

EXAMINATION OF FACTORS INFLUENCING THE INTENTION TO ADOPT CRYPTOCURRENCIES IN TANZANIA

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ABSTRACT

This paper examined factors influencing the intention to adopt cryptocurrencies in Tanzania. Specific objectives were to assess the roles of cryptocurrencies in Tanzania, to evaluate the risks of adopting cryptocurrencies to the existing financial and banking ecosystem and to examine the challenges of using cryptocurrencies in Tanzania. The study was carried out in Dar es salaam city. Purposive and snowball sampling technique were used to reach 368 respondents. The study employed quantitative method. Data were collected by using structural questionnaires and analyzed by employing regressions and correlation testing. Technology Acceptance Model (TAM) was used to formulate conceptual framework and hypotheses. The findings indicated that the perceived usefulness and the perceived ease of use showed positive association on the intention to use cryptocurrencies. The ease and usefulness of cryptocurrencies was found in fulfilling various roles including making instant international money transfer, transacting at low charges, using it as an alternative source of currency, making free anonymous transaction and paying for the online services that accept cryptocurrencies. On contrary, the perceived challenges and risks were insignificance to both the perceived usefulness and the perceived ease of using cryptocurrencies. The study concludes that cryptocurrencies such as Bitcoin can be used in Tanzania to fulfill various roles. Furthermore, the study concludes that, risks and challenges are the key factors that delays cryptocurrencies from being used as a legal tender in many countries including Tanzania. The study recommends to the government of Tanzania to consider establishing a cryptocurrency based in Tanzania. Also, the syllabus on blockchain technology particularly cryptocurrencies should be established in both school and higher education. Finally, the study recommends central bank to review the Tanzania monetary policy in order to accommodate this financial technology.

Keywords: *Cryptocurrencies, Tanzania, Blockchain technology, Bitcoin.*

INTRODUCTION

Background Information

The 21st century which is also called the century of digital economy, came up with enormous advancement in financial technologies by establishing cashless money system known as cryptocurrencies. According to Ng & Griffin (2018), the global has gained interest on cryptocurrencies after perceiving its usefulness and now making effort to know how this technology works, its risks and the involved challenges. CoinMarketCap (2021) established that there are more than 9300 cryptocurrencies in the world, some most known being Bitcoin, Ethereum, Ripple, Litecoin, and so on. Investors are attracted on cryptocurrencies because they see it as money of the future whose value increases every day and give economic freedom to users (Buker 2021). This is because, the study on financial economics of cryptocurrency market conducted by Aslan (2021) discovered that the world of finance is undergoing a transformation as motivated by rapid advances in digital technology.

In the recent years, cryptocurrencies have caught the attention of many people including governments, scholars, researchers and financial stakeholders all around the world (Ku-Mahamud et al., 2019; Chow et al., 2019; Nadeem et al.,

2021). Currently, El Salvador is the only country in the world which has recognized Bitcoin as a legal tender (Buker 2021). According to (Taylor et al. 2020) many world's governments including US and UK are now reviewing their financial policies to support the new developed financial technologies such as cryptocurrencies.

The study done by Dong He et al. (2016) found that cryptocurrencies came with significant risks of being a gateway for money launders, tax escapers, terrorist financiers, and fraud. According to (Ng and Griffin 2018) the risks of cryptocurrencies to the central bank include security gap, the unknown response of decentralized systems to a global financial crisis situation, data privacy leaks and overall governance of the platform.

However, Global Legal Research (2018) found that majority of world central banks have warned its citizens from involving in cryptocurrencies by giving them education on the unpredictability and risks of this technology. Countries such as Vietnam, Nepal, Pakistan, Morocco and Algeria have banned all cryptocurrencies related activities. Other countries such as China, Colombia, Lesotho, Thailand, Iran and Bangladesh have restricted its citizens from involving in cryptocurrencies activities within their borders but allowing them to do such business outside of their countries.

