



Bank of Uganda

Financial Markets Development Committee

Conference Report

The Africa Blockchain conference - Kampala,
Uganda

23rd to 24th May 2018

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Executive Summary

Blockchain Technology is one of the emerging technologies during the 4th Industrial Revolution (4IR) and it has attracted massive global interest from financial and nonfinancial stakeholders. Information Technology (IT) and FinTech experts believe that Blockchain technology has the potential of disrupting and transforming almost every industry in every country by ushering in a new paradigm comprising the ‘internet of trust’ and ‘internet of value’.

“The first generation of the digital revolution brought us the Internet of information. The second generation — powered by Blockchain technology — is bringing us the Internet of value...” —Don Tapscott, Author, Blockchain Revolution (2016)

It is widely believed that the financial industry may be one of the first to be impacted by Blockchain and its associated Distributed Ledger Technologies. In fact, cryptocurrencies, already introduced within the financial industry space, are causing Governments and Central Banks worldwide to devise systems that either regulate or ban them.

Given the global interest garnered by Blockchain technology due to its potential benefits to the financial sector and the fact that it is in nascent stages, the Financial Markets Development Committee (FMDC) was actively involved in the Africa Blockchain Conference 2018 so as to identify good business cases and make recommendations for Blockchain application within Uganda’s financial sector. This is within the vision of FMDC, which is **“To take the lead in ensuring Uganda has a progressive and competitive financial sector that is anchored on stability and inclusiveness”**

The agenda of the Africa Blockchain Conference 2018 was structured in such a way as to provide an in-depth study of; how Blockchain technology can lead to economic transformation, formulation of regulations for Blockchain, major challenges surrounding the technology and devising solutions going forward.

As a result of the conference, the FMDC team recommends the following:

- a) There is need to carry out more focused research on Blockchain regulation (regulatory sandboxes) and benchmark how other countries (the first Blockchain adopters) have regulated and applied the technology to support financial sector development .

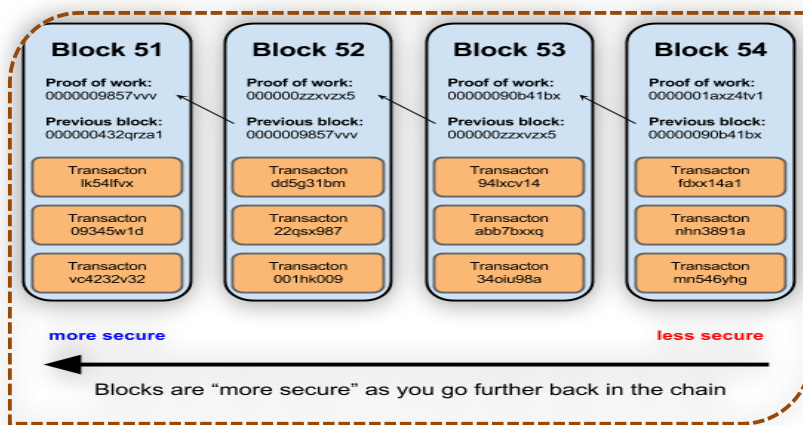
This report therefore is informed by a two-day Africa Blockchain Conference 2018 hosted by the Blockchain Association Uganda in partnership with Binance, FMDC, the Ministry of ICT & National Guidance and the Government of Uganda.

1. Introduction

Around 2008, during the world financial crisis – the Credit Crunch, the first Blockchain was conceptualized by Satoshi Nakamoto, an alias for a person or a group who remain unknown, and that formed a backbone for peer-to-peer cryptocurrencies and a myriad of similar potential applications.

Blockchain Technology and the Fourth Industrial Revolution (4IR) disruption:

In simple terms, Blockchain is a continuously growing list of ledgers/records, called blocks, which are linked and secured using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp and transaction data, thus actually forming a chain.



Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks. Old blocks are preserved forever and new blocks are added to the ledger irreversibly, hence by design **Blockchain** is inherently resistant to modification of the data

