

MACROECONOMIC AND MARKET FACTORS DRIVING CRYPTOCURRENCY VALUATION

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Abstract

Examining Nigerian cryptocurrency pricing determinants was the aim of the study. The purpose of this study is to evaluate the variables affecting Bitcoin's price in Nigeria. With a sample size of 100 Nigerian respondents, the study used a survey research design. By using deliberate sampling methodology, the sample size was determined. A well-crafted questionnaire was used to collect the essential data. Descriptive statistics were examined using OLS regression analysis. The hypotheses were tested and established using an ANOVA with SPSS version 27.0. Examining the variables affecting cryptocurrency prices in Nigeria was the aim of this study. The elements that affect cryptocurrency prices were evaluated by looking at a few different aspects, including as government legislation, technology, and investor behaviour. According to the study's findings, there was a 1% correlation between changes in cryptocurrency prices and changes in investor behaviour. The model was not statistically significant, as evidenced by the F-statistic of 0.034 and its significant value of 0.855 ($p\text{-value} > 0.05$). This implies that investor behaviour and bitcoin pricing do not statistically significantly correlate. Additionally, there is no statistically significant relationship between technology and cryptocurrency prices, and government laws have little effect on either.

Keywords: Cryptocurrency, Bitcoin, Technology.

SECTION ONE

1.1 Introduction

The speculation on cryptocurrencies has attracted a lot of attention from investors around the world in recent years. This came about as a result of rising interest in the efficacy of cryptocurrencies due to the importance of the financial markets (Bariviera, 2017). These days, Bitcoin is one of the most talked-about financial and economic topics in the news. The retail industry has changed as a result of the rise in internet sales caused by an increasing number of tech-savvy consumers making purchases online, and e-commerce has expanded dramatically since the Dotcom collapse (Brauneis and Mestel, 2018).

As evidenced by their wildly inflated investments in online retailers, stock market investors seemed to have an insatiable appetite for e-commerce shares despite serious concerns about the security of online credit card purchases and the Internet's sustainability after the dotcom bubble burst. Before the first cryptocurrency, called Bitcoin, was created in 2009, financial institutions managed electronic payments and served as trustworthy intermediaries in online transactions. Even though this system was successful for most transactions, it operated

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slowly because of commission costs, transaction fees, and banking institution rules (privacy and trust difficulties) (Vasek and Moore, 2015).

This led to the emergence of decentralised cryptocurrencies, which circumvented financial regulations and enabled incredibly fast, easy, and inexpensive transactions. "A digital asset designed to function as a medium of exchange using cryptography to secure the transactions and to control the creation of additional units of the currency" is how a cryptocurrency is described. On May 22, 2010, Laszlo Hanyecz, a computer programmer from Florida, made his first online bitcoin transaction. He bought two pizzas for 10,000 Bitcoins, which are now worth \$155.80 million (Yermack, 2013). Since 2017, there has been a significant surge in the use and popularity of cryptocurrencies. The value of the "assets" that individuals are "investing" enormous sums of money in is only rising because more people are buying them (Baek and Elbeck, 2015)

In 2017, companies raised billions of dollars to launch over a thousand new digital currency. Because of their architecture, which is similar to that of Bitcoin, these coins are free to trade on internet markets and are not backed by any central bank. This has sparked questions and concerns about the state and prospects of decentralised cryptocurrency. There are two main points of view. According to one side, there are no actual assets and it's all just a bubble that will eventually pop. On the other hand, some believe that bitcoin exchanges might give millions of people access to a global financial network valued at tens of billions. The foundation of this industry will be these individuals, who range in age from young millennials in underdeveloped countries with modest funds and lofty aspirations to mom-and-pop entrepreneurs prepared to contribute a portion of their profits to bitcoin endeavours. This has increased interest in cryptocurrency among economists and financial researchers. Despite the paucity of literature on the topic, empirical research is rapidly increasing. In order to achieve this, we also perform a weekly study utilising the ARDL approach, which looks at the effects of cryptocurrency prices from 2010 to 2018 over both short- and long-term periods. We created the "Crypto 50" index to measure overall volatility and trading volume because there is a dearth of data on cryptocurrencies. We then used this index in our analysis. This index consists of the top 50 cryptocurrencies ranked by market capitalization. We investigate the short- and long-term correlations between the stock market (SP500 index), gold prices, macroeconomic indices (interest rate), and the five most popular digital currencies: Bitcoin, Ethereum, Litecoin, Dash, and Monero.

The cryptocurrency industry has also grown astronomically as a result of the introduction of numerous coin varieties in recent years. The impact of cryptocurrencies on market returns and volatility (Omane-Adjepong, 2019), speculation (Blau, 2018), regime shifting models (Mensi, Al-Yahyaeeb, and Kang, 2018), return-volume relationship (Bouri, 2018), herding behaviour in cryptocurrency markets, and portfolio diversification across cryptocurrencies (Liu, 2018) have all been examined extensively.

