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EFFECTS OF BLOCKCHAIN TECHNOLOGY ON PERFORMANCE OF FINANCIAL MARKETS IN KENYA

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Abstract

Purpose: The study sought to establish the effects of blockchain technology on the performance of financial markets in Kenya.

Methodology: The study adopted an explanatory research design. The study target population was drawn from the commercial banks located in Nairobi County, Kenya. The study targeted 84 bank managers in the IT and finance department of the 42 commercial banks in Kenya. Thus the target population of the study was 84 financial market managers selected. The study population was grouped into simple identifiable group called strata and adopted a stratified simple random sampling technique with inclusion of commercial banks. A sample size of a sample size of 50 respondents was arrived at. Data was collected using a structured questionnaire. The data collected was cleaned and coded, quantified and analyzed quantitatively. Quantitative data were analyzed using SPSS 24 where descriptive and inferential statistics were used to capture the data in order to understand the pattern and nature of relationships. Results were presented using tables.

Findings: The study findings showed that the correlation analysis showed that the adoption of blockchain technology had a positive and significant correlation to government policy R = 0.240. Adoption of blockchain technology had a positive and significant correlation to internet infrastructure by R = 0.293. Adoption of blockchain technology had a positive and significant correlation to transaction cost at R = 0.583. Lastly, adoption of blockchain technology had a positive and significant correlation to risk analysis at R = 0.507.

Unique contribution to theory, practice and policy: The study recommended that there should be policy review on issues relating to risk analysis so as to curb illegal money transfers and enhance performance of financial markets in Kenya. The study recommends for a thorough scrutiny by the government and ensures such issues are keenly analyzed to help bring peace and stability in the world. The aspect of having good internet connectivity is beneficial to the nation in that access to proper information will be available and it enables many users to have wide access to services as well as creation of employment. There is need to conduct a study on stability of blockchain technologies use and their impact to the economic growth. The study incorporated Technology Acceptance Model and Innovation Diffusion Theory to link the study topic to the concepts

Key words: *Blockchain Technology, Financial Markets, Government Policy, Internet Infrastructure.*

1.0 INTRODUCTION

There has been an eminent change in the approach of business operations and development that is spiraled by technological advancement. New concepts are emerging in all sectors of economic development with the technological disruption that places the normal running of the institutions at incongruence (Beck, 2018). The distribution and invitation of such rare changes have put many entities at loose end with most of them not knowing when and why to buy-in. according to Hassani, Huang, and Silva (2018), the financial sector has reported an increase in the level at which new technology applications are disrupting the conventional mode of operation to a more virtual and customer-centric approach. Current trends indicate that most of the users especially the young generation that is most populous in Kenya and across the world are relying heavily on use virtual platforms to be able to transact or create wealth. The transition of the internet of things and artificial intelligence has brought about superficial systems that have ended causing havoc to the normal functioning of the financial market forcing them to buy in so as to remain relevant to mixed quarters of users (Tapscott & Tapscott, 2017). The emergence of digitalized services like the blockchain that aren't controlled by the third party in the free market has brought a conundrum puzzle to the financial markets across the globe.

Blockchain is a distribution of digitalized ledger with an encrypted database that is an irreversible and incorruptible repository of digital information (Cesay, Crane & Johnson, 2018). Simply the blockchain technology is built on the technical aspect of relating to top-notch security in application, ability to bypass existing regulation and operate without a third party as it is peer to peer-related and the intended use that is largely unanimous among the users. Thus, the adoption of blockchain technology not only involves understanding its contribution to the economy and the users' preference but also analyzing the risks and consequences of its existence among the independent institutions that operate and comply with the existing regulations under their jurisdiction (Comin & Nanda, 2019).

