AFRICA BLOCKCHAIN INSTITUTE

Algorand FOUNDATION

2021

AFRICA BLOCKCHAIN REPORT

...accelerating Blockchain Innovation across the Continent

The work culminating into this report was funded by the **Algorand Foundation**

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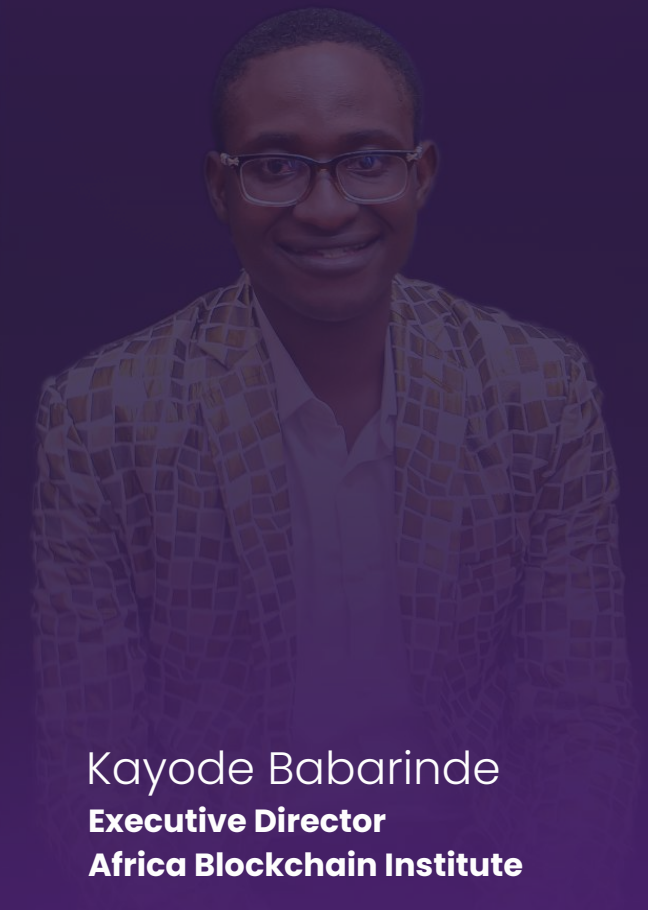
FOREWORD

Blockchain is not just another technology. ***Blockchain is the foundation for the second era of the internet*** – an internet of value, where anything of value, including money, our identities, cultural assets like music, and even a vote can be stored, managed, transacted, and moved in a secure, private way. Blockchain is poised to transform every industry and managerial function - redefining the way we make transactions, share ideas, and manage workflow. The world is undergoing technological development at an unprecedented and explosive pace. Considered the "Fourth Industrial Revolution," this exponential growth will fundamentally alter the way we live, work, and relate to one another. These changes are further accelerated by the advent of Blockchain Technology and are perhaps most palpable on the African continent.

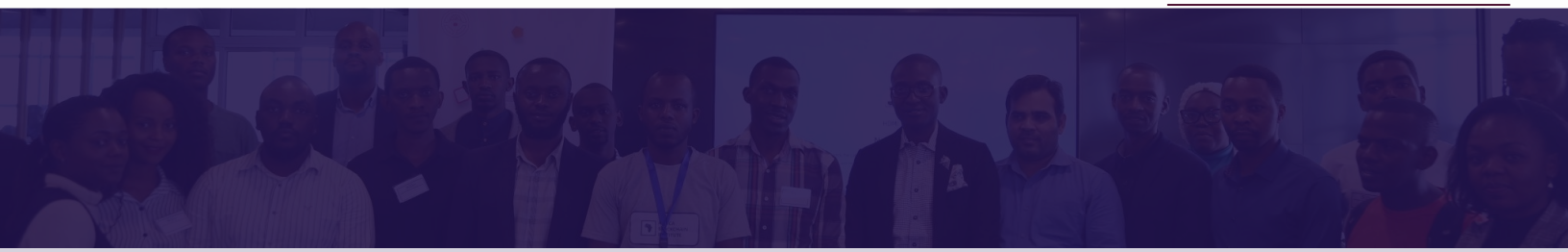


Kayode Babarinde
Executive Director
Africa Blockchain Institute

In Africa, the narratives are changing, especially, with increased communities of vibrant minds, driving solutions, and competing on global platforms. These groups are not waiting on templates, rather creating their own unique templates, that can be modelled across the world. Such an interesting time!, especially now, with the COVID-19 Pandemic, the benefits of Blockchain Technology cannot be overemphasized, for digital transformation across sectors.

I'd like to give kudos to the Research Team that has put this Report together, as it clearly distils the misconceptions of Blockchain activities in Africa, with a focus on some major selected countries. Through this Report, you will get to understand what individuals, corporates, including government institutions, in Africa, are doing with Blockchain Technology. The Report is truly African, as the Research Team sat with a number of Tech Founders, Business Executives, Developers, Academics, Policy Makers, Experts, and Thought Leaders, of African Descent, operating in Africa, giving their unbiased experiences on the reality of Blockchain adoption across the continent, Africa. This quality information, analysis, and resources will set a new paradigm in raising the new generation of African Blockchain Leaders.

This is an Annual Report, I hope you find useful information from this First Edition. Many thanks to the Algorand Foundation for supporting this research, as we look forward to the Year 2022.



EDITOR'S REMARKS

It is a great privilege to lead this research project. It has been six months of learning, coordinating and putting this report together. I cannot be prouder for the work we have done to contribute to the Blockchain technology knowledge ecosystem in Africa.

Our primary goal is to uncover the various Blockchain innovations happening at the grassroots, particularly within the geographical scope of this research (Nigeria, Kenya, Tunisia and South Africa). I am glad that we got to see what startups are doing with Blockchain, focusing on other use cases outside the most popular cryptocurrency use case. The foregoing also helps in clearing the many misconceptions that come with Blockchain technology. This research has established that cryptocurrency is not the same as Blockchain as believed. Blockchain education is still at its infancy stage across the continent.

We had sit-downs with key technology stakeholders who spoke to a broader spectrum of issues about Blockchain technology policies and potentials in Africa. We have carefully captured all their thoughts and granularized the insights from data analysed for the reader's understanding.

We hope this report will continue to serve as a "go-to" resource for Blockchain Innovation Investors, Blockchain Researchers, curious minds, Technology Policy Makers and the general Blockchain Startup Ecosystem for information, data and collaboration.

Enjoy reading!

Oluwaseun David ADEPOJU
Editor, Africa Blockchain Report

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This report has been made possible because of the following people and organizations:

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ABOUT

Africa's foremost Blockchain Think-Tank that is reimagining the possibilities of Blockchain Education, extensive Evidence-Based Researches, and High-End Deployment solutions, for Digital Transformation in Africa.

ABI wants to inspire and multiply the kind of technology disruption that furthers innovation, decentralization, and other areas of scholarship that will best serve Africa. The Institute is committed to generating strategic programs, deploying solutions, and researching policies, by working with others in solving Africa's great challenges, using blockchain technology. ABI brings together leading experts in government, business, and academia, from all over the world to provide the highest quality research, and teachings, that push the boundaries of human knowledge.

For more information visit
https://africablockchain.institute/

The Algorand Foundation is a not-for-profit organization that has a vision of a borderless, frictionless economy built on public, decentralized blockchain technology. The Foundation envisions a wide breadth of applications being built on the Algorand protocol by a new, broader community of blockchain and mainstream developers. The Foundation is committed to facilitating this innovation in a sustainable and eco-friendly manner.

For more information, visit
https://algorand.foundation.

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INTRODUCTION AND PURPOSE

The industrial revolution came with a number of innovative technologies, Blockchain being a major one has brought a huge opportunity for disruption across all sectors of the society. While many still grapple with the understanding and potentials of this technology, others are already onboarding on all that the technology has to do from smart contracts to cryptocurrency encryption wallets etc.

It is very pertinent to note that blockchain technology came with a lot of misconceptions, especially in Africa.

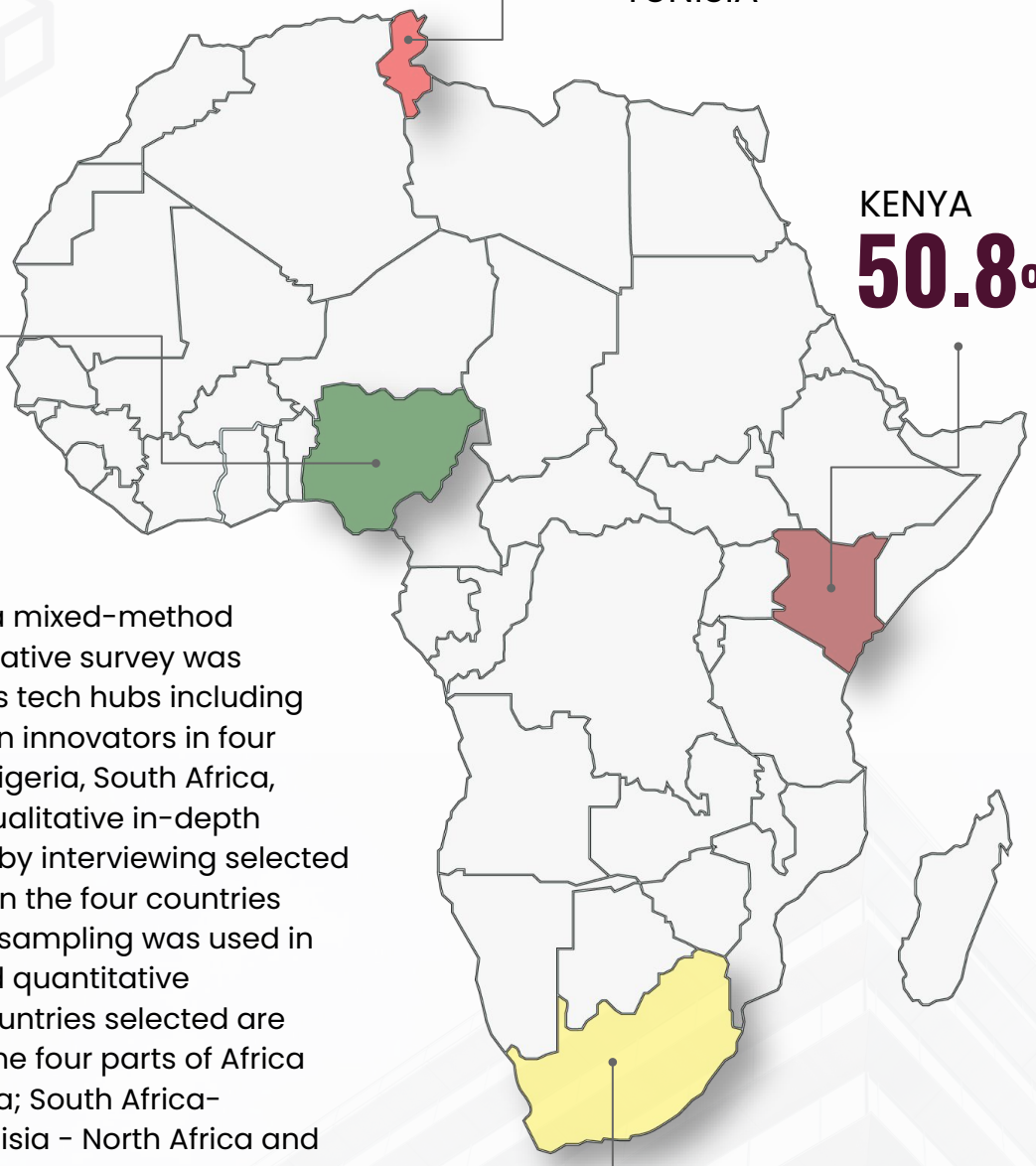
The many conspiracy theories about cryptocurrencies have put blockchain on a synonymous track with words such as scam, Ponzi etc amongst many Africans who are ignorant of the technology.