At the intersection of technology and finance, the area around the relationship between firm pricing and cryptocurrencies is dynamic and always changing. Traditional financial institutions have undergone a radical

transformation thanks to the disruptive Blockchain and other distributed and decentralised ledger technology brought forth by Bitcoin and other cryptocurrencies. Furthermore, firms' value propositions and pricing strategies have been impacted by their growing integration with these digital assets (Bariviera, 2017). Firm price drivers for cryptocurrencies are the elements that affect their value because of the interconnectedness between digital assets and conventional enterprises. By examining the fundamental processes and variables that impact the prices of cryptocurrencies and businesses, this study aims to explore the relationship between cryptocurrency pricing and company value in an established economy.

1.3 Statement of the Problem

As the proliferation and integration of digital assets continues to transform the global financial landscape, the relationship between cryptocurrency markets and traditional financial ecosystems has come under increasing scrutiny. An important aspect of this dynamic environment is the relationship between the value of established companies and the price of cryptocurrencies. However, comprehensive information about how fluctuations in bitcoin values impact the value of businesses is still lacking.

Investigating and elucidating the intricate connections between bitcoin pricing and business value is the primary objective of this study. The exact methods by which changes in bitcoin impact the value of traditional businesses remain unclear, despite the fact that digital currencies are becoming more and more significant in the financial markets. This study looks at the intricate relationships and potential causes between fluctuations in cryptocurrency prices and the worth of companies across a variety of industries in an effort to bridge this gap.

1.4 Objective of the Study

The objective of this study is to evaluate the determinants of Cryptocurrency (Bitcoin) pricing. The specific objectives are to:

i determine the influence of investor's behavior on price of cryptocurrency (Bitcoin). ii Examine the impact of technology on the price of cryptocurrency (Bitcoin) iii Evaluate the impact of government regulations on the price of cryptocurrency (Bitcoin).

1.5 Research Questions

i. What is the influence of the investor's behavior on the price of cryptocurrency ((Bitcoin).
 ii What is the effect of the technology on the price of cryptocurrency (Bitcoin) iii What is the impact of government regulations on the price of cryptocurrency (Bitcoin).

1.6 Significance of the Study

For investors, scholars, and legislators, this study will be crucial. It's thought that the performance of the stock market could be impacted by the cryptocurrency market, either positively or negatively. In the event that the cryptocurrency market has a beneficial effect, it might be regarded as an addition to the stock market. The performance of the stock market is positively impacted by virtual money markets, and investors tend to diversify

their portfolios because these markets encourage speculation and investment. Conversely, a negative market impact suggests that investors would rather place their money in alternative markets.

LITERATURE REVIEW

2.1 CONCEPTUAL REVIEW

2.1.1 Cryptocurrency

Cryptocurrencies are virtual assets on decentralized networks that are secured by cryptography. Cryptography monitors transactions, prevents fraud, and controls the supply of these assets. Unlike bank account balances, the ownership of these assets is not controlled by a third party (White, 2015). A "blockchain," which serves as an open ledger or accounting system and is accessible to all network users, contains digital records of each validated transaction (Gandal and Halaburda, 2014). Transactions on the sites are not regulated by authorities or financial intermediaries. Due to their widespread availability and ability to be used for both virtual and physical purchases, they compete with official currencies (European Central Bank, 2012). Cryptocurrency transactions share several characteristics, such as reduced transaction costs, speedier transactions than traditional bank services, anonymity, transparency, and the lack of recipient or transfer amount constraints (Halaburda and Sarvary, 2016).

The subject of cryptocurrency research is dynamic, fascinating, and constantly evolving. Their quick development is demonstrated by the fact that they have expanded to over 8,000 active currencies in a short period of time and that their value has once increased by more than 1000%. A significant innovation in the financial industry, cryptocurrencies have become very popular in recent years. The main goal was to create money without government assistance (Alzahrani and Daim, 2019). Bitcoin is one of the most significant technological advancements of the contemporary era, according to Milutinović (2018). The total market value of cryptocurrencies is currently estimated to be over US\$1.88 trillion, with Bitcoin at the top with a market capitalization of \$942 billion, or roughly 50% of the total. (Topics Exploding, 2024).

Although the term cryptocurrency lacks a single, widely recognised definition, it is possible to describe it as a subset of digital currencies. Lee (2018) asserts that cryptocurrencies are a subset of digital currency and have become more significant within the latter category. A cryptocurrency is defined as a digital asset that acts as a middleman in trade by using encryption to secure transactions (Milutinović, 2018). All recent advances are governed by its system. Cryptocurrencies are digital currencies designed to be used to protect transactions using robust encryption, limit the creation of new units, and verify the transfer of currency (Greenberg, 2011).

