (US), Kenya, Argentina, the Philippines, and Columbia charged 0-1% for cross-border transfers, compared to 2.7-3.5% for conventional financial institutions.[89] For example, Nigerian-based Bitpesa allows fast, affordable global business payments.[90] The platform converts cryptocurrencies to local currency and acts as a crypto exchange. Users can cheaply send a crypto asset to a recipient who can receive it in crypto or local money. What's more, in 2023, African currencies are losing value due to economic causes. Therefore, accepting and receiving crypto payments allows consumers to hedge against inflation while maintaining value.[91]

Cross-Border Payments and Remittances

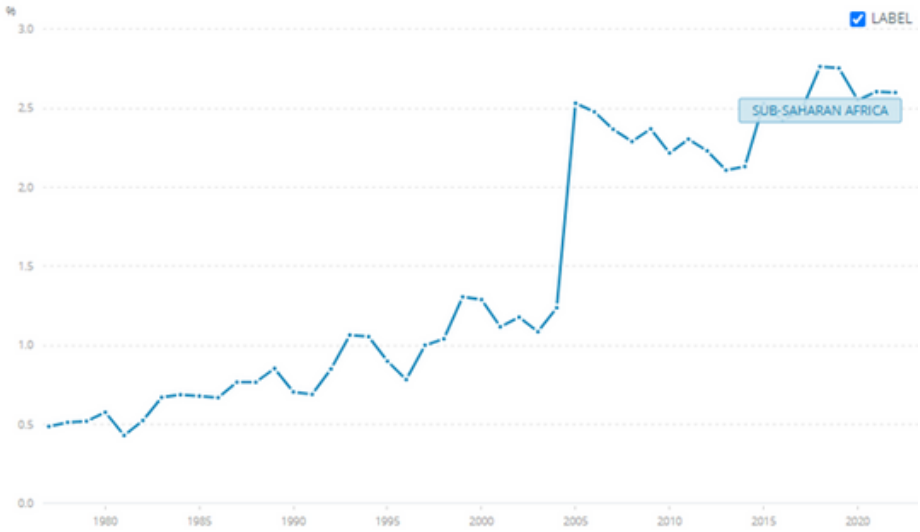
Cryptocurrencies make cross-border transactions easier. Traditional payment systems with many intermediaries are expensive and slow. By removing intermediaries, cryptocurrencies allow fast, safe transactions. Mercy Corps Ventures (MCV) conducted a Nairobi trial to test if digital stablecoins and mobile wallets minimise friction and costs in cross-border payments.[92] It determined that cryptocurrency payment lowers transaction fees by 93% regardless of the payment amount. Again, In a worldwide poll by Ripple and the US Faster Payments Council, 97% of respondents believed blockchain technology would dramatically cut cross-border remittance time and cost within three years.[93]

Bank transfers and credit cards dominate remittances and this create challenges for unbanked and underbanked Africans receiving payments from Europe and other developed nations. Thus, Centbee and Centi Ltd. established a collaboration at the London Blockchain Conference to make remittances between Switzerland and Africa simpler, quicker, and cheaper for the #African diaspora.[94] Centi Ltd.'s cash on-ramp feature and Centbee's off-ramps in Ghana, Senegal, Cameroon, Nigeria, Kenya, and Uganda address this essential problem. Aside from that, Ripple, a 2012 cryptocurrency-based remittance and payments network, is partnering with payments startup Onafriq (with 400 million mobile wallets) to extend remittances in Africa and to Gulf countries, the United Kingdom (UK), and Australia.[95] This will allow Africans to receive money effectively from the diaspora, fostering financial inclusion.

Stablecoins to Facilitate Cross-Border Payments

Cross-border remittances accounted for 2.5% of sub-Saharan Africa's GDP in 2020, or $42 billion, according to World Bank data. The region is the costliest to transfer money to internationally. At the end of 2020, sending $200 using traditional remittance systems would have cost $16.40 (or 8.2%). Hence, traditional money transfer routes proved prohibitive for African nations like Ghana, where remittances account for 6.3% of GDP, or Lesotho, where they account for 25%.[96] Stablecoins prove to be an effective alternative for informal merchants doing cross-border trading. It helps navigate bans on crypto usage alongside its advantages of anonymity and low transaction costs.[97]

Figure 8: Percentage of GDP Represented by Personal Remittances Received in Sub-Saharan Africa.



Source: World Bank, "World Bank Open Data," World Bank Open Data, 2022, https://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS?locations=ZG.

Blockchain analytics provider Chainanalysis stated that Africa received $105.6 billion in cryptocurrency in 2021, a 1,200% rise from $8.8 billion the year before as crypto expanded throughout the continent.[98] Stablecoins, a recent crypto innovation, accounted for many of these transactions. Stablecoins like USDT (value pegged on the dollar) save people the bureaucracy of opening traditional dollar accounts with banks.

What's more! Africans have become inventive on how they utlise their stablecoins for everyday and commercial transactions. For example, Techbal reported that Tochi Onyia, a former blockchain researcher in Nigeria, managed her earnings by withdrawing monthly expenses while storing the rest of her savings in a stablecoin.[99] These stablecoin savings are used to pay for trips to areas like Southeast Asia. Similarly, Uzochukwu Mbamalu, an entrepreneur behind Palremit, noted the preference for stablecoins over traditional banking for young Nigerians, especially in cross-border transactions, where stablecoins like USDT were commonly used to exchange for the Chinese yuan, previously offering higher returns due to their premium value in China.[99]

Figure 9: Global Market Vs Retail Cryptocurrency Growth

Source: Chainalysis, "What's Powering Africa's Grassroots Cryptocurrency Adoption?," Chainalysis, October 14, 2021, https://www.chainalysis.com/blog/africas-grassroots-cryptocurrency-adoption/.

