AFRICA BLOCKCHAIN INSTITUTE

Algorand FOUNDATION

AFRICA BLOCKCHAIN REPORT

...accelerating blockchain innovation accross the continent

2023

A research report prepared by the
Africa Blockchain Institute

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A Message From The Executive Director

Kayode BABARINDE

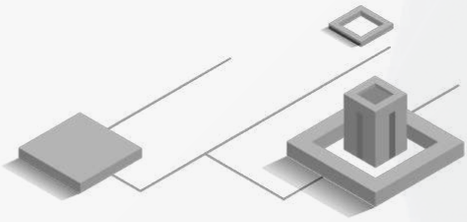
Executive Director

Africa Blockchain Institute

It is with great excitement that we present the 3rd Edition of the Africa Blockchain Report. The report showcases a comprehensive overview of the current state and potential future of blockchain technology on the African continent. This 3rd edition focuses on Morocco, Senegal, Ethiopia, and Mauritius. Over the past few years, the adoption of blockchain in Africa is on the rise, with a growing number of businesses, startups, governments and individuals using the technology to solve real-world problems and drive innovation. Also, the notion that blockchain is crypto, or crypto is a scam, is gradually becoming clearer. Through this reports, Africans are getting to understand better blockchain technology and its associated opportunities.

From improving financial inclusion and access to quality healthcare services, to streamlining supply chain management and tackling issues of corruption, the potential for blockchain to drive positive change in Africa is vast, and endless. This report aims to provide a holistic view of the current landscape, exploring the various ways in which blockchain is being used. We also examined the challenges and opportunities that come with the implementation of blockchain in Africa, and consider the potential impact it could have on the continent's economic and social development. Bravo to the research team again for crafting out such detailed investigation into blockchain activities happening in the case study countries.

We hope that this report serves as a valuable resource for those looking to understand the state of blockchain innovation in Africa, and as a catalyst for further exploration and engagement with this exciting and transformative technology. We also want to thank the Algorand Foundation for supporting us on the journey of birthing this report.



THE EDITOR

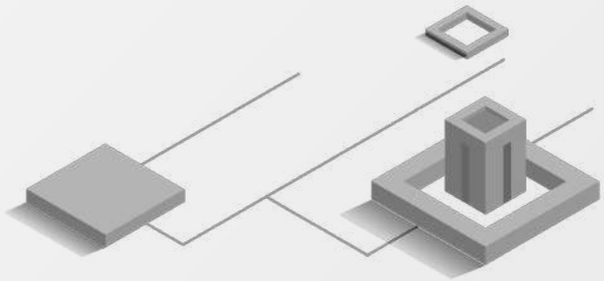
I am proud of the journey so far as we continuously contribute to thought leadership on blockchain innovation in Africa. This 3rd edition report would make the total number of countries covered so far twelve. We are glad with the engagements and references that the first two editions have continued to gain and we hope that this 3rd edition will not only add to thought leadership on blockchain innovation in Africa but will also grant you special and unique insights into the current state of blockchain innovation in Mauritius, Ethiopia, Morocco and Senegal.

In our usual mode of engagement, we have engaged several stakeholders, blockchain startups and innovation ecosystem players in the four countries. We believe that the data and information we have gathered are a premium knowledge source for financiers, business stakeholders, policy makers, startup ecosystems and government regulators.

We are confident that this edition contains even richer content, broader scopes of insights and data synthesis. Please feel free to reference, quote and refer to the information in this body of work.

Enjoy reading!

Oluwaseun David ADEPOJU
Editor, Africa Blockchain Report



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About Africa Blockchain Institute

Africa's foremost blockchain think-tank that is reimagining the possibilities of blockchain education, extensive evidence-based research, 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 greatest challenges using blockchain technology. ABI brings together leading experts in government, business and academia, from all over the world to provide high quality research and education that push the boundaries of human knowledge.

For more information on how you can support this great vision and also learn more about ABI's activities on the continent visit, https://africablockchain.institute/

About Algorand Foundation

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

blockchain technology was initially faced with distrust and misinformation, especially in Africa.

INTRODUCTION & PURPOSE

The industrial revolution ushered in a number of new technologies, one of which, blockchain, has significantly increased the potential for disruption across all sectors of society. While many people are still figuring out how to use this technology and what it can do, others are already familiar with it potential, including its application for Smart Contracts, Decentralized Autonomous Organizations (DAO), DeFi (Decentralized finance), and Cryptocurrency exchange interoperability. It is vital to highlight that blockchain technology was initially faced with distrust and misinformation, especially in Africa. Many uninformed Africans have associated blockchain with scams, Ponzi schemes, and other types of financial fraud due to the prevalence of crypto-related conspiracy theories. Due to the lack of information and orientation on how the technology operates, many Africans have fallen victim to fraudulent investment schemes, tarnishing the reputation of "blockchain" throughout the continent.

We cannot deny the significance and utility of blockchain in a multitude of industries despite the fact that many Africans are uninformed of or have a completely false understanding of the technology. Blockchain's potential for digital economy entrepreneurs and public-sector partners in Africa is even more enticing. This research project **aimed to examine the current state of blockchain activity in Africa**. The purpose of this practitioner study is to teach the African and global audience about blockchain use cases, success stories, common misconceptions, and future expectations for the technology.

In Africa and throughout the world, blockchain technology has been misunderstood as an enabler of Ponzi schemes, dark web operations, money laundering and cryptocurrency fraud. Many regions of Africa still have a high level of ignorance regarding this technology; therefore, it is time to change the narrative. In cooperation with the Algorand Foundation, the Africa Blockchain Institute conducted continent-wide research to highlight blockchain activities by technology business founders, blockchain pioneers, and technology ecosystem stakeholders in Africa.

This report portrayed the following research objectives:

- To gain in-depth knowledge of the use of blockchain technology in Africa;
- To bridge the knowledge gap between academic blockchain technology research and industrial blockchain use and application;
- To produce an African blockchain report that is data-rich and genuinely representative of the actual situation of use cases, innovation and challenges associated with the application of blockchain in Africa.

The purpose of this report is to teach the African and global audience about blockchain use cases, success stories, common misconceptions, and future expectations for the technology

Key Insights *from* Previous Editions

To read more, download the full report from www.africablockchain.institute

September 2021
Nigeria, Kenya, Tunisia & South Africa

Nigeria is one of the few African countries with a proper National Blockchain Implementation Framework

There were more alternative use cases of blockchain outside of cryptocurrency use cases in South Africa and Kenya compared to Nigeria and Tunisia

Nigeria leads in Africa with cryptocurrency use cases of blockchain

Lack of funding to build and experiment blockchain innovations was a common challenge in the four countries

Majority of the blockchain innovators in the four countries are under the age of 30 years

There are stronger energy related use cases of blockchain in Kenya and Tunisia with companies such as melanin.solar in Kenya and Lightency in Tunisia

June 2022
Rwanda, Ghana, Egypt & Zimbabwe

Blockchain enthusiasts and innovators in Zimbabwe were ahead of all African countries by bringing the very first Bitcoin Automated Teller Machine to Zimbabwe even though it was eventually shut down

Rwanda has a better experimentation outlook for blockchain technology in Africa

There are currently two major applications of blockchain by the government of Rwanda in land title management and in mining track and trace

The earliest land title management use case of blockchain on the continent was in Ghana

The strongest use case of blockchain in the logistics value chain was seen in Egypt with cargoX

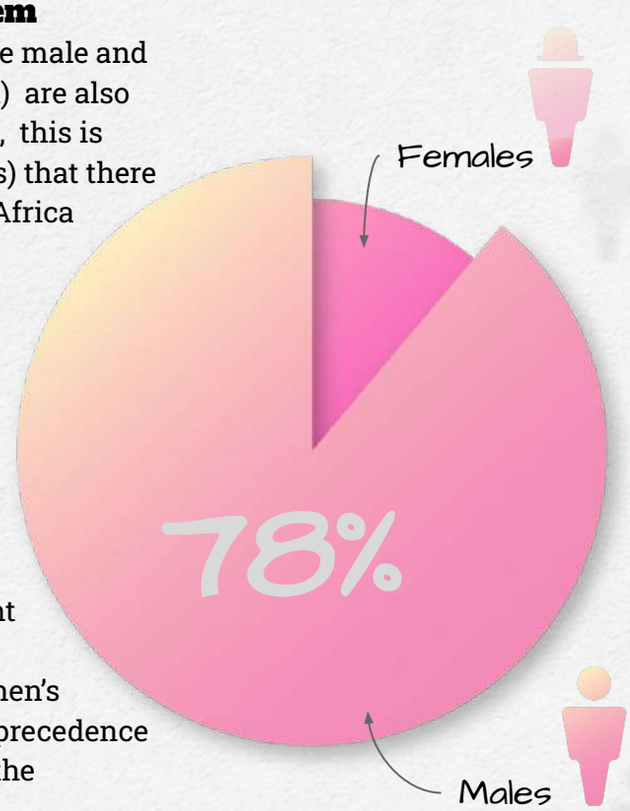
Data Insig hts

Triangulated Data Synthesis

This section ties together similar insights from the survey and in-depth interviews, in order to create a holistic picture about blockchain activities in the countries of study. Inferences are made from the different data points and consequently, significant recommendations are made.

The Gender Complexion of Blockchain Ecosystem

The highest number of respondents (78%) in the survey are male and also the majority of the in depth interview stakeholders (11) are also males. While this outcome is not fundamentally by design, this is confirming over and over again (also from previous reports) that there seems to be more male innovators and enthusiasts in the Africa blockchain ecosystem compared to females. However, an exciting insight in this research shows that there are more male technical founders while women tend to be more of community builders. Majority of the women that participated in this research are strong community builders around blockchain values and ecosystems (2 out of 12 stakeholders and 22% of the founders). While it has been recommended severally to have more women coming into the blockchain ecosystem as technical founders, we should in the moment give women significant credit for being great community builders and for being strong pillars in the ecosystem. Giving more notice to women's engagement with blockchain technology will also set the precedence for other women to join the innovation space provided by the technology.



Access to Finance and Seed Funding for Blockchain Innovation

While lack of funding has ranked number one among the challenges faced by blockchain innovators in Africa, including the survey result of this study - 56.1%, insights from the in-depth interviews shows that the seed funding to accelerate blockchain innovation can be found on the continent of Africa. Here is the picture: there are the blockchain startups who believe that there is no money on the continent to fund their innovation. Then there are also the more senior technology stakeholders who believe that there is money but that the money is in the hands of "old monies" who do not believe in technology investment and lastly, the "old monies" who made their wealth from traditional and conventional businesses such as agriculture, mining and trade and have no interest or, does not believe in modern technology investment such as the blockchain.

With the situation described above, there is a great opportunity for some " intermediary capital managers" who can convince the African "Old monies" to invest in blockchain innovation. There is a need to create the bridge of opportunities between the young blockchain startup ecosystem and the arenas where the funds are domiciled in Africa.

Investment from Africans to support research and application of blockchain on the continent is now more paramount than ever.

Rationale for Choice Blockchain Use in Building Projects

There is a consistent pattern of insight on the rationale behind the choice of blockchain startups to use in building their projects by the startups and the stakeholders interviewed. The most prominent rationales stated were security, existence of support for the local community, mobile friendliness, and availability of a wide variety of token contracts. The availability of a local support community was a big highlight as the insights showed that innovators want to be able to have a community to fall back on for discussions, questions, support and feedback in their building journey.

African Blockchain Innovators Building for Africa but from Outside of Africa

A number of the blockchain startups reviewed or that participated in this study are building their solutions outside of the continent (roughly 10%) even though their solutions are targeted towards their home country. This is also confirmed in the interview especially in Morocco and Senegal. This situation is occurring largely due to regulatory issues around blockchain and crypto solutions in their home countries. It is believed that this situation will continue to change as more countries in Africa transition from the "Wait and See" approach to blockchain regulation to "Wait and Experiment" approach. Support for experimentation will allow young innovators to stay at home and work on their ideas rather than traveling offshores which may be more inconvenient for them. Building at home may be better than building from abroad where you are disconnected from the iterations of the problem you are trying to solve.

The Differences Between the Anglophone Africa Blockchain Ecosystem and the Francophone Africa Blockchain Ecosystem

The differences identified in these two ecosystems are observed under three variables: founders presence, type of solution and ecosystem vibrancy.

Founders and Stakeholders' Presence

It has been observed that majority of the founders and blockchain ecosystem leaders in Francophone Africa live and lead from outside of Africa compared to anglophone Africa where majority of the founders and stakeholders live and lead from within the continent.

Types of Solutions

There is an observation that while there are varieties of blockchain use cases coming from Anglophone Africa, there is mostly a singularity of fintech use cases in most parts of Francophone Africa.