The financial markets operate under a defined prudential regulation that upholds the core of being integral and compliance with the set standards when servicing their users across the board. Abiding by the regulations must give them a competitive edge against any new concept that may appear to be decentralized as they will call policymakers and implementers to safeguard their interests and clients in the non-bias market. The application of blockchain technology is absolutely a new phenomenon to the financial institutions based on its unique feature and ability to operate in a decentralized platform (Pathal, Malik & Mohanty, 2018). The financial sectors are controlled by the third party and having a peer to peer digitalized ledgers assuming their innate roles becomes a resounding scenario and hard to make choice in a dynamic and riskier financial world where cybersecurity is a concern and liability acceptance hangs at the balance.

Block chain technology has received unprecedented welcome with mixed reactions at the global perspective with some strong supports from other jurisdictions accepting it as a medium of exchange and store of value (Wang, Lin & Luo, 2019). Leading banks like JP Morgan, Royal Bank of Scotland, Credit Suisse, State Street, Commonwealth Bank of Australia among many have joined the league in the adoption of blockchain in their transactions. Surprisingly, the Swiss largest private bank called Falcon Group that has undisputed experience in wealth management for over 50 years jointly partnered with the

Bitcoin Suisse so as to offers its client the opportunity to trade Bitcoin using cash holdings. Japan is a developed nation and the third-largest economy in the world with legalized Bitcoin as an accepted payment method categorized into digital currency with sales tax-exempt when used (Treleaven & Brown, 2017). Cyprus encourages the use of Bitcoin as a legal tender whereas Ecuador burned the use of Bitcoin.

In Kenya, the adoption of blockchain technology is gaining momentum more so the cryptocurrency wing. A number of companies such as Bitpesa, a digital payment solution that converts Bitcoin to Kenyan Shillings are actively in use (Kamau, Boore & Njenga, 2018). The Ministry of Lands and the Central Bank of Kenya have been contemplating coming up with their own centralized blockchain that will publicly be used in records and trading which is still to materialize. Though, the Central Bank of Kenya hasn't given a green light to Kenyans on the use of cryptocurrency such as Bitcoin, Zcash, Monero, Kringlecoin among others as a recognized legal tender.

Financial markets represent the places where there are intermediaries to service money to borrowers and receive from savers (Comin, 2019). Mostly, buyers and sellers trade financial securities, commodities, forex, exchangeable items and derivatives. The financial market is best described as banks, forex markets and stock exchanges like the Nairobi Securities Exchange where government raises cash, investors make money and entities minimize risks. The financial market's aim is to effectively command on the flow of the savings and investment in the economy through the facilitation of compiling equity and creating goods and services in the market to suit the desires of lenders and borrowers.

Statement of the Problem

Technological advancement is viewed as a frontier towards unlocking market opportunities and driving new investments that were termed as a reserve too few in a conventional model mostly in the financial sector. The use of blockchain technology related to cryptocurrencies has emerged as the best asset diversification for financial portfolio and scored the approvals of global firms such as IBM, Samsung, Amazon, Guru, eBay, Alibaba, Verizon and many more accepting Bitcoin. Blockchain technologies have proved the test of time to withstand and honestly thrive in incorruptible, most secure and decentralized with no intermediary and addition of block to the chain that gets approved and executed disrupting the financial sector.

Schuetz and Venkatesh (2019) studied blockchain technology adoption and the financial inclusion of rural Indians. This was motivated by the desire to understand the economic development of the rural population characterized by financial illiteracy, geographical barriers, high costs and challenge to right banking products. The adoption of blockchain was termed as a solution to most of the challenges and key to alleviating them from financial exclusion. Understanding governance and control of distributed ledger type of blockchain was put forward by (Zachariadis, Hileman & Scott, 2019). Given that blockchain is becoming noticeable in finance making it a question to their suitability in competing with established financial institutions and their implications in the long run. Findings showed that having a decentralized distributed ledger poses the risk of no administration going against the governance policies of many states.