Therefore, stablecoins are integral in facilitating local and cross-border payments in Africa. These digital currencies have their values pegged on stable assets such as fiat currencies or commodities. USDT, the most popular stablecoin, outperformed Mastercard and Visa in transaction volume. USDT processed $18.2 trillion in 2022, Mastercard $14.1 trillion, and Visa $7.7 trillion.[100] Evidently, the former offers a more predictable medium of exchange, reducing the risks associated with currency fluctuations.

Traditional transfer methods sometimes demand high fees, currency conversion costs, and unfavourable exchange rates, lowering African recipients' cash out. However, stablecoins use decentralised blockchain networks, eliminating intermediaries and reducing transaction costs.

For example, Kotani Pay USSD provides blockchain functionality offline. Using feature phones, migrant families and their dependants to remit and cash out stablecoins to their mobile money wallet.[59] The recipient's phone number becomes their wallet address, allowing them to receive digital assets. Again, Ugandan startup Eversend bundles fintech and stablecoin wallets to expand its currency exchange service.[98] For fintechs, the firm is providing stablecoin APIs for collections, payments, and currency conversions. The firm's currency exchange platform settles cross-border transactions using stablecoins, unlike banks and money transfer firms like WorldRemit, Moneygram, and Wise.

As a result, stablecoins also have the potential to provide quicker, cheaper, and safer remittances, helping African families and communities.[101] Stablecoin-using migrants sending money back home strengthen their domestic economies. This funding may boost local enterprises, education, healthcare, and entrepreneurship.

Intra-Africa Trading using Stablecoins.

Internal commerce in Africa is considered minimal compared to other regions. Obtaining dollars or euros for purchasing industrial inputs, agricultural products, or manufactured goods in neighbouring nations is complex.[102] Cross-border trade in Africa is often conducted in dollars. However, the USD is scarce and mainly accessible to large corporations and politically significant organisations due to the volatility of African currencies. Thus, trade settlements are challenging for small and medium-sized businesses (SMEs).

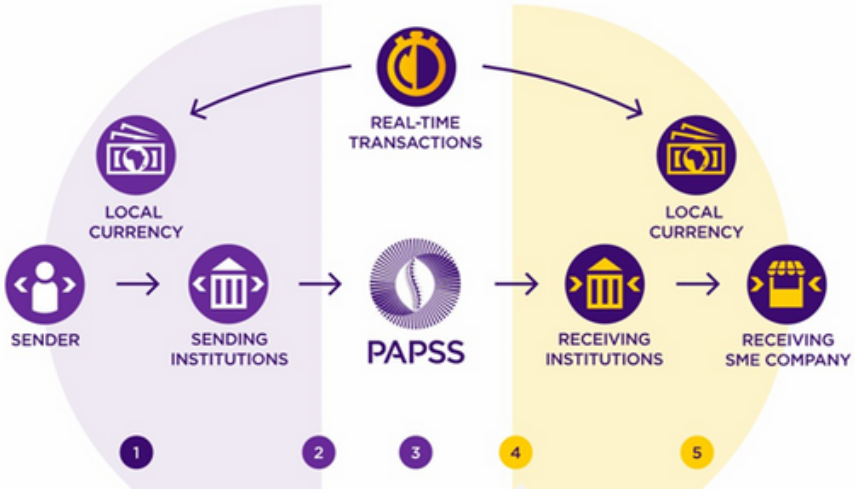
"Despite decades of negotiations and agreements within subregions and RECs in Africa, intra-African trade remains a tiny proportion of the continent's overall trade. ... [While] greater intra-African trade may be rhetorically appealing on grounds of economic nationalism or South–South solidarity, as a blueprint for accelerated development it is a fantasy." [102]

Crammer et al. 2022 research pointed out:

Currently, the Pan-African Payment and Settlement System (PAPSS) aims to facilitate fast, smooth cross-border transactions between participating nations and financial institutions. PAPSS, a realistic solution to the lack of a common African currency, includes six central banks, 18 commercial banks, three switch operators (primarily Nigerian), and five payment gateways.[99] The system is predicted to streamline international transactions and create Africa's SWIFT if widely implemented. Thus, cross-border traders on the continent will now access dollars and PAPSS network service providers conveniently.

Blockchain-powered stablecoins will revolutionize intra-Africa trading. They are a reliable and accessible digital currency solution for cross-border transactions. Thus, businesses can bypass the challenges associated with the scarcity of traditional foreign currencies like the US dollar or the euro. In this regard, Eversend aims to recreate PAPSS and SWIFT using global stablecoins.[104]In the future, it will explore privately issued blockchain variations of local currencies for rapid cross-border transactions. The firm is building an infrastructure to enable multinational enterprises to transfer money. This strategy will increase trade activities, enhance financial inclusion, and create new opportunities for small and medium enterprises (SMEs). For example, low-income households engaged in the informal sector can use stablecoins to sell their commodities to neighboring countries at higher prices.

Figure 10: The Pan-African Payment and Settlement System (PAPSS



Source: PAPSS, "PAPSS - Make Instant and Secure Cross-Border Payments in Local Currencies across Africa," PAPSS, 2023, https://papss.com/.

Central Bank Digital Currencies (CBDCs) for Cross-Border Payments

These digital currencies are risky because they enable the government's near-unfettered authority over private money, particularly in Africa, where crypto bans have failed.

CBDCs, or government-backed stablecoins, can be used as a cross-border payment option.[98] During cross-border trade, CBDCs flow from the payer's account to the recipient country's central bank, straight to the payee or peer-to-peer, without going via commercial banks. Thus, two or more parties must agree on standards and processes to make cross-border exchanges feasible. The World Bank denotes that there are various preconditions and high challenges to CBDC system interoperability and enhancing cross-border money movement.[105] These include financial concerns, technological inconsistencies (DLT standards), and legal hurdles. CBDCs for cross-border payments also raise currency conversion, cross-currency rates, and monetary sovereignty concerns. Hence, central banks are sceptical of non-uniform regulations applying across different borders and potential CBDC inconsistencies.