Virtual currencies, according to the European Central Bank, are "a type of unregulated, digital money, issued and most often controlled by its founders, used and accepted among members of virtual community." ECB, 2012 The most relevant information about cryptocurrencies and virtual currencies is given by this definition. We can also consult the definition of virtual currencies provided by the European Banking Authority (EBA), which defines them as "a digital representation of a value that is used by individuals and legal entities as a medium of exchange

and can be transferred, stored, or exchanged electronically, but is not issued by a central bank or a public authority or linked to fiat money" (EBA, 2019).

The Financial Crimes Enforcement Network (Fin Cen) defines virtual currencies as "a medium of exchange that works as a currency under certain conditions but does not have the characteristics of real money" (Fin Cen, 2013). The history of cryptocurrencies began when Satoshi Nakamoto, using the pseudonym Bitcoin, issued the cryptocurrency for the first time in 2008 (Kuikka, 2019). Nakamoto (2008) sought to create a peer-to-peer, decentralised digital currency system free from governmental regulation. Nakamoto used the blockchain to solve the problem of building trust in a distributed system (Pierro, 2017). Since then, almost 4,000 different cryptocurrencies have emerged.

Vigna (2017) asserts that all Bitcoin variants are called "altcoins." Cryptocurrency is thought to be different from previous digital currencies created by central banks. Cryptocurrencies have emerged as an alternative to centralised payment networks in response to economic challenges. Cryptocurrencies function on decentralised networks without a central authority, claim Halaburda and Gandal (2014). Blockchain technology, the foundation of cryptocurrencies, is an open distributed ledger that documents transactions (Lee, 2018). Blockchain technology operates independently of a trustworthy third party. Network nodes validate payments, and once verified, all transactions are digitally recorded and recorded in a "blockchain" (Halaburda and Gandal, 2014). Blockchain technology benefits from decentralization in terms of enhanced security, quicker settlement times, and greater capacity (Lee, 2018).

2.1.2 Bitcoin

Bitcoin is the first cryptocurrency to garner significant attention because of its unique features, transparency, and user-friendliness (Bundi & Wilda, 2019). The first and best-known cryptocurrency is called Bitcoin (BTC). It was created in 2008 by an unidentified programmer or programmers using the false name Satoshi Nakamoto. A study titled Bitcoin: A Peer-to-Peer Electronic Cash System published the technical details of a payment system that would allow users to send and receive money without the involvement of any intermediary financial institutions. That was one of the major events of the twenty-first century (Volkering, 2017).

Despite not being created by a central bank, Bitcoin is a digital money that both individuals and businesses accept as payment (Raymaekers, 2015). It can be traded, distributed, and stored electronically. Bitcoin, a "pure" peer-to-peer electronic money system that functions without the involvement of management or third parties, is one possible substitute. In other words, Bitcoin brings the desirable features of physical money, such the finality of transactions and the lack of middlemen, into the digital realm while integrating monetary policy. According to Segendorf (2014), Bitcoin enables anonymous payments that are made entirely outside of banks and governments. According to Urquhart (2016), Bitcoin has been used by investors for financial as well as investing goals. Bitcoin is categorized as a virtual money by the European Central Bank and the US FinCEN (Lastra and Allen, 2018).

Bitcoin is categorized as something that "is not originally a value, but an object of investment" by the National Bank of

China (Xie, 2019). Bitcoin has been categorized as a single measure by a German court (Hanibal, 2018). The payment mechanisms used by Bitcoin are different from those of conventional payments because it is based on a revolutionary technical solution. Money transfers over the internet are made possible by the Bitcoin protocol. All users are anonymous when they join a peer-to-peer network to exchange Bitcoin (Morisse, 2015). By employing both the sender's and the recipient's public keys, transactions are sent over the Internet to another person or company and are signed by a private key (Raymaekers 2015). Bitcoin transactions are recorded on a blockchain, which acts as a history log, and ownership and transfers are verified by miners to avoid duplicate purchases. Consequently, the Bitcoin protocol guarantees that data can be transmitted securely without depending on a single authority and offers a solution to the issue of double-spending (Velde, 2013).

There is a well-known cap of 21 million coins that can be produced for Bitcoin. Rising demand could drive bitcoin prices through the roof due to this limited supply. Investors have flocked to space in an effort to capitalise on the anticipated rise in value as a result of these causes. The price of Bitcoin is notoriously affected by mood. Investors disregard the risks of keeping an asset that generates no cash flow when the market enters its "greed" phase, and Bitcoin soars on the strength of utopian promises. Sellers lower the price of Bitcoin in reaction to bad news or a general market decline when there is "fear" around the cryptocurrency.