Mavilia and Pisani (2019) established the assimilation of blockchain in developing nations with a case of financial inclusion in Africa. Africa still lacks access to financial inclusion and

weakness in the present financial system as reported by the World Bank Survey. This can be inferred to the presence of Bitcoins that not only has disrupted the markets but also created new entities. The study findings indicated that the new wave of blockchain technology is key to solving financial exclusion and bringing sustainable development to African states. Kibet, Thiga, and Karume (2019) assessed blockchain-based contracts for the housing sector in the Kenyan market. The housing sector involves a lot of resources to develop with lots of intermediaries led by brokers, bank providers, government and agents yielding high cost and lack of transparency. The application of blockchain technology in the smart contract was found to address the weaknesses in the system and can drastically reduce the housing cost. The development of the financial resilience of the Kenyan smallholders being impacted by blockchain was presented by (Bolt, 2019). This was cultivated by the need to have innovative finance for scaling agriculture among organized farmers in the village. The blockchain technology lens was of interest comparatively to wider use of mobile money payment. The findings indicated a high possibility in the adoption of blockchain comparing to the adoption of mobile money payments available.

The above-presented studies captured on a few descriptions of blockchain technologies and hence cannot be generalized to the current study. This study is, therefore, going to fill the gap by establishing the effects of blockchain technology on the performance of financial markets in Kenya. Special considerations were mirrored on government policy, internet infrastructure and financial literacy, transactional cost, and risk analysis.

Objectives

i. To assess the impact of government policy on blockchain and performance of financial markets.
ii. To establish the effect of availability of internet infrastructure and financial literacy on the performance of financial markets.
iii. To analyze the impact of blockchain transactional cost on the performance of financial markets.
iv. To assess the impact of blockchain risk analysis on the performance of the financial markets.

2.0 LITERATURE REVIEW

2.1Theoretical Reviews

Technology Acceptance Model Theory

Technology acceptance model was developed by Davis in 1989 from the Massachusetts Institute of Technology (MIT). the theory gives an emphasis on the reason why users accept or reject the information technology and how to improve on the acceptance by offering a way to support and foresee the acceptance more so in the financial markets. The Technology Acceptance Model is based on the two broad foundation of to why the users accept technology and the construct of perceived utility and perceived facility (Wright, 2017).

This research study will incorporate Technology Acceptance Model (TAM) to relate on the study's blockchain usefulness and the simplicity pegged on to the two main factors in describing user's acceptance or rejection of blockchain related services. The usage of technology is described as the extent to which an individual think that the adoption of a

certain system will boost his/ her individual performances in the financial environment or other business related services. The TAM model states that the adoption of technology is a decision reached by the user's motivational behavior to utilize and also impacted by the attitude of the users when adopted. Attitude of the users is impacted by the opinions about technology, which are made up of the perceived ease of use and the perceived usefulness making it relevance in blockchain technology. The TAM model is grouped in the list of very influential and analyzed theories in stating the behavior of the final users of the technology (Fitriyani & Sfenrianto, 2016).

Innovation Diffusion Theory

The innovation diffusion of theory was put forward by Rodgers in 1995, the theory emphasizes on the three broad aspects that influences and are main source of influencing the adoption and diffusion of an innovation in the cryptocurrencies market. The main aspects are based on the perception of the innovation characteristics in the market, characteristics of the adopters and contextual factors (Cronnolly, 2016). Commonly, innovation is a theoretical and practical idea that is regarded as original or new on its kind and diffusion is the process through which an innovation is transferred through particular mediums within a specified period of time among a recognized individuals of a system in social context (Rizzo, 2016). The theory of innovation of diffusion expounds on the possible user's choice adoption influence of an innovation founded on social status.

The theory is relevant to the study on the adoption of blockchain technology with a vibrant example of Bitcoin which emerged in 2009 with the aim of creating a currency that is not regulated by any state, financial institutions or intermediaries. Relatively to the merit of technology diffusion, Bitcoin has exemplified this by offering a more privatized approach compared to the traditional methods of payments. The product also cautions the users against the perceived inflation and it has a steady supply and appreciation in the market. The adoption of blockchain technology is termed to be following the model proposed by Rodgers on the innovation diffusion theory with five categorical points (Ermakova, 2017).