Ecosystem Vibrancy

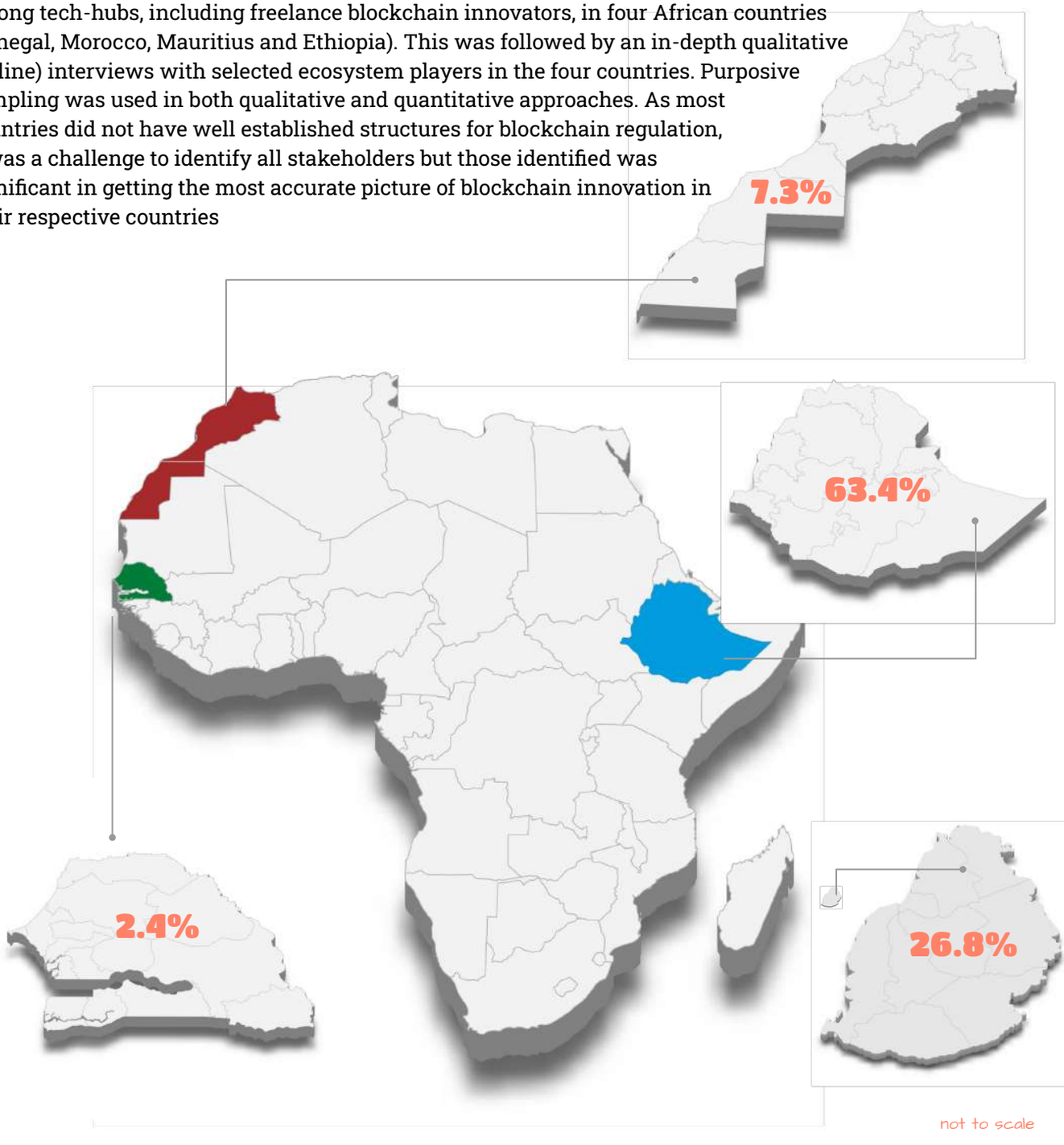
The blockchain ecosystem in Anglophone Africa is more vibrant than Francophone Africa. This is evident in the response to surveys and confirmations of stakeholders. This may be due to several reasons but the most viable explanation for the low ecosystem vibrancy in Francophone Africa can best be explained by the data from Seeds Star that measured different tech ecosystems in Africa in the area of culture, mindset and community. The data stated thus:

> *"The third pillar of the index, culture, is often the most difficult to define. It takes into account criteria such as the density of entrepreneurs, the number of events related to entrepreneurship, the presence of start-ups in the media, the collaboration between the actors of the ecosystem and the number of success stories. While there are significant differences between all countries in the region, the Index generally gives a low rating to the entrepreneurial culture of French-speaking countries".*
>
> *Seedsstar (2019)*

Despite this situation, things are changing gradually and there are some solid community building structures coming from the corridors of Francophone Africa such as the recently held Africa Fintech Summit in Abidjan and the Bitcoin 2022 Conference in Senegal.

Scope and Methodology

The research used a mixed-method approach for data collection. A survey was administered among tech-hubs, including freelance blockchain innovators, in four African countries (Senegal, Morocco, Mauritius and Ethiopia). This was followed by an in-depth qualitative (online) interviews with selected ecosystem players in the four countries. Purposive sampling was used in both qualitative and quantitative approaches. As most countries did not have well established structures for blockchain regulation, it was a challenge to identify all stakeholders but those identified was significant in getting the most accurate picture of blockchain innovation in their respective countries



A larger percentage of the respondents are from Ethiopia at 63.4% followed by Mauritius at 26.8%. Morocco at 7.3% and Senegal representing the least at 2.4%. It is interesting to note that despite the low blockchain engagement in Ethiopia, a number of off the grid efforts to innovate with the blockchain technology are ongoing. Majority of those who participated in the survey in Ethiopia are not all necessarily blockchain companies from inception but have been exploring the onboarding of their solutions on the blockchain. Another interesting insight to note here is that in Senegal, where the least participation happened, there are just a few innovators who are visibly building a blockchain solution. There is significant "hearsay" information and media sentiments from ecosystem conversations. Senegalese are building amazing blockchain solutions abroad and not necessarily building exclusively for the Senegalese community.

Majority of the respondents are between the ages of 21-39 years (87.8%) followed by innovators under 20 years old at 9.8%. This confirms again that the engine of innovation in Africa are the young people.

age

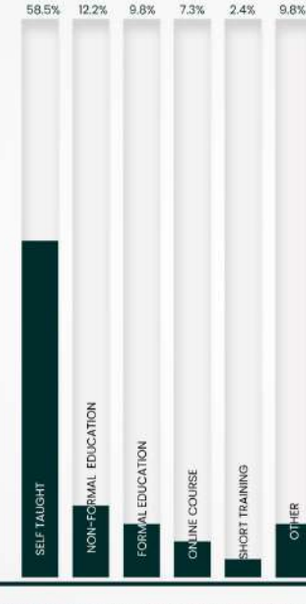
AGE GROUPING OF RESPONDENTS

education

LEVEL OF **EDUCATION**

Undergraduates and postgraduate students are somewhat similar in this study. One constant finding in this and other studies of blockchain innovation in Africa is that higher levels of education correlate with more opportunities to work on solutions that use blockchain either as the primary or secondary technology in a startup's infrastructure. It is possible that this is because developing a blockchain-based business model demands a familiarity with the underlying principles of the technology.

knowledge



INITIAL SOURCE OF BLOCKCHAIN KNOWLEDGE

Out of the respondents, 58.5% said they learned about blockchain technology on their own. This is a fantastic opportunity for businesses and organizations to develop training and education programs for blockchain technology that accommodate a wide variety of learner profiles and preferences. This presents an opening for more business investments in academic initiatives that bring blockchain education to schools across Africa.

solutions

BLOCKCHAIN SOLUTIONS

Different innovators are focusing on various problems, but smart contract development for varying values rated highest (24.4%) in the ranking parameters. However, the fact that 29.3% of the samples included statements of different use cases is a major strength of this study. Among the most common "alternative use cases" are development of virtual assets in the fashion industry such as avatars, skins and credential management on the blockchain.

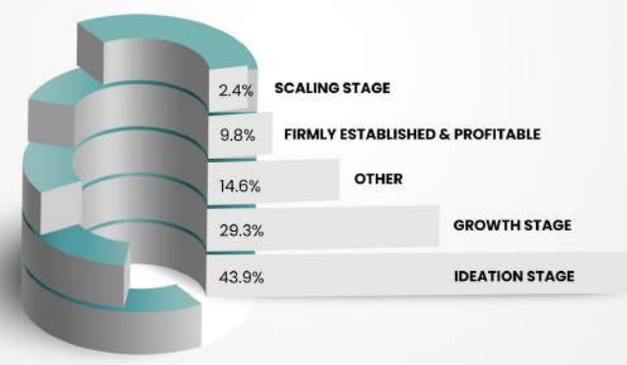
duration

58.5% of respondents have been working on their solutions for less than a year, while 24.4% have been working on them for more than five years. This shows that the adoption of blockchain innovation in Africa is still in its infancy, particularly in the development of use cases that have a direct impact on individuals, businesses, and society at large. These findings reveal "virgin" territory ripe for innovation, development, prototyping, and investment in the African blockchain ecosystem.

DURATION SPENT IN DEVELOPING BLOCKCHAIN IDEA

In consistency with what has been experienced across Africa, the larger percentage of respondents are at the ideation stage of venture development at 43.9% followed by 29.3% of those at the growth stage. Only 9.8% of the companies are firmly established and profitable.

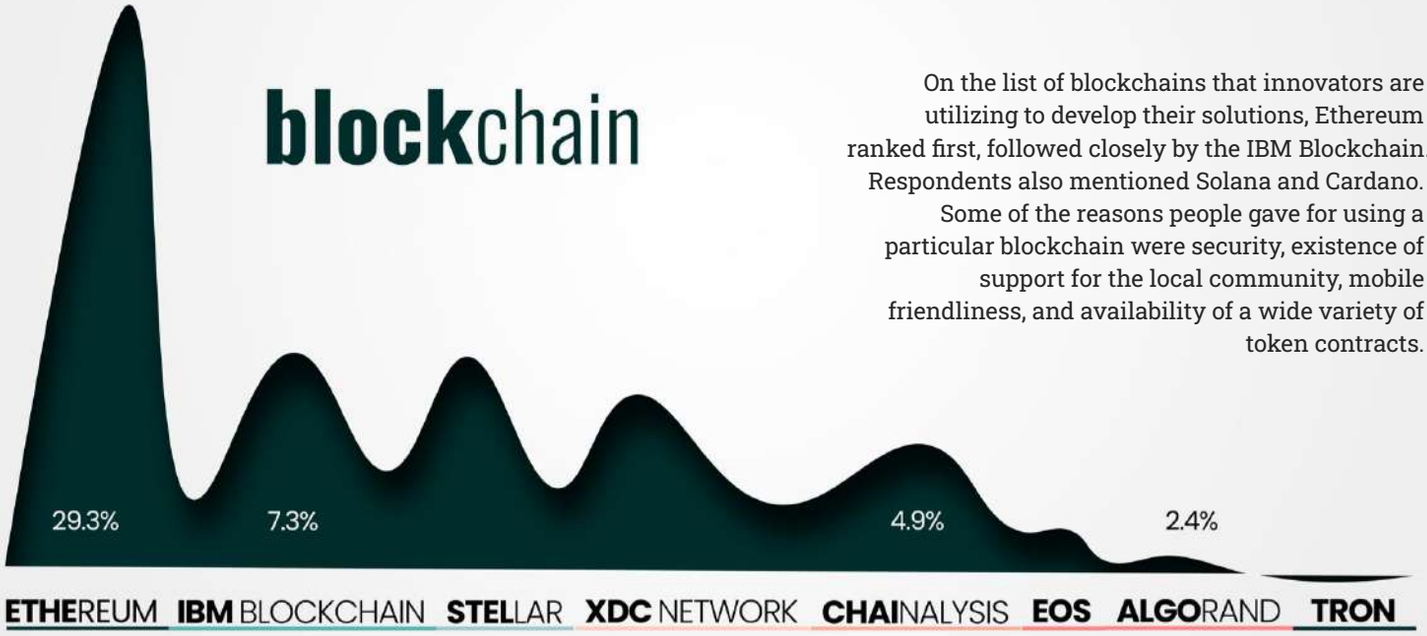
growth



STAGE OF STARTUP

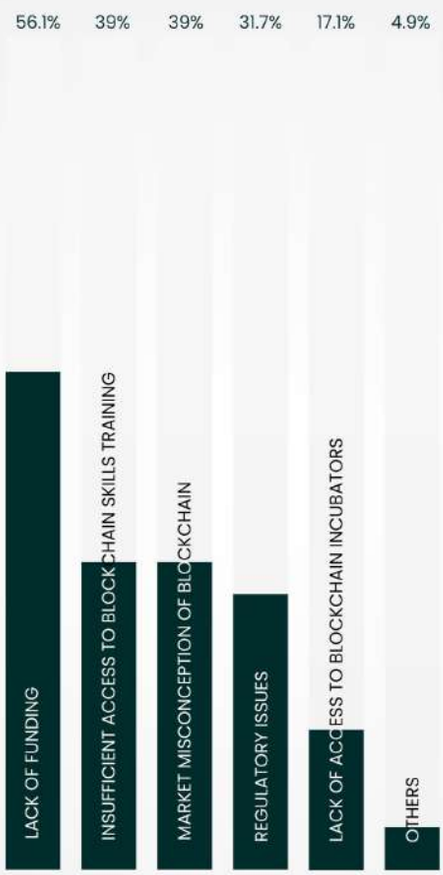
blockchain

On the list of blockchains that innovators are utilizing to develop their solutions, Ethereum ranked first, followed closely by the IBM Blockchain. Respondents also mentioned Solana and Cardano. Some of the reasons people gave for using a particular blockchain were security, existence of support for the local community, mobile friendliness, and availability of a wide variety of token contracts.