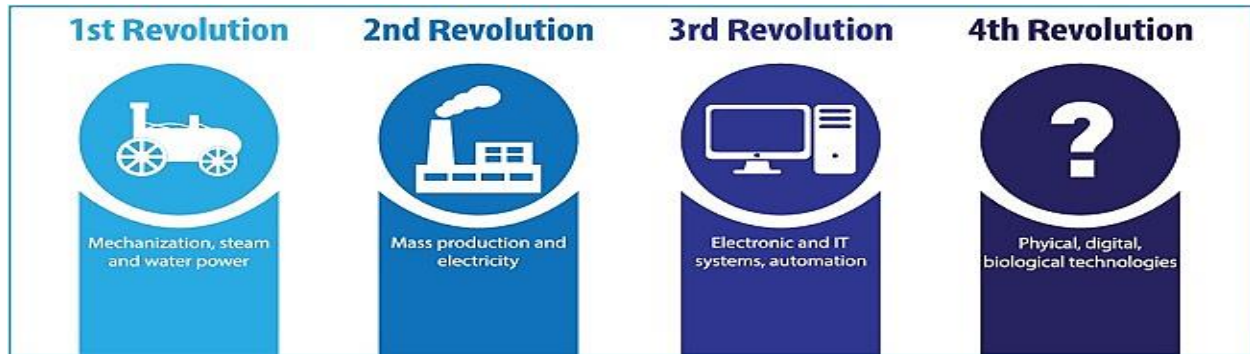
making it impossible to manipulate by faking documents, transactions and other information.

In order to be identified as a distributed ledger, a Blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node (inter-computer) communication and validating new blocks. By that, Blockchain technology tries to reduce the cost of trust (accounting double-entry) and enhance honesty in record keeping among the peers who may actually be strangers.



The Blockchain (database) is not managed by any particular body; instead, everyone in the network gets a copy of the whole database.

The 4IR is characterized by emerging technology breakthroughs in a number of fields. These breakthrough technologies that have potential to disrupt almost every industry in every country include Blockchain, artificial intelligence, robotics, nanotechnology, quantum computing, biotechnology, the Internet of Things, 3D printing and autonomous vehicles.



2. Summary of salient aspects discussed during the conference:

The conference was structured to provide an in-depth study of how Blockchain technology can lead to economic transformation, the formulation of regulations for Blockchain, major challenges surrounding the technology and the way forward. The aspects highlighted below are the summary of the salient aspects discussed.

2.1. How Blockchain Technology can lead to economic transformation

Blockchain technology has the potential to transform multiple industries and make processes more self-governing, secure, transparent, and efficient. The technology has a myriad of potential uses which are highlighted in the summary below:

- a) Streamlining of supply chains to enhance transparency and accountability and minimize associated costs, for instance reduction in food wastages by easily linking farmers (suppliers) who have excess output to potential markets (consumers). This could be useful for Commodity Exchanges and Warehouse Receipt Systems.
- b) Protection of intellectual property rights and thus creating wealth and enhancing creativity within the economy. Blockchain can be exploited to protect copyrights in various fields, for instance in entertainment by preventing piracy and in journalism by enhancing author's rights. This enables the copyright owners to receive direct payment for their work.
- c) Improvement of Government efficiency and curbing corruption. This can be achieved by linking all government ministries departments and companies to share data instantly when it is created and automating various processes including land registration and government payments that are susceptible to corruption tendencies.

- d) Increasing tax revenue collection. Chances of errors and misrepresentation in tax records are greatly curtailed when transactions cannot be easily altered in Blockchain. This also makes tax audits easy and quick to carryout thus reducing costs and increasing their impact on tax compliance. The technology has the potential to broaden the tax base and ultimately lower tax rates in order to increase investment when government transactions and even taxpayer transactions are linked to the tax authority's blockchain.
- e) Herbal rare plant species can be secured by recording their DNA, potential uses and medicinal values in Blockchain so as to easily track their origins worldwide. This helps in preventing habitat loss and species extinction using Blockchain technology
- f) Blockchain technology can aid and enhance record keeping. For instance, in the Health Sector, records of drugs can be kept and counterfeit drugs can be eradicated.
- g) Government can use Blockchain for registration and verification in the following areas; citizen identification; asset verification such as land and property; farmer verification and transaction tracking; Government recruitment and employment history verification among others. This could be beneficial in the movable assets registry once created.
- h) Financial services can benefit from Blockchain in the following ways; improving efficiency in Government payments and disbursement of donor funds by establishing trust and minimizing routing channels.
- i) Blockchain technology, if encouraged in a country, can attract foreign investment in startups and private equity and venture capital.
- j) Blockchain can revolutionize government-citizen engagement by;
 - Enhancing citizen engagement in politics through digital democracy (i.e. digital voting, educate voters),
 - Encouraging citizen participation through community service (i.e. earn coins for actions, facilitate fund transfer that avoids terrorist financing, slow response to disaster relief, and donor fatigue) and,
 - Disrupting Corruption through smart contracts for public procurements that are monitored and audited using Blockchain technology.