Modern Monetary Theory and Profitability of Commercial Banks

Modern monetary theory (MMT) explains exclusively how the government, central bank and the commercial banking sector interacts, with some economists arguing that understanding of reserve accounting is critical to understanding monetary policy options. This theory was developed by a group of economist including Randal Wray (2009) and Bill Mitchell. All of the commercial banks will also have an account with the central bank. This permits the banks to manage their reserves that is, the amount of available short-term money that a particular bank holds.

At the end of every day, a commercial bank will have to examine the status of their reserve accounts. Those that are in deficit have the option of borrowing the required funds from the central bank, where they may be charged a lending rate which is also referred to as the discount rates on the amount they borrow. In a balanced system, where there are just enough total reserves for all the banks to meet requirements, the short-term interbank lending rate will be in between the support rate and the discount rate. Both the Treasury and the central bank are involved in these reserve management operations to maintain interest rate stability (Palley, 2012). This applies to the relationship between the Central Bank of Kenya and its

regulatory requirement to maintain a capping that and inclusion of new financial technologies that are emerging making it relevant to the study

2.2 Empirical Review

Adoption of disruptive technology continues to pose a threat to the jurisdiction of many states. Contrary, some nations have given node on the practice of blockchain technology as a generally acceptable legal tender. Blockchains are observed by all parties involved and thus cannot be adjusted, permitting direct transactions that have no regulator thus decentralized (Harley 2016). In the context of the application of blockchain, the Kenyan regulations is yet to regard its use in the industry in relation to other global markets like Japan. Central Bank of Kenya for instance has embarked trying to puzzle the issues of blockchain technology and various taskforce have been formed to look into the matter and not to lag behind (Gian, 2016). In sharp contrast the Kenyan regulations are very careful with the technology, but with good investments done to recognized entities, a shift in trend could be the only route to raise the adoption and successful monitoring of blockchain technology in the Kenyan government.

The blockchain networks allow another transaction to be included in the blockchain using a long and wide process of consensus where all the parts of one of the network validate the transactions (Harley 2016). This makes it no possible to those who have financial literacy skills to conduct transactions through the network of blockchain without any third part as long as there is internet. This importantly means that the networks of blockchain is peer based, difficult to manipulate and works in an environment that has internet connection.

The technology of blockchain has the ability to interrupt multiple industries and automatically complete assignments that normally required a large manpower resource in transaction. The automation of many assignments make it possible for the blockchain to reduce many jobs once regarded as important to the business. Predictors suggest that the practical adoption of blockchain by banks in the retail sector will result in a loss of 30% of jobs in the banking sector (Giancarlo 2016). There is a possibility that the blockchain does create jobs, many managers discover that the big shortage of blockchain expertise, the hiring and training of recruits in this field of technology (Rizzo, 2016). The block chain technology has the ability to importantly raise the transaction speed and costs from days to countable minutes, and reduce the personal exchange fees by removing the needs of third party transactions (Harley 2016).

The online currency Bitcoin is very complex and is affected in its application through a lawful, economic and technical factors. The regulatory institution and the current framework of regulations on monetary principles and regulation are in the dark part on the ways to monitor the system that is not involved in intermediary and is distributed in investments, financial capital and monetary freedom. A number of stakeholders have been cynical about the blockchain and associated lack of trust in reliance and validation of these cryptocurrencies like Bitcoin. Online currencies like bitcoins have unknown lawful status in many states and the currency users may be exposed to illegal activities when using bitcoins (Brians 2014).

