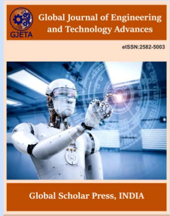
Global Journal of Engineering and Technology Advances

eISSN: 2582-5003

Cross Ref DOI: 10.30574/gjeta

Journal homepage: https://gjeta.com/



(Research Article)

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An appraisal of ethical issues and the effect of artificial intelligence on the cryptocurrency market

Olufunmilola Adunni Ogunyolu [1, *] and Adewale O Adebayo [2]

[1] *Department of Computer Science, Babcock University, Ogun State Nigeria.*
[2] *Department of Information Technology, Babcock University, Ogun State Nigeria.*

Global Journal of Engineering and Technology Advances, 2022, 11(02), 063–070

Publication history: Received on 16 April 2022; revised on 18 May 2022; accepted on 20 May 2022

Article DOI: https://doi.org/10.30574/gjeta.2022.11.2.0083

Abstract

The world has gradually embraced Cryptocurrency at various levels of capacity and it is not governed or regulated by any Control system. It has over time been used by participants as a means to invest despite the volatility of the market. Though Government does not have the means to outright stop the virtual marketing deals of Cryptocurrency, recently Nigerian government called for deposit money banks to close all corresponding accounts which are perceived to be involved in Cryptocurrency trading. The Crypto market has evolved as the digital and internet world exponentially evolved. Sadly, Cryptocurrency has been misused by illegal participants and exploited wrongly which has caused a lot of worrisome issues around the world like loss of funds, hacking of financial databases, terrorist financing, and identity fraud. This paper aims to identify the methodology surrounding the world of Cryptocurrency and how advancement in technology through artificial intelligence can help solve ethical issues related to cryptocurrency trading. Based on these appraisals, we highlighted procedures to provide a safer, secure, and relatable market for every interested individual.

Keywords: Artificial Intelligence; Blockchain; Cryptocurrency; Ethical issues; Fiat Money; Volatile

1. Introduction

The cryptocurrency market is a major digital market that has been embraced by several countries for monetary transactions. The market is implemented through the use of blockchain, a common public ledger that houses the transaction history and activities of currency investors. Cryptocurrency has been used in various aspects of the economy, like online purchases, stocks, and fundraising. Since the introduction of cryptocurrency in 2009, there has been the introduction of different currencies like Bitcoin, Ethereum, and Litecoin among others, which grew tremendously [1]. It was further speculated that it might take over paper notes. The ethical issue surrounding the Crypto economy is related to the fact that it is a volatile market and any investor who is not knowledgeable enough might be exposed to loss of funds. A Country like Morocco has declared cryptocurrency illegal [2]. Forecasting crypto prices can be done based on investor sentiment as well as the gains on the investment [3].

This paper aims to discuss various ethical ways to avoid the loss of funds by investors through emerging technology and artificial intelligence during cryptocurrency trading. It attempts to present the dynamics of cryptocurrency, the future of cryptocurrency, and how artificial intelligence can help avoid being scammed. It discusses why countries need to exercise caution about Cryptocurrency and identifies ethics guiding Cryptocurrency and its effects on the global economy.

* Corresponding author: Olufunmilola Adunni Ogunyolu
Department of Computer Science, Babcock University, Ogun State Nigeria.

In order to achieve these, various studies on cryptocurrency by researchers were studied, analysed, and evaluated. An appraisal of the methodology behind cryptocurrency was explained. The history of money as a medium of exchange up to the emergence and evolution of cryptocurrency was also studied along with the effect and contribution of artificial Intelligence. The factors surrounding the ethical issues that can guide against the negative effect of the cryptocurrency market were also identified while the positive impact was also mentioned.

Central Bank in Nigeria recently gave a direct order to deposit banks to close all accounts with any form of Cryptocurrency dealings. The ripple effect of outright closure of such accounts is that participants who registered with their investors might eventually lose their funds that were previously invested in the Cryptocurrency market. The Central bank believes that against the ethics of the financial market, it was gathered that Cryptocurrency was being used for scamming uninformed investors, money laundering, terrorist financing, and other criminal activities due to anonymity by its patrons. The Crypto economy is a market not regulated by any corporate body, Journals have been written on operation mode and applications of Cryptocurrency in the modern-day world as well as its technology [4]. According to [5] it was mentioned that the gain on an investment in the crypto market entails attention from investors and fluctuation of the market. Despite the several advantages of cryptocurrency, it houses a lot of negative effects on the financial market but if accepted by countries; legally its gain can be optimally enjoyed [6].