Noteworthy, at least nine African nations are exploring or preparing to develop CBDCs. They include Kenya, Madagascar, Eswatini, Rwanda, Ghana, Morocco, Tanzania, Zambia, and Tunisia.[106] However, these digital currencies are risky because they enable the government's near-unfettered authority over private money, particularly in Africa, where crypto bans have failed.[99] They also threaten private stablecoins that must maintain adequate reserves with central banks like regular banks.

Government Efforts in Cross-Border Payments

"Digitization of trade platforms will improve inefficiencies in the movement of goods and services at border posts." [107]

Zambia's President Hakainde Hichilema, at the Digital Government Africa Summit 2023.

AfricaNenda's report denoted that the Transactions Cleared on an Immediate Basis (TCIB) system helps address challenges like high costs, limited accessibility, and lack of transparency in cross-border payments within the Southern African Development Community (SADC) region.[107] TCIB offers a regional instant payments solution, making cross-border transactions faster more cost-effective, and simplifying compliance requirements while fostering increased competition within the formal financial system. Thus, the framework is spearheading a transformation in cross-border payments. The aim is to promote financial inclusion and enhance regional economic integration in the SADC region.

Similarly, governments can streamline regional cross-border payments through blockchain. Based on this foundation, countries can collaborate and standardize regulatory frameworks and financial protocols across participating countries. Integrating blockchain technology into existing financial infrastructures will establish secure and transparent cross-border payment channels. Blockchain will reduce transaction costs and processing times further while ensuring compliance with international regulations. This streamlined approach will significantly boost regional trade and economic development while boosting financial inclusion.

Conclusion

Africa requires blockchain-powered financial solutions to become financially inclusive. The diversified region includes marginalised people. Offering affordable and accessible financial services will aid those without access to traditional banking. Innovative solutions will alleviate poverty and boost economic resilience across Africa. Hence, blockchain promises to simplify decentralised systems, lower transaction costs, and provide distributed trust. It reduces risks and capital requirements by making transactions faster, cheaper, and less error-prone.

Notably, stablecoins use decentralised blockchain technology to eliminate intermediaries and lower transaction costs. These digital assets are integral in improving local businesses, education, healthcare, and entrepreneurship by facilitating remittances between African families and their loved ones in the diaspora. They also provide an avenue for alternative cross-border payments for African businesspeople wanting to avoid prohibitive transaction fees associated with traditional financial institutions.

Unfortunately, intra-Africa trading is a significant challenge in Africa. SMEs face challenges executing cross-border transactions due to lacking a common African currency and local currency volatility. Central Bank Digital Currencies (CBDCs) have emerged as a potential means to streamline transactions across borders. However, financial, technological, and legal inconsistencies arise. Besides, the government's control over private money and the necessity for reserves pose problems.

In response, the Pan-African Payment and Settlement System (PAPSS) aims to facilitate cross-border transactions between member nations and financial institutions. Additionally, the Transactions Cleared on an Immediate Basis (TCIB) system is a SADC government effort that seeks to improve cross-border payments, encouraging financial inclusion and regional economic integration. Based on these models, similar blockchain-powered interoperability systems with stablecoins as the exchange medium can transform intra-Africa trading. They are more trustworthy and convenient for the unique cross-border trade challenges in Africa.

Evidently, integrating blockchain technology into the existing financial infrastructures is the best way to create secure, transparent cross-border payment channels. The resultant system will minimise transaction costs and processing times while meeting legal and technical standards across various borders.

Education and Awareness

Empowering Blockchain Understanding

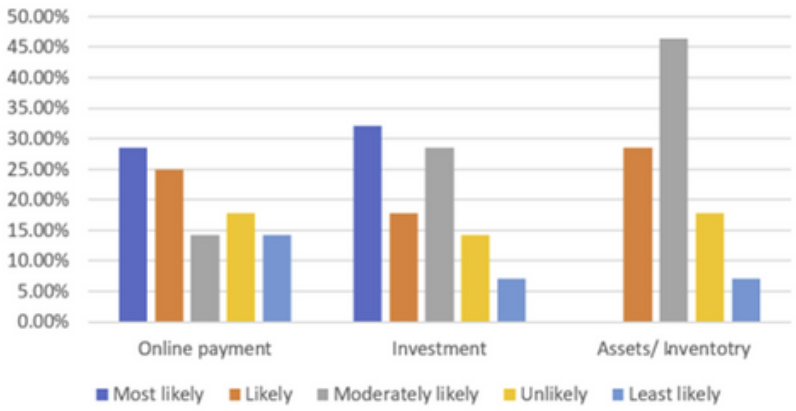
These outreaches highlight the advantages of decentralised financial systems and encourage the use of blockchain for transactions, savings, and investments.

Education and awareness play a pivotal role in unlocking the potential of blockchain-based financial solutions. The technology is at its nascent stage. But it is slowly becoming increasingly prevalent. Thus, understanding its benefits and functionalities becomes essential for both individuals and businesses. Comprehensive education should empower people to trust and adopt the technology. Blockchain is inherently associated with cryptocurrency and related fraud. However, blockchain does not necessarily mean Bitcoin or cryptocurrency. It is an incredible technology that can revolutionise payments and remittances in Africa. Awareness campaigns can dispel existing misconceptions. These outreaches highlight the advantages of decentralised financial systems and encourage the use of blockchain for transactions, savings, and investments. Bridging the knowledge gap will make it more accessible and inclusive across diverse communities in Africa.