2.3 Conceptual Framework

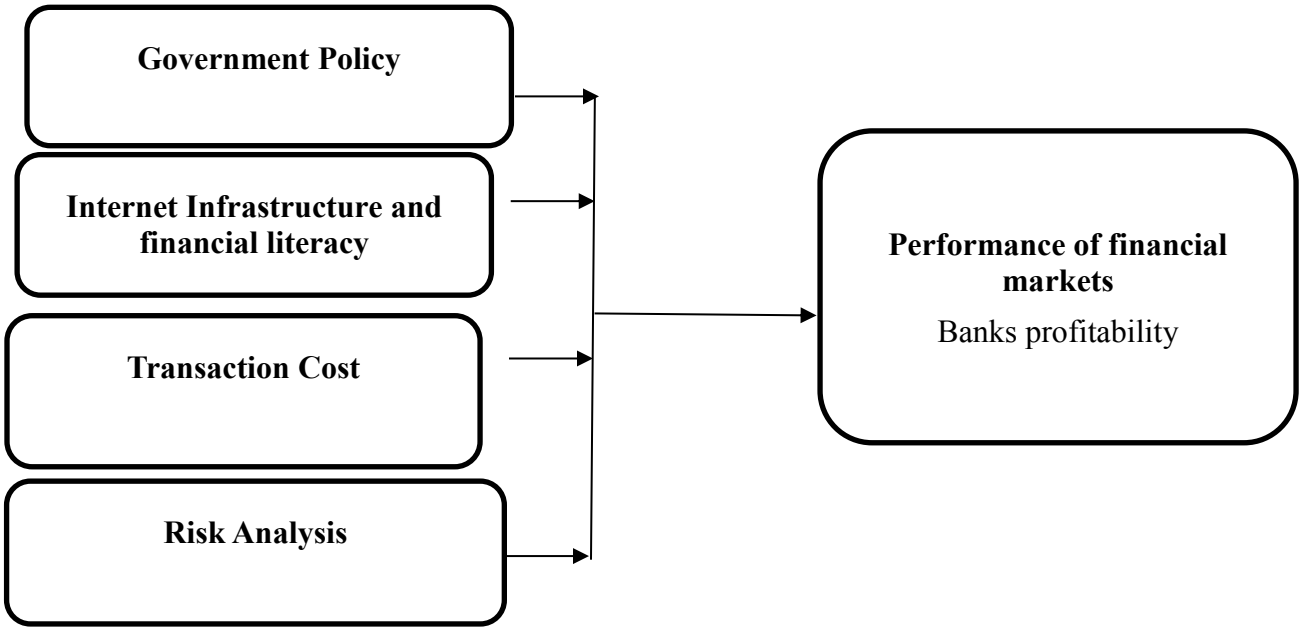

Figure 1 Conceptual Framework

3.0 RESEARCH METHODOLOGY

The study adopted an explanatory research design. The study target population was drawn from the commercial banks located in Nairobi County, Kenya. The study targeted 84 bank managers in the IT and finance department of the 42 commercial banks in Kenya (KBA, 2019). Thus the target population of the study was 84 financial market managers selected. The study population was grouped into simple identifiable called strata and adopted a stratified simple random sampling technique with inclusion of commercial banks. A sample size of a sample size of 50 respondents was arrived at. Data was collected using a structured questionnaire. The data collected were cleaned and coded, quantified and analyzed quantitatively. Quantitative data were analyzed using SPSS 24 where descriptive and inferential statistics were used to capture the data in order to understand the pattern and nature of relationships. Results were presented using tables.

4.0 RESULTS AND DISCUSSIONS

4.1 Descriptive analysis

4.1.1Government policy

Table 1: Government policy

	Mean	Std. Deviation
Different countries have different policies on the use of blockchain technology	2.33	1.155
Some countries through government directive have ban the use decentralized blockchain such as bitcoin	2.86	1.195
Some government have encouraged use of decentralized blockchain technology like bitcoin as a form of payment.	3.19	1.401
Government policy on use of blockchain technology is meant to take advantage of digital currency	3.62	1.203
Growth of disruptive blockchain technology poses challenge to the government policy	4.24	.768
Valid N (listwise)		

The findings in the above table indicate that government policy has a great impact towards the adoption of the blockchain technology. Evidently, majority of the respondents were in support to the fact that the growth of disruptive technology in blockchain poses a challenge to the government of which the statement recorded a highest mean of 4.24 and a standard deviation of 0.768. This was followed by the statement on government policy being on the use of blockchain technology being meant to take the advantage of digital currency in the market which had a mean of 3.62 and standard deviation of 1.203. Statement relating to some government having a hand in encouraging use of the decentralized technology like bitcoin as a form of payment was ranked third with a mean of 3.19 and a standard deviation of 1.401. It is widely known that some government still have lack of directive in the ban on the use of decentralized blockchain technology such as bitcoin which had a mean of 2.86 and a standard deviation of 1.195. The statement on different countries having different policies on the use of the blockchain technology had the lowest mean of 2.33 and a standard deviation of 1.155.