The Nigerian Central Bank insisted that Cryptocurrency is a threat to the Country's financial system since it is unregulated and unlicensed. Central Bank also clarified that Cryptocurrency was initially banned in 2017 but it's been reiterated in case such deals are still been done. They also confirmed that it has been banned in other countries like Egypt, Qatar, and Iran making 51 countries[7].

It is was further mentioned that Fiat money is for the comfort of the Country while Cryptocurrency is not and the FBI (Federal Bureau of Investigation) recently alerted the Central Bank that the Cryptocurrency was being used to defraud its citizens and made several Americans lose their jobs and funds [8].

Furthermore, researchers have written so many articles on Crypto-economy and its positive and negative effects but several gaps have not yet been covered especially ways to curb scammers from victimizing uninformed investors. Several Millions of dollars are being lost daily and billions are lost yearly through the Cryptocurrency market. The regulation of the Crypto Economy has become a rather worrisome issue to the government due to the exploitation by some crypto developers. Several cases of unethical hyping of these financial services to investors causing loss of funds and crippling the economy exist. Ethics is a moral standard that makes up the attitude of a person or a group of persons and it can also be described as principles guiding a person or a group of people, this could be positive or negative ideals depending on the issues addressed. Ethics overtime was derived from philosophies, religion, and culture. It is expected to affect human life positively in the way they behave. Though Philosophers have divided ethical theories into meta-ethics, applied ethics, and normative ethics.

- Meta-ethics involves the nature of moral discernment. It delves into the origins and definition of the ethical concept.
- Normative ethics discusses the in-depth moral discernment and the basis for what is acceptable or not acceptable.
- Applied ethics focuses on matters dealt with like war and animal rights amongst others.

Ethics is a moral map that should proffer solutions to difficult issues and Philosophers have often said that what a person thinks is morally good might be irrational before someone else.

2. Cryptocurrency

Cryptocurrency is digital money, which is not tangible and not governed [9]. It's a currency that is traded online. Examples of these are Bitcoin and Ether, amongst others. People see Cryptocurrency as an investment means or a way to make quick returns where there are no expected transaction fees. The ethics of this is for both parties to have fair and honest business dealings with each other but contrary to the opinion that there cannot be a moral justification for ethical views on cryptocurrency since the dynamics of the business are not clear[10].

While investors buy Cryptocurrency using their credit cards, others do it through various means. It is majorly saved online or in investors' wallets. Cryptocurrency is more of a volatile market, which is not reversible when the market is not favourable. Cryptocurrency like bitcoin originated with a white paper published in 2008 under "Satoshi Nakamoto". The idea was introduced in the form of cash-like payment for electronic transactions having the positive attribute of real cash. In the United States According to [11] It was mentioned that buying cryptocurrency with fiat money, charity donations, crypto as gifts, or movement within wallets is not taxable while purchase of goods or services is taxable.

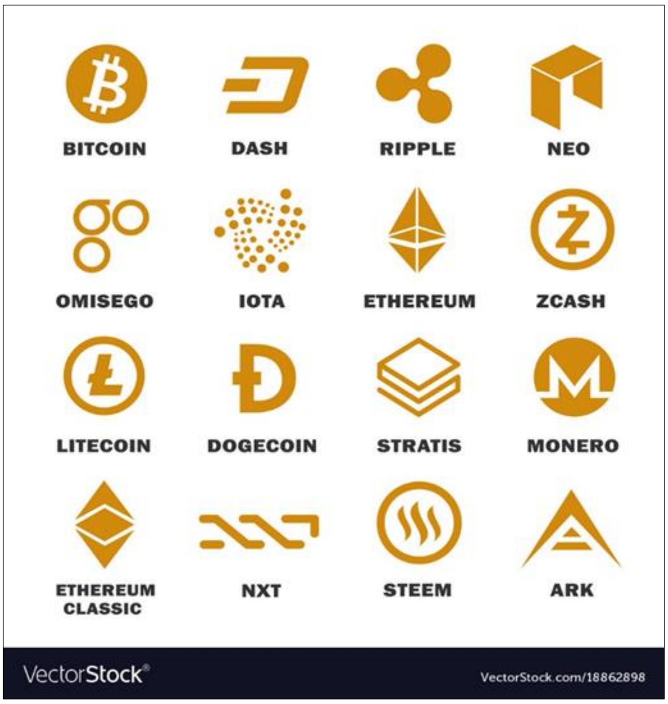

Figure 1. Examples of different cryptocurrency logos like bitcoin, Ethereum, etc for identification [12]

2.1. Physical Cash

While cash can be exchanged between buyer and seller, units of value are also transferred without any need for an intermediary. One of the disadvantages of this is that both parties must be physically present for the exchange to take place.