2.1.3 Blockchain technology

According to Andrian (2018), blockchain technology gained popularity when Bitcoin became extensively used. The financial industry makes extensive use of blockchain technology, which is also the foundation of all cryptocurrencies (Pierro, 2017). The best explanation came from Tapscott (2016), who described the blockchain as an impenetrable digital log of economic transactions that can be set up to record just about any value, not just financial transactions. The short answer is that a blockchain is a time-stamped, unowned collection of immutable data records that are kept up to date by cluster computers. The concepts of cryptography protect and connect each of these data points, or "blocks" (i.e., a chain).

A blockchain is a platform for publicly accessible decentralised ledgers, claims Evans (2014). A decentralised system does not need a central authority to authorise or carry out operations because it is peer-to-peer based (Andrian, 2018). It was in Haber and Stornett magazine in 1991 when the Blockchain concept was first mentioned. They proposed a safer method for time-marking digital documents. The timestamp is meant to give a broad sense of the document's creation date. The timestamps also accurately indicate the order in which both papers were written; if one was created before the other, the timestamps would show that. Because of security measures, a document's timestamp cannot be changed after that (Karamé & Androulaki, 2012). Blockchain enables safe, direct money transfers between people without the need for a bank, credit card, or PayPal. Anyone can construct new

online transaction management systems by downloading, running, and using the open-source code for free. This means that the blockchain has a lot of unrealised potential that might significantly change a lot of things in life. Large institutions and certain governments are storing data and transactions on blockchain. They want to be less expensive, faster, safer, less prone to errors, and less likely to be attacked or fail. These models don't always use bitcoins as a form of payment. But the blockchain's use in cryptocurrency transactions is its most significant and extensive application.

According to Davidson (2016), there is a technical solution to the double-spending problem in the blockchain. The blockchain tackles this problem by using a decentralised database (or ledger) with network-enforced protocols based on a PoW³² consensus technique for database updates. Some advantages of blockchain technology include its distributed ledger, transparency, decentralisation, tamper-proof construction, openness, trust, and immutability (Golosova and Romanovs, 2018). A decentralised system does not keep all of the data in one place. Within the network, the data is owned by every node. For example, in a decentralised network, you can talk to your friend directly without using an intermediary. The movement behind cryptocurrencies was based on that principle. You are solely responsible for your financial situation. Without going thru a bank, you can send money to anybody (Ammous, 2018).

2.1.4 Technology

The vast majority of cryptocurrencies function as nodes on a peer-to-peer network that is linked by open-source and free software.² This program facilitates information exchange between network nodes. Similar to an online bank account, it also has an integrated digital wallet that can be used to store cryptocurrency on a hard drive. According to Berntsen and Schaer (2017), the network and wallet cooperate to enable the receiving, transmitting, and storing of bitcoin. The main innovation behind cryptocurrencies is not peer-to-peer network technology, which was already used by file-sharing programs like as "BitTorrent." On account of the "double-spending problem," there have been multiple unsuccessful attempts to use these decentralised networks for financial transactions. Because they are merely electronic data that is exchanged between individuals, virtual currencies can be copied. As a result, the problem of duplicate spending arises, making it ridiculous to use the units for financial transactions. The double-spending issue was resolved in 2008 by Satoshi Nakamoto using "blockchain ledger technology" and encryption (Nakamoto, 2008). A blockchain functions as an open ledger that is accessible to all network users. It identifies the owners of cryptocurrency and displays every transaction ever done. As a result, the network can guarantee that units are only used once.

It also confirms the validity of transactions and makes sure cryptocurrency isn't spent again. The software uses encryption to create public keys, or pseudonyms, which serve as account numbers and safeguard user privacy. Every user has a public key and a private key that are used to confirm who the true owner is, much like a pin code. The blockchain is operated by miners. Transaction confirmation and mining for new coins are their two

main duties. Miners are similar to businesses that extract gold and sell it on markets. Bitcoin mining, in contrast to gold mining companies, makes money by giving the network cryptocurrency units in return for processing power.

2.1.5 Government Regulations

The design and operation of the blockchain, among other things, significantly influences how the law is unable to keep up with the swift development of technology, the persistent market participants, and the reforms that are required. Cryptocurrency facilitates cross-border connections (Langlois, 2017). Eliminating illicit activities, protecting consumers, and achieving other financial regulation goals are made more challenging by cross-border markets, anonymity, and the lack of state and organised commercial group oversight. The voluntary closure of illicit markets before enforcement crackdowns and the creation of new ones with better features are two instances of how the law is falling behind technology innovations and market participants' responses to these enhancements (Makina, 2019). The demise of bitcoins due to the above-mentioned anonymous promoters or actors serves as another illustration.

The numerous applications of cryptocurrencies, which have already been covered, have negative impacts on individuals, the financial system, and the government in addition to issues specific to technology. The difference in market interests between customers, market participants (providers of products and services), and the government exacerbates the issue. Inadequate consumer protection is one of the primary regulatory issues brought on by the previously described imbalance. Market integrity, resilience, and distributional fairness goals are more arguments in favour of cryptocurrency regulation (Makina, 2019).