4.1.2 Internet infrastructure and financial literacy

Table 2 Internet infrastructure and financial literacy

	Mean	**Std. Dev**
Internet connectivity is a primary need in digital age in driving the adoption of blockchain technology	3.14	1.276
Internet support base like Amazon, Alibaba Masoko and Jumia are key drivers to use of blockchain backed cryptocurrency	3.38	1.284
Good internet connectivity in Kenya is facilitating the use and adoption of blockchain technology	3.95	.805
Internet connectivity and financial literacy negatively impacts the performance of financial markets	3.97	0.821
Availability of internet infrastructure promotes the adoption of blockchain technology	4.00	.837
Valid N (listwise)		

Findings in table 2 indicate that presence of internet infrastructure plays a critical role towards the adoption of blockchain technology in the financial sector. Thus, the availability of the internet infrastructure promotes the adoption of blockchain technology had the highest mean score of 4.00 and a standard deviation of 0.837. This was followed by the fact that good internet infrastructure connectivity in Kenya is a facilitation to the use and adoption of blockchain technology which had a mean of 3.95. Statement relating to internet supported platforms like Amazon, Masoko and Jumia are key drivers to the use of blockchain backed cryptocurrency had a mean of 3.38 and a standard deviation of 1.284. Lastly, statement relating to internet connectivity is a primary need in digital age is driving the adoption of the blockchain technology had a mean of 3.14 and standard deviation of 1.276.

4.1.3 Transactional cost

Table 3 Transactional cost

	Mean	Std. Deviation
Decentralized cryptocurrencies have low cost with no third part involved making it a host to many users in blockchain circle.	3.33	1.317
Low transaction costs incurred is driving the use and development of blockchain technology.	3.57	1.028
Financial markets relies more on online payment platform making them to miss blockchain cryptocurrency backed transactions	3.61	1.037
The transaction cost involved and decentralized are driving the adoption of blockchain technology in financial institutions.	3.90	1.136
Blockchain backed cryptocurrency platform attracts least transaction costs involved in the financial institutions	4.10	.944
Valid N (listwise)		

Blockchain technology tend to have lower transaction cost involved, from the study findings it was evident that blockchain backed cryptocurrency platforms attracts least transaction costs involved which had a mean of 4.10 and a standard deviation of 0.944. Statement relating to the transaction cost involved and decentralized being the driving force for the adoption of the blockchain technology in financial institutions had a mean of 3.90 and a standard deviation of 1.136. Further, statement relating to low transaction cost incurred is a driving factor to the use of the blockchain technology was third with a mean of 3.57 and a standard deviation of 1.028. The support base with least impact was relating to the decentralization of cryptocurrencies having low costs with no third party involved had a mean of 3.33 and a standard deviation of 1.317.

4.1.4 Risk Analysis

Table 4 Risk Analysis

	Mean	Std. Deviation
Blockchain cryptocurrencies like Bitcoin have uncertain legal status with ill motive activities	2.48	1.401
Decentralized blockchain technology like bitcoin are complex and used to evade tax and promote illegal activities	2.86	1.352
Decentralized blockchain technology are alternative in transaction thus negatively impacting on the performance of the financial markets	3.12	1.304
Decentralized blockchain technology are not regulated by any government	3.24	1.300
Some blockchain cryptocurrencies poses a threat to cyber-attacks, wallet theft and pyramid schemes attracting a large pool of fraudsters.	3.57	1.028
Valid N (listwise)		

The study finding on the risk analysis of the blockchain cryptocurrencies poses a threat to cyber-attacks and in pyramid schemes attracting large pool of fraudsters had a highest mean of 3.57 and standard deviation of 1.028. Statement relating to decentralized blockchain technology are not regulated by any government was second with a mean of 3.24 and a standard deviation of 1.300. Decentralized blockchain technology like blockchain like bitcoin are too complex and used to evade taxes and promote illegal activities had a mean score of 2.86 and a standard deviation of 1.352. Finally, statement relating to blockchain technology having uncertain legal status with ill motive activities was ranked last with a mean score of 2.48 and standard deviation of 1.401.