Against the ignorance of the technology among many in Africa, we can not deny the impact, role and usefulness of Blockchain in many sectors. Greater yet is the potential that lies in the technology for new startup founders and public services stakeholders in Africa. This research has been conducted to study the trends of Blockchain activities in Africa and has resulted in the production of this practitioner report to enlighten the African public on Blockchain use cases, success stories and future patterns of expectations on the technology.

Blockchain technology has been riddled in different quarters in Africa as a tool for Ponzi schemes and cryptocurrency scams. The level of ignorance on this technology is still relatively high in many parts of Africa and it is high time we experienced a change in narrative. It is against the aforementioned that the Africa Blockchain Institute in partnership with the Algorand Foundation conducted continental-wide research with the aim to showcase the Blockchain activities across Africa by technology startup founders, Blockchain innovators and the technology ecosystem stakeholders. Succinctly, the content of this report portrayed the following research objectives;

1	To gain in-depth knowledge of the use of blockchain technology in Africa.
2	To bridge the knowledge gap between academic blockchain technology research and Industrial blockchain use and application.
3	To produce an African blockchain report that is data-rich and truly representative of the real situation of use cases, innovation and application of blockchain in Africa.

SCOPE & METHODOLOGY



The research used a mixed-method approach. A quantitative survey was administered across tech hubs including freelance blockchain innovators in four African countries (Nigeria, South Africa, Tunisia, Kenya). A qualitative in-depth interview was done by interviewing selected ecosystem players in the four countries selected. Purposive sampling was used in both qualitative and quantitative approaches. The countries selected are representatives of the four parts of Africa (Nigeria- West Africa; South Africa- Southern Africa; Tunisia - North Africa and Kenya - East Africa). ***These countries have been selected due to the top roles they play in the blockchain space in Africa.***

SCOPE & METHODOLOGY

Data Collection

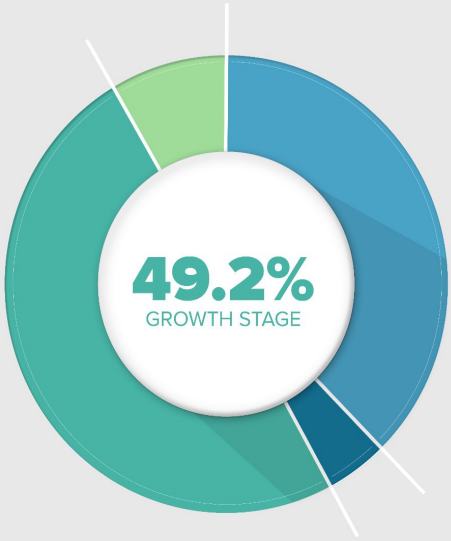
The total number of responses from the survey in the four countries totalled 290 (Nigeria, Kenya, South Africa and Tunisia). We set out to get a maximum of 100 responses in each country but the data collection pattern showed that the level of innovation, education and blockchain innovation ecosystem in each country varies. The data was collected from startups across different stages of growth and not just targeted towards the already known names that may have appeared in other mainstream tech reports. This is a unique value proposition of this report. These new entrants and innovators are believed to possibly go mainstream in the next few years.

Key Informants were also interviewed across the different countries.

Data Coding and Cleaning (Survey)

The dataset was cleaned to eliminate confounding variables and redundant data. This is necessary for capturing the most important data for deeper insights.

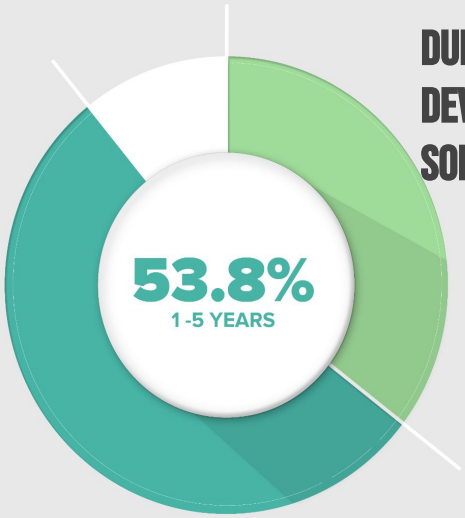
RESULTS OF DATA ANALYSIS



STAGE OF COMPANY

- SCALING STAGE 35.4%
- IDEATION STAGE 35.4%
- ESTABLISHED 10.8%
- GROWTH STAGE 49.2%

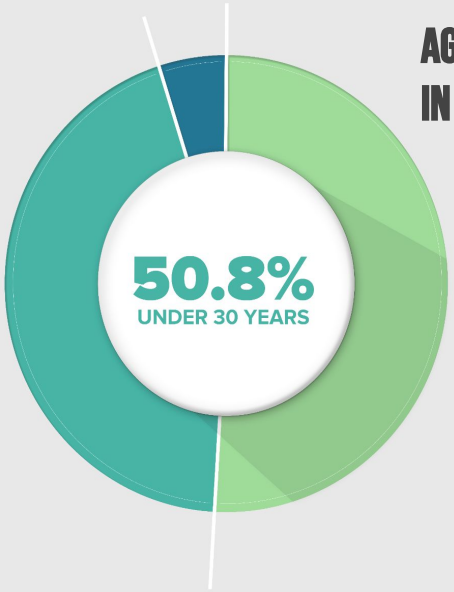
Across the four countries of study (Nigeria, Kenya, South Africa and Tunisia), 49.2% of the companies that participated in this study are at the growth stage while 10.8% are strongly established and profitable companies. In addition, the data showed a lot of positive potential for pioneering new economic models of innovation in the Blockchain space in Africa as 34.5% are in the scaling stage while 35.4% are still at the ideation stage.



DURATION SPENT ON DEVELOPING A BLOCKCHAIN SOLUTION

- LESS THAN A YEAR 35.4%
- 5 - 10 YEARS 35.4%
- 1 - 5 YEARS 53.8%

The highest percentage of the startup's companies are in their first five years of operation with 53.8% of the companies across the four countries of study. In addition, 35.4% of the startup companies are in their first year of operation and this shows great potential for growth through incubation, acceleration and funding support.

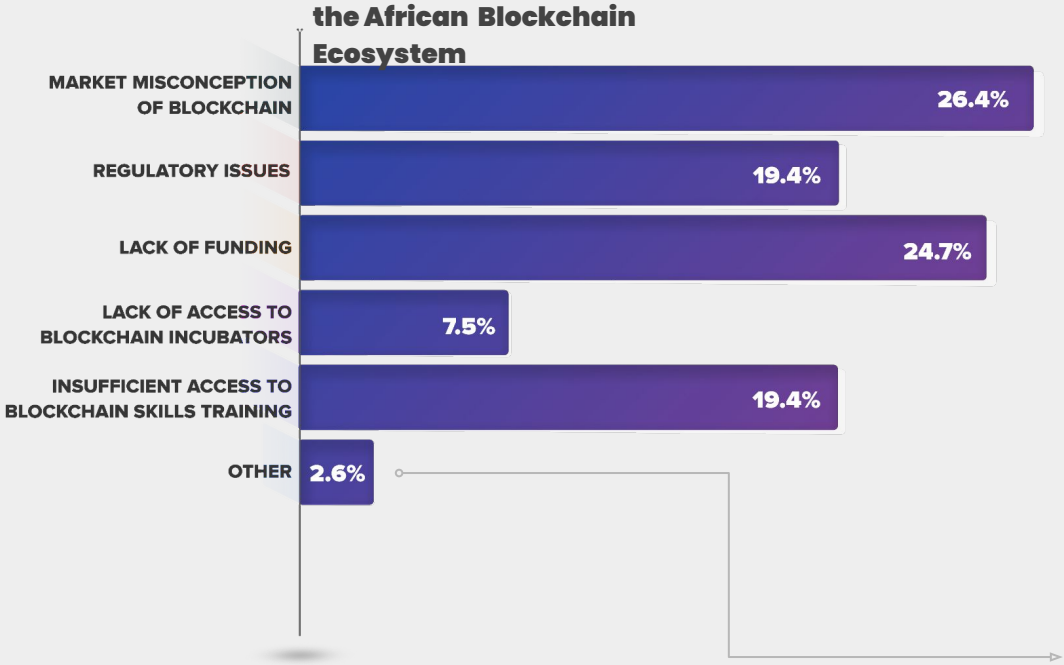


AGE OF PARTICIPANTS INVOLVED IN BLOCKCHAIN SOLUTIONS

- UNDER 30 50.8%
- UNDER 20 4.6%
- 30 AND ABOVE 44.6%

The data showed that the startups building blockchain solutions are largely under 30 years old (58.8%) old which is the right indicator for a vibrant blockchain ecosystem startup ecosystem. Even more promising is the under 20 years old who represents 4.6% of the respondents.