The size and significance of cryptocurrency marketplaces further bolster the case for bitcoin regulation. Statistics indicate that by 2016, more than 10 million people owned bitcoin (Lodge, 2015). Furthermore, estimations indicate that over 300 million people will be using cryptocurrencies by 2018 (Mandel, 2017). Most notably, the entire market value of cryptocurrencies was close to \$62.4 billion by the end of 2018. This increased to \$2.60 trillion in October 2021 (Morgan, 2007). To put the latest recent statistic in context, this was almost equal to the GDP of the United Kingdom in 2020. In the same year, Nigeria's GDP was less than 20% of the previously indicated amount (McNeil, 2010). Cryptocurrency markets continue to grow. This rise suggests that additional understanding of markets, user behaviour, and cryptocurrencies may be necessary. The broader impacts of this disruptive technology's expansion on user interactions, established markets, and states' ability to implement public policy goals must be considered by financial regulators (Makina, 2019).

2.1.6 Investors' Attributes

Investor interest has been proposed as a key determinant of bitcoin pricing. Smales (2021) showed that the price of cryptocurrency and investors' attentiveness were positively correlated. Others have also noted that investors' attention may improve the accuracy of Bitcoin return forecasts. Zhu, Zhang, Wu, Zheng, and Zhang (2021) and

Mohamed (2021) further confirmed that investor attentiveness predicts future bitcoin volatility using a vector autoregression technique. Additionally, it was found that attractiveness metrics—which fluctuated over time—were important determinants of bitcoin's price (Guizani & Nafti, 2019). These findings indicate that the price of bitcoin and investor interest are directly correlated (Hakim das Neves, 2020). The popularity of cryptocurrencies mostly determines returns.

In the near run, popularity and Bitcoin were positively correlated, as demonstrated by KaraÖMer (2022). As Bitcoin gains popularity, its price is expected to increase (Garcia et al., 2014; Nepp & Karpeko, 2022). The increasing popularity of cryptocurrencies has led to a rise in social media activity and search volume, which suggests that investor interest in these assets is growing, which raises prices. A favourable sentiment or opinion among investors is positively connected with pricing (Kjaerland et al., 2018; Patel, Tanwar, Gupta, and Kumar, 2020). Due to social media, which gives investors a platform to express their financial and emotional opinions, Bitcoin volatility is significantly impacted (Gurrib & Kamalov, 2022; Sapkota, 2022). These outcomes supported the findings of Garcia et al. (2014), who hypothesised that positive word-of-mouth is what drives Bitcoin price bubbles.

Positive comments about trading activity also increased Bitcoin's volatility (Wang, Lee, Liu, and Lee, 2022). Huynh (2021) also shown that negative attitude has a major impact on Bitcoin's return and trading volume. This was supported by Wang and Vergne's (2017) findings, which demonstrated that returns were negatively connected with the "buzz" surrounding cryptocurrencies. Social media posts and well-known individuals like Elon Musk have a significant influence on bitcoin values by causing bubbles, claim Shahzad, Anas, and Bouri (2022). Similarly, it was demonstrated by Gerritsen, Lugtigheid, and Walther (2022) that cryptocurrency experts had a major impact on Bitcoin returns. Barth, Herath, Herath, and Xu (2020) found a negative relationship between the price of Bitcoin and the number of discussions concerning its unethical practices. According to Bartolucci et al. (2020), the developers' emotions also contributed to the price fluctuation of Ethereum and Bitcoin. Ahn and Kim (2021) found that emotional traits were a significant predictor of the volatility of Bitcoin trading volume and returns. Additionally, the notion that investor sentiment is correlated with bitcoin market volatility was supported by Rubbaniy, Tee, Iren, and Abdennadher (2022).

2.1.6 Relationship between cryptocurrency and stock market in emerging countries

A broad spectrum of actors, including capitalists, bankers, entrepreneurs, and political circles, have taken notice of the connection between cryptocurrencies and the stock market. Scholars have sought to find a pattern in this association over the years. They have uncovered a complex relationship between stocks and cryptocurrencies that depends on a number of factors, including the nation's volatile exchange rate and unpredictable inflation, the intricate and costly banking system, financial constraints, regulatory uncertainty, and—above all—the presence or threat of capital control. The previous research on the connection between cryptocurrencies and stock markets

in developing nations is compiled in this portion of the article. Emerging markets are defined as developing nations that are rapidly growing and industrializing. In 2021, this market encompasses 25 countries, some of which are classified into a few economic blocks, including BRICS, CIVETS, BEM, and MENA.

2.2 THEORETICAL REVIEW

2.2.1 Cryptocurrency and the quantity theory of money.

In the cryptocurrency era, the quantity theory of money has recently been recognized as a de facto model. Weber [8] observed a project economy in which tokens are used as digital currencies for a specific period. This model is mathematically illustrated as follows: $P_c = M_c V_c / Y_c$

where P_c represents the price, c represents a unit of cryptocurrency,

M_c represents the quantity of cryptocurrency necessary to finance the total expenditure in the project economy, the V_c velocity in this context represents the number of times a digital currency is expended on output, and Y_c represents the real output and a unit of output measured in cryptocurrencies C terms.