4.1.5 Performance of financial markets

Table 5 Performance of financial markets

	Mean	**Std. Deviation**
Government has invested in blockchain technology hubs	2.86	1.352
Less government support on tapping blockchain technology has reduced the performance of financial markets	3.24	1.300
Number of digital currencies outlets has increased in the last five years to compete with mainstream financial institutions	3.33	1.317
The number of users of cryptocurrencies has increased over the last five years lowering value of transactions registered in financial markets	3.90	1.136

The study findings on the performance of the financial markets was assessed and indicated that the number of the users of cryptocurrencies has increased over the last five years with a highest mean of 3.9 and standard deviation of 1.136. This was followed by the statement on the number of digital currencies outlets has increased with a mean of 3.3 and standard deviation of 1.317. Statement on less government support on tapping the blockchain technology has reduced the performance of the mainstream financial markets was ranked

third with a mean of 3.24 and standard deviation of 1.300. The statement on the government had invested in blockchain technology had the least mean score of 2.86 and a standard deviation of 1.352.

4.2 Regression Analysis

The study conducted a multiple linear regression analysis.

Table 6: Coefficient of determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.684[a]	.468	.335	.57052

An R Square of 0.468 indicates that Risk analysis, Internet infrastructure and financial literacy, Government policy and Transactional cost have a joint significant impact to the performance of financial markets 46.8%.

Table 7: Coefficient of correlations

		Performance of financial markets	Government policy	Internet infrastructure	Transaction cost	Risk analysis
Pearson Correlation	Performance of financial markets	1.000				
	Government policy	.240	1.000			
	Internet infrastructure and financial literacy	.293	.385	1.000		
	Transactional cost	.583	.170	.514	1.000	
	Risk analysis	.507	.249	.128	.296	1.000

The above table shows that adoption of performance of financial markets had a positive and significant correlation to government policy r = 0.240. Performance of financial markets had a positive and significant correlation to internet infrastructure and financial literacy by r = 0.293. Performance of financial markets had a positive and significant correlation to transaction cost at r = 0.583. Lastly, performance of financial markets had a positive and significant correlation to risk analysis at r = 0.507.

Table 8 Analysis of variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.584	4	1.146	3.521	.030[b]
	Residual	5.208	16	.325		
	Total	9.792	20			

From the analysis, the model was statistically significant given that the pvalue was 0.030 which was less than 0.05.

Table 9 Model Coefficients Results

		B	Std. Error	Beta		
1	(Constant)	.020	1.091		.019	.985
	Government policy	.100	.243	.083	.410	.687
	Internet infrastructure and financial literacy	.041	.303	-.031	-.137	.893
	Transactional cost	.599	.275	.483	2.176	.045
	Risk analysis	.299	.169	.347	1.767	.096

a. Dependent Variable: Performance of financial markets

The regression equation is:

Y = B0+B1X1+B2X2+B3X3+B4X4+e

Y = Performance of financial markets

B0 = Constant term

X1 = Government policy

0.100 = Coefficient of X1

X2 = Internet infrastructure and financial literacy

0.041 = Coefficient of X2

X3 = Transactional cost

0.599 = Coefficient of X3

X4 = Risk analysis

0.299 = Coefficient of X4

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study findings on the role of government policy on the adoption of blockchain and performance of financial markets was established and presented. The study summary on descriptive analysis indicated that growth of disruptive technology in blockchain poses a challenge to the government of which the statement recorded a highest mean of 4.24 and a standard deviation of 0.768. Further, the adoption of blockchain technology had a positive and significant correlation to government policy r = 0.240. An increase in level of government policy would lead to an increase in adoption of blockchain technology by 0.100 units.