Most Pressing Challenges in the African Blockchain Ecosystem



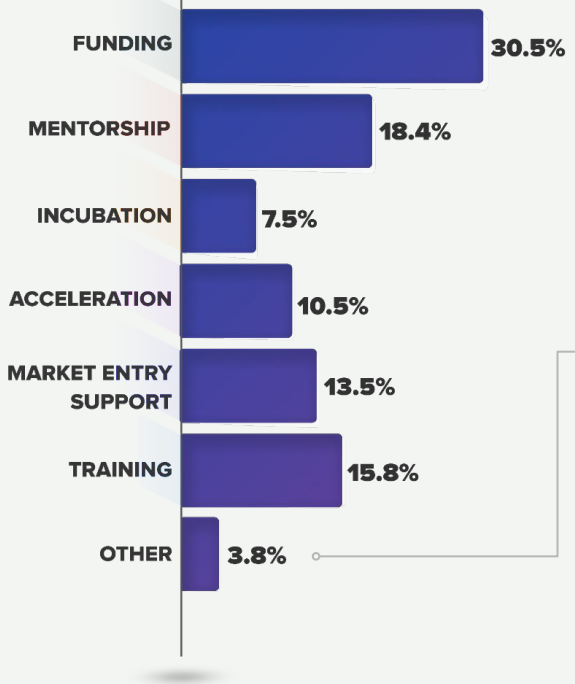
Most people do not understand the power of blockchain. A bigger problem though is the lack of trust for freelance developers

Sparse number of Blockchain developers/talents in Kenya

Clients don't understand Blockchain. So it is hard to convince them that it is a good technique

Lack of trust in how regulated firms transact with each other

Most Pressing Support Needed by Blockchain Ventures Across the Continent



Support and training for freelance developers

Access to Blockchain developers

Awareness on Blockchain

Market awareness

Train people to trade Cryptocurrency

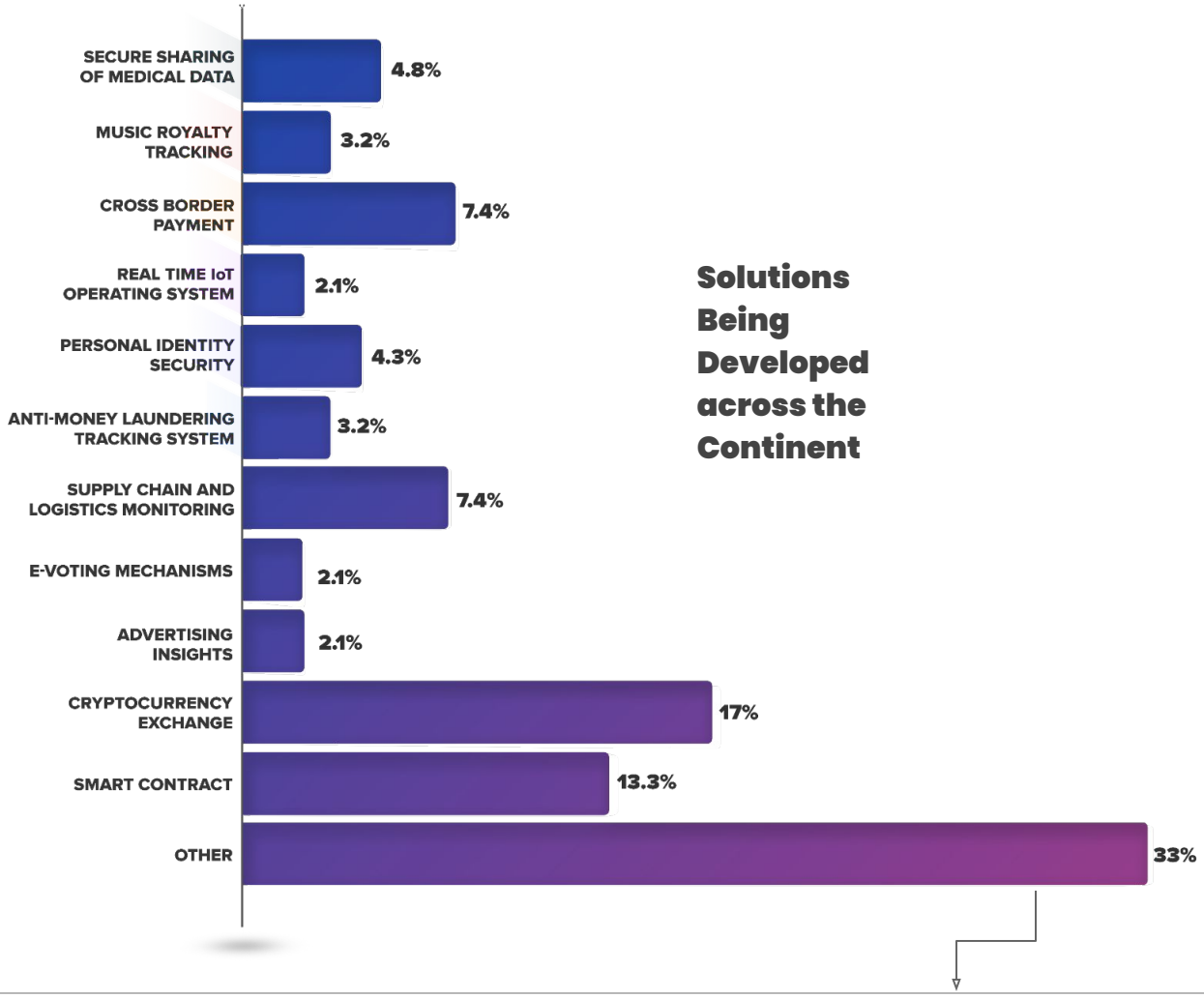
Better licensing access

Build of trust between regulated firms

None at the moment

Awareness

Qualified talents



Solutions Being Developed across the Continent

Multi Solutions
Software Development
Social media applications
Agriculture - Markets
Web applications
Mobile and web application
Properties
Money transfer
Advertising
Identity Security
Solar energy solution
Agriculture
Bitcoin mining
eCommerce
Digital payments
Assets
Medical data
Land acquisition

Distributed Ledger, AI and VR
Finance
Financial markets education
Multi-platform
Education
Blockchain UX Framework
NFT
Educating and Consulting
Analytics
Currencies and tokenization
DeFi
Governance Transactions
Cross-border payments
Geo Mapping medical emergencies
Autonomous organization
Currency exchange
Banking

Banking and Agriculture
Mobile payment
Payment systems
Courier
Human Resources and Payroll Mgt.
Logistics
Cryptocurrency Exchange
DLT-based Solutions
Ledgers
Land Title Deed Management
Supply Chain Management
Money Transfer
Mobile Payment in Agriculture
Digital Payments

OTHER

SECTION ONE

SECTION 1

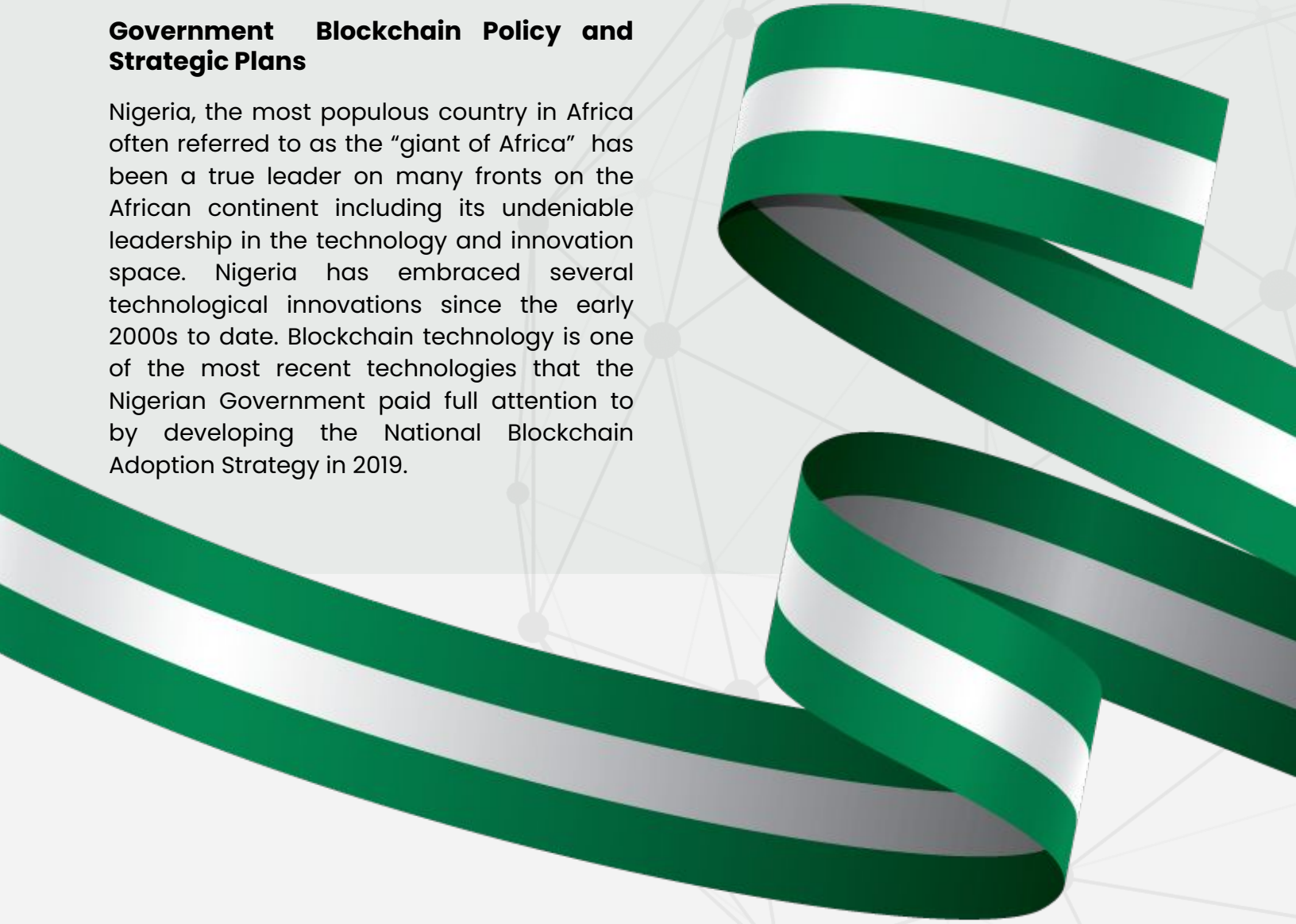
BLOCKCHAIN ECOSYSTEM

COUNTRY CASE

NIGERIA

Government Blockchain Policy and Strategic Plans

Nigeria, the most populous country in Africa often referred to as the “giant of Africa” has been a true leader on many fronts on the African continent including its undeniable leadership in the technology and innovation space. Nigeria has embraced several technological innovations since the early 2000s to date. Blockchain technology is one of the most recent technologies that the Nigerian Government paid full attention to by developing the National Blockchain Adoption Strategy in 2019.