Problem statement

Tanzania is among many world countries that have prohibited its members of the public from involving in cryptocurrencies. Currently, it is against the monetary regulation to market, trade and use cryptocurrencies in Tanzania (Bank of Tanzania 2019). According to Ng and Griffin (2018), the risks of adopting cryptocurrencies to the central banks include security gap, the unknown response of decentralized systems to a global financial crisis situation, data privacy leaks and overall governance of the platform. Moreover, Cumming et al. (2019) found that there are several types of cryptocurrency fraud and regulatory uncertainty including unregulated exchanges and cyber-security fraud such as exchanges hacks, social media identity hacking, ransomware and taxation fraud. In spite of the involved risks and challenges, cryptocurrencies can be used to fulfil various roles including fast transactions, low transaction charges, ability to transfer even small fraction of money, giving freedom to its users and paying for online games (Nadeem et al. 2021). There have been number of studies in Tanzania that focuses on blockchain technology but not much basing on cryptocurrency adoption as a legal tender. (e.g. Philemon, 2020; Likavčanová, 2019; Luhanga, 2020; Nkwabi, 2021). However, there is a slight indication that suggest cryptocurrencies can be adopted as a legal tender. This indication can be found by considering El Salvador as the first and only country in the globe that has accept Bitcoin as a legal tender (Oxford Analytica 2021; Buker 2021).

Taylor et al. (2020) established that, many world's governments including US and UK are now reviewing their financial policies to support the new developed financial technologies such as cryptocurrencies. Tanzania, being among the global free nations shouldn't isolate itself in this move to cashless digital economy. Therefore, this study aims to examine factors that will influence the adoption of cryptocurrencies as a legal tender in Tanzania.

Objectives of the study

Three main objectives are associated with this study, namely;

To assess the roles of cryptocurrencies in Tanzania,

To evaluate the risks of adopting cryptocurrencies to the existing financial and banking ecosystem,

To examine the challenges of using cryptocurrencies in Tanzania.

Significance of the study

This paper is expected to contribute to the existing body of knowledge in cryptocurrencies which is beneficial to scholars, researchers, politicians, central banks and other financial stakeholders. It enlightens to understand the roles, risks and involved challenges of accepting cryptocurrencies as a legal tender in Tanzania. Findings of this study will help financial stakeholders to decide on either to accept this technology or keep waiting. Furthermore, the result will give light of the roles that cryptocurrencies such as bitcoin have in Tanzania. Finally, the findings are predicted to find out the challenges and risks that makes difficult to legalize this financial technology.

LITERATURE REVIEW

Cryptocurrencies can be defined as a peer-to-peer version of decentralized electronic cash that allows payments to be sent directly from one peer to another (Lee & Chuen 2015). According to Al-Amri et al. (2019) cryptocurrency is a virtual currency designed as an alternative to standard fiat currency, which allow its users to execute digital payment for goods and services without the need for third party. Vaz et al. (2020) stated that cryptocurrency is being promoted as a trusted system that can work without traditional financial institutions and government support.

Cryptocurrencies such as Bitcoins can be purchased locally from a person by visiting a common website called Local Bitcoins or through cryptocurrency exchanges (Patterson 2020). The most well-known website for finding exchanges and cryptocurrency markets is called Coin Market Cap. Cryptocurrencies are stored into digital wallets such as mobile, desktop and web wallets. These wallets need to be secured against cyber security threats such as malicious software.

The study adopted technology acceptance model (TAM). TAM model was founded by Davis (1986) in order to forecast the user behavior in accepting new technology. According to this model, perceived usefulness and perceived ease of use are the key elements that people use to accept or reject the new technology. The study conducted by (Marangunić and Granić 2015) revealed that TAM is a key model in understanding human behavior toward the probability to accept or reject the technology.

Figure 1 represents a study framework.

