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Decentralised finance and cryptocurrency activity in Africa

Peterson K. Ozili

Abstract

This paper presents a discussion of decentralized finance in Africa. It presents some statistics and data on decentralized finance in Africa. Thereafter, the potential benefits, challenges and regulatory issues associated with decentralized finance in Africa are discussed. Recently, there has been an increase in the use of cryptocurrency, decentralized finance applications (dApps) and decentralized financial services (DeFi) in several countries. These innovations facilitate the delivery of financial services using smart contracts. Decentralized finance (DeFi) encompasses all financial services that are built on public blockchains, based on open protocols and removes intermediaries from the financial intermediation process. There is significant cryptocurrency activity in Africa while decentralized finance (DeFi) is relatively new and unpopular in the African continent. There is low interest in decentralized finance in Africa. The benefit of DeFi to African countries include increased liquidity for small and medium scale enterprises (SMEs), new opportunities to raise additional capital to fund capital-intensive activities, it will usher in an era of smart contracts that are negotiated bilaterally without needing an intermediary, it will encourage peer-to-peer trade between economic agents in several African countries, it will enhance the efficiency of the Pan-African Payment Settlement System (PAPSS), and encourage more trade between individuals and corporations under the African Continental Free Trade Agreement (AfCFTA), amongst others.

Keywords: Decentralized finance, Cryptocurrencies, DeFi, dApps, AfCFTA, Bitcoin, blockchain, central bank digital currency crypto technologies, Africa, smart contracts.

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1. Introduction

DeFi or decentralized finance is one of the recent innovations in modern finance. Yet, there is very little or no discussion about decentralized finance in Africa and there is little understanding of the meaning, benefits and implications of DeFi. In this article, I introduce decentralized finance (DeFi) in Africa. I present some decentralized finance statistics. Thereafter, I highlight the potential benefits, challenges and regulatory issues associated with decentralized finance in Africa.

Financial services in African countries is still very much centralized. As such, it is fair to say that much of modern finance in Africa is executed under a centralized financial system or a CeFi system. This means that commercial banks, the central bank and other financial institutions are still heavily involved in financial intermediation, payments processing and settlements.

Today, Africa is among the globally recognized hub for Fintech growth and development. Many African countries, for example South Africa, Nigeria, Kenya and Rwanda, have made tremendous progress in mobile money adoption and in building a robust payments system all of which were aided by financial technology or Fintech. Other African countries are still in the process of exploring the endless possibilities of the Fintech revolution. Interestingly, cryptocurrency activity in African countries is on the rise as South Africa, Nigeria, Ghana and Kenya are top leaders in cryptocurrency activities in the African continent as of 2021. DeFi is slowly moving into Africa. While these developments are interesting, it is difficult to tell whether the African continent is ready for decentralized finance. I show some data and statistic on the current state of DeFi in Africa. I use these statistics to infer the readiness of African countries to embrace decentralized finance.

What is decentralized finance? Decentralized finance (DeFi) refers to any financial services that are built on public blockchains. It removes banks and financial institutions from the financial intermediation process. Decentralized finance is based on open protocols which allows individuals or firms to perform financial transactions over the internet on a non-custodial basis without needing an intermediary. Most decentralized financial services are delivered using decentralized applications (dApps).

The rest of the paper is structured as follows. Section 2 presents a review of cryptocurrency and DeFi studies. Section 3 reports the data and statistics on cryptocurrency and DeFi in Africa. Section 4 shows the potential benefits of decentralized finance for Africa. Section 5 presents the challenges of decentralized finance. Section 6 presents the DeFi regulatory issues. Section 7 presents the conclusion of the paper.

2. Literature

2.1. Cryptocurrency in Africa

The literature show that cryptocurrency is enabled by blockchain technology. Ozili (2019) shows that blockchain technology in finance can create a trustless environment for users and providers of finance and can remove intermediaries from the financial intermediation process. Agu (2020) shows that cryptocurrency can act as a catalyst for economic growth especially when crypto currency assets are taxable. Agu (2020) argues that cryptocurrency is criticized by African government as a means to launder money and to commit financial crimes, and that its negative impact could outweigh its perceived positive impact on the economy. Some of the cryptocurrency-based intermediaries in Africa include BTCGhana, BitPesa and Belfrics (Gomachas, 2019). Norman-William (2018) shows that cryptocurrency can act as a medium of exchange by using cryptography to anonymously secure transactions, verify the transfer of assets and to control the creation of additional units of cryptocurrency. Although there is growing demand for cryptocurrency in the African region, many African countries have banned private cryptocurrency such as bitcoin and Ethereum. This has discouraged investors from investing in cryptocurrency in Africa.