Foundational to the booming Fintech industry in Africa has been education and awareness. According to Disrupt Africa's "Fintech in Africa 2023" study, Nigeria has over 2,000 fintech businesses, surpassing South Africa's 1,500. The analysis found that Nigeria's fintech businesses raised over $1 billion in 2022, surpassing South Africa's $600 million.[109]A large and digitally-savvy young population, an increasing middle class with disposable means, and government support have driven Nigeria's fintech industry. With more people becoming familiar and comfortable with digital technologies, the higher the penetration rates. In the same way, young people, being early adopters, have contributed to to crypto and blockchain awareness. Cryptocurrencies are experiencing growth in Africa as young people seek alternate finance.[110] Nevertheless, extensive efforts are needed to make the technology available to diverse populations.

Research on youth's cryptocurrency awareness and participation in Kenya revealed that 57% of respondents are likely to use cryptocurrencies for online payments, while 32.15% are less inclined to do so. The survey found that 21.43% of respondents would not invest in digital currencies, 50% were likely to do so, and 28.57% had a negative impression. The remaining 28.57% did not intend to hold cryptocurrency as assets or stock. Thus, this population is likely to utilise cryptocurrencies for online exchange and payment.[111]

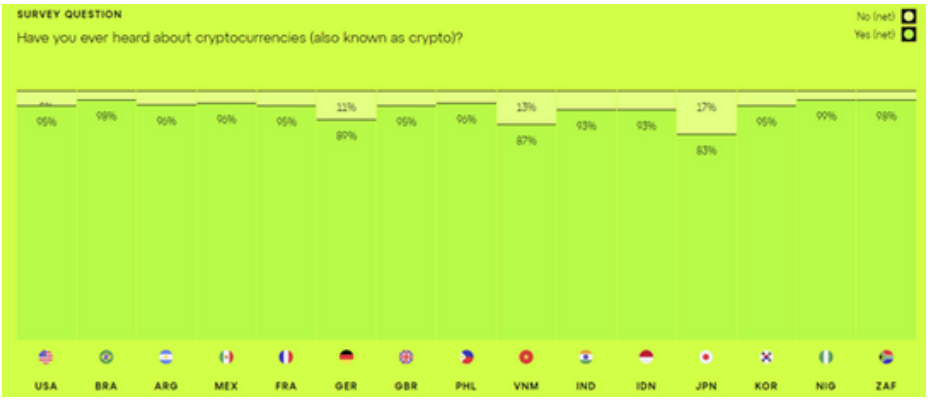
Figure 11: Rationale for Increasing Cryptocurrency Adoption



Source: Charles Guandaru Kamau, "The Cryptocurrency Market in Kenya: A Review of Awareness and Participation by the Youth," Journal of Asian Business Strategy 12, no. 1 (August 26, 2022): 49–56, https://doi.org/10.55493/5006.v12i1.4599.

Next, ConsenSys and YouGov's worldwide poll found Nigeria, Africa's biggest economy, to be the most cryptocurrency-aware country.[112] Nigerians and South Africans comprehended Web3 better than those from big economies like the UK, US, Japan, and Germany (99% and 98%, respectively). The survey comprised 15,158 18-65-year-olds from 15 countries. 70% of Nigerians said they understood blockchain fundamentals. With 76% of 1,001 Nigerian respondents owning or having held cryptocurrencies, their bitcoin knowledge is also commendable. Additionally, 90% of Nigerian respondents intended to invest in cryptocurrencies within a year, and 65% regarded them as a hedge against inflation and monetary devaluation. This premise shows the need for further education efforts among other African nations to reach the level of Nigeria and South Africa.

Figure 12: Global Web3 and Crypto Adoption Survey 2023



Source: Consensys, "Web3 and Crypto Global Survey 2023," ConsenSys, 2023, https://consensys.io/insight-report/web3-and-crypto-global-survey-2023.

The Bare Minimum Role of the Government So Far

"They want to put it (e-Naira) out there to get people to use it, but people don't have enough places to use it."[115]

Adesoji Solanke, Renaissance Capital, Nigerian Branch Director.

The government's involvement in the cryptocurrency space has been mostly indirect. Instead of supporting the mainstream adoption of crypto-based financial solutions, they have emphasised CBDCs. Financial inclusion is often touted as an objective of these programs.[60] But the way forward is not clear, nor is the value proposition for people with low incomes beyond the existing financial services in the market. CBDC programs may need to rethink technical connections to expand access and create corresponding financial literacy programs.

Bloomberg stated that a year after the eNaira's introduction (2022), fewer than 0.5% of Nigerians were utilising it.[113] For Nigeria's CBDC, e-Naira's anti-laundering procedures compromised users' privacy by allowing the government to track people's money and use it for control. Centralisation is also a major issue with the eNaira.[114] More people could have been educated about the advantages of a digital naira before pushing for adoption.

Again, Senegal collaborated with Banque Regionale de Marches (BRM) and eCurrency Mint Limited to launch eCFA in 2016, a digital currency based on its national currency. [115] The digital currency aimed to offer trustworthy and affordable financial venues for underbanked Africans. At the time, technical specifications and whether it would use a permissioned or decentralised blockchain network were unknown. Like the e-Naira, it was criticised for being government-controlled. Aside from over-centralisation, these CBDC initiatives have yet to provide citizen-focused use cases to encourage mass adoption.[116]

Institutional Awareness Programmes

Cryptocurrency exchange companies have been at the forefront of fostering widespread awareness. Educational initiatives, workshops, and outreach efforts contribute to building a knowledgeable and informed user base. These programs serve as premises for engaging the public regarding their service offerings and the underlying technology.

For example, Binance is promoting crypto education and adoption in francophone Africa. Binance's five-country francophone Africa tour in 2022 supported crypto and web3. Its community gatherings in Benin, Togo, Côte D'Ivoire, Cameroon, and Burkina Faso teach crypto and NFT basics. Aside from that, Binance opened a crypto centre in Cameroon to promote crypto literacy and acceptance![117] Binance hopes to boost African cross-border payments and business and wealth development by educating more people about digital assets and blockchain. Aside from that, a company like Polygon offer several boot camps to hone African developers' skills and abilities.[118]

"WorldCoin will be hard-pressed to prove that the users it was collecting data from were properly informed of who was collecting the data, why the data was being collected and the purpose of processing." [118]

Alex Blania ,Worldcoin CEO .