2.2. Digital Currency and Money

Cash is transmitted through electronic means majorly with a little transaction fee. The disadvantage is that double payment can be made and quite difficult to recover. The difference between physical and digital currency is that physical cash has a physical identity while cryptocurrency does not have a physical identity[13].

2.3. Electronic Channel

They are used by regulatory bodies like Central Banks to transmit funds through electronic channels. The bank's ethical responsibility is to ensure funds are transferred through safe electronic channels and on time. The bank keeps track of the transaction history of exchanges made and also ensures the customer builds absolute trust in them by ensuring Cash kept in their custody is safe and accessible anytime [14]

2.4. Cryptocurrency a Virtual currency

Cryptocurrency is a virtual currency unit of different types including Bitcoin. It requires no Control Authority like a bank and has grown tremendously over the last years. Ownership privileges can be moved virtually. It requires no physical Individual and has no ethical right to keep accounts. It only has blockchains that keep a record of predecessors and keep a record of new transactions. Participants can choose to remain invisible through the use of pseudonyms and unlike the traditional transfer electronically, it requires no intermediary institution nor transfer fees. An example is Bitcoin which works basically by downloading a bitcoin wallet used by investors to receive, send and store units after which currency exchanges take place and are monitored. Examples of Cryptocurrency are:

Bitcoin and Ethereum are virtual Cryptocurrencies with public investors' participation in monetary transactions and interest through the internet; it was designed similar to fiat money. Bitcoin is made possible by participants trading in them. It is majorly done on peer-to-peer networks on the Internet where participants keep a virtual ledger of bitcoin transactions only accepted by the bitcoin network association. Bitcoin as a currency is not governed by any regulatory authority but rather created through a mining process [15]. Ethereum is also a blockchain with its cryptocurrency called ether and smart contracts which involve common agreements between investors, procedures saved on the blockchain are dependent on rules attained to inform investors of any changes on time.

2.5. Relationship between Fiat Money and Bitcoin

- While Fiat money is issued and monitored by authorized control bodies like Banks and the government of any country, Bitcoin is not controlled by any Central System.
- Bitcoin can store value as well as fiat money and they both depend on participants to function as a means of exchange.
- Though people perceive Bitcoin to be more trusted since it is tamper-proof meaning it cannot be spent twice and it cannot be cancelled or reversed.

Bitcoin is created through the concept of Mining, where mining is a major aspect of bitcoin protocol where verified transactions are collected in blocks and included in the ledger of the previously processed blocks. The network creates a common link called the blockchain, which is used to prevent participants from repeating the use of the same bitcoin or spending them more than once as expected.

Cryptocurrencies are not in any way insured by the government which implies that money saved in online wallets is not in any way protected like the money kept in banks. The value and price of Cryptocurrency change almost per hour and cannot be accurately forecasted sometimes [16]. There is no assurance of a positive return on investment in Cryptocurrency which is why it is called a volatile market.

Most Cryptocurrency inventors have introduced several means that could make investors susceptible to crypto fraud and also oblivious to the risks inherent in Cryptocurrency by persuasion and by introducing mouth-watering returns on investment to interested individuals using the crowdfunding method to fund this volatile markets. It was discovered that on the scale of compliance to persuasion, after thorough interrogation, investors caved in due to:

- Peer Influence (my friends are into it and why don't I give mine a try).
- Personal Control: Moral Ethics is a set of rules which guides a person in decision-making when issues arise.
- Hardship: oftentimes financial hardship makes individuals invest in illicit businesses to make ends meet [17].

Other studies have focused on mapping out ways to curb online investment fraud and the tactic design used but very few have specifically identified the possible solutions. The use of Influence associated with social media, Trust, and Urgency for return on investment is predominantly used. This comprises counsellors and health professionals who specialize in victim support where online scammers like crypto scammers portray services to be legitimate with the use of key trust measures to lure victims like exploring their behaviour [18].