2.2.2 Technology Acceptance Model

The Technology Acceptance Model (TAM), which was initially developed by Fred

Davis in 1986, provides valuable insights into the efficacy and effectiveness of blockchain technology in the accounting sector. TAM, a well-established theory, was initially developed to predict and clarify the manner in which individuals interact with or deny Information and Communication Technology (ICT).

TAM, which is based on the Theory of Reasoned Action (TRA), emphasizes two critical factors that influence the adoption of technology: perceived ease of use and perceived utility. These factors are now essential in understanding the way in which accounting professionals perceive and implement blockchain technology.

2.3 EMPIRICAL REVIEW

Yelowitz and Wilson (2015) used anecdotal evidence and Google Trends data to examine the factors influencing the interest of Bitcoin users. The main drivers of interest in Bitcoin, according to this paper, are computer programmers and covert illegal activity; the influence of political and financial variables are less clear. The last addition was provided by Kim et al. (2016), who looked at social activity in cryptocurrency communities and created a sentiment analysis index to see if these factors affect the values of Ethereum, Ripple, and Bitcoin. They found that changes in the pricing of inexpensive cryptocurrencies were anticipated by the suggested method. Garcia, Tessone, Mavrodiev & Perony (2014) and Kristoufek (2015) addressed the analysis and made a distinction between internal and external factors that affect the price of Bitcoin. These have been some of the most important studies. The latter study, in particular, developed a framework for categorising the variables that might have an effect on the price of Bitcoin. It also described the substantial influence of the Chinese market on Bitcoin and highlighted its potential as a safe-haven asset. Using the wavelet coherence method, the author examined several possible variables, such as interest, technical, transactional, and economic.

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According to Kristoufek, "despite the fact that Bitcoin is typically regarded as a purely speculative asset, we have observed that standard fundamental factors—such as price level, money supply, and trade volume—have an impact on its price in the long term." This statement opened the discussion on the duality property of Bitcoin (digital currency or speculative asset). The idea that it is not completely lost at this moment is further supported by the author's observation that it is a special asset that moves from being purely financial to being speculative.

Time series analysis was used by Georgoula, Pournarakis, Bilanakos, Sotiropoulos, and Giaglis (2015) to examine how economic, technological, and sentiment factors on Twitter affected Bitcoin. Their data show that the price of Bitcoin has a positive short-term association with favourable sentiment on Twitter, Wikipedia search queries, and hash rate, but the USD to Euro exchange rate has a negative correlation. Using a VEC model, they found that the price of bitcoin has a long-term negative correlation with the S&P 500 index and a positive correlation with the quantity of bitcoins in circulation.

A methodology based on engineering is utilised by Hayes (2017) to create a valuation model for Bitcoin and 65 other popular cryptocurrencies. According to the author, a cryptocurrency's value may be ascertained by how hard it is to mine a new block, which produces new coins. The amount of computing power available, the algorithm utilised, the number of coins discovered each minute, the proportion of coins mined so far, and the network's lifespan all serve as stand-ins for this difficulty. Using a simple regression model, the author finds that the price of the cryptocurrencies included in the cross-section is statistically significantly influenced by the algorithm employed, computational difficulty, and coins per minute. Furthermore, there is a high degree of explanatory power in the regression.

Jeffrey Chu, Saralees Nadarajah, and Stephen Chan (2015) provide a thorough examination of the daily returns for the BTC-USD exchange rate. The authors claim that the stock returns reported by Stephen J. Brown and Jerold B. Warner demonstrate how the conventional assumption for statistical inference is commonly ignored when working with daily return data. The daily price returns for the BTC-USD exchange rate are then fitted by the authors to 15 of the most widely used parametric statistical distributions. They come to the conclusion that the data is best fitted by a generalised hyperbolic distribution. According to this distribution, the Bitcoin returns are more peaked and have far larger tails than one could expect from a normal distribution. This selection was empirically determined using information criteria that penalize the inclusion of supplementary parameters.

Van Wijk (2013) aims to determine how vulnerable Bitcoin is to macro-financial factors over the long and short terms. Among other variables, the author specifies an ECM model and includes a number of well-known macroeconomic indices, including the Dow Jones Industrial Average, the Nikkei 225, the FTSE 100, the price of Brent and WTI oil, and many international exchange rates. According to the author, only the Dow is relevant in the short run, as shown by t-tests, but the USD-EUR exchange rate, WTI oil, and Dow Jones all have a major long-term influence on the price of Bitcoin.