Notably, failure to promote user education can lead to operational disruptions. For example, WorldCoin claimed that it invested $4.8 million in cryptocurrency education in Kenya![119] After numerous instances of WorldCoin customers not understanding the product and the purpose of collecting biometric data, the Kenyan government and many opponents believe there is little to no proof of any education. Without sufficient education, users fall prey to security vulnerability scams or make uninformed financial decisions, leading to potential financial and privacy losses.

Industry Stakeholder Awareness Programmes

Lobbyist groups, communities, non-profit organisations (NGOs), and blockchain associations have been instrumental in promoting public education. These entities serve as advocates for the technology. Their efforts help dispel misconceptions and foster a deeper understanding of the transformative potential of blockchain and cryptocurrencies. Through collective action, these groups contribute significantly to creating a more inclusive and informed populace. They lay the groundwork for broader adoption and positive contributions to economic development across the African continent.

For example, the Stakeholders in Blockchain Technology Association of Nigeria (SiBAN) educates Nigeria's blockchain and cryptocurrency community. It promotes blockchain use, consumer protection, and regulator collaboration.[120] It aims to empower Nigerians to make the most of blockchain technology.

Kenyan-based Crypsense Academy leads digital asset management education. It provides basic to intermediate courses with insights from blockchain, Defi, and NFT professionals. Besies, Crypsense Academy, the first African Crypto Accelerator LaunchPad, coaches, funds and provides the technical infrastructure for blockchain and crypto businesses to tokenise concepts and launch tokens on global exchanges with institutional cooperation.[121]

In addition, the Africa Blockchain Center (ABC) graduated its first 105 blockchain developers.[122] Global specialists led the six-month training program, which focused on Cardano, Algorand, and Ethereum. Graduates from Kenya, Nigeria, Tanzania, Zambia, South Africa, and Benin learned about decentralisation, asset tokenisation, cryptography, smart contracts, and blockchain-based system development. [123]

Besides, the Blockchain Association of Kenya has been integral in lobbying the public in shaping digital asset policy in Kenya.[124] Its notable programme in 2023 was the Digital Asset Policy Safari (DAPS).[125] The project was to culminate into a comprehensive report featuring feedback from researchers, lawyers, media professionals, bankers, and other industry stakeholders. Its main goal is to promote innovation and legal clarity in the digital asset sector.[126]

Significance of Effective Education and Awareness

Empowering Informed Decision-Making

Understanding the fundamentals of these technologies enables users to assess risks such as price volatility and cybersecurity threats. As a result, they can navigate these platforms securely and make wise investment choices. Crypto assets' price volatility, driven by speculative demand, ownership concentration, and shallow marketplaces, sometimes makes them unreliable.[127] Potential investors should be better equipped to recognize warning signs and conduct due diligence. Hence, informed decision-making is crucial for fostering responsible participation in the crypto space, reducing the likelihood of fraud or financial mismanagement.

Building Trust and Credibility

A trustworthy ecosystem will motivate people to use cryptocurrencies. Education and awareness campaigns boost blockchain and cryptocurrency legitimacy. Demystifying these technologies, debunking myths, and fostering transparency improves user confidence in digital financial systems. For example, South Africa's blockchain-based property registration project demonstrated how proper education generates user confidence. The government gained support for the initiative by teaching individuals about blockchain's transparency and immutability, solving data integrity issues.[128]As a result, knowledgeable individuals are likely to likely value blockchain technologies and help propagate its adoption.

Encouraging Entrepreneurship and Innovation

Knowledge-oriented hackathons, certifications, and workshops create entrepreneurial opportunities and contribute to innovation. Effective education sparks interest and creativity, encouraging the development of locally relevant solutions. For example, new platforms have emerged in Africa, such as BitSika, Machankura, Lidya, YellowCard, Bitpesa, etc. Besides, blockchain training equips people for job opportunities, including blockchain developers, project managers, architects, security experts, and quality assurance. This spurs economic growth by bringing more participants into the digital economy.

Understanding Blockchain Use Cases

"WorldCoin will be hard-pressed to prove that the users it was collecting data from were properly informed of who was collecting the data, why the data was being collected and the purpose of processing." [118]

Alex Blania ,Worldcoin CEO .

Education catalyses recognising the transformative potential of blockchain in sectors such as real estate and supply chain. This inspires the adoption of innovative solutions. For example, Empowa, a Mozambique fintech startup, embodies the new finance democratisation trend.[129] It enables cryptocurrency crowdfunding for residential real estate development. As such, it provides decentralised finance's proof of concept in Africa by avoiding typical bottlenecks in house financing. Its blockchain is used to fund developers and innovators. If individuals understand blockchain's decentralised and transparent ledger capabilities in achieving such use cases, they will be incentivised to adopt it.

Similarly, Pezesha, a Kenyan fintech that scores and generates micro, small, and medium enterprises (MSME) loans, unlocked cryptocurrency-based MSME lending in East Africa. It allows a worldwide pool of lenders to invest directly in Kenyan businesses.[130] It tripled the turnover of a short-term loan portfolio in four months. This venture allows foreign lenders to send USD stablecoin, convert it to Kenyan shillings, and use other credit-scoring features to bridge the capital gap between MSMEs and investors. In 2022, over 3,751 Kenyan and 344 Ghanaian loans have been granted made via the platform.[131] Therefore, awareness of these blockchain-based innovations reduces reliance on traditional financing.