BLOCKCHAINS ON WHICH SOLUTIONS ARE BEING BUILT

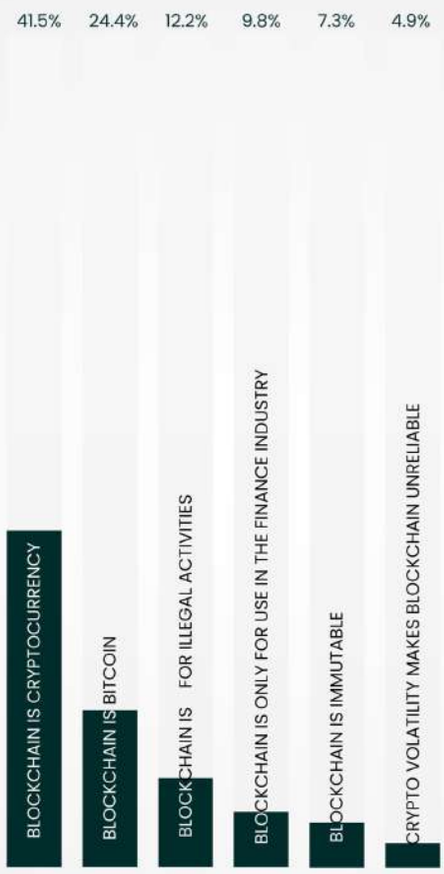
challenges



Lack of funding came topmost in the list of challenges facing the innovators at 56.1% followed by skills issues at 39%. These are two major areas of opportunity for support in Africa for investors and educators.

CHALLENGES ENCOUNTERED IN BUILDING **BLOCKCHAIN SOLUTIONS**

misconceptions



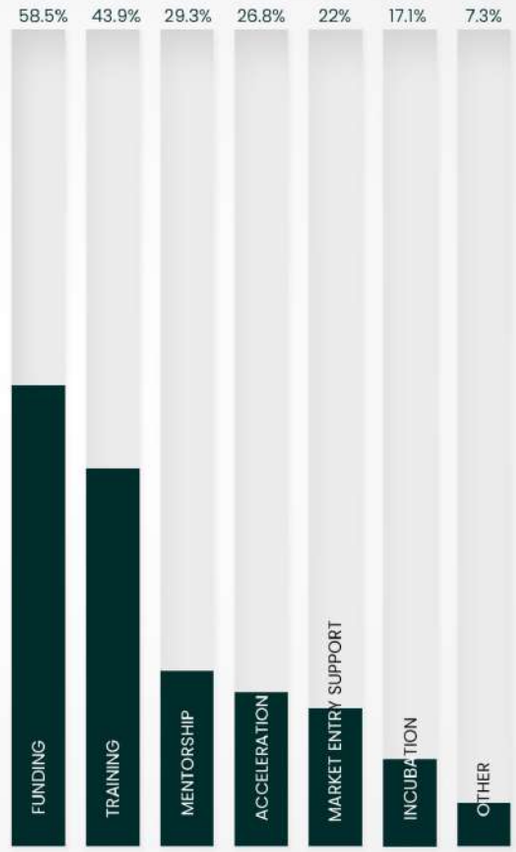
The misconception that blockchain is the same as cryptocurrency is still the most prevalent in the countries of study at 41.5% followed by the misconception that blockchain is the same as bitcoin at 24.4%.

BLOCKCHAIN **MISCONCEPTIONS**

support

Government Support of Blockchain
80.5% of the respondents noted that there is no government support of blockchain in their countries. This brings a great opportunity for government engagement and advocacy for the acceptance and openness to innovate with the technology.

GOVERNMENT SUPPORT OF BLOCKCHAIN



MOST PRESSING **SUPPORT NEEDED**

Most Pressing Need For Blockchain Startups
Funding remains a top concern for support at 58.5% followed by training at 43.9% These are major areas of opportunity for venture capital and social impact funders. This is also a great opportunity for trainers and education stakeholders in the blockchain space to continue to do more investment in education for the technology through all possible channels.

Data Collection Reflection

It has become obvious that blockchain startup founders are finding a new community of reliance and support in online communities such as "**discord**" and "**slack**." This is an excellent insight that is worth sharing, and it is something that has changed the dynamics of finding blockchain startup founders in tech hubs. Coworking spaces provided by physical tech hubs are increasingly being utilized by the majority of entrepreneurs, rather than the incubation and acceleration programs offered by the hubs themselves.

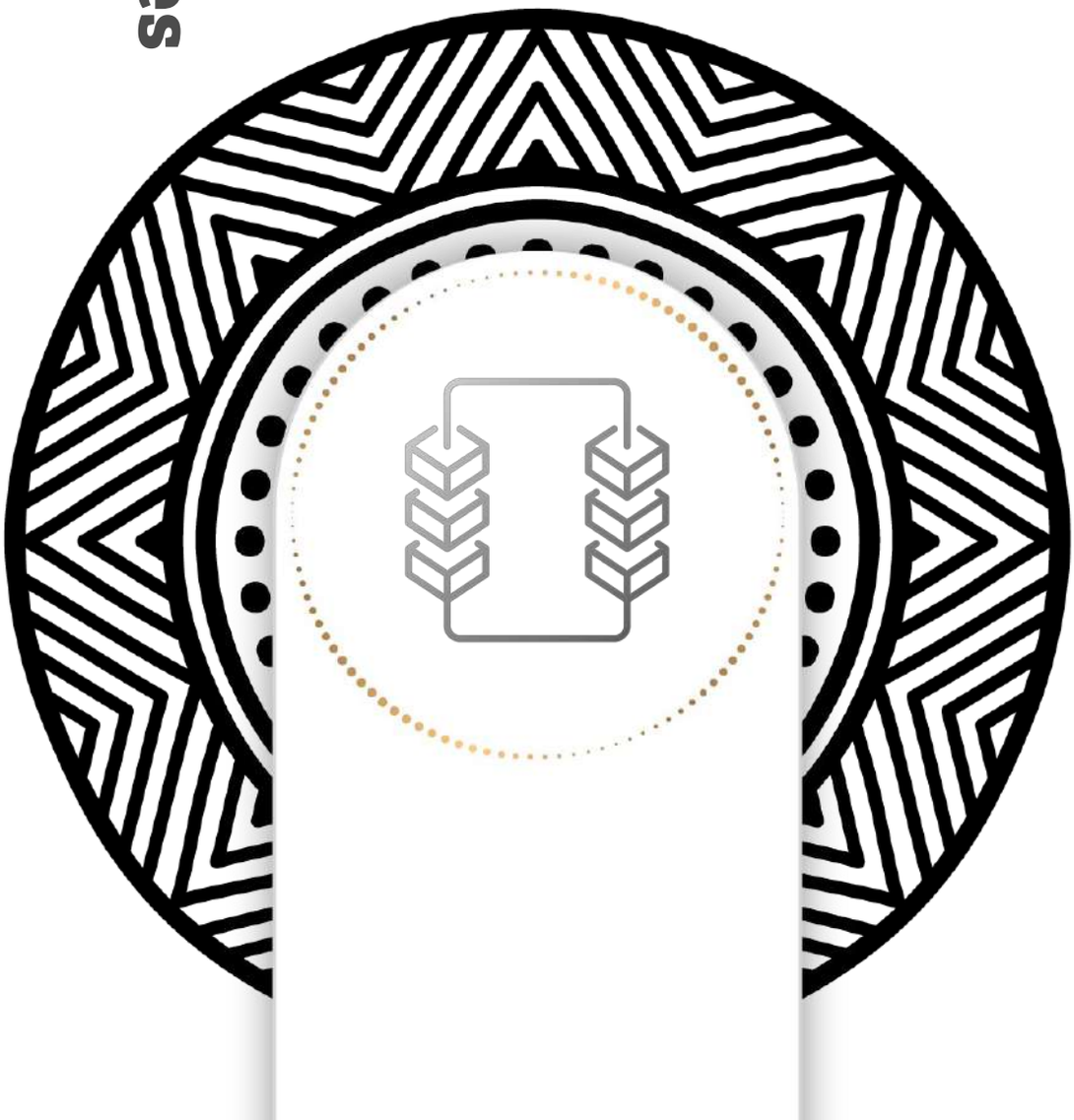
This situation is largely due to the ease of democratized access to information, low barriers to community engagement and access and the opportunity to belong to various online communities simultaneously. In addition, since blockchain technology is still largely in its early days in Africa, most tech-hubs have not yet cracked how to design a structured incubation and acceleration program for their community members who are working on blockchain solutions. This has led many of these innovators to seek support and communities in online communities.

The situation described above is a fantastic opportunity for blockchain firms to take their online communities more seriously and invest in the appropriate online infrastructure in order to be in a position to help innovators who are building on their blockchain protocols.

...most tech-hubs have not yet cracked how to design a structured incubation and acceleration program for their community members who are working on blockchain solutions. This has led many of these innovators to seek support and communities in online communities

BLOCKCHAIN ECOSYSTEM

Country Cases



SENEGAL

Government Blockchain Policy and Strategic Plans

Senegal is one of the earliest countries that introduced a Central Bank Digital Currency (CBDC) called e-CFA. According to Decentralize Africa (2020):

The launch of Senegal's eCFA was a result of a collaboration by Banque Régionale de Marchés (BRM), a local Senegalese bank and eCurrency Mint Limited, a Dublin-based company that specializes in creating digital currencies for central banks to operate alongside notes and coins. BRM issued the eCFA, in compliance with e-money regulations of Banque Centrale des Etats de l'Afrique de l'Ouest (BCEAO), the Central Bank of West African Economic and Monetary Union (WAEMU).

Senegal is widely regarded as the pioneer of a new type of digital money that is reported to be powered by blockchain technology, even surpassing its African contemporaries. Quartz issued a rebuttal to an original post that incorrectly asserted that the "West African eCFA," as indicated in the story's headline, ran on blockchain technology. This leaves open the question of whether or not the eCFA was built with blockchain technology in mind from the start. While details on why Senegal jumped on the innovation bandwagon so quickly are sketchy at best, it is evident that in launching the e-CFA, the country's administration sought to establish itself as a technological leader among the countries of Africa that use the CFA.

The buzz for the eCFA traveled far and wide as several local and international media carried the news as a sign of promise, hope and projections for the future of fintech and financial technology in Africa. Referring to the promise the eCFA carried for many, Chutel (2016) in a Quartz Article published on December, 27, 2016 stated:

"Senegal will soon begin using a digital currency in 2017. It's another opportunity for financial technology (fintech) to help emerging markets leapfrog traditional banking systems and bring financial inclusion to more people". Quartz (2016)

African Business (2017) confirms that Senegal followed Tunisia in launching a national digital currency. The article went on to say;

"It will have the same value as the CFA franc and can be stored in all mobile money and e-money wallets. Given current optimism over the country's economic prospects, these are exciting times for Senegal and Senegalese banking" African Business (2017).

While there was widespread enthusiasm at the announcement of the eCFA in 2017, the idea never materialized. A lot of research was done to determine if the eCFA experiment was a success or not, and many stakeholders and technology gatekeepers in Africa and around the world began asking questions about the development and launch of eCFA after reading an article titled "Senegal's ECFA: Four years in retrospect" by Decentralize Africa in 2020. Decentralize Africa observed that; there appears to be a stakeholder cross wire and misalignment on the eCFA through the statements highlighted;

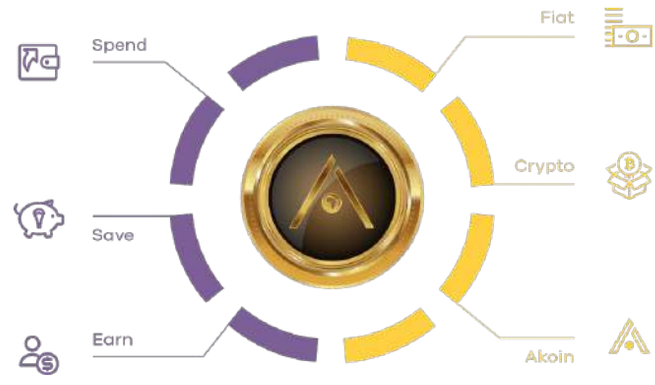
The Central Bank of West African States distanced itself from plans to introduce a digital currency in Senegal, saying it was not involved in the project and would not consider doing so.

The Central Bank, in a statement on its website, warned the issuing bank, BRM, against the use of the term: "eCFA", in order "to prevent any kind of confusion with the legal currency" in the region.

It turned out that the project's stakeholders and governing authorities hadn't been on the same page from the start, despite initial assurances to the contrary. Senegal's motivation to be an early adopter of a game-changing invention is commendable, and it's easy to see why the country would be excited by the prospect. The question everyone is asking is "is all hope lost"?.