Ozili (2022a) shows that the central bank digital currency or the eNaira adopted in Nigeria can improve the efficiency of payments and increase financial inclusion in Nigeria while the specific risks that were identified in the study include rising digital illiteracy, increased propensity for cyber-attacks and data theft. Ozili (2022b) shows that economic agents are using cryptocurrencies to make payments and this poses a threat to fiat currency. This has led many

central banks to respond to this threat by either banning cryptocurrency or taking steps to issue a central bank digital currency (Ozili, 2022d). Ozili (2022b) then argues that central banks can leverage on their monetary powers, and the trust people have in government-back money, to issue a central bank digital currency which people will trust, and this can erode trust in cryptocurrencies and render cryptocurrency unfit for use as a medium of exchange.

2.2. DeFi literature

There are few studies on decentralized finance in the finance literature. Existing studies on decentralized finance focus on the potential benefits and applications of decentralized finance. Other studies identify the challenges of decentralized finance. For example, some studies show that decentralized finance (DeFi) uses smart contracts to create protocols that replicate existing financial services in an open, interoperable and transparent way (Schär, 2021; Ozili, 2022c). Dai (2021) defines decentralized finance as a series of interoperable smart contracts running on distributed ledgers and offering alternative financial services. Also, Popescu (2020) shows that decentralized finance uses networks and open source software to create or transform old financial products into trustworthy and transparent protocols that run without intermediaries. WEF (2021) shows that decentralized finance protocols have specific characteristics mainly the trust-minimized operation and settlement, a non-custodial design, and a programmable and open architecture. WEF (2021) suggests the need to regulate decentralised finance throughout its life cycle. BitKom (2020) shows that investors around the world entrust more than two billion USD to decentralized applications without fear of losing their money because they trust blockchain technology particularly the Ethereum blockchain.

Regarding the benefits of decentralized finance, Chen and Bellavitis (2019) show that decentralized financial services can reduce transaction cost, broaden financial inclusion, increase access to basic financial services, encourage permission-less innovation, and create new opportunities for entrepreneurs, customers and innovators. Chen and Bellavitis (2020) state that decentralized finance can reshape the structure of modern finance and create a new landscape for entrepreneurship and innovation. Schar (2021) notes that decentralized finance is a segment of financial markets with certain risks even though it offers efficiency, transparency, accessibility

and interoperability advantages. Meanwhile, FSB (2019) states that the use of decentralized financial technologies in modern finance offers financial stability advantages. FSB suggests that decentralized finance can introduce greater competition and diversity in the financial system, and can potentially reduce the too-big-to-fail problems in existing financial intermediaries. Piesse (2021) examines decentralized finance in the insurance industry, and show that decentralized finance can lead to the emergence of new digital asset classes in insurance market which could lead to higher insurance policies and higher returns to the insurance industry. Ye and Simon (2021) examine money creation in decentralized finance. They show that stablecoins can be used to meet the demand for safe assets in decentralized financial transactions, and that stablecoin issuers can perfectly transform risky reserve assets into tokens of stable values. Meegan and Koens (2021) show that both decentralized finance and centralized finance have benefits for the financial system. They suggest that decentralized finance and centralized finance should be allowed to co-exist in the same financial system so that customers can enjoy the combined benefits of decentralized finance and centralized finance.