2.2. Remarks by the Governor of the Bank of Uganda

In his remarks, the Governor of the Bank of Uganda thanked the organizers of the conference and acknowledged that it's an opportunity to discuss, share experiences and exchange views about Blockchain technology. He pointed out that cryptocurrency, an application of Blockchain technology, lacks the necessary prerequisites to perform the essential functions of a currency. Cryptocurrencies perform only two functions namely, facilitate payments and are an avenue for speculation, but cannot be a store of value. The Governor called the participants to distinguish cryptocurrencies from the Blockchain technology that supports them and stressed that beyond

cryptocurrency, Blockchain is viewed as a revolutionary technology with potential to change data management and business operations. He highlighted that Governments are considering using the technology in asset management, insurance, payments, voting systems, identity management among others.

2.3. Remarks by the President of Uganda

In his address, H.E. Yoweri Kaguta Museveni, the President of Uganda, stated that Blockchain technology should be examined to ascertain its potential benefits to Uganda, its limitations and how associated risks can be mitigated through regulatory frameworks. Considering the origin and evolution of money, the President encouraged examination of the potential of using cryptocurrency as legal tender. He also stressed that, just like other technological innovations, Blockchain should be exploited to facilitate and enhance the supply of goods and services and business operations within the 4 major industries namely the Agricultural Industry, Manufacturing industry, Services industry and the Information and Communications Technology (ICT) industry.

2.4. Regulation for Blockchain technology

The conference sought to explain the question about how Governments can regulate Blockchain technology. There was consensus among the speakers and discussants that Governments should create an enabling environment through establishing accommodative legal frameworks that focus on customer protection and also regulation of competition. To achieve this, they advised that it requires constant Government engagement with the public and Blockchain technical experts and also training of Blockchain users.

Various keynote speakers and discussants also advised that in order to develop robust regulations, and decide whether to characterize cryptocurrencies either as securities or legal currency, Governments need to benchmark best practice from other countries that have already designed their regulations and avoid pitfalls and challenges involved. Countries to benchmark best practice may include Switzerland which has already set out guidelines to support initial coin offerings (ICOs) and classified them as payment ICOs, utility ICOs and asset ICOs, Canada, USA and Japan which have also developed regulations for cryptocurrencies. In USA, the cryptocurrency is being regulated as a security by the U.S Securities and Exchange Commission. In Japan, Exchanges of Bitcoin (a cryptocurrency) are legal if they are registered with the Japanese Financial Services Agency.

2.5. Challenges that affect the advancement of Blockchain technology

There was consensus among the speakers and discussants during the conference that despite the numerous useful applications of Blockchain Technology, there exist complex challenges that prevent its quick and extensive adoption. These challenges are summarized below:

- a) Lack of awareness and understanding about Blockchain technology and how it works was sighted as the principal barrier to adoption of the technology.
- b) The potential benefits promised by Blockchain Technology (such as increased productivity, efficiency, timeliness and long-term reduced costs) come at a high aggregate initial outlay cost in terms of software development, purchase of specialized compatible hardware and user training.
- c) The lack of regulation for Blockchain technology applications (such as cryptocurrency) presents a risky environment for its users and thus hindering its widespread adoption especially in the financial sector.
- d) Blockchain technology poses a shift away from the current ways of doing business even within industries perceived as highly advanced in digital technology. This requires a complete overhaul of existing legacy systems or finding ways to integrate them with Blockchain, which may at times be time-consuming or undoable.
- e) By design, Blockchain technology, as seen in Bitcoin, provides limited privacy of records because they are made publically visible (decentralized ledgers). Where there is demand to protect and restrict access to sensitive data, Blockchain application is limited until this challenge is solved.
- f) By design Blockchain technology also creates decentralized authority levels (decentralized ledgers) as compared to the centralized authority and trust within organizations which can normally lead to a resistance to change.

2.6. What are the next steps for regulators and policy decision makers?

The following suggestions and recommendations were made during the conference:

- a) The government should create a 'regulatory sandbox' aimed at experimenting with Blockchain technologies and other FinTech in a controlled environment in order to design robust regulatory frameworks and policies about Blockchain technology.
- b) The government, through the Ministry of ICT and National Guidance and National Information Technology Authority (NITA), should set up a national taskforce to explore how the Ugandan government can utilize Blockchain technology and its related FinTech.
- c) The government should encourage training of developers and Blockchain experts to aid in the economic development of the country's Blockchain literacy thus creating youth employment and economic transformation.

- d) Minimum standards and baseline guidelines should be set for know your customer (KYC) and know your machine (KYM) within the Blockchain technology realm and enhancement of Anti-Money Laundering regulations.

3. Recommendations for FMDC

The benefits associated with adoption of Blockchain technology as presented in paragraph 2.1 above are indisputable. The FMDC team therefore recommends the following:

- a) There is need to carry out more focused research on Blockchain regulation (regulatory sandboxes) and also benchmark on how other countries (the first Blockchain adopters) have regulated and applied the technology to support financial sector development.