Summary of the findings on the availability of internet infrastructure and financial literacy showed that the accessibility of the internet infrastructure promotes the adoption of blockchain technology had the highest mean score of 4.00 and a standard deviation of 0.837. Adoption of blockchain technology had a positive and significant correlation to internet

infrastructure and financial literacy by r = 0.293. The increase in internet infrastructure and financial literacy would increase adoption of blockchain technology by 0.041 unit and impacting the performance of the financial markets.

Low transactions cost platform is more likely to be used compared to high transaction cost platforms. The summary on the assessment of how low transaction cost in the blockchain backed cryptocurrency platforms attracts had a mean of 4.10 and a standard deviation of 0.944. Adoption of blockchain technology had a positive and significant correlation to transaction cost at r = 0.583. The regression analysis showed that level of transaction cost would increase the level of adoption of blockchain technology by 0.599.

The study summary of the findings on the aspect of risk analysis showed that the blockchain cryptocurrencies poses a threat to cyber-attacks and in pyramid schemes attracting large pool of fraudsters had a highest mean of 3.57 and standard deviation of 1.028. The adoption of blockchain technology had a positive and significant correlation to risk analysis at r = 0.507. An increase in the level of risk analysis will lead to a 0.299 increase in the level of the adoption of blockchain technology.

Conclusions

From the findings, respondents suggested that the growth of the blockchain technology is mostly favored by the young generation of which its use still remains a puzzle to the old policy makers in the government. This makes the policy maker not to have a clear picture on directly how to make regulations that are mean to first make sure that the nation is safe and there is accountability in tax collection as far as digital transaction is involved. There is need to have clear policies meant to support user of blockchain technology in a way that is meant to promote economic growth and development especially to the young generation.

The study findings concluded that access to internet infrastructure is one of the driving force to the adoption of blockchain technology in Kenya. Access to search services is very available to Kenyans and thus why the level of blockchain adoption is very high in Kenya in the context of the African continent. Industry stakeholders need to ensure that there is equal distribution of digital services to enhance information sharing among the users of digital services. This will also be a plus to the economy and will enable growth of blockchain technology.

The study findings concluded that blockchain technology backed in cryptocurrency platforms like Litecoin, Bitcoin among others have the highest possibility of being used to make transactions as they attract low cost as compared to other conventional financial services provided by Western Union, PayPal among others.

Findings on risk analysis concluded that blockchain backed cryptocurrencies such as Bitcoin are being used to conduct illicit trade and this denies government other revenues that would have been collected for economic development. In most instances, the government has tightly controlled the financial institutions and limited the number and amount of money that can be transacted at ago. Most of the elites have cried foul to the policy. Having an alternative platform like blockchain that is decentralized becomes a favorable choice to conduct such illicit trade.

Policy Implications and Recommendations

From the study findings, the researcher recommends that the government must move with speed and discuss the issues of blockchain technology to the economy. They must be part of the driving force in guiding the citizens on its level of acceptability or not. This will also help the government to look at how they can have a controlling share to such disruptive technology that is here to change. The aspect of having good internet connectivity is beneficial to the nation in that access to proper information will be available and it enables many users to have wide access to services as well as creation of employment.

Comparing on the transaction cost between the blockchain backed cryptocurrencies like Bitcoin that attracts a very low charge when sending money as compared to the mainstream sources such as PayPal and Western Union. The study recommends that the government must ensure there is fair competition in the market and the model of transaction used that is decentralized must be evaluated. This will help to protect those who have invested their resources in having point of sale terminals and other assets.

The blockchain technology application is gaining momentum in areas of illegal business activities such as an alternative to evade taxes, money laundering and financing terrorist activities without being disclosed. The study recommends for a thorough scrutiny by the government and ensure such issues are keenly analyzed to help bring peace and stability in the world. There is need to do a study on stability of blockchain technologies use and their impact to the economic growth.

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