The Senegalese American hip hop singer AKON moved back to Senegal a few years ago to launch his own cryptocurrency called **AKOIN**. This is a reason for optimism regarding blockchain-related innovation in Senegal. With more attention than the eCFA, AKOIN has helped put Senegal back on the map in the previous three years. Here are the first few words from the 2020 white paper posted on www.akoin.io by the cryptocurrency startup AKOIN;

Akoin is a cryptocurrency powered by a blockchain based eco-system of tools and services designed for entrepreneurs in the rising economies of Africa and beyond. Akoin's mission is to unlock the potential of the world's largest growing workforce by creating learning, earning, spending, and saving opportunities across Africa and other lean economies. The Akoin Ecosystem of Decentralized Applications (DApps) and Applications (Apps) provides the building blocks for entrepreneurship and economic opportunity. Users are able to transition in and out of the ecosystem by converting fiat currency or prepaid cell phone minutes (a major store of value in Africa) into cryptocurrency. The Akoin Utility Token is the exclusive currency of the Akoin ecosystem. Our proprietary technology enables immediate trade between major cryptocurrencies, our partners' alternative currencies, and fiat currencies; both on the platform and in the local market.



The Akoin Multi-Currency Wallet enables people to trade with each other interchangeably without the major hurdles or fees of traditional money exchanges.The Akoin Partner Program curates and onboards global brands and best-in-class applications that seek access to the world's largest rising economy. The program achieves this by providing a platform for marketing into Africa and beyond, and by putting each company's brand and offerings into the hands of previously inaccessible demographics.The Akoin Foundation further promotes the Akoin mission through its digital and on-the-ground programs for activating and empowering entrepreneurs in Africa through educational programs, investment and business incubation initiatives, college activation efforts and our growing ambassador program and community network. The foundation also invests in DApps that join the ecosystem, leveraging them as token distribution vehicles to ensure Akoin maintains its utility for the end-user. The foundation is responsible for amplifying Akoin's distribution across the African continent and our shared vision for economic inclusion in rising economies and empowering entrepreneurs in Africa and beyond.

Entrepreneurial/Startup Blockchain Ecosystem and Communities

Senegal's blockchain entrepreneurship space is virtually untapped, providing a prime opening for more innovation investment and dedication to constructing a value-based blockchain ecosystem by both domestic and international actors. In addition to the few forthcoming ideas included in the poll, the following businesses are actively engaged in the blockchain space, either as a community or blockchain use case platform.

COMPANY	FOCUS	HIGHLIGHT	SITE
Bleu Comme La MER	Fishery E-commerce	People can pay for fish with Bitcoin, Ethereum and Tezos	https://mobile.twitter.com/bleucommelamer
Yité Technologies	Blockchain Solution Builder	They have built blockchain based solutions such as FayalBTC, Banxaas and Maalaw.	https://yite.tech/
Akoin	Crypto Solutions	The Akoin cryptocurrency (AKN) will serve as the primary form of payment in Akon's fantasy world.	https://www.akoin.io/
Paydunya	Payment Solution	Provides businesses and financial institutions with a variety of multi-channel digital solutions that simplify the collection and distribution of bulk payments.	https://paydunya.com/
Oolu	Energy and Environment	Blockchain Innovation in Energy	https://oolusolar.com/

Confirming whether AKOIN is already a trading cryptocurrency, research shows that AKOIN is listed on Bitmart and Bitrex. Coin Market Cap (Coinmarketcap.com) also showed AKOIN's (AKN) maximum supply of 450,000,000 AKN coins. Fingers crossed for the evolution of more blockchain powered innovation by the government of Senegal and by private players such as Akon.

Banxaas

Banxaas is a Senegalese Bitcoin exchange website that is yet another Yite Technologies invention. It enables Senegalese and anybody else living in Senegal to purchase and sell bitcoin using local payment methods and local currencies (XOF). It is a peer-to-peer, native, non-custodial, and open source exchange platform. The portal displayed "coming soon," and they are currently in the MVP stage.

Maalaw

Maalaw is a cryptocurrency wallet. It is sometimes referred to as a "wallet" since it lets you use a locally designed solution to store, send, and receive Sats. Maalaw is the culmination of months of R&D and the use of cutting-edge computer security and encryption.

Akoin

Akon, an African-American singer, has a keen interest in blockchain, and his curiosity led to a quite bold proposal. Akon formerly made history in the music business, but he is currently focusing his energy on other areas. The ambitious $6 billion project being built in Senegal by the Senegalese artist and businessman is a futuristic one—he wants to have his own city. The Akoin cryptocurrency (AKN), a token that formally entered the cryptocurrency market in 2020, will serve as the primary form of payment in Akon's fantasy world.

PayDunya

PayDunya provides businesses and financial institutions with a variety of multi-channel digital solutions that simplify the collection and distribution of bulk payments as well as the sending and receiving of payments via a website or mobile application.PayDunya gives customers the option to pay directly through your website using a variety of adapted payment methods.

Oolu

One of the off-grid solar enterprises in West Africa with the quickest growth is called Oolu.The startup's utmost focus is to provide energy solutions and cutting-edge services that enhance the quality of life for clients, communities, and the environment. The concept, which was created in collaboration with regional communities, enables provision of premium solar goods with a reasonable financing option. With replacement components covered by warranties and customer care agents who can communicate with clients in their native tongues.Oolu means "trust" in Wolof, the official language of Senegal.

FayalBTC

FayalBTC offers consumers the implementation, integration, and/or handling of an all-in-one solution allowing users to take payments in Bitcoin and other Altcoins incidentally, according to the website of the parent firm, Yite technologies. They employ the BTCPay Server solution, a cryptocurrency payment processor, to accept payments in Bitcoin (on-chain and through the Lightning Network) and Altcoin. There website also stated that;

BTCPay Server is open source and non-custodial, i.e. you are the sole custodian of your private keys. The payments made go directly to your wallet, without going through a third party, which increases the confidentiality and security of your transactions. Finally, there is no address reuse because each new payment generates a new address, derived from your xpub key.

"We haven't even scratched the surface of blockchain's potential as a technology globally and we have also not yet identified its best use."

In my perspective, a blockchain is just another kind of ledger. If you want to see the world as it really is, all you need to do is look in a ledger. I believe that blockchain is the most secure record keeping system ever developed by humans. Despite the fact that it is still in its infancy, I think that the increased sense of safety that comes with using blockchain technology is a major motivator for its widespread use. To this day, nevertheless, it is still one of the most secure registers we have created.

Blockchain Use and Adoption in Senegal

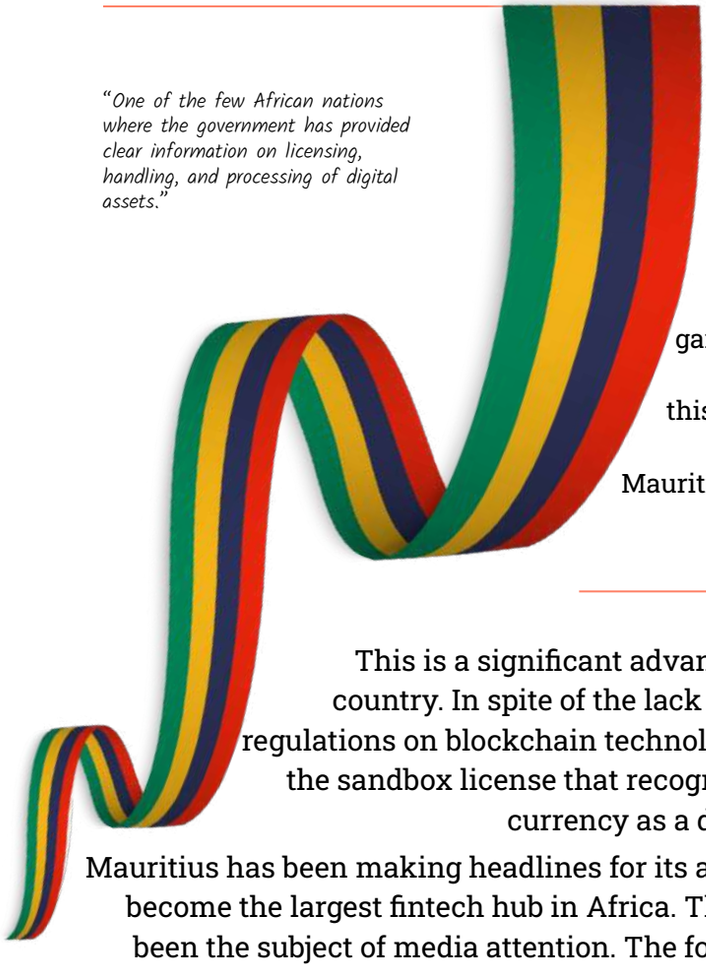
In my opinion, we haven't even scratched the surface of blockchain's potential as a technology globally and we have also not yet identified its best use. That seems to be the case in Senegal as well; lots of folks here will tell you they're working on blockchain projects or something similar. Thus, much conditional or directive effort is necessary. More than that, I see blockchain technology as being in its infancy at this point. Indeed, it is still a cutting-edge innovation. Given that cryptocurrency is currently the hot issue, I believe there is room to explore more use cases beyond cryptocurrency.

Blockchain Misconceptions in Senegal

Blockchain and cryptocurrencies are tough to understand for those who are unfamiliar with the concept of cash. Secondly, people often associate blockchain and cryptocurrencies with frauds. But, truth be told, one of the benefits of blockchain is the security. By the way, fraud is nothing new in the traditional financial system therefore it is not unique to blockchain or cryptocurrencies.

Moustapha Diop
Head of Marketing , APIX

MAURITIUS



"One of the few African nations where the government has provided clear information on licensing, handling, and processing of digital assets."

Government Blockchain Policy and Strategic Plans

The remarkable and slowly expanding blockchain ecosystem that is developing in the country has not garnered nearly enough attention from many quarters despite the fact that it is advancing. The inclusion of Mauritius in this study is a significant accomplishment on our part. Despite having just a small blockchain Entrepreneurial Ecosystem, Mauritius is one of the few African nations where the government has provided clear information on licensing, handling, and processing of digital assets.

This is a significant advantage for the country. In spite of the lack of any clear regulations on blockchain technology, beyond the sandbox license that recognizes crypto currency as a digital asset, Mauritius has been making headlines for its aspiration to become the largest fintech hub in Africa. This goal has been the subject of media attention. The following is a quote from Manisha Lallah (2019) that was included in an article that was published on appleglobal.com:

"The Mauritius Government is supportive of blockchain technology and initially implemented a sandbox license recognising crypto currency as a digital asset. The recent budget also focuses on the promotion of FinTech services, helping to establish Mauritius' position as a leading FinTech hub in the African region."

Since the launch of the fintech innovation sandbox in 2019, several media outlets have highlighted Mauritius as a fintech destination that the African continent and the rest of the globe should keep an eye on. Graham Patrick (2019) wrote one such media highlight on www.maitlandgroup.com, where he stated that:

"Rather than resist what many see as 'inevitable', the government of Mauritius has recognised that the digital revolution presents an opportunity for smaller economies like that of Mauritius to leapfrog traditional industrial development. Innovation, in the form of artificial intelligence and fintech, including blockchain, is seen as a means to increase private investment and employment in Mauritius".

To say that Mauritius is one of several African countries that has recognized the game-changing potential of technology is an understatement. Patrick (2019) delves deeper into the specifics of the aforementioned sandbox by explaining that its license is meant to give business owners a way to operate in the event that they have an innovative project for which there is currently no (or an insufficient) legal or regulatory framework in Mauritius. In addition, he said:

"Mauritius offers a "sandbox" space to test promising projects within set parameters which act as a temporary framework to, in essence, develop a working prototype. Following a testing period and upon demonstration of applicability, compliance and benefits of a project, permanent regulations can follow for the new industries and, in the process, establish new worldwide best practices" Patrick (2019).

Multiple reliable sources have also stated that Mauritius has established a National Regulatory Sandbox Licence Committee to develop the idea and examine all concerns concerning sandbox licensing, with a focus on fintech endeavors. Mauritius has demonstrated, through its laws and regulations, that it understands blockchain technology, its promise, and the legal requirements that come with the constant innovation that comes from testing and exploring the technology. Just a few African countries have laid out their goals for the development and use of blockchain technology to create and manage digital and virtual assets, as well as their expectations of businesses and the ecosystem as a whole.

The two licenses introduced by the Financial Services Commission of Mauritius were " The Custodian Services (Digital Asset) Licence"; and "The Digital Asset Marketplace Licence". According to FreemanLaw (2022), new standards for the licensing of security token trading were announced by Mauritius in June of 2020. According to the Rules, anybody providing custody services for digital assets in Mauritius must first get a Custodian services (digital asset) license from the Financial Services Commission. The rules refer to these offerings as Trading Securities Systems. Standards and guidelines for cyber security, a minimum capital requirement of 35 million rupees or the equivalent amount, a board that is always comprised of a minimum of three directors, at least one of whom must be a resident of Mauritius and at least 30% of whom must be independent director(s); must at all times perform its core functions from an office in Mauritius and maintain up-to-date transactional records; must file with the FSC as so and so forth are all key provisions. The instructions conclude with a warning to prospective investors that they are not covered by any compensation schemes mandated by Mauritius law.