[19] Mentioned the effect of social media on forecasting the market value but minimal research was directed towards using the same social media to curb the unethical use of Cryptocurrency to defraud victims as well as software mechanisms to trace such occurrences before there is a loss of funds. Most aspiring investors who know nothing about Cryptocurrency are usually quick to invest with dealers despite ignorance of the methodology behind the real crypto market. This is usually done by a well-known dealer with fake credentials and eventually would have caused financial loss before the law enforcement will be alerted[20].

One of the major ways to curb investors from falling victims is to map out the various techniques used by scammers to defraud their victims and also create awareness like the Central Bank using the internet through the various social media to sensitize the society and discourage celebrities from hyping such dealers since enthusiastic investors believe in their celebrities.

3. Methodology of Cryptocurrency Market

This section shows the various methodological operations behind the cryptocurrency market and mining.

While Cryptocurrency has positive effects on the economy in some countries it has also facilitated criminal activities over time like Terrorist financing and the illegal sale of weapons which is harmful to individuals and has also been used to cause harm through the use of ransomware which encrypts user credentials and ransom has to be paid before it is released [21].

3.1. Cryptocurrency funding through initial coin offering:

Investors fund crypto wallets without passing through traditional routes of raising capital using an initial coin offering and it refers to a crowdfunding technique that enables like-minded people to raise funds for crypto investment.

3.2. Blockchain

This is a technological design that collates and doubles digital transactions by distributing across the peer-to-peer network, it is not easily manipulated or changed by unauthorized users.

3.3. Mining

Crypto mining is done with the availability of hardware and software resources with a high processing power for verifying transactions on a digital ledger based on the blockchain which can also be done on mobile smartphones.

3.4. Public and Private keys

A public key is a key that refers to a transaction done among investors or recipients of cryptocurrency protected by a private key.

3.5. Market fluctuations

In the crypto market, its fluctuation occurs as a result of several factors like unavailability of enough cryptocurrency in circulation, and reduction in fiat currency among others.

3.6. Cryptocurrency Ethical issues

Since cryptocurrency is not controlled by any regulatory body, it possesses a lot of risks and could cause loss of funds, money laundering, layering, and terrorist financing since it’s possible to remain anonymous.

3.7. Ledger

Is responsible for the safekeeping of all true transactions done within the cryptocurrency network between investors example is a blockchain and a crypto wallet.

3.8. Market Cap

This is adopted by cryptocurrency investors used in analysing currency across board which can help identify cryptocurrency trends to make business decisions as to whether to buy or sell. It also indicates the efficiency of cryptocurrency available.

3.9. Crypto wallets

There are different types of wallets available in cryptocurrency

- Hot Wallets: are wallets backed by the internet for accessibility and are usually prone to online attacks being a digital purse for storing crypto funds
- Cold Wallets are wallets assessable offline when not connected to the internet and kept safe away from online possible attacks
- Paper Wallets: are wallets used for receiving and sending cryptocurrencies to other investors using public and private keys for decryption[22].

3.10. Artificial intelligence, machine learning, expert system, and Big data tokens are based on market capitalization

The basic reasons why several sectors have embraced AI and ML is learning ability, evaluation of huge data has made it possible for the crypto economy to adopt it as well as its accuracy and level of speed.

3.11. Market sentiment analysis based on cryptocurrency

Refers to reactions of miners as well as investors

3.12. Crypto bots

They are online enhanced technology used for trading online for profit if however, built correctly, it has the power to trade without the effort of human intervention, especially at odd hours.

Figure 2. Example of how a crypto bot automatically trades with different cryptocurrencies on the crypto market online with less human intervention: [23]

4. Results and discussion

Based on the study, it was discovered that crowdfunding is one of the major problems of investors as a result of the knowledge gap and artificial intelligence has not yet been fully utilized based on its data processing power. It is similar to an initial coin offering which involves many individuals funding an investor for the purpose of cryptocurrency trading which usually turns out bad due to unreasonable return on investment promised by the investors to the individuals. The unethical hyping of unattainable return on investment caused loss of funds and usually unrecoverable. Most investors get carried away by these funds and sometimes deviate from the initial plan of using funds for crypto currency but out of greed divert such investments for personal gain. While some investors due to lack of enough knowledge of crypto currency do not embrace artificial intelligence and crypto bots to enhance the crypto currency trading. Most times, investors get funding from individuals raising funds exponentially beyond what is needed which causes inability to handle the unexpected growth and at the end of the day since investors cannot meet up with promised returns on investment or had a loss due to volatility of the crypto market, the operation turns into a Ponzi scheme. Ponzi scheme occurs as a result of crowdfunding this means investors are put under pressure to meet the expectations of the individuals to pay principal and interest. As a result of the failed system on the part of the investors, then individual's fund is used to pay another and it turns to be a Ponzi scheme circle by robbing peter to pay Paul. Sadly, this occurs on regular occasions and individuals still fall victim to such.