> **Blockchain journeys were clearly riddled with challenges skewed towards adoption than implementation.**

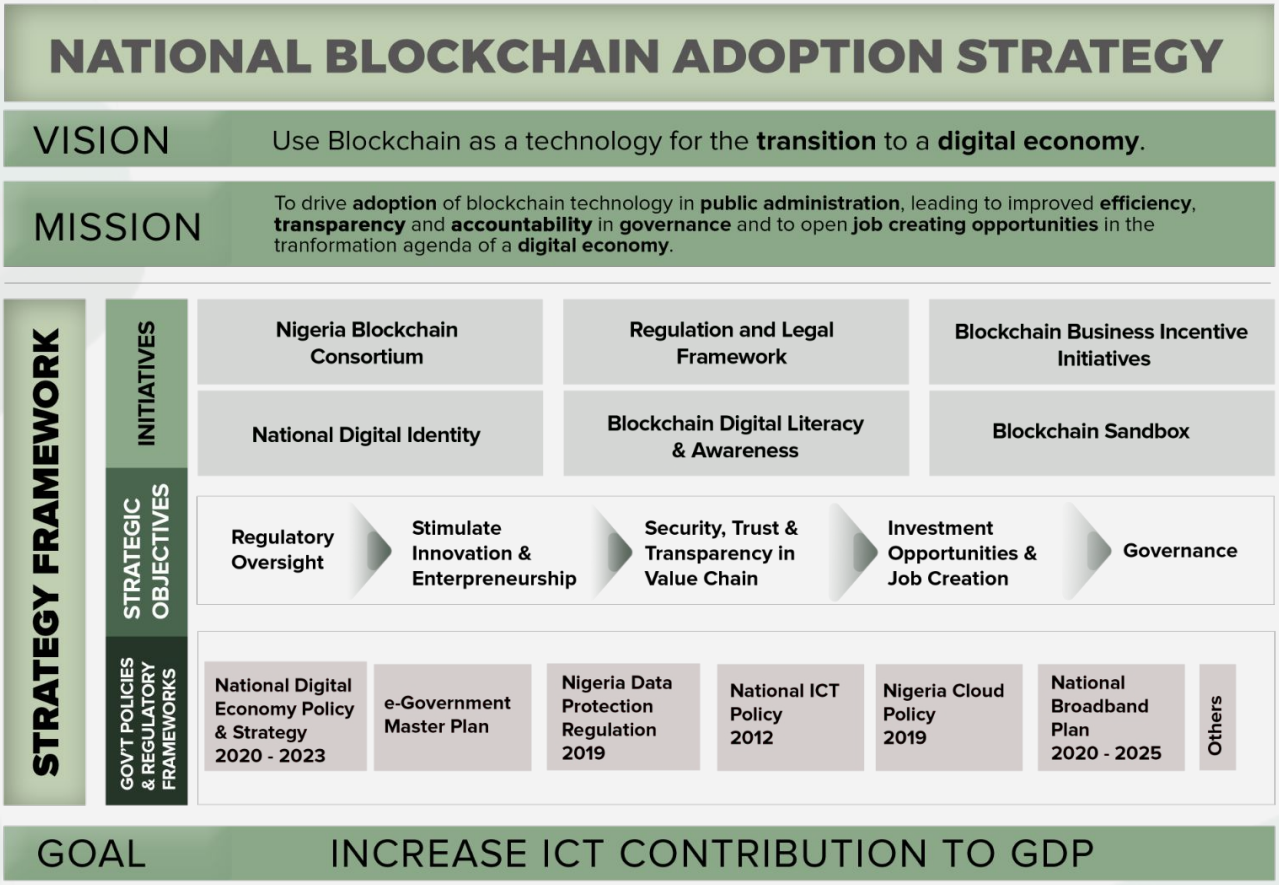
A survey was conducted in 2019 on over 70 blockchain startups in Nigeria by Blockchain Nigeria User Group, an active community of blockchain developers, investors, entrepreneurs, crypto traders, and enthusiasts. The survey conducted among the start-ups revealed that these Blockchain journeys were clearly riddled with challenges skewed towards adoption than implementation. It shows that companies had ventured into blockchain in different operational landscapes with more emphasis on finance, trading exchanges, wallet services and blockchain education, amongst others. (National Blockchain Adoption Strategy, 2019). It should be noted that despite the mainstreaming of Blockchain across all the sectors of the Nigerian economy by technology startups, there are myriads of challenges faced every day by these innovators. One of such challenges is the gross misconception of the technology and the unavailability of a national regulatory charter on the technology.

The aforementioned survey further suggests that a good number of these blockchain startup projects have either gone live or have an MVP. The survey generally shows the promising nature of blockchain technology adoption by businesses in Nigeria. Examples of potential use cases include the following;

- Tracking and tracing of drugs in the pharmaceutical supply chain;
- Claim verification and approval in the disbursement of fertilizer subsidy;
- Verification of university certificates;
- Transfer of land records.

(The National Blockchain Adoption Strategy, 2019) further stated that though all these early adopters wanted to experiment with Blockchain to identify a futuristic solution, the road that led to their experiments were full of challenges. The major reasons for this were lack of awareness, evolving nature of Blockchain platforms, lack of clear government stand on the technology, lack of regulatory instruments and application integration challenges.

The Nigerian National Blockchain Strategy



Source: National Blockchain Adoption Strategy, 2019

This strategy was developed with the intention of using Blockchain as one of the emerging technologies for the transition into a digital economy. Its main aim is to drive the adoption of blockchain technology in public administration, leading to improved efficiency, transparency, and accountability in governance and to open job-creating opportunities in the transformation agenda of a digital economy. This strategy for Blockchain adoption is built on the following 6 key initiatives:

Establishment of Nigeria Blockchain Consortium	Strengthening of the Regulatory and legal framework	Focus on the provision of National Digital Identity
Promotion of Blockchain digital literacy and awareness	Creation of Blockchain business incentive programmes	Establishment of a national blockchain sandbox for proof of concepts and pilot implementation

The strategy shows that Nigeria is making deliberate decisions to solve the several challenges facing Blockchain solutions builders and startups through policy formulation and implementation. It is very pertinent to state that if Nigeria can commit unwaveringly to the National Blockchain Adoption Strategy above, it will soon become one of the Blockchain centres of Excellence in Africa and in the world at large.

Entrepreneurial/Startup Blockchain Ecosystem

The Nigerian Blockchain Entrepreneurial Ecosystem has evolved with most of the Blockchain startups building Cryptocurrency and Financial Interoperability platforms. Startuplist.africa in its 2021 Africa Crypto Landscape Snapshot, reported the companies below as major Blockchain Crypto-solution startups in Nigeria. This study however seeks to discover blockchain solutions and innovators beyond cryptocurrency solutions. This will give a holistic view of other blockchain projects currently being developed in Nigeria across all stages of venture development.

Source: Startuplist.africa, 2021

"We need to focus on the bigger picture of blockchain technology and not just its aspect that brings monetary gain in the immediate (term) alone."

KEY INFORMANT INTERVIEWS

"I do not believe that we are using and exploring the blockchain to the fullest potential. We have only activated one use case, which is cryptocurrency trading and crypto wallet creation. I, however, believe that things are still evolving as blockchain technology is just barely a decade old.

The misconceptions about blockchain can be divided into two categories: the first is for core technology developers and the second category are those who are new to technology in its entirety. The first category often believes that there is nothing new that blockchain technology is bringing, probably because they have seen it all. The second category considers blockchain technology as something vague and abstract. There is also the misconception of assuming that blockchain is just for creating a blockchain wallet because that is the most populated terminology with the people when blockchain is mentioned. We need to focus on the bigger picture of blockchain technology and not just its aspect that brings monetary gain in the immediate alone.

Nigeria currently has many blockchain technology startups with whitepapers on what they plan to do. Still, there is a significant deficit in those who are doing those things and taking action. In the next ten years, we will have more people who are educated in the use and application of blockchain. ***The government has a significant role to play in driving policies that encourage blockchain impact in Nigeria.*** *We need a technology education policy to create that stable policy arena for blockchain technology."*

Oluwatobi Kalejaiye
Founder, Blockchain Center, Ibadan, Oyo State, Nigeria

"Blockchain technology is a truth machine. The use cases of blockchain technology are still evolving globally, so it is not surprising that Nigeria is not maximizing the potential of the technology. I believe that we still have a long way to go in building blockchain technology innovation in Nigeria. ***The misconception of the technology is still very high in Nigeria because of some of the platforms that rode on the blockchain narrative of safety to scam people.*** *Many people continue to bask in this ignorance of blockchain technology misconception by trolling anyone passionate about the technology. Our organization is building some blockchain innovations outside of Nigeria's most popular use case, which is cryptocurrency.* ***We are solving the problem of certificate counterfeiting and humanitarian funding tracking.*** *There is a need for policy harmony in Nigeria across all the regulatory spectrums on the policy side. Most blockchain solutions are dead because of regulation overload. The advice is to have a blockchain policy gateway to rest the currently occurring policy conflicts issues around blockchain and its future."*

Adedeji Owonibi
CEO, Convexity, Abuja Nigeria

"Blockchain is scaling trust. Blockchain technology can be likened to a google doc where the owner has been designing something and eventually shares it with many people with edit access. This enables the owner of the document to track with others who are writing and editing in real-time. Everyone has to own up to whatever they have done on the record. This is the best way to explain the technology to a layperson.