The Government of Mauritius also recently enacted the Virtual Asset and Initial Token Offering Services Act. Toofail (2022) reports that on December 10th, the National Assembly enacted the Virtual Asset & Initial Token Offering Services Act 2021, which will become law once it receives Presidential approval. Service providers for virtual assets and initial coin offerings (ICOs) are subject to regulation and oversight by the Financial Services Commission (FSC) under the Act. Thus, the Act empowers the FSC to, among other things: License suppliers of services related to virtual assets.

While Mauritius is still working out the kinks in the sandbox and licensing processes, it must also focus on actively regulating blockchain technology and forging a channel for the testing and iteration of new ideas inside the local innovation ecosystems.

Entrepreneurial/ Startup Blockchain Ecosystem

It is safe to conclude that education, community effort, and continual improvement are still in their infancy in the blockchain entrepreneurship ecosystem of Mauritius. Below are highlighted some of the organizations and enterprises working in disseminating information about blockchain or developing real blockchain solutions:

COMPANY	FOCUS	WEBSITE
Horizon Africa Blockchain Network	Smart Contracts	https://www.horizonafrica.io/
BitOrb	Blockchain Education & Training Platform	https://bitorbit.com/
Crypto N' Cafe	Commodity Trading	-
Blockchain Mauritius Foundation	Blockchain Education & Training Platform	https://icoholder.com/en/companies/mauritius-blockchain-foundation-10556
Dodocoin Blockchain Technology Ltd.	Commodity Trading	https://dodoex.io/
Codevigor	Development of Blockchain Applications and Services	https://www.codevigor.com/
Mauritius Africa Fintech Hub	Blockchain and Financial Education	https://mauritiusfintech.org/

Horizon Africa Blockchain Network

The Horizon Africa blockchain Network (HABN) is an Ethereum-based blockchain which provides a platform for your blockchain Solutions. The Horizon Africa project also aims to increase the involvement of African developers in blockchain technology. The Horizon Africa blockchain Network will provide a test bed for developing and deploying simple or complex Dapps (Decentralized Apps) for solving problems specific to the African continent, and allow Africa to communicate and work more efficiently with other countries.The platform has six focus areas highlighted below;

Having the proper structure to develop FinTech solutions.

Creating Greater security and transparency for government.

Use HABN to streamline medical processes and records.

Use the power of blockchain to tokenize the African Economy.

Develop blockchain-based Games.

Educate everyone and introduce blockchain to young people.

BitOrb

Bitorbit offers a simple and intuitive toolkit that allows any general user to mint, promote, sell, buy, and exchange digital content (photos, videos, audio, texts) in both the classic form and the form of NFT. Bitorbit is a perfect meeting place for digital content creators, streamers, bloggers, artists, NFT artists, collectors, and merchants. It is also a ready-made Web3.0 marketplace for game developers, creators of metaverses, NFT games, their followers and users.

Crypto N' Cafe

Crypto N' Kafe is a decentralized consumer ecosystem, based on smart contracts and powered by Ethereum blockchain technology. This ecosystem serves the farmers and the consumers to collaborate directly and overcome the domination of retailers.Availability of smart contracts makes it possible to facilitate different operations.

Blockchain Mauritius Foundation

BMF is a Group Of Technologists, Investors, Ex Bankers, Lawyers, And Fintech Professionals From Around The World Building A Full Service blockchain Financial Ecosystem. The community focuses of the various forms of blockchain Innovation below;

- Advanced DAOICO models with Smart Contract Integration
- Advising Token Holder Voting Options Creating Audited blockchain Driven Profit Distribution
- Models Executed on Smart Contract Coins, Tokens and Smart Contracts and DLT for Publicly Listed Companies
- Crypto Exchange and Trade Platform Execution
- Industry Standards and Global Policy in both the public and private sector
- Ai Software Driven Crypto Investments
- Blockchain for personnel and identity Management
- Distributed Ledger Technology in Real Estate and Land Records Management
- Blockchain for Governments
- Cryptographic Ledger Currency Models and Closed blockchain for private and Central Banks
- Distributed Ledger Technology for Corporates and Enterprise
- blockchain Agnostic Crypto Wallet & Physical Card Solutions
- The World's First Fully Integrated Crypto Investment Bank
- Public & Private Listing Advisory
- Non-Profit Education

Dodocoin Blockchain Technology Ltd

It is a multichain asset liquidity platform. DODO's original Proactive Market Maker (PMM) algorithm helps LPs and market makers concentrate their assets and provide strong liquidity without onerous capital requirements. A variety of permissionless liquidity products and solutions are available. Whether it is fungible or non-fungible, mainstream or "long-tail", internal or external, you can buy and sell any asset with one click on DODO. With efficient routing algorithms comparing prices across the entire network, you get the best bang for your buck. Available on the platform are ETH, BSC, Polygon, Arbitrum, HECO, OKC, Aurora, Moonriver and Boba. DODO is officially multi-chain. With an emphasis on scalability, flexibility and versatility, DODO brings ample liquidity across the full spectrum of DeFi networks and scaling solutions.

Stakeholder Snapshots

Blockchain is becoming very popular with the people. The more interesting thing is that anything on the blockchain cannot be changed or amended since people contribute to it by validating all nodes whenever transactions occur. This feature of the blockchain makes it genuinely unique from similar previous database systems. In a nutshell, the blockchain doesn't care who you are.

Blockchain Startup Ecosystem in Mauritius

There aren't many startup players in the blockchain Ecosystem in Mauritius. However, as more and more people get interested in blockchain, it is finally catching up. Crypto use cases have however raised public knowledge of the technology, which, let's say, **90% of people who hear about it are solely interested in crypto trading** and whether the price is going up or down, and so on. However, 10% of people discover it and want to learn more about it and begin leveraging blockchain technology to find applications. As a result, Mauritius does not have a large number of startups.

Ishant Ayadessen
Founder and CEO, Afreeca Invest

Blockchain is this new technology that is helping and disrupting the way we do business when it comes to processing cross-border payments. Technology is helping us in reimagining the human approach to communication as we go from a centralized to a decentralized type of operations. This technology is actively fostering the spread of novel worldviews and lifestyles. This is because the conventional system is more entities to entities. I can also see the shift in how well this new system about peer to peer transactions that occur at the individual level, is beginning to be more democratized. People are able to bypass intermediaries and talk to one another freely; yet, anarchy reigns and authority is nonexistent.

...we're just getting started... and this provides us with the time and space to get the principles right, while also relating 'solutions' to our specific situations and correctly modifying things to our environment.

Blockchain Use in Mauritius

If we are absolutely honest with ourselves, we'd say we're just getting started. This, I would say, provides us with the time and space to get the principles right while also relating to our specific situations and correctly modifying things to our environment. In Mauritius, we attend roundtable conversations, get feedback from stakeholders, and learn how they see this development progressing in order to ensure that it has been adequately updated for our very special global context. I believe there has been progress, while some countries have made far more than we have. If I'm not incorrect, you may buy tickets in cryptocurrency in Singapore, and if not, you can do so in Dubai, where blockchain-based solutions have already been democratized in daily life. Due to the many phases that a blockchain development process needs to go through, **I don't believe we are there yet as a country. Some of the startup solutions we have seen work quite well, but that doesn't imply they employ cutting-edge technology or can operate on a global scale.**

...some stakeholders continue to mix up the notions of cryptocurrency and blockchain.

Blockchain Misconceptions in Mauritius

In our recent roundtable, we discovered that some stakeholders continue to mix up the notions of cryptocurrency and blockchain, as if they were interchangeable. So, I'd say there's a widespread misconception that blockchain is the same as cryptocurrencies. I would say that many are still unsure about the definition of the technology itself and it has only been linked to crypto usage in the general ecosystem.

Benazeer Saidoo
Deputy CEO, Mauritius Africa Fintech Hub

Blockchain technology is a tool that allows you to execute both new and old tasks in creative ways. However, how you use this technology is where it deviates from game-changing. The initial iterations of the internet, which were utilized by the military, may have been built by a central institution, such as the government, however, other advancements have occurred, such as streaming video and similar technology. They all, however, stem from a single source, which might be a person, a group, the government, or a corporation. Blockchain, on the other hand, comes from an anonymous source, which is where it started. However, it also provided us with the opportunity to double-check everything. This has never been available or done before, at least not to this extent. As a result, we now have advanced technology that makes trusting anybody in your area difficult.

Blockchain Application and Innovation Ecosystem in Mauritius

I don't believe that blockchain technology is being used to its full potential anywhere in the globe. However, there are a number of variables to consider in Mauritius and other, I would say, underdeveloped nations. Because I concentrate on Mauritius, it goes without saying that one of the key issues with blockchain technology, or the development of blockchain technology for various use cases, in Mauritius is a lack of finance. This is because Mauritius has a really broad ecosystem that is now active because we have investors, startups, and entrepreneurs, but we also have some government assistance. However, funding for businesses is severely scarce.

Mauritius has a really broad ecosystem that is now active because we have investors, startups, and entrepreneurs, but we also have some government assistance. However, funding for businesses is severely scarce.

Because Mauritians are now competing with people from all over the world, we must be realistic when discussing an entrepreneurial enterprise in Mauritius. **If you run a blockchain-related firm in Mauritius, your competitors may be in the United States.** You are, without a doubt, in a global environment. As a result, what is now lacking is the **financial help** and access to funding that should be available to new enterprises but isn't. And there are several reasons for this. Despite the fact that many wonderful things have happened, people and venture capitalists in Mauritius still associate blockchain with fraud and scams, with all of the unsavory ICOs that have occurred in the past. There have been several advances in payment systems though.

Blockchain Misconception in Mauritius
The issue of blockchain misconceptions is not only a matter of trusting technology; there is also a lot of negative media coverage of it, and tainting of the technology by conventional systems or traditional companies, such as banks and financial organizations. They prefer to spread the idea that blockchain is usually associated with fraud and other similar acts. I must note that it is not as though con artists do not exist in Mauritius; this is clearly an issue in many other countries as well. We need to do better to keep telling the good stories on the potential of this technology.

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Blockchain Startup Ecosystem in Mauritius
I would argue that the ecosystem saw a boom around 2020 and 2021, with numerous new initiatives being implemented. But, once again, this relates to the first issue I mentioned before, namely a **lack of funds. As a result, the vast majority, if not all, of these startups—including mine—were self-funded**. But what occurred was that they simply fade away for a year or two. In addition, we were dealing with the pandemic, cryptocurrency price movements, and other issues at the same time. These are external reasons, yet they have a significant influence on these businesses. I would argue that the environment is now facing some difficulties.

One of our major issues with policies has been that they do not keep up with the rate at which progress and innovation occur.

Blockchain Policies Recommendation in Mauritius
In terms of policies, I believe that Mauritius and many other African countries have the right set of regulations in place. The problem with policies is that many of them end up being completely useless by the time they are implemented, whether they are part of a legal framework, incentives, guidelines, or something entirely different.

And one of our major issues with policies has been that they do not keep up with the rate at which progress and innovation occur. Having said that, having the correct set of rules and regulations is critical. And I would add that we should follow a fundamental principle: create laws, policies, and a legal system that do not restrict innovation. For example, you cannot set up licenses and other such things with a licensing fee of, say, half a million USD. Is that right? As a result, because we lack the finances to pay half a million USD for the license, this effectively precludes 99% of all companies. In addition, because these regulations are meant for startups, it makes no sense to exclude firms from the entire policy-making process.

Create laws, policies, and a legal system that do not restrict innovation.

Suyash Sumaroo
Director, Codevigor

ETHIOPIA

It is fascinating to observe the evolution of Africa's blockchain ecosystem, as different nations take different approaches to embracing this seemingly contentious technology. Like other African governments, Ethiopia first banned cryptocurrencies before changing its mind not long afterward. According to Ogunjuyigbe (2022) in a post on www.venturesafrica.com, he noted:

"In June 2022, Ethiopia joined the league of crypto-antagonistic countries when its central bank issued a statement calling crypto transactions illegal and warning people to avoid using them. The bank claimed that only the birr, Ethiopia's native currency, can be used to settle transactions in the country. But now, less than three months after that declaration, Ethiopia's government seems to be having a rethink. Instead of shutting out cryptocurrencies, it wants to regulate the space. Hence, it gave a 10-day ultimatum for cryptocurrency operators to register with the national cybersecurity agency—the Information Network Security Administration (INSA). This move makes Ethiopia the second African country to reverse a hostile stance on crypto this year."
Ogunyigbe (2022).

Many African nations have legitimate worries about blockchain technology, particularly cryptocurrencies, and we cannot ignore them. Studies have demonstrated that nearly all governments have chosen these stances for the sake of protecting their population or because they are genuinely curious about the technology. It's also interesting to watch how, like Ethiopia did just three months after announcing an unequivocal ban position, many countries uncover fresh facts and understanding of the invention and make follow-up pronouncements relaxing for regulatory openness.

Ethiopia has made it clear that cybersecurity is a top priority, prompting the country's Information Network Security Administration to request registration from the crypto industry (INSA). This is indeed a progress on the openness to crypto innovation.

On the blockchain innovation side outside of cryptocurrencies, "In April of 2021, the Ethiopian government revealed that it had inked an agreement to develop a national database of student and teacher IDs via a decentralized digital identification solution. This was done in order to construct a national database of student and teacher IDs. The agreement calls for the provision of identification cards to 5 million kids attending 3,500 schools. These cards will be used to keep educational information on a distributed ledger known as blockchain.