Regarding the challenges of decentralized finance, Zetzsche et al (2020) argue that decentralized finance has the potential to undermine traditional forms of accountability and erode the effectiveness of traditional financial regulation and enforcement. Chohan (2021) argues that while decentralized finance prioritizes disintermediation and decentralization to empower individuals along crypto-anarchist principles, it has substantial difficulties such as market manipulation, distortionary incentives, excess short-termism, encouraging Ponzi-schemes, and money-laundering challenges. Wharton (2021) shows that while decentralized finance can promote efficiency, transparency, innovation, and financial inclusion, decentralized finance also presents serious concerns such as greater potential for fraud, cyber-attacks, and decentralized finance governance problems. Smith (2021) examines how decentralized finance can be useful in accounting and finance practice. Smith (2021) shows that crypto assets present a number of accounting issues such as the lack of consistency in how crypto assets are treated, accounted for, and reported. Also, Smith (2021) points out that different regulators have diverging viewpoints on how crypto assets should be treated for accounting purposes. Also, the accounting for decentralized finance is further complicated by the volatility of the price of assets backed by

cryptocurrency. These issues collectively make the accounting for DeFi-related crypto assets very difficult at the early stages. Su (2021) shows that decentralized finance has a growing total value locked (TVL). The TVL is a common measure of the market size for decentralized finance activity. The total locked value (TVL) exceeded \$100 billion in 2021. Su (2021) shows that decentralized finance offers financial services through a peer-to-peer system using digital assets and smart contracts. Su (2021) then argues that decentralized finance could save transaction costs in the finance industry even though there are concerns that DeFi could damage market integrity, disrupt the financial system and could also lead to an overhaul of existing financial regulatory frameworks to accommodate decentralized finance innovations. Dai (2021) shows that the major challenge of decentralized finance is the issue of privacy. This is because decentralized finance applications can expose privately negotiated contracts to public scrutiny.

3. Cryptocurrency and DeFi activity in Africa: Some Statistics

- **Retail cryptocurrency** – The African region had the largest retail cryptocurrency volume in May 2020 according to a Chainalysis 2020 report. In the report, retail cryptocurrencies are defined as cryptocurrencies below the \$10,000 mark.
- **Cryptocurrency inflow and outflow** – Among the regions of the World, the African continent witnessed the lowest cryptocurrency inflows and outflows between July 2019 to June 2020 according to a Chainalysis 2020 report.
- **Cryptocurrency value** – The African continent accounted for only 3 per cent of global cryptocurrency value in 2020 according to the Chainalysis 2021 Global Crypto Report.
- **Share of global cryptocurrency trading activity** - Africa had the lowest share of global cryptocurrency trading activity compared to Europe according to the Chainalysis 2021 cryptocurrency report.

- **Interest in DeFi** - Africa recorded the lowest interest in DeFi since DeFi inception. This is shown by the very low web traffic to DeFi protocols from 2019 to 2021 according to a Chainalysis 2021 report. Majority of the web traffic to DeFi protocols came from North American countries and Western European countries. The low web traffic to DeFi protocols in Africa shows that there is low interest in decentralized finance in African countries.

- **African countries adopting DeFi** - Among the 54 countries in Africa, only one country is listed in the top 20 global DeFi adopters in the 2021 ranking. Togo is the only African country listed in the top 20 global DeFi adoption index in 2021. This statistic shows that African countries are among the least adopters of DeFi in the world. It also shows that there is little interest in decentralized finance in the African continent and the DeFi concept is a relatively new concept in many African countries.

4. Potential Benefits of DeFi in Africa

Decentralized finance offers some benefits to users in African countries, for example:

- i. DeFi can increase liquidity for small and medium scale enterprises (SMEs) in African countries.
- ii. DeFi can create new opportunities to raise additional capital to fund capital-intensive activities of corporations and government agencies in African countries.
- iii. DeFi can potentially usher in an era of smart contracts that are negotiated bilaterally without needing an intermediary.
- iv. DeFi will encourage peer-to-peer trade between economic agents in several African countries.
- v. DeFi can enhance the efficiency of the Pan-African Payment Settlement System (PAPSS)
- vi. DeFi can encourage more trade between individuals and corporations under the African Continental Free Trade Agreement.

- vii. DeFi can reduce the cost of financial services. Removing financial intermediaries will reduce transaction cost and lead to cost savings.
- viii. DeFi can lead to exciting innovations in financial services in African countries. It can lead to new types of financial products and services that have wide usage in many industries and sectors in African countries.
- ix. DeFi can motivate African governments to introduce digital financial literacy programs for their citizens so that citizens can become familiar with blockchain-based financial services and digital financial services. Studies have shown that digital finance can enhance financial literacy (Ozili, 2018; Özen and Diakonidze, 2021)

5. Challenges of DeFi in Africa

Blockchain-based DeFi may not generate immediate and real benefits to users of financial services in African countries if a number of challenges are not addressed. These challenges include: lack of technological infrastructure to support decentralized finance applications, poor security protocols, lack of regulatory sophistication to understand and regulate blockchain-based technology protocols, regulatory ambiguity, rising digital illiteracy among a large segment of the population, increased appetite for cyber-crime, and resistance to change among policy makers and ordinary citizens and merchants. These challenges could limit the adoption decentralized finance in Africa. Despite these challenges, there is optimism that decentralized finance (DeFi) will eventually find its way into African financial systems. But first, the aforementioned challenges must be addressed to prepare for DeFi adoption. Table 1 shows some additional challenges of DeFi.

Table 1: Factors promoting DeFi and obstacles to DeFi in Africa

Region	Countries	DeFi Promoters	Obstacles to DeFi
North Africa	Morocco, Algeria, Tunisia, Libya, Egypt and Sudan	(i) Islamic finance; (ii) institutional investors, (iii) cryptocurrency users	(i) Religiosity, (ii) resistance to change, (iii) weak technological capabilities, (iv) lack of political will to accept DeFi disruption
East Africa	Burundi, Comoros, Djibouti, Ethiopia, Eritrea, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, Tanzania, Uganda, Zambia and Zimbabwe.	(i) Openness to financial innovation, (ii) institutional investors, (iii) cryptocurrency users, (iv) technology companies	(i) Citizens over-reliance on traditional financial intermediaries
South Africa	Angola, Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe.	(i) Regulator's openness to financial innovation, (ii) institutional investors	(i) Resistance to change
West Africa	Benin, Burkina Faso, Cape Verde, The Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo	(i) Regulator's openness to financial innovation, (ii) institutional investors, (iii) cryptocurrency usage, (iv) technology companies	(i) Reluctance to remove financial intermediaries from the financial intermediation process, (ii) resistance to change
Central Africa	Cameroon, Central African Republic, Chad, Congo Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon, São Tomé & Príncipe.	(i) Institutional investors	(i) Resistance to change, (ii) weak technological capabilities, (iii) lack of political will to accept DeFi innovation

6. DeFi regulation in Africa

The current regulatory frameworks in many African countries may be inadequate to monitor and regulate decentralized financial services. Adopting decentralized financial services in African countries may require the formulation of a new regulatory framework for decentralized financial services, or may lead to the modification of existing blockchain financial services regulation particularly for African countries that already have a blockchain finance regulatory framework such as South Africa. Regulators willing to accept decentralized financial services in their financial systems would need to think about developing better know-your-customer (KYC) systems, increase consumer protection, increase trust, and develop capabilities to regulate and supervise technology protocols. At the same time, financial regulators will also need to be concerned about internet financial crime, data breaches, and whether to adopt DeFi services under a full decentralization model or a partial decentralization model which would be the case for African countries that do not want to completely remove intermediaries from the financial intermediation process.

7. Reflection and Conclusion

Decentralized finance is still a new concept in Africa. It is a disruption that cannot be resisted for too long. Decentralized finance promises many benefits to users despite its challenges. In Africa, decentralized finance is a much needed disruption that can make finance become more accessible to citizens and small businesses that cannot access financial services conveniently from traditional financial institutions. Meanwhile, critics view decentralized finance as another unnecessary disruption for African banks because decentralized finance could pose an existential threat to weak African banks. There is also the argument that replacing centralized finance (CeFi) with decentralized finance (DeFi) would eliminate intermediaries. This can lead to loss of thousands of jobs in many African countries and can lead to high unemployment. Although DeFi critics have a valid point in their arguments, some of these concerns can be addressed through DeFi regulation. Regulatory and technology problems will be the biggest challenge to adopting

decentralized financial services in the African continent. But one thing is certain, if decentralized finance is welcomed and adopted in many African countries, then it is most certain that central bank digital currency (CBDC) will become the dominant medium of exchange to drive payments in the DeFi sector of African economies.

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