Based on an improved version of Barro (1979), Ciaian (2016) proposes a set of structural VAR models for Bitcoin. Three separate theories are assessed by the authors: 1) the factors influencing supply and demand for Bitcoin, 2) the appeal of Bitcoin as an investment, and 3) its vulnerability to macro-financial factors, using level and price return data for Bitcoin from November 2009 to May 2015. The unique feature of the Bitcoin supply is that it is an exogenous variable, as it is predetermined and established by the source code. The authors investigate hypothesis 1 by analyzing the demand-side drivers of Bitcoin price, which include the scale of the BTC economy as represented by the number of unique addresses on the network, the number of transactions, and the velocity at which BTC is exchanged. They observe that the number of transactions and network addresses have a positive and statistically significant impact, whereas the velocity has a negative and insignificant impact, which is in contrast to the expectations and theory.

Ciaian et al. (2016) looked into how several factors affected the price of Bitcoin. Three categories were used to group the factors: macro-financial changes, user attractiveness, and supply and demand dynamics for Bitcoin. The market forces of supply and demand for Bitcoin were measured by counting the number of addresses used on a given day, the number of transactions each day, and the total amount of units mined. Macro-financial development was evaluated using the Dow Jones stock market index and oil prices.

The number of new users and remarks on the largest online Bitcoin forum, Bitcointalk (2016), as well as the number of views of the terms "Bitcoin" and "Wikipedia," were used to evaluate the user appeal of Bitcoin. The authors were able to verify the impact of market forces such as Bitcoin supply and demand and the appeal of Bitcoin to consumers on the price of Bitcoin. However, the influence of macro-financial developments was not confirmed. The desirability of Bitcoin as an investment is evaluated based on the volume of BTC-specific Wikipedia search queries, the number of new members, and the number of new posts taken from the well-known cryptocurrency forum, bitcointalk.org. Based on data from Wikipedia searches, new members, and new posts, they believe that the price of Bitcoin is statistically significant in the short run. Long-term significance, however, is limited to the variable "new posts." Since the authors suggest that information on Bitcoin has more time to spread, it is not surprising that the effects of Wikipedia views and new membership decline over time.

The potential caveat is that these variables may be indicative of more than just the interest of potential investors; they likely also reflect increased interest in BTC education more generally. This would not impact price and may be distorting the magnitude of the effect. The author ultimately endeavors to quantify BTC's exposure to broad macro-financial conditions by utilizing the Dow Jones Industrial Average, Brent crude oil price, and USD-EUR exchange rate.

They conclude that the price of BTC is not affected by these typical macro-financial variables in the long term, as none of them demonstrate any statistical significance at conventional levels. The authors speculate that the

results of Van Wijk are biased and that supply-demand effects are more prominent in the determination of Bitcoin price, as these results contradict the earlier results.

Dyhrberg (2016) employs a GARCH framework to analyze the Bitcoin return time series in order to determine the currency's exposure to macro-financial variables. She includes the Fed Funds rate, gold futures, USD-EUR and USD-GBP exchange rates, and the FTSE 100 returns as independent variables. She suggests the use of two GARCH models, as well as two time series, to describe the behavior of the BTC price return series. The standard GARCH (1,1) model and the Exponential-GARCH (E-GARCH) (1,1) model, which were initially developed by Nelson (1991), are the two models. that considers potential asymmetry in the volatility equation. This phenomenon, which is also referred to as the leverage effect, is well-documented and is observed in numerous financial time series. Specifically, volatility may alter asymmetrically in response to positive or negative news. She advocates for the inclusion of all variables in the volatility and mean equations. The residuals are assumed to follow a standard normal distribution in both models.

The models' results suggest that the BTC is significantly influenced by the Fed Funds rate, shifts in the USD-EUR and USD-GBP exchange rates, and the FTSE 100 in both the mean and volatility equations. Interestingly, the findings indicate that BTC volatility decreases in response to a positive shock in the Fed Fund rates. This response is atypical in light of the documented dependency between asset prices and prevailing interest rates.

Moreover, the author suggests that a positive change in the USD-GBP exchange rate may indicate potential hedging and risk management opportunities, as BTC volatility decreases thereafter. Additionally, she observes that leverage is present in Bitcoin as volatility increases in response to "bad news" (i.e., a negative surprise or innovation).

RESEARCH METHODOLOGY

3.1. Research Design

The research was conducted using a survey research design and focused on a sample size of 100 respondents in Nigeria. Purposive sampling methodology was used to determine the sample size. The primary data was collected using a well-structured questionnaire. Descriptive statistics were analyzed using OLS regression analysis.