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"The partnership will see Cardano-based decentralized identification system Atala Prism first implemented in the country's schools," decrypt.co (2021) claimed as an additional explanation of the parameters of the agreement between the Ethiopian government and Cardano. It will be put to use in the creation of "tamper-proof records" of educational achievement across 3,500 schools and five million pupils in order to rapidly validate grades.

It will be put to use in the creation of "tamper-proof records" of educational achievement across 3,500 schools and five million pupils in order to rapidly validate grades.

Geahun Mekuria, the Minister of Education for Ethiopia, recently had a video conversation with John O'Connor, the director of African operations for IOHK. In this conversation, Geahun Mekuria expressed his excitement about the potential transformative power of blockchain on the educational system in Ethiopia. According to him,

"The goal of this effort is to enhance the level of education by using various forms of modern technology. It is extremely realistic to consider the use of blockchain technology as a means of enhancing the quality of educational provision".

A deep dive into the progress of the deal, an article by written in Coin Republic (September, 2022) highlighted that:

"Charles Hoskinson, the founder of Cardano, has provided an update on the initiative it launched last year in Ethiopia. In order to develop a national attainment recording system, Cardano builder IOG entered into a partnership with the Ethiopian Ministry of Education in 2021. The Ethiopian federal education authorities have also begun implementing digital identity (ID) for students and teachers as part of the nationwide blockchain-based program, according to the article that was shared by the creator of Cardano". Smith (2022) on www.coinrepublic.com.

Data input is expected to begin in October 2022, according to Zelalem Assefa, head of ICT and digital education at the Ministry. Close to twenty public schools were chosen to take part. Identity Management may be in its infancy, but the eyes of the world are on the Cardano-Ethiopian government partnership as its success or failure could have far-reaching consequences for the adoption of blockchain technology in Ethiopia and possibly even the rest of Africa. Taking a look at Ethiopia's Digital Strategy 2025, it seems that the government is on the right track to make the transition to digital. This relies on the strategy being followed and implemented as intended, with blockchain technologies' widespread adoption serving as a prerequisite for further advancements.

Entrepreneurial/Startup Blockchain Ecosystem

Though the blockchain space in Ethiopia is still at a juvenile stage, it promises to be even better in the near future. Below are highlighted some of the organizations and enterprises working in disseminating information about blockchain or developing real blockchain solutions.

COMPANY	FOCUS	WEBSITE
Bit2pax	White-label solutions for cryptocurrency exchanges	https://wallet.bit2pax.com/
Hyperlink Info System	Mobile App Development	https://www.hyperlinkinfosystem.com/
360 Ground	Web Development/Branding	https://360ground.com/
Gebeya	Talent Agency	https://gebeya.com/
Simbo Technology	Software Development	http://www.simbotechnology.com/
Yatreda	NFT	https://yatreda.com/
AfroValley	Social Impact with Blockchain	http://www.afrovalley.io/

Bit2pax

Bit2pax operates as an exchange software technology company, saddled with the responsibility of offering digital currency exchange and asset integration to customers across the globe. Based in Addis Ababa, Ethiopia, Bit2pax offers a white-label solution for cryptocurrency exchanges and provides a medium for users to exchange Ethiopian Birr to Bitcoin.

Gebeya

Gebeya is a Pan-Africa online Freelance Talent Marketplace headquartered in Addis Ababa, Ethiopia. The company aspires to be a major contributor to Africa's digital talent space by leveraging on the global job opportunities in the tech industry for African talent. The rising demand of IT-related services prompted a partnership between Gebeya and Stellar.org. The partnership will help Gebeya produce the next generation of African blockchain Engineers and Specialists.

Hyperlink Info System

Hyperlink InfoSystem is famous as one of the top performers in web development and mobile apps. The company offers a wide range of customized services in mobile apps, website development, AR-VR Development, Game Development, blockchain Development and much more.

Simbo Technology

Simbo Technology is a leading Ethiopian software developers company. The company provides business solutions like website development, software development, e-learning platforms and mobile app development. Simbo Technology, designs, develops and promotes software products using state-of-the-art technology.

360 Ground

360 Ground is notable for building mobile, web and cross-platform applications. The company utilizes web and ecommerce and applications to generate visitors and conversion with measurable results. The Ethiopian based company has made an impact in the software development niche as well by creating enterprise software, ERP Systems and software integration with modern legacy systems.

Yatreda

Yatreda is a family of artists in Ethiopia making art in the style of tizita- nostalgia and longing for the past. Yatreda in a deep-dive on the future of NFTs and how the technology is reshaping the lives of artists, features NFT in art collection and an NFT series titled "Movement of the Ancestors : የቀደምቶች ዉዝዋዜ" which merges traditional Ethiopian dance with the blockchain.

AfroValley

AfroValley actively enables true social development by creating clear connections between motivated, willing resource pools and beneficiaries of great potential. Currently it offers cross-border trading platform while digitising relevant data of farmers to better identify food security and economical development challenges in order to connect beneficiaries to appropriate resources to address them. Ultimately supporting Farmers with better welfare, health, economic and social outcomes while modernising the agro sector.

Blockchain is simply a digital ledger or in fact, a connected chain of those digital ledgers where any type of transaction can be basically kept and confirmed in a sort of dispersed manner. So, this information, which is transactional information saved on blocks and Ledger's may be confirmed by different participants or nodes in a network. One can effectively ensure the veracity of this information via diverse consensus methods in which each blockchain has a protocol. Basically, a blockchain is as simple as a ledger, but depending on the type and complexity of the protocol, it might have different legitimate ways to check the validity of a transaction.

Blockchain Ecosystem in Ethiopia

The young people of Ethiopia are intrigued by the financial freedom that blockchain offers and individuals are accustomed to discovering various applications, whether for trading, investing, or, more broadly, as a developer. So, in general, it is excellent, but it is still in the gray area. On the government regulation side, things are still mixed in terms of whether crypto is legal or not but the people continue to get more enlightened and open themselves up to the opportunities that the technology tends to offer.

Blockchain Misconception

The most common misconception in the early days is that blockchain is Bitcoin but it seems knowledge is evolving and many people are beginning to understand that the cryptocurrency use case of blockchain is just one of the thousands of other use cases.

Areas of Blockchain Disruption

The three areas that I believe blockchain solves problems in Ethiopia are in Agriculture, facilitating access to foreign exchange and in the logistics value chain.

Blockchain is simply a digital ledger or in fact, a connected chain of those digital ledgers where any type of transaction can be basically kept and confirmed in a sort of dispersed manner.

Yeabsra Hailu
Computer Engineer and blockchain Developer

Blockchain technology is an emerging software technology that is a distributed type of data and transaction linkage or organization, implying that blockchain technology has no central database and it is delivered to all clients, users, or beneficiaries of the system on which it operates.

Blockchain Appreciation and Use in Ethiopia

The progress on blockchain innovation in Ethiopia has not been significant and implementation has not been uniform. I believe that blockchain technology is not yet at that stage of proper appreciation and use in Ethiopia.

Disruptive Potential of the Blockchain Technology in Ethiopia

The use and adoption of cryptocurrencies is needed to decentralize the payment system as Ethiopia has no broad payment system. There will also be some **potential in the application of blockchain in mobile banks** in Ethiopia by the commercial banks. In addition, the use of bitcoin on its own or as a component of the blockchain would be advantageous to Ethiopians because there are low obstacles to entry and full adoption of cryptocurrencies for value exchange and value transfer. Finally, **Ethiopia will be needing some sort of smart contract to disrupt the land title management processes in as the authentication bureau for this service is over packed and over worked at all times.**

The Future of Blockchain Technology in Ethiopia

I believe that the Cardano/government deal on the student identity management system in the educational sector will form the biggest foundation of blockchain regulation, further experimentation and adoption in Ethiopia. I also believe that the private sector will pioneer many of the innovative solutions that will be coming out from the blockchain experiment in Ethiopia.

Temesgen Feseha Wude
Manager, Creative Hub Ethiopia

Advantages of Blockchain Technology

Blockchain is fostering collective intelligence, culture, decentralization and redefining the idea of leadership. It is great to note that Blockchain has the potential to promote a culture in which people communicate and collaborate. The other interesting thing to state is how blockchain is restructuring the economy as we know it when we consider how tokenization of value is decentralizing reward systems and changing incentive modalities.

Blockchain Innovation in Ethiopia

Ethiopians have been inspired to experiment with blockchain technology by the newfound freedoms that it offers. **The agriculture value chain, identity management, and financial services are just a few of the early adopter sectors.** I predict that in ten years, all of East Africa's economies will be run on blockchain because of the efficiency of its economy of scale when paired with interoperability. In addition, it will provide a venue for people to network and find commercial partners.

Kume Chibsa
Founder and CEO, Afro Valley PLC

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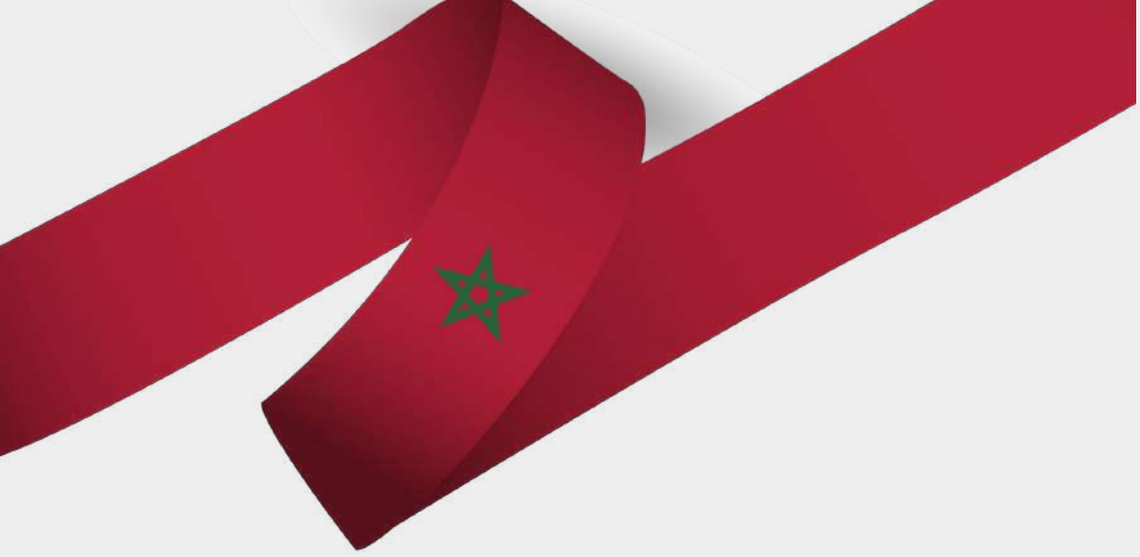
I predict that in ten years, all of East Africa's economies will be run on blockchain because of the efficiency of its economy of scale when paired with interoperability



MOROCCO

Government Blockchain Policy and Strategic Plans

Morocco is one of the countries in Africa that gave a clear stand on its position by banning the use and adoption of crypto in 2017. However, despite the ban and the cautious "wait and see approach" to cryptocurrencies, there have been some little but yet noticeable innovations with the technology behind cryptocurrency, blockchain.

In a communique dated 21st November, 2017, the Bank Al Maghrib in collaboration with the Ministry of Economy and Finance of Morocco and the Moroccan Capital Market Authority published statements banning cryptocurrency in the country. The communique highlighted the ban in four major sentences as shown below. The communique itself is a response to some news circulating in the media stating that Bitcoin is accepted in Morocco. Published originally in the French language, the communique states;

"Following certain articles recently published in the national press announcing the acceptance in Morocco, by internet exchange platforms, of BITCOIN as a method of payment for the purchase of products and services, the Ministry of Economy and Finance, Bank Al-Maghrib and the Moroccan Capital Market Authority warn the public about the use of this instrument as a means of payment. These announcements are likely to confuse the minds of the public, making them believe that this virtual currency is recognized by the monetary authorities."

Virtual currency or crypto-currency is a decentralized unit of account, created not by a State or a monetary union but by a group of persons (natural or legal), based on the existence of a register containing all transactions, kept up to date on all network nodes (blockchain technology). Virtual currency is only exchanged online and therefore does not exist in the form of coins or notes. Today there are more than 5,000, of which BITCOIN is the most successful.

As this is an unregulated activity, the Ministry of Economy and Finance, Bank Al-Maghrib and the Moroccan Capital Market Authority draw the public's attention to the risks associated with the use of virtual currencies (including mainly):

- **Lack of consumer protection:**
  - *The absence of regulatory protection to cover losses in the event of failure of trading platforms;*
  - *The absence of a legal framework for the specific protection of users of these currencies related to the transactions carried out, especially in the event of theft or misappropriation;*
- **Volatility of the exchange rate of these virtual currencies against a legal tender currency; price may vary sharply upwards or downwards, in a very short time, in an unpredictable manner;**
- **Use of these currencies for illicit or criminal purposes, in particular money laundering and the financing of terrorism;**
- **Failure to comply with the regulations in force, in particular those relating to the capital markets and foreign exchange legislation.**

Source: Ministry of Economy and Finance, Bank Al-Maghrib and the Moroccan Capital Market Authority

Similar to what many African countries stated in their official communique on cryptocurrencies, the position of Morocco is similar and consistent with what we have seen in other countries. In an interesting turn of event, the government discovered that despite the ban and the official communique warning the moroccan public against the use and adoption of cryptocurrencies, people continue to use and trade difference cryptocurrencies and this led to the a new reminder by the three bodies who initially published the first comunique in 2017 with a new entity, the Foreign Exchange Office.