Recommendations

Collaborations and Partnerships

Partnership with Online Communities

Online communities and groups tap into dynamic platforms that already foster engagement and discussion. For example, SenBlock, Senegal's most active crypto community, educates people on blockchain technology, web3, and associated applications.[132] SenBlock partnered with Koolute (blockchain-powered real estate platform) to empower regional skills, teach about the real estate value chain, and promote blockchain use across Senegal.[133] Again, Tezos (a blockchain and cryptocurrency evangelism community in Africa) has identified a new strategy to create awareness through local languages.[134] For instance, it conducted a blockchain awareness programme in Fulfulde, a language shared by 15 million persons in northwest Africa. This approach extends the reach and fosters conversation and knowledge-sharing among illiterate and less educated populations. [135]

Partnership with Academic Institutions

Besides, educational institutions' partnerships can leverage established networks to integrate cryptocurrency education into curricula. This will empower the next generation with a foundational understanding of digital assets. For example, in March 2023, over three thousand students attended the first stop on Binance's East Africa tour at Kenya's Jomo Kenyatta University of Agriculture and Technology.[136] In May 2018, Ether Africa's founder, Lamine Diallo, advocated for blockchain courses at both public and private institutions, including the University of Nairobi.[137] Next, the @ilabAfrica at Strathmore University teamed up with 482.solutions to provide courses in blockchain solutions development.[138] The institution also partnered with Land LayBy Technologies, a company that focuses on real estate and social impact technologies, to release a blockchain product built on the Ethereum platform.[139] Such collaborations help develop tailored educational programs, workshops, and resources to address unique challenges and opportunities in the African context.

Partnership with Blockchain Associations and Lobbyist Groups

These influential organizations offer valuable insights into the cryptocurrency landscape. They can actively contribute to the formulation of policies that promote innovation and protect users. For example, Afriplains Digital, Tanzania, and Blockchain Worx, Singapore, partnered with the Blockchain Association of Africa (BAA) to promote blockchain education in Africa.[140] [141] [143] The collaboration fosters blockchain technology awareness across the continent through evangelism, community outreach, and capacity building. The partnership began with Blockchain Worx's Blockchain Innovation Centre in South Africa, Uganda, Rwanda and Tanzania, providing institutions with the tools and experience to investigate and develop blockchain solutions for African businesses and society.[142] Through such extensive advocacy, people are likely to understand blockchain use cases.

Innovation Hubs

Innovation hubs and regulatory sandboxes encourage blockchain and cryptocurrency adoption. The hubs provide a space for experimentation while ensuring compliance with regulations. UNDP denotes that pilots and experimentation within fintech-related regulatory sandboxes can test cryptocurrencies' potential benefits, such as financial inclusion across various geographic, income, and gender groups, quick and inexpensive payment, trade facilitation, ecological diversity improvement, etc.[56] Regulatory sandboxes will allow crypto firms to test new financial products, services, and business models with real clients while regulators assess the risks and advantages. Again, specific Sustainable Development Goals (SDGs) should be included in digital currencies business concepts and models. Currently, Eswatini, Kenya, Mauritius, Mozambique, Nigeria, Rwanda, Sierra Leone, South Africa, Uganda, and Zimbabwe have fintech regulatory sandboxes.[144] These governments must carefully evaluate crypto pilot programmes in their sandboxes. Hence, other governments can use these precedents to develop cryptocurrency policies for their respective jurisdictions.

Noteworthy, Adanian Labs is a venture studio operating in Kenya, Tanzania, Zambia, South Africa, and Nigeria that specializes in AI, blockchain, and smart technologies. Its core focus is on launching, growing, and scaling tech firms in these industries. The company frequently organizes hackathons to encourage innovation and provide participants with opportunities for skill enhancement.[145] Besides, the Innovation Hub in Pretoria, South Africa, helps IT and innovation startups. Its incubation and acceleration programs help entrepreneurs develop ideas and find funding.[146] Therefore, these hubs serve as catalysts for the creation of technology-driven solutions that address the unique challenges that marginalised communities face. As educational hubs, they also offer training programs, workshops, and mentorship opportunities that empower individuals with the skills needed to navigate the digital landscape.

Research and Development

Research and development (R&D) are the focal points of advancing the blockchain and cryptocurrency space. Robust R&D efforts help develop innovative technologies and solutions tailored to the unique socio-economic contexts of African nations. For example, the Blockchain Web 3 R&D Lab was launched in collaboration with Crypsense Digital Group and The Africa Blockchain Center.[147] Through blockchain education, research, and development aid, the centre intends to assist African governments, enterprises, and organizations in their transition to Web 3. The lab provides training programs, creates tokenized businesses, and promotes sector-specific blockchain adoption in industries such as health care, finance, and agriculture. Based on its African Women of Web 3 (AWoW3) program, it also focuses on gender inclusion and empower poor women.

Furthermore, the University Blockchain Research Initiative (UBRI) in South Africa provides pertinent research on blockchain technology and its applications. It assesses, provides workshops, and works with industry partners to apply blockchain to diverse areas.[148] Next, the South African Institute of Chartered Accountants (SAICA) is exploring blockchain applications in accounting and auditing. The project aims to improve financial reporting openness, efficiency, and assurance.[149] Therefore, the knowledge generated through R&D elevates awareness and equips people with the skills and resources needed to understand the space. Ultimately, it fosters a more inclusive and sustainable financial ecosystem across Africa.

Conclusion

Education and awareness are key to realising the potential of blockchain-based financial solutions. Fintech success in Africa was fueled by a large, digitally-savvy, youthful population, an expanding middle class with discretionary income, and government support. Against this backdrop, young Africans have embraced crypto and blockchain as early adopters, stimulating growth in the industry.

The government's cryptocurrency engagement is primarily indirect. Some governments have launched CBDCs, while others are still testing their efficacy.

Most governments have been coy about supporting the mainstream adoption of crypto-based financial solutions. sThe future of CBDCs, on the other hand, remains unclear. Beyond existing financial services in the market, governments must rethink the value proposition for low-income persons.