From the study, we can say that most investors often through crowdfunding of cryptocurrency wallets lure victims into the belief that they can get a particularly high percentage as return on investment after a certain period of days. This is done by hyping Cryptocurrency returns making participants of the crowdfunding vulnerable to fraud [24]. this should also be made known to the public as a tactic to lure unsuspecting victims.

From the overall study, we can say that Artificial Intelligence, machine learning, and big data have been used over time to solve ethical issues in several financial and management institutions and machine learning can also be used for market forecast or prediction, Artificial Intelligence is believed to be one of the best tools that can be used to forecast and prevent illegal issues before they occur through gathering and data analysis to enhance ethical decisions on a crypto network. Artificial Intelligence has been a useful tool in many fields as a technological tool against Fraud especially where funds are illegally transferred from innocent victims for the purchase of cryptocurrency. A survey displayed a

$9m daily financial loss in 2018 and a total of $4 billion in 2019 due to fraud since there is no legal security as in the case of credit cards [25].

Based on our findings rather than the use of pseudonyms as a way of trading, Cryptocurrency should be governed by a regulatory body. Ethical rules and regulations should be clearly stated and avoid any form of ambiguity. Investors can come into play by developing or mapping out various control means of checking illegal trades or any form of Ponzi scheme.

Crypto Economy is a volatile market and since it's not regulated, crowdfunding of wallets should be regulated or discouraged to avoid unethical issues and violations of human rights. The Security and Exchanged Commission should work in line with Central Bank to ensure all investors in the Crypto Economy register with them having done a background check and new investors should use a demo account to learn trading before venturing into real-life trading. Unlike Credit Cards where funds lost can be recovered, it is hardly the case in the Crypto trading world. In the business world, Insurance has been a great advantage when financial businesses are done or go wrong, this should be introduced in Crypto Economy to have an insurance pool in case there is a bad market day for any investor so that funds can be recovered partially or fully.

Multi-factor authentication and two-factor authentication should be encouraged on crypto wallets or mobile applications. Cryptocurrency sites should be verified before any investment is done to avoid cyber-attacks while private keys should be kept safe by investors and celebrities should take extra caution and not be coerced into advertising crypto dealers since most fans adore their celebrities. The future of Cryptocurrency might tend towards using it to purchase physical goods like cars from Tesla or used as collateral for car loans according to New York Times. Elon Musk of Tesla pumped about $1.5billion into the Cryptocurrency economy thereby boosting the Crypto Economy. Though Bitcoin ensures validation of transactions, it also makes background checks and security validation [26]. However, this can also be an escape from money laundering and should also be regulated.

A case of a new Cryptocurrency called GainBitcoin guaranteed investors a 10% return on investment through crypto-investment which was used to invest in another type of bitcoin of no significance in the market. However, Amit Bhardwaj was arrested by Law Enforcement for defrauding investors of about $300m through the popular means called Ponzi scheme. [27]. The government might eventually benefit from the crypto-economy if adopted and regulated according to the ethics of the Central Bank and Security Exchange Commission.

5. Conclusion

Based on this study we can say that Individuals can subscribe to Cryptocurrency without the use of Investment companies that pool funds through crowdfunding. They could download any Cryptocurrency app and start demo trading then such individuals can start real trading after they must have been trained adequately. Several schools are into courses on Cryptocurrency trading worldwide and more schools should adopt in curriculums.

It is believed that the pandemic led to the embrace of digital currency as long as Central Bank embraced it for the good of the country's safety and access to the general public. Indemnity sign-off should also be encouraged for investors and legitimate crypto participants since it's a volatile market.

Hyping of the Crypto market by luring investors into ridiculous return on investment should be strictly controlled and new digital currencies introduced should also be monitored duly and investigated. The use of artificial Intelligence in improving cryptocurrency dynamics and methodology needs to be explored more and other authentication means like biometrics should also be explored in cryptocurrency market.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflicts of interest.

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