The Ministry of Economy and Finance, Bank Al-Maghrib, the Moroccan Capital Market Authority and the Foreign Exchange office on 5th April, 2020 jointly did a press release where they stated;

"despite previous clarifications relating to the risks associated with the use of virtual currencies such as Bitcoin, it has been observed that natural and legal persons continue to use this type of process.

According to them,

"it is an unregulated activity characterized by great volatility which causes an absence of any protection for the consumer, especially since this system seems attractive and easy to use".

Despite all these consistent warnings against cryptocurrency, the country has shown some greenlight in understanding the terrain thereby announcing that they are working on a legal framework to regulate the ecosystem and the blockchain technology itself. According to an article by Imru Al Qays (2022) on the website of the Moroccan Institute for Policy Analysis, he stated thus;

*"Morocco is also in the process of researching the development of its own CBDC (Central Bank Digital Currency); and is studying other countries' adoption of BTC, or their own CBDCs, to figure out where it might apply the technology for its own economy. That said, according to the website cbdctracker.org, the country is still in the research phase, which is inconclusive as to whether the country will definitely be using a CBDC (presumably the E-Dirham) in the near future". (*mru Al Qays, 2022)

Palpating the general public perception on blockchain and digital assets in Morocco shows that hopes are high and there are clusters of optimism from crypto enthusiasts, blockchain innovators and the early adopters of the technology in the country. There are hopes that legal frameworks will eventually be announced by the necessary bodies and that a sandbox for experimentation will come out of the research phase of the government's "wait and see" approach to blockchain.

Entrepreneurial/Startup Blockchain Ecosystem

The entrepreneurial blockchain ecosystem in Morocco has some innovative solutions building on the blockchain and also a number of organizations consulting on the technology for the purpose of education, advocacy and policy engagements. Some of the ecosystem solutions have been reviewed below;

NB: Some of these companies or solutions were founded by Morrocans but operating from another country but with users from Morocco.

ORGANIZATION/COMPANY	FOCUS	WEBSITE/LINK
intCount	Smart Contracts	https://intcount.com/
ADI Solar Energy Sarl	Solar Energy Tracking	http://adisolarenergy.com/
Bennani Consulting	Consulting	https://www.bennaniassocies.com/en/#
Player Wallet	Gaming	https://www.f6s.com/company/player-wallet#about
Branchedchain	Supply Chain	https://www.f6s.com/company/branchedchain
SmartProf	EdTech	https://www.instagram.com/smart.prof/
IOVee	Hospitality and Asset Management	https://www.f6s.com/company/iovee
WafR	Retail Tech	https://www.wafr.co/
A&K Blockchain Advisors	Trainings in Bitcoin and Cryptocurrency Markets/Investment	-

ADI Solar Energy

It is an African startup, founded by a team of doctors, engineers and business specialists, in 2016 in order to provide adapted and concrete solutions to current problems through the use of new technologies of this millennium. In order to achieve their goal, they found a dynamic team spread all over the continent and set up a list of the major concerns (water and energy consumption, availability and supply) which faced our society and brought appropriate and relevant solutions. Therefore, they have launched major projects highlighted below;

- Improving the yield crop through technology through a smart agricultural system which is able to Measure, Collect, learn, Act. With this system, they are able to increase the yield by 40%.

- The improvement of the efficiency of the solar power plant, by using solar tracking systems *(rumored to be on the blockchain but no confirmation as at the time of publishing this report)* and automated cleaning and cooling systems.

WafR

WafR, a Moroccan retail technology firm, has raised $1 million in a seed round. WafR enables businesses to broadcast smart promos to grocers in order to increase market share. The fundraising round included contributions from First Circle Capital, WeLoveBuzz, and other business angels in addition to Launch Africa Ventures, a well-known pan-African venture capital fund located in South Africa. After this fundraising round, WafR is now valued at $9 million. Ismail Bargach and Reda Sellak's 2018 startup WafR enables FMCG companies to provide discounts on their platform in an effort to attract more customers. In the near future, WafR hopes to have 50 000 grocery partners, helping its FMCG clients conduct clever promotions that will increase their market share. Currently, WafR has 20 000 grocery partners. With the help of this finance, WafR will be able to expand its workforce by hiring a late co-founder and so quicken its commercial activities.

intCount

intCount is a registered trademark that provides digital solutions located in Budapest Hungary, but founded by Moroccan Founders. They specialize in software development and web service design / (REST APIs), BlockChain technology consulting and Ethereum smart contract development. They work with companies of all sizes. Their goal is to offer their customers digital solutions, clear and transparent, and in line with their project.

Bennani Consulting

Bennani & Associés is the leading independent business law firm in North Africa, West Africa and Central Africa.Recognized for its high quality services and its tailor-made advice at the level of the standards of the largest international firms, Bennani & Associés has today five offices in the most important areas and sectors in North Africa, West Africa and Central Africa. They are known to have done some work and contributed to blockchain Policy Conversations in Morocco.

Player Wallet

Many international websites allow users to place orders and receive them, and the bulk of people who do so are those shopping for gaming-related products (hardware or digital). According to statistics, there are more than 3 million active gamers in Morocco, valued at $49 million. This sum reflects the transactions and microtransactions Moroccans make with international businesses (such as the purchase of dematerialized games).

BranchedChain

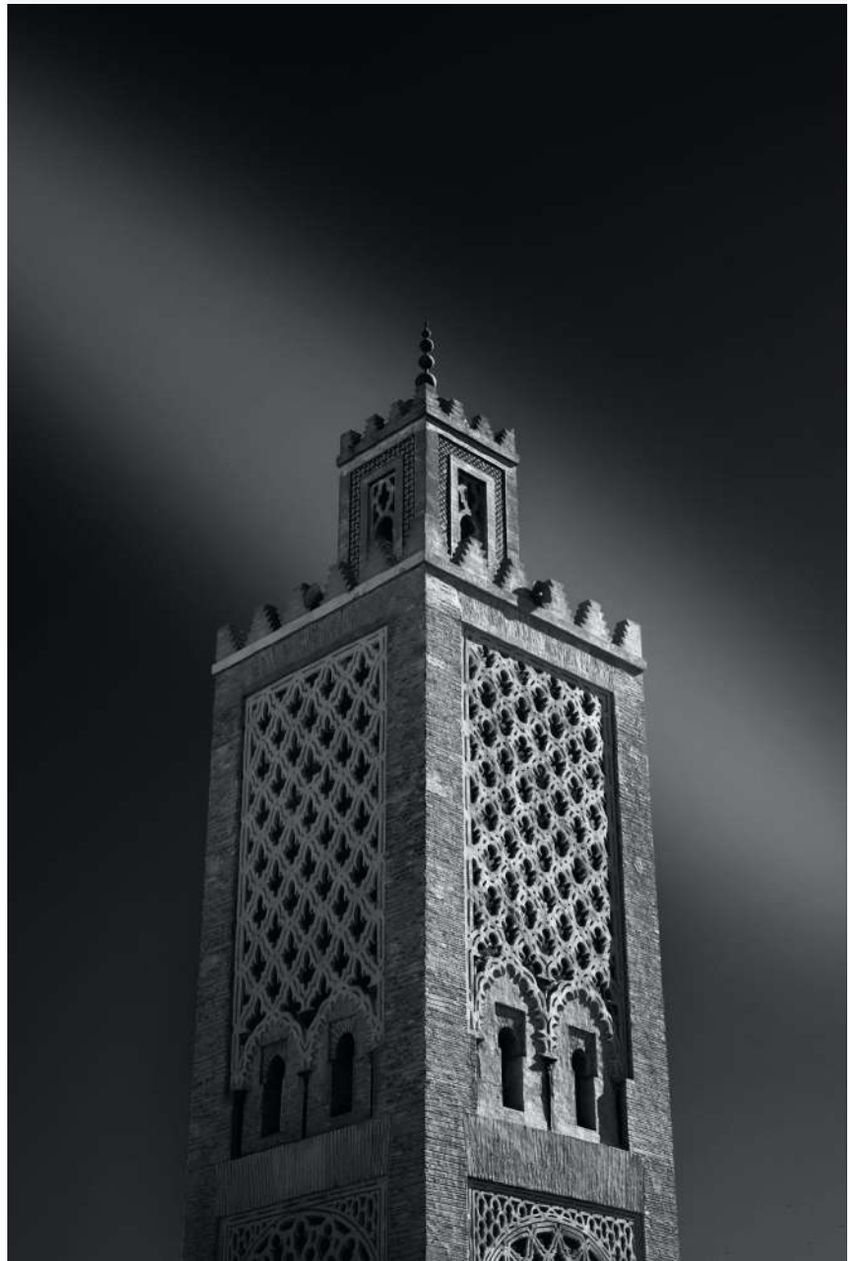
BranchedChain, was developed by engineering students at the Ecole Nationale Supérieure d'Arts et Métiers ENSAM MEKNES. The startup provides a comprehensive solution that includes supply chain management in software while digitizing the ecosystem to offer various opportunities for improvement..

SmartProf

With a marketplace for individual tutoring for students of school age, Moroccan edtech firm Smartprof has raised $110,000 in a pre-Seed investment round. Plug and Play, UM6P Ventures, and a few angel investors took part in the funding round. Hamza, Mustapha, and Ali Faouiz established SmartProf in 2021 with the goal of developing a one-stop edtech platform for private tuition in North and West Africa, a market that they believe is worth billions of dollars.

IOVee

IOVee, a startup headquartered in Rabat, Morocco, offers flow solutions where people and items become QR IDs, allowing the platform to trace and prove simple and repetitive presence, tasks, and completed procedures with their metadata as location, time start/end, and data history of human activity.



Blockchain is a method of connecting individuals, but it may also be used to facilitate business deals. It is quite akin to the way the internet links people together. Even if those little devices need to talk to one another, it is on a whole other level than even the Internet of Things. And by "transaction," I don't simply mean monetary transactions or CBDC or cryptocurrencies; I mean any **exchange of data, and every data exchange has to be logged and validated so that we may put our trust in the system rather than in any one person, group, country, or family.**

Blockchain Innovation in Morocco

Blockchains are a hotly debated subject. Although it hasn't been long in Morocco, I'd say that organizations are talking about its newest developments to investigate and join without necessarily accomplishing anything significant with it. As a result, certain businesses emerge or are periodically introduced, but generally speaking, I would contend that they are not productive in the sense that they are not producing any particular use cases. Although we have improved, there are times when quantity over quality is preferable.

Blockchain Misconception in Morocco

There is a widespread misconception about bitcoin and blockchain. There is a belief system that cryptocurrencies are built for money laundering and for the purpose of removing funds from the nation because of the substantial rules in place in Morocco about the removal of funds from the country and tax evasion. Because of this, I think there is a widespread misunderstanding about blockchain being the fueling force for Ponzi schemes and thereby growing the interest in the use of crypto currencies.

Urgent Area of Blockchain Innovation and Policy in Morocco

Morocco needs to get on onboard with the adoption of digital identity systems running on the blockchain. Digital identity is the foundation of ease of value transfer, value safety and KYC innovation. Another important area would be the policies around digital currencies innovation to truly create a decentralized environment that aids cross border business transactions.

Hicham Benbella
Client Technical Leader, IBM

> *“ There is a belief system that cryptocurrencies are built for money laundering and for the purpose of removing funds from the nation.*

Blockchain is a technology that was created to solve social problems. As a result, it has the ability to boost trust in our data. So it is not as though everyone utilizes the same one or two databases; rather, each user has access to their own copy of all databases. The blockchain, in my opinion, is **a social technology** that aims to develop confidence in a value and retain a record of it forever.

Blockchain Use and Adoption in Morocco

I can compare the current state of blockchain use and adoption in Morocco to the early days when just a tiny percentage of individuals utilized blockchain technology. As a result, there is an effort to study if the Moroccan government may have a CBDC utilizing Blockchain because of its potential. For example, we have a sector that uses blockchain technology to send fertilizer to the rest of Africa. I believe that use cases will increase and adoption will go mainstream in the coming days.

Blockchain Misconception in Morocco

The main misconception regarding in my opinion, is that it is frequently brought up as a way to make quick money. Most individuals engage in crypto-trading because they want to make a lot of money quickly. People therefore see it as a way to invest rather than a technology that would solve issues. This is one such myth, but there is another that asserts that **other social groups unhappily view it as a hoax**. The people in this school of thought **believe that Blockchains in general are all scams** that have no use.

Blockchain in the Next Decade in Morocco

I see blockchain helping Morocco in **traceability of value and tokenization of value**. These two use cases can completely revolutionize how we see value and how values are transferred and stored. These two use cases will also help in driving transparency and accountability in any value chain.

Ilyass Moussaid

Innovation and Technology Transfer Expert

”

Blockchain can drive transparency and accountability in any value chain...