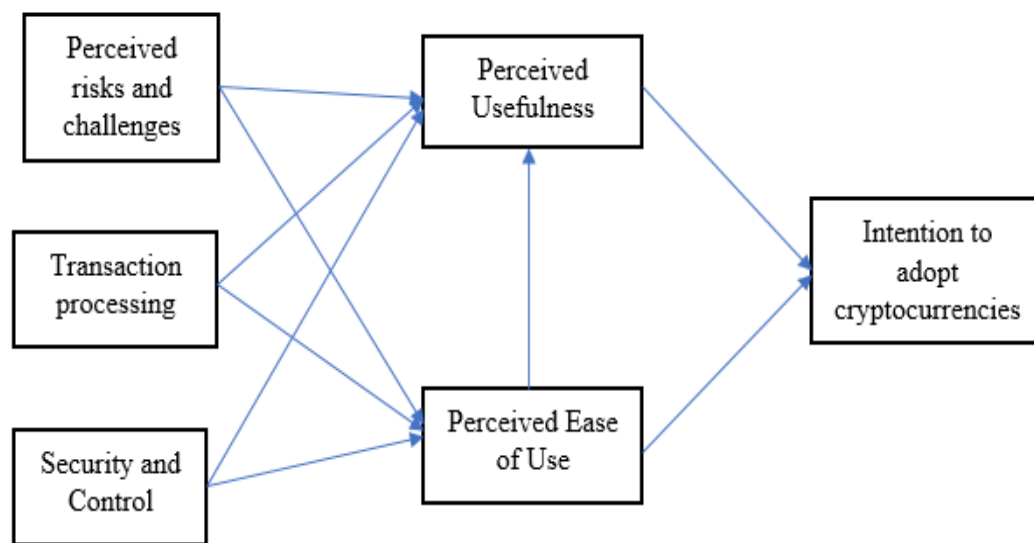


Figure 1: **Proposed conceptual framework**

Perceived Ease of use and Perceived usefulness

Davis (1989) defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance." Ease of use refers to the ability of user to perceive that a technology can be used with less effort (Ahmer 2017).

Hypothesis 1 (H1): The perceived ease of using cryptocurrencies is positively associated with the perceived usefulness.

Intention to adopt cryptocurrencies

According to Nadeem et al (2021) people intends to use cryptocurrencies to fulfill various requirements such as cross-border payment, as an alternative source of currency and as a mode of exchange.

Hypothesis 2 (H2): The perceived ease of using cryptocurrencies is positively associated to the intention to use cryptocurrencies.

Hypothesis 3 (H3): The perceived usefulness is related positively to the intention to use cryptocurrencies.

Transaction processing

Studies show that cryptocurrencies such as Bitcoin enables to make ease and fast international transactions at low charges (Nadeem et al., 2021; Ermakova et al., 2017). Also, it is difficult to trace and delete transactions (Norman 2017).

Hypothesis 4 (H4): The transaction processing has positive significance to the perceived usefulness of cryptocurrencies.

Hypothesis 5 (H5): Transaction processing benefits may have positive influence on the ease of using cryptocurrencies.

Security and control

Han & Yang (2018) defined security as the conditions or circumstances that enables information or data to continue being confidential, truthful and available to the owner when accessed. On the other side, control means a freedom to ownership, access and management.

Hypothesis 6 (H6): The perceived security and control has positive influence to the perceived usefulness of cryptocurrencies.

Hypothesis 7 (H7): The security and control have positive impact on the ease of using cryptocurrencies.

Challenges and Risks

Outreville (1998) defined the term risk as “a state in which losses are possible.” The study done by (Cumming et al. 2019) found that there are several types of cryptocurrency fraud and regulatory uncertainty including unregulated exchanges and cyber-security fraud such as exchanges hacks, social media identity hacking, ransomware and taxation fraud. Moreover, Global Legal Research (2018) concluded that cryptocurrencies may attract money launders.

Hypothesis 8 (H8): The perceived challenges and risks have negative impact on the perceived usefulness.

Hypothesis 9 (H9): The perceived risks and challenges have negative impact on the ease of using cryptocurrencies.

METHODOLOGY

This study applied quantitative research approach to examine factors impacting the adoption of cryptocurrencies in Tanzania. The selected study area is Dar es Salaam city. Dar es Salaam was selected because it is the most populated city with high adult literate rate. Also, it is a capital city of Tanzania where every kind of business is being traded. The researcher was aware that cryptocurrency is an illegal business in Tanzania and that some members of the republic are trading, using and promoting it anonymously. That is why Dar es Salaam was an appropriate study area.

The study adopted non-probability sampling. In order to have the right participants with knowledge and experience on cryptocurrencies, purposive and snowball sampling methods were used to reach 368 respondents. The snowball approach was valid in this study because most users of cryptocurrencies being anonymous making difficult to reach them (Brewerton & Millward 2001). In the purposive sampling, the researcher selected individuals who were aware of cryptocurrencies (Taherdoost 2016).

The main data collection instrument used in this study was a structural questionnaire with five points Likert scale whereby 1= Strongly disagree, 2 = Disagree, 3= Don't know, 4 = Agree, 5= