

A Review of Blockchain and Cryptocurrency in the South African Banking

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Abstract

What are Blockchain and Cryptocurrencies? Can they be used in the banking sector? Is South Africa using them? These are various questions this paper attempts to answer. This paper looks for an in-depth overview of blockchain and cryptocurrency applications over the years, their current trends and challenges, innovations, and how the technology brings value to the finance industry. The paper fills a gap in South Africa by providing more insights into blockchain applications. This paper used research tools to understand the topic better to obtain relevant literature reviews from articles, reviews, conference papers, and journals. One hundred forty-two sources were reviewed, and only 24 were retained and identified as suitable to aid the completion of this paper. These sources varied from 2018 to 2022 and included book chapters, conference papers, reviews, journals and articles. Results revealed that Blockchain is a way of managing a dataset distributed across a global network of computers with no single point of control. It creates blocks of all records kept as chains on a distributed network. Each block corresponds to coins that people hold (Cryptocurrency). As much as blockchain and cryptocurrencies are technologies that have been used in other countries, South Africa still has a long way to go to fully adopt them. Factors such as education on these technologies and infrastructure readiness are still significant challenges in the country; nevertheless, there is still hope for the country to use those technologies as humans are dynamic continuously.

Keywords

Blockchain, Digital currency, Innovation, and Opportunities and risks.

1. Introduction

Blockchain innovation could lead to businesses expecting a shift in how payments are conducted. As articulated by one reviewer, "The blockchain is essentially an online database that lists every account payable situation and the ability to record it permanently on a distributed public ledger" (Babajide et al. 2020). Deloitte suggests that by the year 2025, 10% of the GDP will be recorded on blockchain technologies (World Economic Forum, 2015). Throughout the technology, blockchain is considered the basis of a digital ledger of financial transactions. All transactions are publicly added to the blockchain's universal catalogue, and verified by network nodes, and every entity in the network is called a user node (Babajide et al. 2020). This is a lightweight network of computers with a complete copy of the blockchain's ledger of transactions (Hassani, 2018). One of Satoshi Nakamoto's arguments was this piece that was about digital currency and operational efficiency. He believed all this could be achieved with a network connection as one where computers communicate and share information and data (Vivekanadam, 2020). He intended to eliminate centralized parties during a transaction, which was done by sharing information with all of the networks. A blockchain-based digital currency also drives out costs in the system and allows parties to optimize overall user utility (Vivekanadam, 2020). Accordingly, a meeting in the U.S. in 2015 called 'Blockchain 2015' in Miami. Some call this 'Bitcoin White Money' broken into three phases: Blockchain phase-one, blockchain phase-two, and blockchain phase-three (Adhami et al., 2018). Phase one was labelled as 'Bitcoin-focused encryption digital funds as a starting point. Phase two was marked as 'smart management of contracts, often referred to as smart contracts. Finally, Phase three was labelled as an 'innovation process focused on the application of blockchain method.

The use of blockchain technology is rapidly growing in banking operations across the world. With the help of Cryptocurrency, the traditional banking system is dramatically changing, and these institutions no longer need a bank to act as a middleman. Cryptocurrency is used as digital money to buy or sell goods or perform other economic activities (Bergetal., 2019). Cryptocurrency offers many benefits. For example, it can be a reliable P2P payment

technology and exist universally (Asharaf and Adarsh, 2017). Still, it has its downsides that negatively impact the financial industry. One of the downsides is the potential of cryptocurrency use for money laundering and illegal activities (Asharaf and Adarsh, 2017); a report was released in the U.K. called "Distributed Book Technology: Beyond Technology". The report intended to produce an extensive statistical analysis to study blockchain and cryptocurrency applications across different business sectors and aspects (Asharaf and Adarsh, 2017).

1.1 Aim of the study

This study aims to present the current state of affairs of blockchain and cryptocurrencies in the South African Banking sector.

1.2 Objectives of the study

The following objectives were highlighted for the study: (1) To analyze recent and future developments of blockchain and cryptocurrency technologies in South Africa; (2) To highlight blockchain and cryptocurrency technologies' competitive advantages to the banking sector.

1.3 Scope of the study

This study reviews the use of blockchain and cryptocurrency technologies in South Africa. It takes a closer look at their use in the banking sector. The study is based entirely on a review of the literature from 2018 to 2022.

1.4 Value of the study

Blockchain and Cryptocurrencies are relatively new technologies in South Africa; this study is essential as it investigates their use in the country's banking sector. The study will add value to the existing literature on blockchain and cryptocurrencies in South Africa. Other industries can also find interest in the output of this work as they can benchmark the results and improve their performance.

2. Literature Review

2.1 Evolution of the Blockchain Technology

Though initially developed in 2008, blockchain can potentially increase its market share and development in the future. An unknown person devised a new type of online cash currency behind the pseudonym of Satoshi Nakamoto as a cryptocurrency (Nakamoto, 2008). The evolution of blockchain technology dates back to 1991, as portrayed in the following (Table 1).

Table 1. History of Blockchain

Year	Contribution
1991	Stuart Haber and W Scott Stornetta describe a highly immutable and anonymous network of interacting blocks.
1998	Nick Szabo, a science practitioner, represents a decentralized digital currency model known as 'bit gold.'
2000	Stefan Konst publishes a new theory of computations where the level of intensity of cryptography equals the difficulty of the implementation task by other researchers.
2008	Satoshi Nakamoto introduced his method that takes advantage of new blockchain technology.
2009	The use of blockchain technology led to Nakamoto's invention of an online marketplace.
2014	There have been numerous blockchain-based applications that have provided financial services like bank accounts and digital wallets. Blockchain 2.0 refers to applications beyond currency and acts as a store of value itself.

2.2 Overview of the Blockchain Technology and Concepts

Blockchain is a block that systematically records a bunch of data (Liu et al., 2017b). As the data is recorded, it keeps a time of when it was recorded, often referred to as a timestamp (Liu et al., 2017b). As a variety of the data is recorded, eventually a chain is formed hence labelled as a block of chains commonly referred to as blockchain. The system that allows the data to be recorded includes a process called an encryption technique. This means that data is recorded anonymously and transparency which cannot be altered or changed once performed (Liu et al., 2017b).

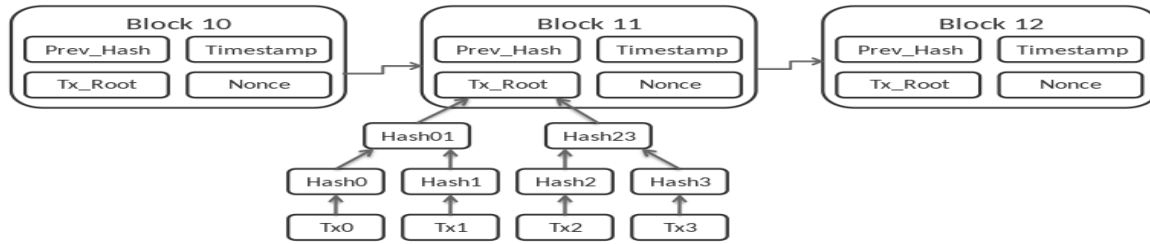


Figure 1. Blockchain diagram

Adapted from: (Manu et al., 2020)

Figure 1 shows a hash of transactions. These hashes of transactions are updated as each data is shared on a network of nodes. Nodes are computers that can participate in the P2P system and share information and data on the nodes using information and communication technologies (Asharaf and Adarsh, 2017). Transactions are stored on a secured network and can be traced back in the chain (transactions) for the precedent hashes (Asharaf and Adarsh, 2017).

2.3 Blockchain Digital Wallet

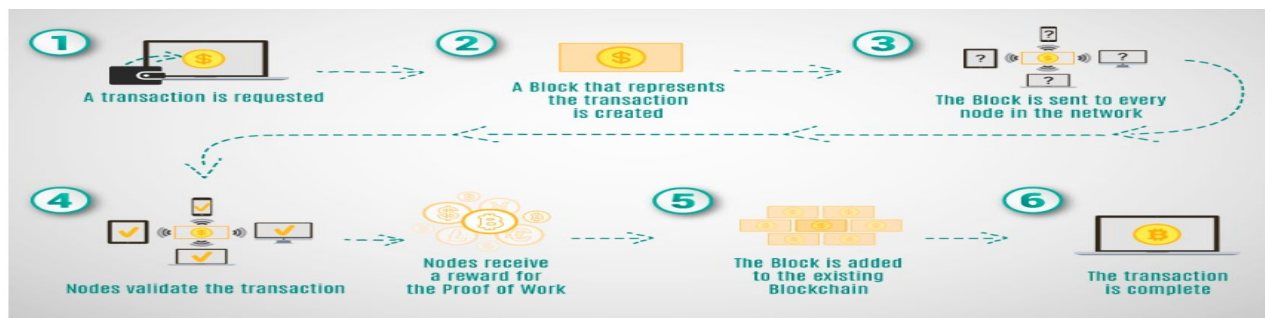


Figure 2. Blockchain and Cryptocurrency Wallet, Adapted from: (Manu et al., 2020)

Figure 2 above displays how blockchain and cryptocurrency technologies work. Blockchain has a definite timestamp for each business transaction, making sense (Bunea et al., 2016). As a permanent feature, all of the transactions performed are permanent features (Bunea et al., 2016).

Nakamoto designed blockchain technology with immutability in mind (Nakamoto, 2008). In simpler terms, one cannot make forgery and falsify data (O'Leary, 2017). The system does not allow data to be hacked and unauthorized entries. All the users on the network share funds as nodes of the computers are connected in one without a moderator to control the process (O'Leary, 2017). Like most other establishments, banks have enabled their websites to allow internal teams to process or analyze data. Banks use peer-to-peer network technology, referred to as distributed processing (O'Leary, 2017). Like spread processing systems are referred to as clients, members are known as servers (Vivekanadam, 2020). In some cases, peers can operate as both clients and servers. The peer-to-peer architecture has increased performance (Vivekanadam, 2020). The servers are accessible via the digital cloud. There are similarities when using peer-to-peer computing with teams (Vivekanadam, 2020).

There are different parts of the operational processes of cryptocurrencies. One is an exchange, another is the user, a miner, and one is a wallet provider (He et al., 2016). Coin markets require people to trade or stock exchange to conduct economic transactions (He et al., 2016). This can be a business involved in currency exchange for a commission, also known as a profit. A firm's commission in going through transactions is often referred to as a profit (Bunea et al., 2016). For example, a person buys a company's stock listed on a stock exchange and then sells it to complete a sale. Users of cryptocurrencies are people who wish to possess, purchase, and trade coins (Bunea et al. 2016). There are several ways users obtain virtual currencies, including buying them, selling their goods to acquire bitcoin, and finding

other ways to earn a digital source of income. A business person is any individual or organization responsible for maintaining the software in blockchain technology (Cheng et al. 2018). Free software programmers volunteer their time and money to bounties for projects. Miners earn rewards by contributing computing power to the network (Cheng et al., 2018). Wallet providers are essential marketplaces for cryptocurrencies like Bitcoin and Ether. (Turban et al., 2017), it is an organization that implements technological advancements for handling and consumer purchase data.

3. Methodology

The paper looks for an in-depth overview of blockchain and cryptocurrency applications over the years, their current trends and challenges, innovations, and how the technology brings value to the finance industry. The paper used research tools to understand the topic better to obtain relevant literature reviews from articles, reviews, conference papers, and journals. Keywords such as "Blockchain" and "Cryptocurrency" were used when searching for different literature sources. SCOPUS, Google Scholar, universities database, and Research-gate were used. Table 2 summarizes some of the reviewed literature. One hundred forty-two sources were reviewed, and only 24 were retained and identified as suitable to aid the completion of this paper. These sources varied from 2018 to 2022 and included book chapters, conference papers, reviews, journals and articles. The study also used a survey of questionnaires to collect data to understand what Cryptocurrency are, their use, and their different views on various of them.

Table 2. Papers and Authors' Contribution

	Source Title	Author(s)	Journals	Publisher	Year	Document Type
1	A review of Cryptocurrency.	García-Corral.	Financial Innovation	SpringerVerlag Italia s.r.l	2022	Article
2	Blockchain and Bitcoin Network	Talhi, C.	IEEE Transactions on Engineering Management	SpringerOpen	2022	Article
3	Blockchain and Payment Systems.	Maguluri, S.T.	IEEE Network Systems	River Publishers	2021	Article
4	Social cryptocurrencies for Development.	Mora, H., et al.	Kybernetes	River Publishers	2021	Article
5	SoK: Cryptojacking malware	Tekiner, E., et al.	Proceedings – Conference	Association for Information Systems	2021	Conference Paper
6	Factors influencing Crypto and Adoption.	Arias-Oliva, M., et al.	Mathematics	Association for Information Systems	2021	Article
7	Cryptocurrency: Regulation in South Africa.	Ukwueze, F.O	Public Administration and Information Technology	Potchefstroom Publisher	2021	Article
8	Cryptocurrency and Education.	Johnson, K., Krueger, B.S.	Public Administration and Information Technology	Institute of Electrical and Electronics Engineers Inc	2021	Book Chapter
9	Government use of Blockchain and Cryptocurrency.	Clavin, J., et al.	Government Digital Technology	SpringerVerlag Italia s.r.l	2020	Article
10	Smart Contracts and Cryptocurrency Maximization.	Tien, S.-K., et al.	Proceedings - Global Conference on Crypto Use 2020	SpringerVerlag Italia s.r.l	2020	Conference Paper
11	Legal Requirements and SMART Contracts.	Pocher, N., et al.	Blockchain and Cryptocurrency Workshop.	SpringerVerlag Italia s.r.l	2020	Conference Paper
12	An analysis of Cryptocoureny and Bitcoin.	Berk, C.	Dynamics of Money, Financial Crisis: Regulation.	SpringerVerlag Italia s.r.l	20202	Book Chapter
13	Coin offering in the U.S. – a Descriptive Study	Gupta, A., et al.	2 ND Conference of the Application of	SpringerOpen	2020	Conference Paper

			Blockchain and Coins 2020.			
14	Spill-over effect in the U.S. Markets.	Senarathne, C.W.	ACM International Conference Proceeding Series	SpringerOpen	2020	Conference Paper
15	Accurately Predicting using Blockchain and Cryptocurrency.	Saad, M., et al	Systems and Journal	SpringerOpen	2020	Article
16	Cryptocurrency and FOMC relations.	Corbet, S., et al.	Finance and Banking Journal.	SSRN	2020	Article
17	Does the adoption of cryptocurrencies affect firm performance?	Juma'h, A.H., Kerri, R.	26th Americas Conference on Information Systems, AMCIS 2020	SSRN	2020	Conference Paper
18	Dark data analytics using blockchain technology	Neha, Pahwa, P.	Lecture Notes in Operations Engineering	Institute of Electrical and Electronics Engineers In	2020	Conference Paper
19	A study of Cryptocurrency and Terrorism	Majumder, A., et al.	The Impact of Global Terrorism on Economic and Political Development: Afro-Asian Perspectives	IOS Press B.V.	2019	Book Chapter
20	Performance modeling and analysis of the bitcoin inventory protocol	Shahsavari, Y., Majumder, A., et al.	Proceedings - 2019 IEEE International Conference on Decentralized Applications and Infrastructures, DAPPCON 2019	SSRN	2019	Conference Paper
21	Project based learning: Predicting bitcoin prices using deep learning	Yogeshwaran, S., Kaur, M.J., Maheshwari, P.	IEEE Global Engineering Education Conference, EDUCON, April-2019, art. no. 8725091	SSRN	2019	Conference Paper
22	Blockchain and the related issues: a review of current research topics	Lu, Y.	Journal of Management Analytics	SSRN	2018	A review
23	A petri nets model for blockchain analysis	Pinna, A., Tonelli, R., Orrù, M., Marchesi, M.	Computer Journal,	SSRN	2018	Article
24	. Blockchain for Good? Digital Ledger Technology and Sustainable Development Goals	Adams, R., Kewell, B., Parry, G.	World Sustainability Series	SSRN	2018	Book Chapter

4. Findings

4.1 Blockchain and Cryptocurrency in Banking

The developments of freeloading industries in recent years have caused a change in the way banking operations are done in South Africa as it has been made more efficient using new methods. This is because new technologies such as blockchain and peer-to-peer systems are an effective way of banking operations. South Africa's financial plan is efficient and rates well compared to its peers and neighbours (Pilkington, 2016). The country has a credit score rating, domestic credit rating, issued in the place of 144% of GDP, which is in line with other countries. The country's banking employer is the most prominent finance, with a credit score rating of 66% of GDP and above global averages (Deloitte,

2019). This shows that South Africa has an expanded banking system, dominated by a guidelines-oriented banking suggest and more risk-averse approval (Deloitte, 2019).

According to this review study, interest in blockchain technology and Cryptocurrency is concerned with the number of people willing to use the technology and the age of the generation that has an interest in using the technology.

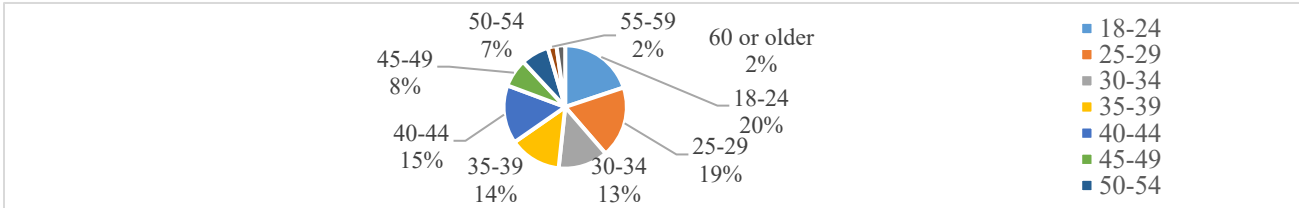


Figure 3. The rate of participation by each age group as defined by respondents

Figure 3 shows the primary participating respondents of the study. We most frequently survey ages 25-29, and 18-24 (about 20%). The ages of 40-44 and 35-39 were also considered, with 14% and 15%, respectively. Millennials and Generation Z are overall much more technologically-driven. It is shown that some characteristics are similar. The similarities are because they're all products of technology adoption. They were acquiring convenience with the rapid adoption of technology, and being flexible to adopt change led to their current stances towards technology.

Respondents who were found to have higher education were significantly more likely to state that using Cryptocurrency relates to educational standards than non-educated people.

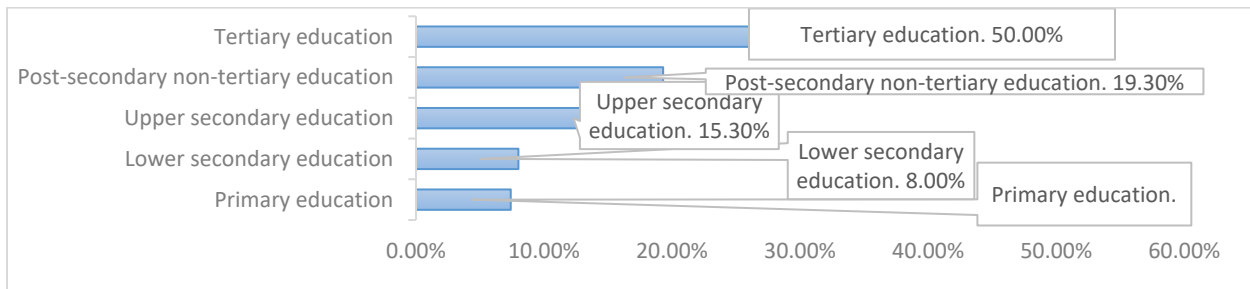


Figure 3. Respondents' Educational Backgrounds

When we analyzed the respondents in Figure 3, we found that they have contrasting educational backgrounds. Out of 100%, 50% of the respondents had tertiary schooling, 19.3% had post-secondary education, followed by respondents with an upper-secondary education and 15.3%, and lower secondary education recorded 8%. This shows that most millennial and generation z respondents have tertiary schooling and are computer and technology-driven. As customers of business institutions, these will be pertinent to how corporations present themselves. They create a commercial space for their products.

4.1.1 Current status in South Africa

Transaction rates and fees are low in South Africa (Deloitte, 2019). There are situations where customers use public institutions to perform electronic transactions (Hendriks, 2012). This is due to the low-interest rates on loan products and ever-increasing deposit fees (Deloitte, 2019). Development in South Africa has mainly been in the payment sector (Kudichs, 2018). Financial technology, primarily enabled by financial conglomerates, has enabled banks to pay and collect money faster and facilitate e-commerce (Walton and Johnston, 2018). Furthermore, banking technology allows us to access the internet, and there has been growth in the electronic financial sector. In such an environment, a study by Accenture called 'Unlocking Digital Value in South Africa' (2019) finds that South African banks have found payment solutions that fulfil their client's wishes.

Data was then collected to identify the type of sector respondents use to perform banking operations, and it was found that respondents mostly use the public sector to purchase products and services online, as shown in Figure 4. The data from Figure 4 supports the above text that customers use the public sector to perform bank-oriented transactions, mostly because of low transaction rates in South Africa.

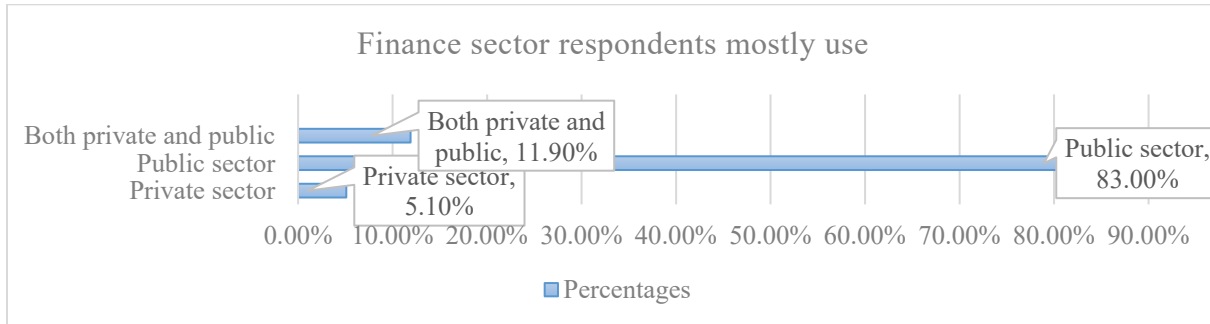


Figure 4. Finance sector respondents mostly use

Figure 4 highlights the finding that nearly all respondents utilized the public sector for banking transactions, with 83.0% recorded. Of these respondents, more than 11% used both the public and private sectors for banking functions. Only a few people used the private sector for banking, with 5.1% recorded.

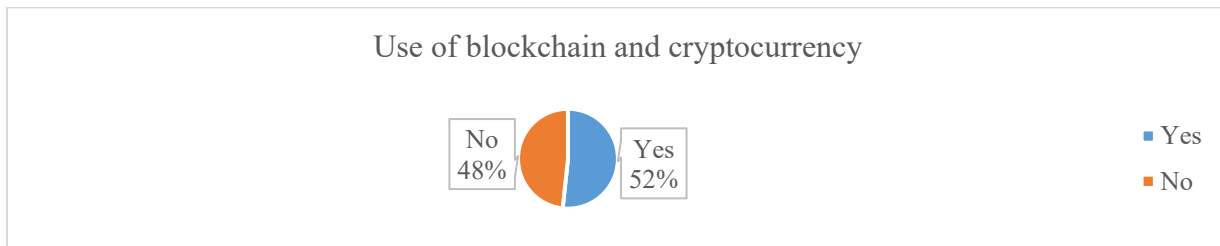


Figure 5. Use of blockchain and Cryptocurrency

More than half of the respondents (51.7%) had ever used virtual currency to perform economic transactions, with 46.3 percent of respondents not having used virtual currency in these transactions. Figure 5 above portrays the results.

By 2019, blockchain spending in South Africa was projected to be \$10320 million, with analysts believing that the market is likely to grow another 50% by 2025, to reach US\$ 2 056 million by then, according to the Research and Markets report dated 2019. Turban et al. (2017) Luno and Cryptocurrency Change Platforms enable South Africans to invest in virtual currencies analogous to a stock market. In South Africa, optimized mobile payment solutions allow customers to send and receive funds without maintaining bank accounts (Turban et al. 2017). Banks convert card details into digital formats, and users transact using their preferred mobile devices (Deloitte, 2019). Luno's client base and related transactions are expected to increase substantially in South Africa, according to Luno Research (Singh, 2021). According to the online exchange, the number is projected to rise as over 250,000 users were recorded in 2021. Luno also revealed that crypto grew considerably in 2019, with a 300% year-to-year growth. For instance, the Luno showed that \$3 billion (R43 billion) of transactions were done in the country by 2019 (Singh, 2021). A recent study showed that 1,500,000 (15%) users in South Africa have invested in Bitcoin, a digital asset, through various internet platforms Global Web Index report (Ward, 2018). The number is enough to drive at least 1,500,000 people to be interested in Bitcoin, according to the Global Web Index report (Ward, 2019). The increased number of digitalized interactions and services has brought cybercrime challenges. Also, corporations' utilization of financial data creates obstacles to data security and privacy (Deloitte, 2019).

4.2 Recent Trends and Development in South Africa and Global

Walton, A., & Johnston (2018) state that millennials and gen Z millennials show particular interest in Cryptocurrency and blockchains in South Africa. These generations see non-fungible tokens (NFTs) as a sign of wealth, owning something that is not arbitrary, e.g., assets you can't lose. The study also concluded that interest in blockchain technology and Cryptocurrency tends to be greatest among urban populations. The Ethereum NFT is a form of Cryptocurrency used to represent ownership in a digital platform (Finder's Cryptocurrency Adoption Index, 2022). It can be bought and sold because it is a certificate of ownership, just like any other piece of property. Users refer to this token as a "self-ownership token," representing ownership of virtual and physical assets on a digital platform (Finder's Cryptocurrency Adoption Index, 2022). South Africa is listed as the 18th country out of 26 included in cryptocurrency use, as stated in the report (Finder's Cryptocurrency Adoption Index, 2022), in which a survey has surveyed more than 7,834 people in 26 selected global countries. The level of ownership of cryptocurrencies in South Africa is relatively low compared to the worldwide average. India is the country with 29%, and other high percentages include Germany at 6%.

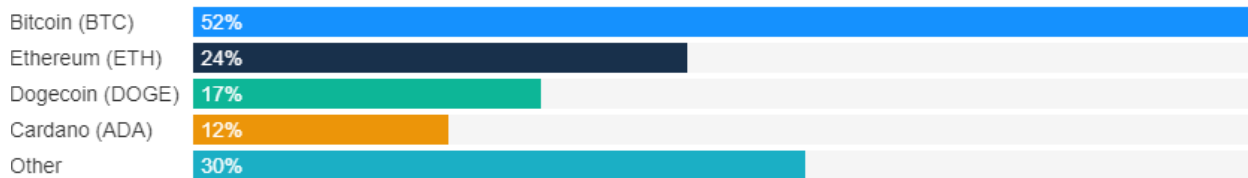


Figure 6. Popular Virtual Currencies, Adapted from: (Finder's Cryptocurrency Adoption Index, 2022)

Figure 6 shows that they are more users utilizing Bitcoins as a cryptocurrency in South Africa. South African consumer sentiment towards crypto assets has risen to as high as 52%, more than five points greater than the global average, which sits at 37% (Finder's Cryptocurrency Adoption Index, 2022).

a) Global ownership of the blockchain and Cryptocurrency

The global average ownership of utilizing blockchain and Cryptocurrency is 15% (Finder's Cryptocurrency Adoption Index, 2022). The percentage is projected to be growing in the future. The U.S. government use blockchain technologies, and the most popular one is Bitcoin. Styles this "virtual" money as a potential replacement for the dollar. China's global financial technology sector is expanding, broadening the financial market. The Chinese market leads in total uses and full market size worldwide (Włodzimierz, 2016). In this market, capital businesses of the internet start-ups have developed a broader market, which focuses on the payment sector and accounts for over 12 trillion renminbi, more than half.

b) The Regulations Dynamics of blockchain and Cryptocurrency

The business environment is constantly changing, and the dynamics of managing business institutions and users must accommodate the use of digital payments. It is now convenient to foster business transactions and faster operational processes. While it is easy to transfer money via online services, the internet presents many opportunities and benefits, as well as risks and threats, to consumers who do not perform everyday banking transactions with banks, especially those who try to take advantage of the openness of the internet to bypass regulators, whether the financial institutions are aware of their activities or not (Stettner et al. 2019). It is difficult to foresee how one can tax customers on Cryptocurrency due to the unregulated use of Cryptocurrency (Stettner et al. 2019). Furthermore, changing the definition of "assets" to include Cryptocurrency will cause one to be taxed using existing tax laws (Stettner et al., 2019). Cryptography limits government power, and taxation is one (Stettner et al. 2019). It puts these abilities in the trust of the people. A trustless blockchain protocol is essential to tax evasion (Stettner et al. 2019).

Further, because the South African Reserve Bank's current regulations exclude the crypto sector, the SARB Act fails to protect customers of crypto users in South Africa. This loophole allows for danger for customers in the commercial industry. National Credit Act enables all lending entities to register as credit providers with the National Credit Regulator board (Mothokoa, 2017). Underpinned components include a P2P system and lenders who perform online transactions. The Insurance Act policy ensures providers of insurance products have regulations (Mothokoa, 2017). These regulations may require the products sold to be safe by government regulations. Financial Services Act governs

all investments, processes, and business transactions of the financial sector. All entities that exchange foreign currency, bonds, and equities must be licensed. In other legislations, external companies join the remedies of the Company Act, 2008; they have 20 days to commence doing business. If such interactions are not registered within twenty days after they start to do their business, they will fall under the Company (Mothokoa, 2017). The CPA, known as Consumer Protection Act, strengthens consumer rights in S.A. All consumer sales are governed by this law (Mothokoa, 2017). The Financial Intelligence Center Act, 2001 (FICA) plays a significant role in governing funds laundering in S.A. (Mothokoa, 2017). Blockchain and cryptocurrency component has changed the business and market environment structure, and regulation must adjust regulations to foster the protection of users on the network.