Regarding blockchain potentials, I want to believe that the technology is still in its infancy in Nigeria, as the essential use case is for payment. A typical example of platforms that have become entrenched in a layman's mind in Nigeria is brands such as Bolt and Uber. These platforms have gained massive adoptions to the point where they do not need further explanations. I believe blockchain technology will also get to this point shortly;

> ***...suppose we have progressive people in power that can drive policies that can make the technology mainstream, such as integration for e-voting. In that case, the whole country will have no choice but to understand and embrace the technology.***

We need to go beyond the payment solutions on the blockchain to build other solutions such as Identity Management, Land Records Management and Smart contracts."

Jesudamilare Adesegun-David
Founder, Ennovate Lab, Ogbomoso, Nigeria

"One of the popular perceptions of people when you mention blockchain is "Bitcoin", not even cryptocurrencies as a general concept that operates on the blockchain. The technology can be explained using the idea of google doc where several people can collaborate, and there is no hiding place in terms of activities on the block. However, we have seen a lot of ignorance from law enforcement agencies, governments, and individuals in terms of fear of the potentials of blockchain technology. It seems the people in authority are afraid of what the technology-savvy young people can do with blockchain technology. The aforementioned is somewhat a threat to their control of information, access and the fear of losing control of the economic process.

Fraud has been amplified as the reason why governments and law enforcement agencies have been clamping down on blockchain technology innovation, but in fact, the fundamental issue here is that ***most vested interests are afraid of the transparent potentials of the technology.*** *Blockchain technology is the best tool for fighting corruption and fraudulent activities."*

Dr Seun Kolade
Associate Professor/Reader in Entrepreneurship & International Development, Faculty of Business and Law, De Montfort University

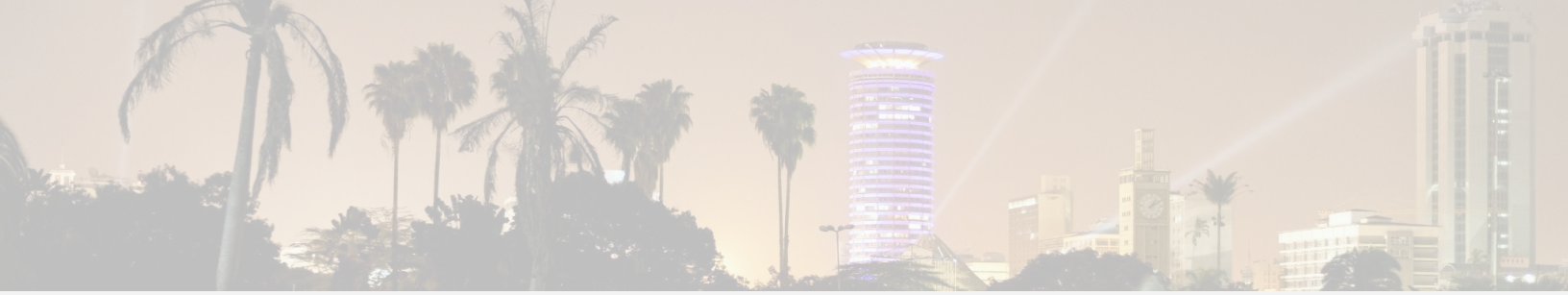
Startups/Companies Involved in the Study

Fliqpay	Royalties ledgers
Doron Fintech	Inspirar
Cloudpitcher	Mouve Logistics
Softprism	Web3Bridge
LawPavilion	Newtab
TIPSTACK LLC	Fx Inner Circle
Gramstore	Teamcore
STICO	Petra Africa
Fidel forex	Sanwo
Wusob technologies	Convexity
SoftBridge	HackChain
The Tag.ng	Crevatal
Crypto mint	Vault Bridge
Pleiades Cluster	DuchSpace
Apex data Insight	Cryptocrib
Synergy	Sela

KENYA

Government Blockchain Policy and Strategic Plans

The Republic of Kenya has one of the most detailed blockchain ecosystem plans and playbooks combined with a solid distributed ledger task force in the East Africa Region. In 2019, the government of Kenya through the Ministry of ICT published a document titled “emerging digital technologies for Kenya, exploration and analysis”. The document highlighted the most important strategies and plans for the acceleration of blockchain technology in Kenya.



One of the most interesting things about Kenya's adoption of Blockchain is that the government recognizes the technology as a great solution to eradicating corruption in government. Other areas of the potential application of the blockchain by the government of Kenya according to the Distributed Ledger Taskforce are

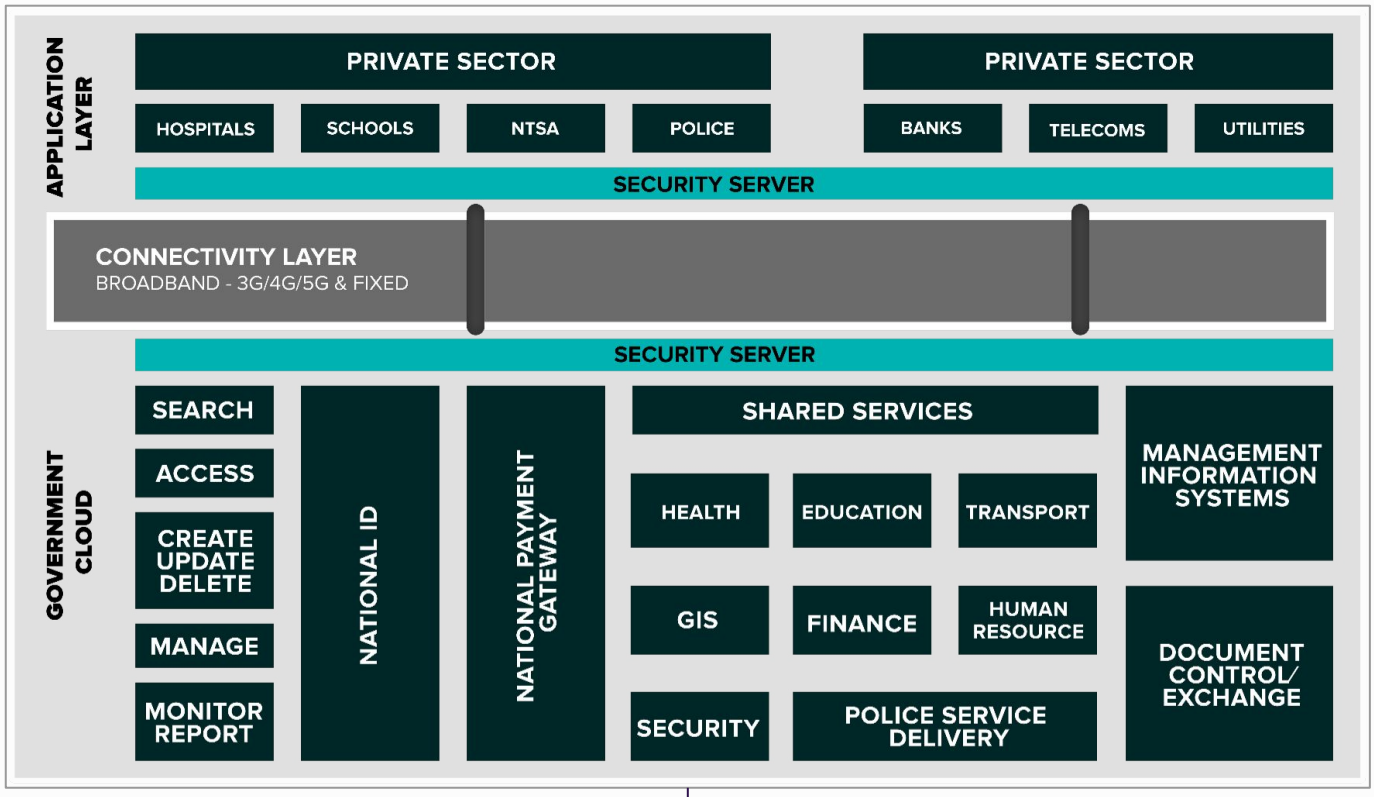
- To create new opportunities to minimize national debt through the digital asset framework.
- Streamline democracy and elections
- Facilitate financial inclusion.
- Reduction of transaction cost
- Improving public service delivery.

It should be noted that the overall projection of the government of Kenya is that through the implementation of all Blockchain application plans, Kenya would be the least corrupt country in the world by 2022. We hope Kenya reaches this audacious milestone by 2022 as projected. The position of Kenya's government on Blockchain technology is an indicator of the transformational potential of the technology.

It is worthy of mention, the action items the government had put in place to achieve the plans listed above. These action items are in some ways related in alignment with the implementation plans of the Nigerian government in their blockchain strategies of 2019. The action items are to;

- **Create a Regulatory Sandbox** to enact supportive regulations that will facilitate innovation and revise those that hinder advancement.
- **Multisector Partnership** aimed towards the adoption of blockchain technology and Artificial Intelligence Solution including investments in infrastructure and skills development.
- **Investment and Support** aimed at the active investment in blockchain solutions and government support. This is to ensure that the private sector is able to provide proof of concept and proof of scale.
- **Emerging Technology Brainstrust is saddled** with the responsibility of handling all emerging technologies and impact initiatives that the Kenyan government embarks on for the present and for the future. The Brainstrust is further saddled with the responsibility to generate strategies for the government on the use of global emerging technologies to best serve the citizens. In addition, Braintrust harmonizes the use of technologies across government and to support the implementation of initiatives.

The government of Kenya has a clear path to implementing all the plans as explained above. Below is the implementation plan called "National Digital Infrastructure Framework" as stated by the (Ministry of ICT of Kenya, 2019);



Source: Emerging digital technologies for Kenya - exploration and analysis, 2019

This strategy has shown that Kenya is working to support both the government and private sector sides of the blockchain innovations spectrums. This will help in accelerating the works of blockchain solutions startups and the adoption of their innovation in government service delivery.

Entrepreneurial/Startup Blockchain Ecosystem

Startuplist.Africa listed the company below as the crypto-blockchain solution companies in Kenya. However, this research will go beyond crypto-blockchain solutions to other blockchain use cases and solutions, beyond the cryptocurrencies exchange use cases.