Without going into technical specifics, I would describe blockchain as a brilliant, ground-breaking technology that eliminates the need for trust between two individuals. That's how I describe blockchain technology since it tackles concerns like double spending and the potential to decentralize transactions, among other things. As a result, blockchain, in my opinion, is a game changer that fundamentally solves the issue of trust, whether between institutions or between individuals.

Blockchain Use and Adoption in Morocco

In essence, I blockchain technology is underutilized. It is unclear whether the financial institutions in Morocco created their own blockchains because just a few banks have issued tokens and bonds, among other things, on blockchain. They didn't even say which blockchains they were employing or how they were accomplishing it. Even **the private sector, which is showing some interest but has no clue how to implement or utilize it, is not adopting it in any public service**. Perhaps **blockchain will be used by the government for government procurement services, which might reduce corruption.**

Blockchain Startup Ecosystem in Morocco

Only one blockchain startup readily comes to mind. I have no doubt that some innovators are doing a lot of off-the-grid experimentation with the technology. But currently, there is not really a blockchain startup ecosystem in Morocco. I can confirm that **starting a blockchain-based firm in Morocco is difficult and the regulatory framework has not yet been created**. Despite some hints from the central banks and other sources, nothing tangible has been done on the regulation side. . We're still waiting for the bill to pass before we can determine how it will be handled.

> *"Blockchain, in my opinion, is a game changer that fundamentally solves the issue of trust, whether between institutions or between individuals.*

Challenges in Building a Blockchain Startups in Morocco

I think there's a lot of **work to be done to teach folks on how blockchain works due to a lack of knowledge** or comprehension. I can state that we recognized that we're lacking a couple of stages before the blockchain. To utilize blockchain, you must understand protocols, digital computing, and money. Before you can start a blockchain firm, you need greater computer literacy and financial understanding of a blockchain; therefore, lack of information and comprehension is one of the biggest challenges. Aside from that, bitcoin markets are considered as speculative, and people don't grasp money or its innovation. **Despite being opposed to blockchain technology, the government claims to be working on it without recognizing Bitcoin or other protocols.** I don't see how businesses can establish themselves here without making room and changing how things are done.

Blockchain in the Next Decade in Morocco

I'll admit that Morocco will surely be a leader in the development of blockchain technology, and I think the banks will play a role in that growth. However, as I mentioned, certain solutions may make use of blockchain to some level; this would rely on the legal framework. It may not be progressing as rapidly as I would want, but I do think it is sort of evolving. For instance, **Africa is used to using mobile payments and has a conventional banking system and this may hinder the evolution of the financial use cases of the blockchain in Morocco for a while.**

I think there is a lot more interest in Blockchain technology from the investment side in Morocco than there is in the rest of Africa, and maybe **there will be some solutions from this ecosystem because of the investment drive.** I also do think that b**lockchain will successfully address the remittance problems in Africa by disrupting the huge transfer fees for financial transfers within the continent**. Additionally, there would be less corruption and more openness if the government decides to use the blockchain for procurement in Morocco in the next 10 years. I can also confirm that **Elections and blockchain technology have been in discussion in the country**. Having stated all these points, I believe a lot might happen in Morocco in the next decade.

Imru Al Qays
Managing Partner, A & K Blockchain Advisors

Blockchain creates a group of choices that an organization may make while adhering to information security and immutability requirements, among other things, and employing a decentralized decision-making process. Blockchain is thus to me both a technology and a business solution. The bigger picture encompasses more than just blockchain.

The Current State of Blockchain in Morocco

Despite our best efforts, I fear that **most people still know very little about this technology.** I believe to accelerate the knowledge of blockchain technology, it **needs to be taught in schools**. Taking into account the fact that not everyone, not even the young, has a firm grasp on general technology developments in Morocco. I must note that **the traditional banking system is very strong in Ethiopia and there needs to be some infusion of Decentralized Finance and Digital Finance as we evolve** into the future of value transfer and storage. The permissionless medium of value exchange will continue to evolve and the Moroccan ecosystem will have to come to speed with it eventually. The full potential of blockchain technology has not yet been realized and this is the reason you won't find many blockchain solutions when you look around. There are certain experts from abroad who have been working in the ecosystem through some webinars and once in a while interventional training but hopefully things get better with time.

Blockchain Startup Ecosystem in Morocco

There are a few new companies that are promoting their blockchain-based marketing materials and web 2.0-based products. There is no doubt that we need to do better with regards to developing blockchain companies. I believe that **the government's prohibition on the purchase and sale of cryptocurrencies, as well as other measures taken against the industry, is to blame for the dearth of blockchain innovation.** In terms of our own endeavor, we want to incorporate both private and public blockchains. We plan on using the private blockchain for business purposes, but we also want to link it to the public blockchain so that we can issue a token that can be sold to anyone who is interested in donating to, say, social or environmental causes. I do not think that the technology is the issue, as it is actually difficult to obtain the necessary authority in this scenario to issue a token. It is still being utilized improperly, misunderstood, and misused.

Challenges Faced in Building a Blockchain Company

The very first challenge is the challenge of regulations. The next challenge is the scarcity of competent blockchain engineers. Few people have expert-level knowledge of a certain programming language or framework, such as Rust or Solidity. **We're down to a skeleton crew, and everyone's flat out these days because they freelance for a wide variety of foreign companies**. If you're a developer, for instance, it may be difficult to find workers that are computer savvy. The first step is integration; the second is developing the knowledge, capabilities, and skills necessary to create solutions and technologies. **Without a solid foundation and the right environment, it will be difficult, if not impossible, to attract venture capitalists, angel investors, or other types of financial backers** willing to put money into your firm. The third limitation is the difficulty of securing starting finance for competing companies.

Omar Benaicha
President and CEO, Certi-Trust Group

Blockchain technology is a critical component of today's digital transformation. It is founded primarily on a number of ideas such as security, decentralization, integrity, and cryptography. To define the blockchain, I will state that it is a distributed ledger system that takes the shape of a hierarchical tree called the Merkle tree, where the leaves of the tree represent the additional data to be generated This responsibility consists of Link blocks, each of which carries a cryptographic hash of the preceding block as well as a timestamp proving when the data was produced. Also, storing transaction data. As a result, **blockchain transactions are safe and recorded at the same time**, and the data inside the current block may be altered without affecting following blocks.

Potential Areas of Disruption of Blockchain in Morocco

I believe that blockchain has the potential to address many problems. For example, in the financial ecosystem, we are dealing with the introduction of Digital currency. Digital currencies can solve the problem of volatility for example which will by implication make the Durham less volatile in comparison with cryptocurrencies. In the automobile industry as well, there is a great opportunity for blockchain to be applied for track and trace of vehicle history. In addition, **blockchain can also disrupt the way Morocco trades with other countries in Africa.**

Anass Zaidouni
Professor of Blockchain

Blockchain is founded primarily on a number of ideas such as security, decentralization, integrity, and cryptography.

Within a big decentralized distributed network, blockchain is a digital immutable database containing publicly visible information. So it's a digital ledger with built-in safeguards to prohibit changes to current blocks. This is what we mean by immutable, and each node in the blockchain preserves a copy of the ledger and is linked to one another. And the data travels the network by assisting in the establishment of a network connection from one peer to another peer connection.

Moroccan Blockchain Ecosystem

As far as I'm concerned, there are some blockchain and more bespoke solutions, but there are much more initiatives in the works. **We have many young inventors who are creating fantastic solutions, but the difficulty is that they continue to do it from outside of the country.** As in the United Kingdom and Estonia, we are now attempting, through more Moroccan blockchain labs, to conduct research on conventional science. This is in collaboration with some companies based in Switzerland and the United States in order to bring this knowledge to Morocco. To take our knowledge to the next level, as well as through educating people, we will be encouraging young engineers to build their own startups and bring their ideas to life.

Government Responsibilities

In Morocco, I believe that the government should **encourage young students to understand more about blockchain technology.** I believe they should do certain conferences, similar to a mastery of blockchain and specialization in blockchain. They should do that since cryptocurrency is not legal in Morocco. We should issue a thinking directive, make it legal, and make life easier for young engineers to jump on board.

Youssef Khaoulaj
Blockchain Engineer

OBSERVATIONS

*Seed rounds of **investments** necessary to explore with blockchain technology may actually be raised **from inside Africa***

To avoid blockchain brain drain, African nations should set up experimental opportunity spaces

"Experiment and see" instead of "wait and see"

A community of practice is key to growing stakeholder relationships

While many African nations have waited for large corporations and governments to set the standard before deciding how to regulate blockchain technology within their borders, it has become increasingly clear that each nation must make its own decision based on its own needs, ecosystem development plans, and the opportunities it hopes to create for its citizens.

Insights from interviews revealed that the seed rounds of investments necessary to explore with blockchain technology may actually be raised from inside Africa, highlighting the need for a new strategy to support blockchain innovation on the continent.

To decrease the number of young Africans leaving the continent to establish blockchain enterprises elsewhere, African countries should begin to create experimental opportunity spaces for young innovators wanting to experiment with blockchain technology.

Stories of failed digital assets are being used by many African nations to decide whether or not to abandon their "wait and see" strategy and instead try out the more experiential "experiment and see" method. The failure of a digital asset should not be used as an excuse to delay or prevent the widespread implementation of blockchain technology. Like every other technology, blockchain must have its humble beginnings before reaching its full potential.

Fostering the relationship among blockchain technology stakeholders requires the creation of a community of practice in African countries especially in the countries of focus for this study.

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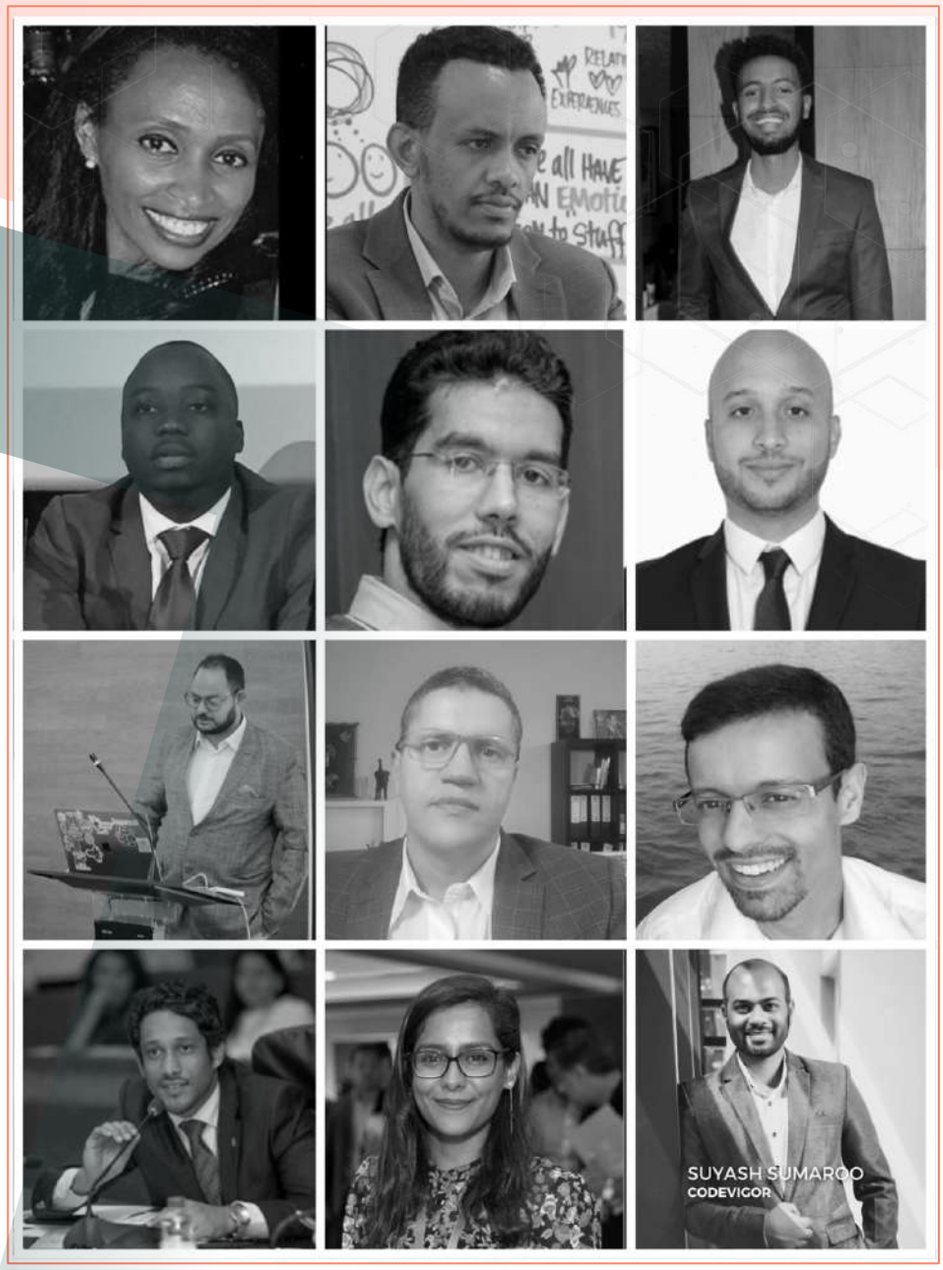

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