3.2 Model Specification

To investigate the determination of cryptocurrency pricing in Nigeria, the study constructs its model as follows:

$$QCP = F(Bo + Bi + InvestB + e) \dots\dots\dots 1$$

$$QCP = F(Bo + Bi + REGM + e) \dots\dots\dots 2 \quad QCP = F(Bo + Bi + TECHPACT + e)$$

$$\dots\dots\dots 3$$

Where:

QCP	=	Cryptocurrency Pricing
InvestB	=	Investors Behaviour

REGM	=	Regulatory Measures
TECHPACT	=	Technology Impact
e	=	Error Term
Bo -Bi	=	Coefficient of the Estimates

DISCUSSION OF FINDINGS

This study was carried out to examine the determinants of crypto currency pricing in Nigeria. A few elements such investors behaviour, technology and government regulation were used to assess the determinants of crypto currency pricing.

The first objective was to determine the influence of investor's behaviour on the price of crypto currency. A linear regression model was specified to this assessment: $PriceD = \beta_0 + \beta_1.INVESTB + \varepsilon$

The linear regression produced the following results

Variable	Beta	Std Error	t-test	B	P-values
InvestB	.029	.189	.184	.035	0.855

$R^2 = 0.001$, FStat = 0.034

To synthesise the first hypothesis that there is no significant effect of investor's behaviours on the price of crypto currency, the result from the linear regression revealed that the R square is 0.001. This implies that 1 per cent of the changes in investor's behaviour 1 per cent of the changes in the price of crypto currency. The F-statistics was 0.034, therefore the model was not statistically significant with a significant value of 0.855 (p-value > 0.05). This implies that investor's behaviour has no statistically significant relationship with crypto currency pricing. This result is rather very low because of erratic responses brought on by negligence or insufficient effort (Arias *et al.*, 2022). This especially so since the respondents were bank employees who do consider the study valuable or lack time within their schedule to go through the questionnaire diligently. However, further test and retest methods with a more robust analytics tool be used for further study.

The second objective was to examine the impact of technology on the price of crypto currency. A linear regression model was specified to this assessment: $PriceD = \beta_0 + \beta_1.TECHIMPACT + \varepsilon$

The linear regression produced the following results

Variable	Beta	Std Error	t-test	B	P-values
TECHIMPACT	-0.064	.192	-0.399	-0.076	0.692

$R^2 = 0.004$, FStat = 0.159

To synthesise the hypothesis that there is no significant effect of technology on the price of crypto currency, the result from the linear regression revealed that the R square of 0.004.

This implies that 4 per cent of the changes in investor's behaviour 4 per cent of the changes in the price of crypto currency. The F-statistics was 0.194, therefore the model was not statistically significant with a significant value of 0.692 (p-value > 0.05). This implies that technology have no statistically significant effect on crypto currency pricing. This result is also low because of erratic responses brought on by negligence or insufficient effort (Arias *et al.*, 2022). However, there is an interesting behaviour shown in the results, the negative value of all other values except the p-value. This implies that there is an inverse relationship between technology and crypto currency prices. The inverse relationship will cause a decrease in price if there is improvement in the technology used for crypto currency

The third objective was to examine the impact of government regulations on the price of crypto currency. A linear regression model was specified to this assessment: $\text{PriceD} = \beta_0 + \beta_1 \cdot \text{REGM} + \varepsilon$

The linear regression produced the following results

Variable	Beta	Std Error	t-test	B	P-values
REGM	-0.092	.224	-0.574	-0.129	0.569

$R^2 = 0.008$, $F\text{Stat} = 0.330$

To synthesise the hypothesis that there is no significant effect of government regulatory measures on the price of crypto currency, the result from the linear regression revealed that the

R square of 0.008. This implies that 8 per cent of the changes in investor's behaviour 8 per cent of the changes in the price of crypto currency. The F-statistics was 0.330, therefore the model was not statistically significant with a significant value of 0.569 (p-value > 0.05). This implies that technology have no statistically significant effect on crypto currency pricing. This result is also low because of erratic responses brought on by negligence or insufficient effort (Arias *et al.*, 2022). However, there also the negative values in t-test, beta and B scores. This implies that there is an inverse relationship between technology and crypto currency prices. The inverse relationship will cause a decrease in price if there is an increase in government regulatory measures.

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The R square for this study, which looks at the factors that affect cryptocurrency prices in Nigeria, is 0.001, according to the results of the linear regression. This suggests that 1% of the fluctuations in investor behaviour correspond to 1% of the fluctuations in bitcoin prices. With a significant value of 0.855 (p-value > 0.05) and an F-statistic of 0.034, the model was not statistically significant. This suggests that there is no statistically significant correlation between the price of cryptocurrencies and the actions of investors. Additionally, there is no statistically significant impact of technology on cryptocurrency prices, and government regulations have no discernible impact on cryptocurrency prices.

5.2 Recommendation

Based on the findings of the study, It is therefore, recommended that

- i The influence of investor's behavior on price of cryptocurrency (Bitcoin) is not statistically significant.
- ii That the impact of technology on the price of cryptocurrency (Bitcoin) is not significant
- iii That government regulations on the price of cryptocurrency (Bitcoin) is not significant.

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