Bit Pesa BINKABI Bitpesa Kotani Pay raise

Source: Startuplist.africa, 2020

"Blockchain is a distributed ledger. However, explaining what this means to a layman requires explaining the concept of value centralization and the loopholes of the system, after which there can be an introduction of value decentralization and the advantages it brings. While it may be hard to explain what blockchain is to a layman, it is easier to explain what it can do. On the side of misconceptions about blockchain technology, many people in Kenya are still ignorant of the concept of mining. They are still unaware of the computational power needed in mining a block value. In addition, the challenges faced by blockchain startups are enormous and prominent. Amongst those myriads of challenges is the belief system that we are too young to build sustainable blockchain solutions. ***There is a general belief among the elderly elites that young people cannot build tangible blockchain solutions because they lack industry experience.*** *Another major challenge is the lack of seed funding to prototype and build Minimum Viable Products that can attract yet bigger funding to scale. For blockchain technology to grow even bigger in Kenya, there is a need for the right policies, such as* ***integrating blockchain technology into middle schools and high schools curriculums.*** *Blockchain education investment policy is needed to scale the use cases and innovative solutions of the technology. There should also be a policy that includes* ***blockchain innovation funds in the national budget****".*

Gibson Njine
Kenyan Blockchain Developer

"The use cases and the application of blockchain technology have not reached their full potential in Kenya as there are still stifling regulations on the technology. In addition, there are also many misconceptions about that technology that must be addressed if the technology will go mainstream in the next ten years. The first misconception is the assumption that blockchain is the same thing as bitcoin. This misconception is because the technology made an entrance into the African market with the cryptocurrency narrative. The second misconception is the use of technology as a buzzword for everything innovative. For example, we have heard people saying they will integrate their organization processes on the blockchain without understanding whether the process needs to be on the blockchain or not, but since "blockchain" is one of the most innovative technologies in the fourth industrial revolution, it sells in almost every narrative. On the policy side, we would suggest the following to the government of Kenya; ***merging the USSD technology with the blockchain to drive more value and also security of transactions****, engaging the technical people in blockchain decision making, putting the public records on the blockchain and finally,* ***engaging the young people to drive the innovation****."*

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Impact Africa (www.impact africa.network)
Startup studio in Nairobi

"We are still scratching the surface of technology on the continent. We cannot deny that we have many startups coming up every day with fantastic blockchain solutions/ideas, but how many have moved beyond ideation? We indeed have many challenges facing technology in Africa and even globally, but the most prominent is the lack of skills and talents in developing blockchain solutions. In terms of misconceptions about technology, I think education is the biggest issue here. When people understand the technology well, they will accept it better. There is also the issue of consistent suspicion from the government on the potentials of the blockchain industry. My suggestion on what the government of African countries should do is to ***create a blockchain sandbox or a general technological sandbox to encourage blockchain innovation.*** *Blockchains should also become a technology curriculum in schools."*

Timothy Kotin
CEO Superfluid.io and Superfluid Labs

"Kenyan blockchain startups face a lot of challenges in developing their innovative solutions. One of such is even distribution and availability of energy to the grassroots. This is a problem our company is solving, thus, a blockchain platform where people can meet and do a peer to peer energy value exchange. Another challenge that must be mentioned is the heavy tax on companies in Kenya. We have also noticed that the technical skills needed to build blockchain solutions are scarce on the continent. Our company, Bithub Africa, has been training blockchain developers to boost the blockchain skills space. There is also a new digital tax policy that has just been passed, affecting many growth-stage blockchain companies. I will also like to mention that the Central Bank of Kenya policies should accommodate blockchain innovations. Finally, education will remain the most vital force in driving blockchain innovation in Africa, and we must invest heavily in this."

John Wainaina Karanja
Founder. Melanin.solar

"We need the government of African countries to begin to be open-minded to innovation experimentation even when they are not fully ready to make definitive decisions and policies or regulations of new technology like blockchain. Countries such as Switzerland, Netherlands and the United Kingdom have such playbooks we can learn from. In terms of misconceptions of blockchain technology, I believe we should double our efforts in the blockchain ecosystem to continuously educate the people in government on the potentials of blockchain. This will eventually lead to a favourable policy arena for blockchain technology on the African continent."

Lucas Zaehringer
Founder, Positive Blockchain.io

"...the technical skills needed to build blockchain solutions are scarce on the continent".

Startups/Companies Involved in the Study

- BITSOKO
- BITPESA
- CELLULANT
- SENDY
- WORKPAY
- LORI
- CREDIT BLOCKCHAIN
- CORDA
- HASHGRAPH
- R3 CORDA
- HARAMBEE TOKEN
- IOTA/TMEA
- CEX.IO
- AGRICHAINCOIN
- BLOCKCHAIN FOR AFRICA
- CAPAGRI AFRICA LIMITED
- ROBIA
- IMPALA PAY LTD
- FUNTRENCH
- UBAPESA LIMITED
- UTU TECHNOLOGIES
- ALLENHARK TERMINAL
- TECHZILLA
- KOINDESK
- BAZIL K.
- HEALTHWALLET KENYA
- FUSION INFORMATICS
- AFRISMASH TECHNOLOGIES LTD
- ROCKS SOFTWARE KENYA
- NIKOHAPA
- M-PEPEA
- M-FARM
- WEBPINN
- MINE SOFTWARES
- NAIROBI WEBDEVS
- NCRYPTO
- LAND LAYBY GROUP
- CARREFOUR
- HYPERLINK INFOSYSTEMS
- PESAMKONONI FINANCE LTD
- MWALIMU APP
- PESABASE
- CRYPTOADS
- IDTECH KENYA
- VIDAN LAWNES
- CONQUEST CAPITAL
- BITHUB AFRICA
- BITWAVE
- BLUECHIP
- KULFARMS
- BITCOINMINE KENYA
- ZURUWIRELESS
- VEESHAFRICA
- LEARNTAFRICA
- MIFA
- MEDIRECORDS KENYA
- CYTECH KENYA
- LAND LAYBY LTD
- ESTATE CLOUD
- IMPALA PAY LTD
- NURSE IN HAND
- WHIVE
- TRUEFINEX
- BITCOIN TURBO KOIN
- KENICOIN
- ONCE SYNC LIMITED

TUNISIA

Government Blockchain Policy and Strategic Plans

Tunisia is one of the first countries in Africa with a lot of enthusiasm for the 4th industrial technology, Blockchain inclusive. According to CryptoGuru (2019), "Tunisia has become the first country to officially announce and start the development work on its national currency to a blockchain platform. Perusing various reports and articles online has shown that Tunisia the Tunisian government had an open mind towards blockchain innovation by engaging two fintech firms to collaborate to work on their digital currency infrastructure and the launching of the e-dinar, the first blockchain-enabled digital currency in Africa.

According to Asiatimes (2019), *"Driss, a US-educated Tunisian engineer, has already instituted a blockchain-based digital payment system called DigiCash with La Poste Tunisienne, the North African country's postal service, and is working with the central bank, Banque Central Tunisienne, and newly appointed BCT governor Marouane El Abassi to explore and study the launch of a national digital dinar".*

The Swedish minister of Finance also gave credence to the bold step made by the government of Tunisia towards a cashless digital future. In her words, *"there was nothing stopping Western countries – and emerging economies such as Tunisia and fragile states such as Somalia – from becoming cashless economies.*

To spotlight the current situation in the blockchain and crypto regulation policies in Tunisia, more recently, Coindesk (2021) reported in quotes "

"Tunisia's Minister of Finance, Ali Kooli, said during a television interview over the weekend that he plans to change the country's cryptocurrency laws. Bitcoin ownership should be "decriminalized".

The article further stated that The proposed law change comes after local media reported that a 17-year-old Tunisian boy was arrested in April for using cryptocurrency for an online transaction. The incident caused outrage in Tunisia's crypto community, with many blaming the arrest on the lack of regulatory clarity in Tunisia.

Summarily, it seems Tunisia is open to blockchain and cryptocurrencies but only limited to innovation within their regulatory framework. There is a wind of hope in many quarters that the arrest of the 17-year-old Tunisian boy who transacted with bitcoin will be the transformational point for decriminalizing Bitcoin transactions in Tunisia.

Entrepreneurial/Startup Blockchain Ecosystem

The blockchain startups ecosystem in Tunisia has startups such as SQOIN, Coinsense, Ahmini, Flouci and Lightency.

"Blockchain creates the system of trust in value exchange; trust and security in value exchange are the foundational words for blockchain technology. I want to see the blockchain used for community engagement and participation where communities can use the blockchain to build their currencies and value exchange systems. This gives control of economic tools back to the people in a transformative way. I also want to see blockchain developers moving away from just building technical support systems and moving into building solutions that directly reach the consumers and the grassroots. In Tunisia, we have many young innovators building great solutions, but most of them build such solutions outside of the country. There are challenges the blockchain ecosystem in Tunisia is facing. Some of such challenges are the issues of laws and regulations from the government and the lack of funding for blockchain companies building a blockchain for social impact solutions. Most African governments do not yet understand how to regulate, collaborate and support blockchain solutions, including Tunisia. I want the government of Tunisia to focus on two policy areas to drive blockchain Impact in Tunisia. Firstly, there should be an implementation policy for digital signatures that is valid in court and secondly, a policy on digital equity".

Karim Chabrak
CEO, Coinsense Tunisia

"Blockchain technology is the database of the future, where everything shall be decentralized and transparent. It is one of the most disruptive technologies because it comes with a simple answer to risk reduction, fraud, transparency, and trust in many use cases. Blockchain is cryptocurrencies, but it aims to solve problems like digital identity, supply chain hurdles, and a myriad of other use cases. Decentralization and cryptographic hashes can change the way people interact, or business is done. On the potential of blockchain technology, in Tunisia, we see a lot of resistance when it comes to blockchain adoption., even though we have some significant initiatives, like the BCT Sandbox, where we see pilots in CBDC, tokenized funds, e-kyc and interbank settlement systems, all powered by blockchain. Big corporations lack vision in adoptions, and very few of them are doing POCs on what this technology can bring to their business.

On the startup side of things, even though we have some startups working with Blockchain technology, we don't have a lot of startups, and taking into consideration the tech capabilities of Tunisian engineers and the place that blockchain technology is taking in the landscape worldwide, there is a big gap to fill. My companies, SQOIN and Coinsurance, are among the few players in the blockchain. SQOIN is, as far as I know, the only blockchain player developing products on several protocols and working with new technology such as the blockchain comes with a lot of challenges. We have faced a grey zone in terms of regulations and made a lot of education to create, somehow, comprehension and prepare for adoption. We have also faced compliance issues (not because we were not compliant, but because they don't know if we could have been so. We also cannot deploy asset-driven products, since we have laws that protect our currency and regulation that doesn't know what crypto assets are (utility tokens, security tokens, NFTs are use cases we have deployed for partners outside Tunisia). In the whole world, I think there will be a blockchain twist in every business. Africa should start extensive adoption and upskilling; the sooner, the better, and create blockchain factories, blockchain accelerators/incubators and advocate for regulation and a legal framework for every component of blockchain-based use cases. (Utility, securities, NFT, equity, token economy, smart contracts, smart legal contracts) and create funnels for innovators to deploy compliant platforms and solutions.