Most importantly, institutional awareness programmes help users become informed and knowledgeable about emerging technologies. Besides, industry stakeholder awareness campaigns have also helped educate the public about blockchain and cryptocurrency. Again, blockchain groups encourage blockchain adoption, policy creation, and regulator collaboration. They dispel myths and explain their transforming power. These efforts have established a foundation for widespread acceptance and positive economic development in Africa.

Education and awareness promote informed decision-making, trust, credibility, entrepreneurship, innovation, and blockchain use cases. Collaborations and partnerships with online communities, academic institutions, and local outreach (that can employ vernacular languages) should be encouraged. Apart from that, the widespread adoption of blockchain will necessitate governments to develop innovation hubs and regulatory sandboxes. These spaces allow innovation while meeting regulations. Lastly, R&D is crucial to blockchain and cryptocurrency development. These projects help African governments, businesses, and organisations transition to Web3 seamlessly. They research blockchain technologies and their applications for local use cases.

The Level of Preparedness of Excluded People in the Use of Blockchain and Cryptocurrencies

Policy-Wise

This phenomenon shows that most historically financially excluded populations are unlikely to benefit from blockchain and crypto-based financial solutions.

Cryptocurrencies continue to grow popular in Africa, but many countries lack clear policies or rely on poorly formulated laws. Countries like South Africa, Nigeria, Kenya, Mauritius, and Namibia are making significant strides. There is a need for further policy research, development, virtual asset categorization, licensing, data privacy and security, consumer education, fraud mitigation, international collaboration, and periodic review measures. Digital financial inclusion in SSA averages 39%, with the lowest and greatest values of 2% and 68%, respectively.[150] This phenomenon shows that most historically financially excluded populations are unlikely to benefit from blockchain and crypto-based financial solutions. The OECD recommendation of the Council on Blockchain and Other Distributed Ledger advocates for an environment that supports technological innovations based on multi-stakeholder collaborations (e.g., with the public, private, and academic sectors) to support small and medium-sized enterprises and entrepreneurs.[151] In response, Nigeria has a National Blockchain Adoption Strategy,[152] Kenya has partnered with Abu Dhabi-based Venom to establish Kenya as a blockchain hub[153] and South Africa has a 2024 strategic plan to incorporate stablecoins and blockchain to promote digital financial inclusion.[154] Evidently, it is the countries that have branded themselves as the "Big Four" in African tech that are blockchain-oriented.

Accessibility-Wise

USSD-based crypto payment solutions like Kotani Pay and Machankura require widespread market acceptance to reach mobile money's level.

Onboarding onto a decentralized exchange (DeX) platform is not that easy. It typically involves creating an account, generating and securing a private key, and acquiring the first crypto coin, which is too much work compared to mobile money accounts. GSMA reported that sub-Saharan Africa is the worldwide epicenter of mobile money, accounting for about half of all verified accounts, with $2.3 billion traded per day.[155] Mobile money has been able to promote financial inclusion by allowing unbanked and underbanked populations to send and receive money, access credit, and save money via their mobile phones. USSD-based crypto payment solutions like Kotani Pay and Machankura require widespread market acceptance to reach mobile money's level. In 2023, Machankura had 2900 users across 7 African countries [156] compared to 435 million active mobile money accounts.[157] This means that even though mobile crypto-based financial solutions aim to recreate the success of giant telco services such as M-Pesa, MoMo, and Orange Money, they have a long way to go. Aside from that, a lack of bank engagement in crypto limits access to card, POS, and wallet alternatives.

Affordability-Wise

The efficacy of blockchain-based financial solutions lies in their ability to reduce transaction costs for cross-border payments and remittances.

Additionally, a selling point of blockchain-powered financial solutions is the reduced transaction costs. For example, Coinbase does not charge a fee to transfer cryptocurrency from one Coinbase user's main balance to another. Users only incur costs when they buy, sell, or convert crypto. In this case, you'll pay 1% for all crypto payments (cheaper than bank settlements).[158] However, there is no crypto infrastructure to promote crypto transactions. Few businesses accept crypto payments, while crypto ATMs are expensive (charging above 10% -15% transaction fees).[159] These limitations are barriers to financial inclusion considering the free till costs that mobile money providers like M-Pesa offer. Thus, the efficacy of blockchain-based financial solutions lies in their ability to reduce transaction costs for cross-border payments and remittances. The World Bank's Migration and Development study estimates that Sub-Saharan Africa would receive US$49 billion in diaspora remittances in 2021.[160] Stablecoins now account for 59% of crypto-asset transfers, up from 17% in 2021. [161] They are less volatile and enable B2B and B2C cross-border payments and allow families in the diaspora to remit money to their families back home.

Awareness-Wise

There is little incentive from the government.

The widespread adoption of blockchain depends on the proportion of individuals with digital skills. In impoverished African nations such as Chad, the Central African Republic, Niger, and Togo, less than 1.5 percent of people have these abilities.[162] Envisioning the preparedness of African countries to promote blockchain awareness has significant blockers. The institutional, corporate, community and independent efforts to achieve blockchain education are commendable. The first issue is that most of these outreach campaigns are developer-focused. VASPs organize free hackathons and builder events to increase engagement on their platforms. However, there are limited educational rails to facilitate other career developments, such as project management, blockchain architecture, blockchain security experts, etc. Most individuals who take an alternative path to development are self-learners. This means that they have to spend money on edutech platforms or get caught up in complex and deceptive courses available online. Worst still, some individuals are not motivated to pursue other blockchain opportunities if not crypto trading. In Africa, institutions such as Crypsense, Africa Blockchain Institute (ABI), and Africa Blockchain Center (ABC) are at the forefront of blockchain education and awareness. But, there is little incentive from the government. The latter must be at the forefront of offering grants for R&D, incorporating blockchain studies into tertiary education, and supporting grassroots blockchain outreaches.