Table 3. Thoughts on aspects of digital currency

		No	Yes	Not sure	Total
There should be an initiative between government and SA reserve bank to help govern the use of Cryptocurrency.	Count	31	100	10	141
	%	22.0%	70.9%	7.1%	100.0%
Does the newness of Cryptocurrency deter you from using it?	Count	69	51	56	176
	%	39.2%	29.0%	31.8%	100.0%
The value I attach to Cryptocurrency is low because it has no tangible form.	Count	65	64	47	176
	%	36.9%	36.4%	26.7%	100.0%

Table 3 shows that the respondents believed there should be an initiative between the government and the South African Reserve Bank to help govern the usage of blockchain and Cryptocurrency. A lot of respondents favoured the idea, with (70.9%). Respondents also like this idea. They believe people will find it easier to adopt virtual money for real money as more people hear about its benefits. The newness of Cryptocurrency did not deter respondents from using it. This outcome serves as a good indication that people have a keen interest in virtual money.

Canada was the first country in the world to pass specific legislation governing the law of cryptocurrencies in 2017 (IMF, 2019). On September 14, the highest tax authority in the country, Canada Revenue Agency (CRA), declared its intention to become involved in cryptocurrency identification and accomplish its identity verification purposes. Accordingly, the CRA announced the commencement. The U.S. Department of Financial Services designed the new BitLicense that was adjusted into law in 2015 (IMF, 2019).

c) Opportunities and Risks of Blockchain technology and the use of Cryptocurrency

Leading financial institutions share data to eliminate duplicate data and information (Gamble, 2017). Innovative financial and blockchain technology improves transaction costs in banks and brokerage firms (Gamble, 2017). Quasi-settlement time is low to facilitate direct-consumer interaction and expedite transactions (Garcia, 2018). Blockchain technology leads to more rapid transactions. The support of specialized groups (split the token) is indispensable in the cryptocurrency market (Gamble, 2017). Blockchain technology is a way of ensuring accuracy. With the aid of Blockchain technology, American financial institutions have saved USD 11 million to USD 12 billion a year (Gamble, 2017). Blockchain can be beneficial for financial institutions in an attempt to remain under legal scrutiny (Gamble, 2017). There is transparency in financial records, and all transactions are easy to see. Niforos et al. (2016) claim that vital records in banking are now locked, and users can see the condition of passed data.

Across the globe, blockchain payments deal with international financial companies suffering from the challenge. The lack of industry standards makes it hard for firms to develop proper financial practices. For example, Bitcoin is stored in secure servers. Due to its technological limitations, the process of transferring money is intricate and slow (Toufaily, 2021). Due to the absence of regulations, the transfer of data and information in banking causes (Toufaily, 2021). Institutions are not performing information exchange effectively because of the long-term cost per gigabyte. Saheb et

al. (2020), users accept digital currencies for monetary transactions. Customers sometimes distrust the digital fund's marketplace, and volatility is a significant issue (Toufaily, 2021). Since 2021, banks have increased security systems to protect customers' data and money from identity theft and hacking (Toufaily, 2021). Transacting online requires new tasks as security analysts, bankers, and web developers all play roles in protecting users on the digital platform (Toufaily, 2021). Infrastructural problems in e-commerce result from anonymous online transactions. Banks balance efficiency and confidentiality when meeting their obligations. Government control is crucial to enable justice and compliant firms and users for cryptocurrency exchange (Toufaily, 2021).

5. Conclusions

Blockchain technology is a secured distributed network of nodes on a network of computers. It's a type of ledger technology. The technology allows two people to directly record and exchange cryptographically linked financial assets. Since its inception in 2008, the price of the technology has skyrocketed, partly due to its volatility and increasing use. Although the application has gotten much attention, in South Africa, Bitcoin is the most well-known component of a blockchain. The technology has grown enough to spawn tokens and continues making strides in the future of technology. As Cryptocurrency is used, the blockchain network allows users to transact financial activities and transfer funds. However, it can be dangerous to institutions and clients due to risks such as money laundering and theft. Regulating and policy can penalize such criminal activity, offering more safety for users. As much as blockchain and cryptocurrencies are technologies that have been used in other countries, South Africa still has a long way to go to fully adopt them. Factors such as education on these technologies and infrastructure readiness are still significant challenges in the country; nevertheless, there is still hope for the country to use those technologies as humans are dynamic continuously.

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