Mohamed Ali belajouza
Founder, SQOIN

"I think there is a lot of potentials to explore more use cases, innovation and implementation of the blockchain technology in Tunisia across the societal strata. One of the biggest misconceptions of blockchain technology is that it is immutable and cannot be broken into. Many shady individuals have used this narrative to scam so many people. Another misconception is that the blockchain is a decentralized database, which is correct. Still, we frequently forget that cryptography as a technology existed long before the development of new use cases of cryptography that birthed the blockchain. There must be a balanced understanding of the blockchain if we will use it to the maximum level of impact. In the startup ecosystem, we have several people building solutions in Tunisia, but we still have a long way to go. We need to activate more use cases in the value chain and the banking sector in Tunisia".

Haythem Chedid
Founder, Lightency

"The blockchain is a technology to trust process and exchange value without middlemen and to create a peer to peer trust. On the side of potential, we are not using blockchain technology to its maximum potential, and I think this is still a global issue as the technology is still evolving. It is still at the stage of experimentation, and it is just like the internet in the '90s. It will continue to grow. In terms of misconception, most people see blockchain as a tool for fraud, money laundering and dark web-enabling means. People also think the technology is just for financial services, but they are unaware of the e-voting, smart contracts, and identity management potential of the technology. There is also the misconception of blockchain as the same as cryptocurrency.

In Tunisia, there is a small community of blockchain ecosystems. Since 2018, they have been making progress, such as the sandbox in the central bank driving fintech and blockchain solutions in Tunisia. It is tough to find good smart contract developers on the talent side, and it is also tough to find investors and funders for blockchain solutions, unlike Virtual Reality and Augmented Reality startups."

Seif Eddine Badri
Manager, Beecoop Tunisia

Startups/Companies Involved in the Study

- DAR BLOCKCHAIN
- KAOUN
- MINIMA.AI
- OPYN
- BETACUBE
- K2LIS
- COINSENCE
- BEECOOP
- EL SPACE
- PROSPERUS
- SQOIN

SOUTH AFRICA

Government Blockchain Policy and Strategic Plans

The South African Blockchain Ecosystem is one of the most robust in Africa as there have been discoveries of blockchain use cases beyond the cryptocurrencies and financial uses case. Research has shown that despite little or no structure and framework by the government on Blockchain Technology Adoption and Implementation, there have been statements and white papers on the management and regulation of crypto assets in South Africa. There are notable milestones that we can point to statements issued in crypto assets thus 2014,2016 and 2018.

On September 18, 2014, The National Treasury, the South African Reserve Bank, the Financial Services Board, the South African Revenue Service and the Financial Intelligence Centre issued a press release warning South African Citizens on the use of cryptocurrencies. In the press release, cryptocurrencies were referred to as "virtual currency". The second paragraph of the release stated thus;

> ***"Virtual currencies are becoming increasingly popular among users to purchase goods and services, to transfer to another person, for personal use or to hold as an investment. While there are benefits associated with this new technology, it is difficult to assess those benefits against the risks of something so novel, innovative and technologically sophisticated. Users of virtual currencies can therefore become susceptible to fraudulent or any other criminal behaviour as they may be less circumspect than usual when faced with the promise of high-return investment opportunities".***

The statement above pointed to the fact that the stakeholders were not in denial of the potentials and benefits of cryptocurrencies and by implication the technology behind it, blockchain technology. In terms of regulation, the press release stated thus;

Currently, in South Africa, there are no specific laws or regulations that address the use of virtual currencies. Consequently, no legal protection or recourse is afforded to users of virtual currencies.

Due to their unregulated status, virtual currencies cannot be classified as legal tender as any merchant may refuse them as a payment instrument without being in breach of the law. In addition, virtual currencies cannot be regarded as a means of payment as they are not issued on receipt of funds. The use of virtual currencies, therefore, depends on the other participant's willingness to accept them.

While virtual currencies can be bought and sold on various platforms, they are not defined as securities in terms of the Financial Markets Act, 2012 (Act No. 19 of 2012). The regulatory standards that apply to the trading of securities, therefore, do not apply to virtual currencies.

To corroborate the position stated above, article 4.2 of the South African Reserve Bank Position Paper (2014) stated thus;

> ***"Additionally, there are many legal uncertainties regarding virtual currency schemes (including DCVCs). The lack of a proper regulatory and legal framework substantially exacerbates the other risks, especially the enforcement of the principle of finality and irrevocability in the payment systems.10 Furthermore, no specific regulatory protections exist that would compensate the owner or user of DCVCs for any loss that may be suffered, should the DCVC fail or the business ceases to exist. In this regard, users need to be warned that they might lose their money".***

More recently, in 2018, according to Consensys (2021), the South African Reserve Bank (SARB), in consortium with seven commercial banks, used Quorum to create Project Khoka. This blockchain-based interbank system processed the typical daily volume of payments with complete confidentiality and finality in record time. After success, the SARB announced phase two of Project Khoka, which will issue, clear and settle debentures on DLT using tokenized money in a minimum viable product (MVP) to inform policy and regulatory reflections. During Project Khoka 2, participants will purchase debt instruments with a wholesale CBDC (wCBDC) and a wholesale digital settlement token (wToken). The wToken can be thought of as a privately issued stablecoin used for interbank settlement.

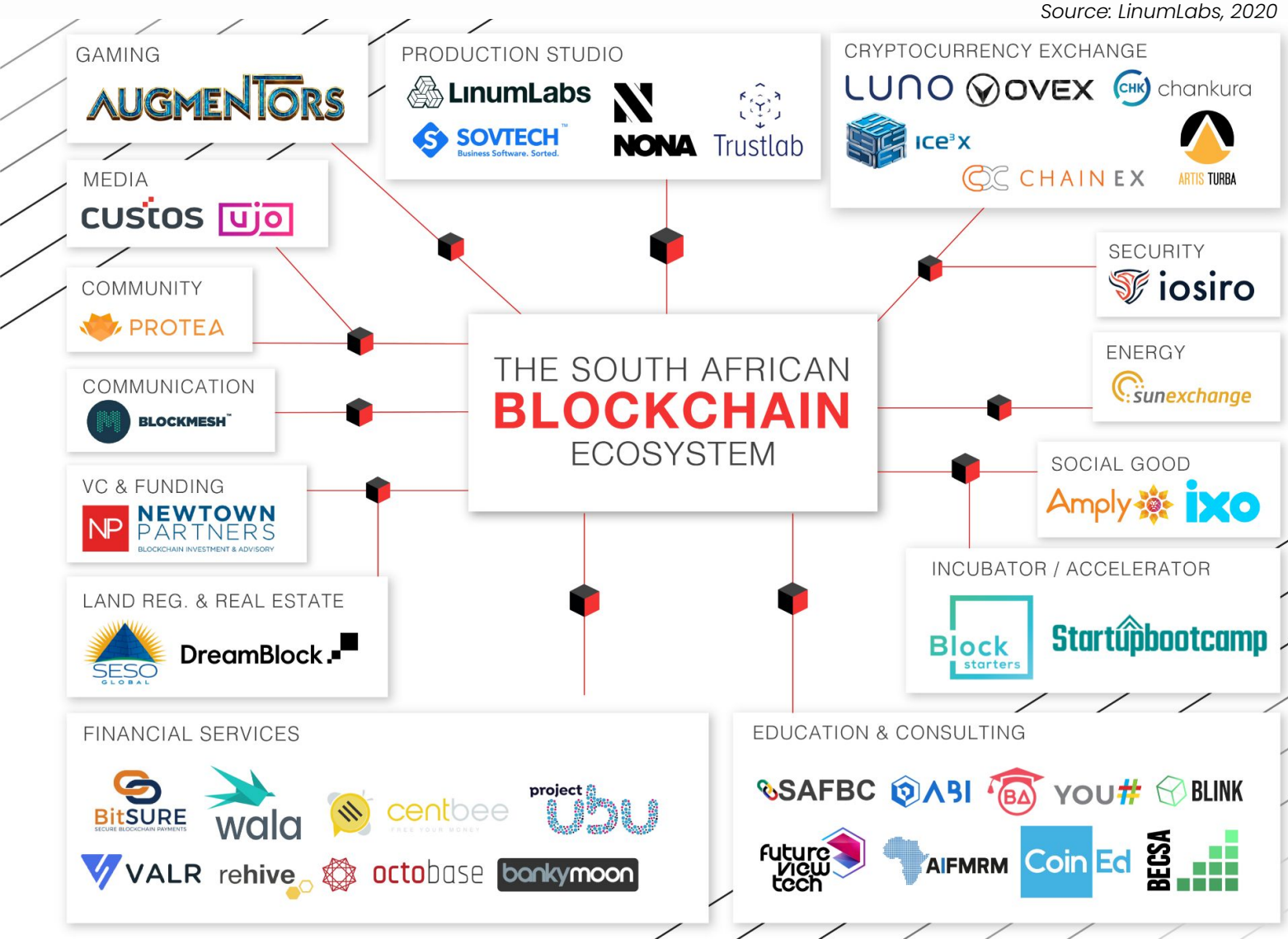
This is a sign that things have evolved between 2014 when the first position paper and a press release was made and in 2021 when the Standard Reserve Bank of South Africa is now conducting feasibility research in CBDC according to Cointelegraph (2021).

There is hope that above the development of CBDC's, the South African Government will design a National Blockchain Implementation Framework that will create the course for blockchain mainstreaming in the country.