Report Conclusion

Congratulations for reaching this far in the report. We appreciate your consideration and interest.

We recognize the fragmented nature of available data for blockchain solutions' accessibility and regulatory dynamics, Nonetheless, our commitment to presenting a holistic perspective on blockchain-specific activities and regulatory postures in Africa has been unwavering.

Cryptocurrencies are gaining popularity in Africa due to the need for financial inclusion, economic challenges, currency volatility, and cross-border transactions. Nigeria, South Africa, Mauritius, and Kenya are leading the way in cryptocurrency legislation.

In terms of **policy,** this is an opportunity for African governments must set the standard for crypto regulation. Effective policies should focus on research, development, virtual asset categorization, licensing, transparency, consumer education, risk mitigation, international collaboration, and periodic review. Governments must engage virtual asset service providers and ensure compliance with regulations, adopting a technology-neutral approach for adaptability, inclusivity, and contingency.

Based on the pillar of **accessibility**, cryptocurrencies are becoming more inclusive due to their decentralization and borderless nature. However, they are mainly available to individuals with internet connections. Thus, mobile-based crypto solutions using USSD technology can help reduce financial inclusion obstacles. Besides, blockchain-based digital finance trends, such as QR code payment patterns and crypto asset-management wallets, aim to bridge the gap between traditional and decentralized finance in Africa. Accessibility is reflected on Africans increasing usage of cryptocurrency for e-commerce, online payments, and cross-border transactions.

Central Bank digital currencies (CBDCs) in some African countries aim to address the challenge of cryptocurrency users not depositing their assets in local banks or mobile money providers. The problem is that they are over-centralised, hindering widespread adoption. Otherwise, governments should consider blockchain technology in providing secure digital identity. This way, individuals without traditional banking credentials can access financial services.

With respect to the **affordability** pillar, blockchain-powered financial solutions help bridge the gap for marginalized populations and reduce poverty. Blockchain technology reduces transaction costs, simplifies decentralized systems, and provides distributed trust, allowing institutions to operate faster and with fewer errors.

Intra-Africa trading is challenging due to the lack of a common African currency and currency volatility. Central Bank Digital Currencies (CBDCs) can be used as a cross-border payment option, but face financial concerns and legal hurdles. Hence, integrating blockchain technology into existing financial infrastructures can establish secure, transparent cross-border payment channels.

As for the **education and awareness** pillar, blockchain adoption drivers will depend on large, digitally-savvy young population, increasing middle class, and government support. Currently, institutional awareness programs, industry stakeholders, and blockchain associations promote public education about blockchain and cryptocurrencies.

Collaborations with online communities, academic institutions, and local outreaches are recommended. Going forward, innovation hubs and regulatory sandboxes are essential for fostering blockchain adoption. Research and development (R&D) will be crucial in enabling African governments, enterprises, and organizations transition to Web 3 and contribute to blockchain technology and applications.

Successful blockchain use cases in Africa aimed at achieving financial inclusion is evidence enough the technology's capabilities. Africa's future, especially with blockchain is bright and exciting. Therefore, the time is ripe for governments, the public, and private players to come together to help the technology achieve the four pillars, namely policy, accessibility, affordability, and education. Blockchain is strategically poised to promote inclusion across the continent.

About Author

David Otieno is an independent blockchain researcher with a specific focus on the digital transformation unfolding in Africa, particularly within the realm of blockchain technology. My mission is to promote a deeper understanding of the blockchain technology and in order to facilitate regulatory advancements and drive adoption.

I recognize that many of you are deeply or partly involved in the blockchain industry, and I want to emphasize that we all started somewhere on this journey. Drawing upon my combined expertise in engineering, research and tech, I aspire to make meaningful contributions to this space by providing valuable research insights. These findings will not only aid in the development of regulatory frameworks but also inform strategic decision-making for C-suite leaders and diverse industry stakeholders .

In 2022, Otieno founded Chaintum Research - a continental research organization that explores blockchain strategies and opportunities to advance Africa's socio-economic ecosystem. The author is an Electrical and Electronic Engineer and a Certified Blockchain Expert. He lives in Nairobi, Kenya.
The author extends an invitation to all of you to collaborate with me in various research capacities to collectively contribute to the growth and maturation of the blockchain ecosystem. Let us join forces to advance this transformative technology and its impact on Africa.

About Chaintum Research

Chaintum Research is a continental research organisation that drives blockchain and Web 3 transformation in Africa. Founded by David Otieno in 2022, the organization has been at the forefront of investigating blockchain's transformative potential in the continent.

Our research program is supported by industry stakeholders, mainly consisting of leaders, managers, enterprises, corporations, and governments. The research activities aim to bridge the existing gap between blockchain technology applicability and socio-economic performance. We explore including policy formulation, financial inclusion, supply chains, real estate, energy and mining, agriculture, telecommunications, tourism, gender equality, philanthropy and aid assistance, healthcare and education.

Our research contributors come from the public and commercial sectors, large enterprises and technological startups, university and research institutes, and the global professional services industry. They present a wealth of views and perspectives as practitioners, inventors, researchers, thought leaders, managers and key players in the blockchain ecosystem.
Our findings are available to the public under a Creative Commons licence to aid in the achievement of our mission. Please visit our membership page to learn more: https://chaintumresearch.org/chaintum-membership/

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Jamelino specialises in Inclusive digital economies / Payment systems / Fintech / Mobile money / Digital transformation / Financial inclusion

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Non-Resident Senior FellowNon-Resident Senior Fellow African Center for Economic Transformation (ACET).

Blaise focuses on technology and Public Policy| Tech Co-founder | Social Innovation | Digital Innovation

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Through Research

https://chaintumresearch.org/ +254703426977 info@chaintumresearch.org

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