Entrepreneurial/Startup Blockchain Ecosystem

It is worthy of mention that there seems to be a great disconnect between the government and the blockchain entrepreneurial ecosystem in South Africa. It is however appreciable that the blockchain entrepreneurial landscape of South Africa is booming despite little to no support from the government. Below is South Africa's blockchain innovation ecosystem report by LinumLabs;

Source: LinumLabs, 2020



Startups/Companies Involved in the Study

MELON
COINED
INTERPRET.AI
MEDME
HOMEMADE POP-UP PLATFORM
PAYBARRIO
SLIPS
GHEA
CENTBEE
BLOCKCHAIN ACADEMY

KEY INFORMANT INTERVIEWS

"There is a huge **disconnect between blockchain solution companies and the traditional banks,** especially when it comes to financial solutions on the blockchain. The fact that the regulatory environment is still largely open makes it hard to have a structure of information flow and support for blockchain innovation. I will advise the government and the regulatory stakeholders to regulate the blockchain innovation business based on objective evaluations and general perceptions. Another issue that we must address is the denial of blockchain companies in the financial sector of being banked. I believe that that ecosystem should work together for the common progress of decentralization of value".

Angus Brown
Founder, Centbee

I would not say blockchain technology has been used to its full potential in South Africa. There aren't enough conversations going on that can drive the scaling at an exponential rate. ***Most investors invest in what they already know*** *, which calls for a growth mindset from Venture capitalists. Most* ***blockchain startups need the funding*** *to make their MVP's and prototypes to convince investors better. Also, most of the solutions I have come across are still at the developmental level. There is still that enormous technical implementation know-how in the blockchain ecosystem in South Africa. In a nutshell, I don't think we are close to the maximum use case yet. There is also poor education on what blockchain is. I think the education on the value and potential of the blockchain will go a long way in driving blockchain impact. We have several blockchain startups coming up every day, and we have worked with some working on their proof of concepts. Many activities are going on, but there is so much potential to explore in the blockchain space. There is a large room for improvement, deployment and implementation of innovation in that sector. The South African government should be more open-minded in understanding the potentials of new technologies.*

Tarisiro and Buntu
SA Innovation Summit

People have always looked for decentralization, and blockchain has brought that to fruition *in finance and the logistics value chain. The blockchain in SA is enormous on the cryptocurrency exchange side, but the other use cases are beginning to evolve. An example is a SA startup based in the USA that has founded a blockchain company addressing digital identity. This is also a solution that can be applied in a place like Nigeria, where passport renewal is a problem. Our use case is one of the most significant and unique use cases, disruption logistics value chain. In terms of blockchain misconception, people still take blockchain for cryptocurrency. This is because cryptocurrencies are the first product that emanated from the blockchain. Still, the use cases are enormous, and we have been educating people to look beyond crypto so that innovation can emerge in the application blockchain. We want people to see the potentials and the possibility of blockchain with continuous orientation and education. In the startup space, there is momentum and some blockchain associations driving conversations and innovation. Blockchain Startups are taking off at different stages of growth, but the issue is to* ***weaponize blockchain to solve more significant societal problems.*** *We need to be conscious to* ***build more prominent blockchain startups at scale and not only "good for the belly" businesses.*** *We should go beyond business to business model but radically disrupt the space so that our startups can scale beyond a location.*

Shadrack and Pretty Kubyane
Coronet Blockchain

RECOMMENDATIONS

Insights from the data has necessitated the following recommendations:

Owing to the majority of the respondents' agreement to misconceptions being the major impediment to the slow embrace of blockchain technology in Africa, technology stakeholders, blockchain education/research companies and corporate blockchain companies should invest in granular blockchain education and advocacy both at the grassroots and national levels across Africa.

The private technology sector should be more deliberate in engaging the governments of African countries in co-designing technology policies that support fourth industrial revolution technologies such as blockchain technology.

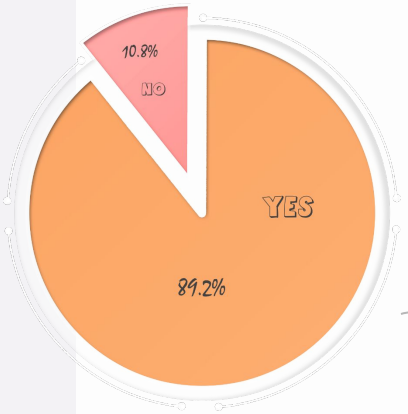
Blockchain companies should invest more resources in applied blockchain technology research and development that can be used in informing government policies and actions even in a "wait and see approach" standpoint of most countries towards the blockchain technology.

Technology Venture Capitalists should not only intensify their investments in African Blockchain solutions but also kickstart a seed funding structure that can help blockchain innovators prototype and test new ideas.

Technology accelerators from within and outside the African continent should design more blockchain specific incubation and acceleration programs for blockchain startups all across Africa.

Blockchain Education Companies in Africa should tap into other climes for capacity development on blockchain technical skills education in order to boost the blockchain development capacities on the continent.

There should be ecosystem advocacy for other use cases of the blockchain technology beyond cryptocurrencies by the blockchain ecosystem players in Africa.

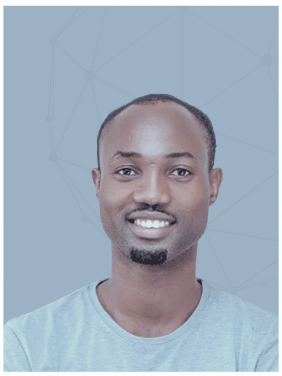


MISCONCEPTIONS BEING THE MAJOR IMPEDIMENT TO THE SLOW EMBRACE OF BLOCKCHAIN TECHNOLOGY IN AFRICA

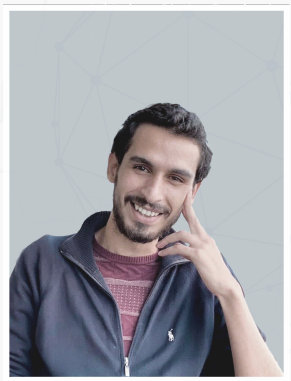
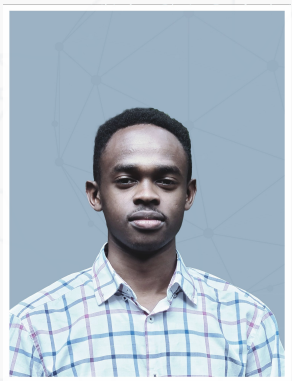
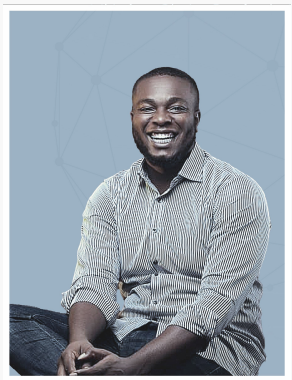
CONTRIBUTOR







SA INNOVATION SUMMIT.

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Appendix

SOME BLOCKCHAIN SERVICES BEING PROVIDED ACROSS THE CONTINENT

- I am a freelancer specialising in building Blockchain solutions, be it smart contract, digital ledgers or any other end to end Blockchain related solution
- Secure Medical Records Accounts
- Software Development and shipping
- Software development
- Social Media App
- Loan application
- Farmers Marketplaces
- We build web apps and websites sometimes leveraging Blockchain Technology
- Mobile and Web apps development
- Property investment
- Mobile App Development Company
- Cash Sending and Bill Payments
- We are building a blockchain based online teaching system for kenyan students
- We are developing a new Ads platform using Blockchain
- We are working on a Blockchain solution to keep people's identities anonymous on the internet
- We use Blockchain to build web applications and mobile apps
- We are training Blockchain engineers to develop and deploy Melanin Solar a distributed Solar energy solution
- Storage and tracking of farmer records, produce and payments
- Bitcoin Mining. We just started etherium and doge too
- We are partnering with informal business and SMEs in Kenya by providing them with e-commerce solutions
- A centralized cryptocurrency, we are working to integrate digital payments
- We are responsible for the management of financial assets owned by our holdings
- Medical and Hospital Data Secure Storing and Access
- Developing land acquisition solutions.
- payment network company specializing in cross -border payments.
- Geo-maps accidents and emergencies in Kenya and alerts the registered paramedics, ambulances and air rescue services available, police stations, and classified hospitals within the vicinity has signed a partnership that will see it embed blockchain technologies in its platform.
- Decentralized autonomous organization
- Digital currency exchange platform that uses peer to peer technology with no central authority
- An innovative cryptocurrency based banking platform
- Provide financial inclusion to the more than 66% Unbanked population in Africa as well as enable data driven agriculture to more than 600 Million African farmers.
- mobile payment platform that uses blockchain technology to bring free merchant and payment services currently in Kenya
- Digital foreign exchange and payment platform that leverages blockchain settlement to significantly lower the cost and increase the speed of business payments to and from frontier markets.
- Pan-African technology company whose payments gateway powers and organises Africa's Marketplace by connecting buyers, sellers and other critical stakeholders with an underlying payments solution that enables them to make and receive payments
- A crowdsourced courier marketplace tackling last mile, ondemand, and hyperlocal deliveries in Kenya.

- Provides a cloud-based workforce management system with human resource (HR) and payroll management for small businesses
- The company provides mobile-based on-demand trucking logistics services through an Uber-like network of drivers and merchant partners.
- Credits Di is an online financial payment service which provides highly exclusive crypto operations as an alternative and improvement to traditional currencies and money transfers.
- A multi-party platform for building DLT-based solutions that only share data with relevant parties.
- A distributed ledger technology in which acrylic DLT charts are safe and fast
- R3 Corda is a distributed ledger platform designed from the ground up to record, manage and synchronize financial agreements between regulated financial institutions.
- Decentralized platform for land title deed management
- The Platform's ecosystem will be driving to Increase the Efficiency of the Supply Chain of agricultural, commodities and food supply, Bridge Asset Investments, diversifies risk in the commodity Market and provide enhanced financing for farmers and food security for consumers.
- Donation and remittance platform
- CapAgri is a mobile app-enabled Business-To-Customer (B2C) Social Enterprise, and last-mile mobile financing platform for Smallholder farmers across African Agricultural Markets
- Digital Payments
- Funtrench is a technology company that builds distributed-ledger, AI, and VR solutions for various emerging challenges.
- Transaction system for NGO governance
- We are a Peer to Peer lending Company
- Group savings system
- Dev education
- Financial markets education
- Creating dapps, community management, promotion and marketing
- Blockchain skills and education start-up
- Blockchain UX Framework
- Education
- Education
- NFT
- Education and consulting on cryptocurrencies and blockchain technology
- Training
- Blockchain Analytics
- Microfinance payments
- Community currencies and tokenization of assets
- DeFi

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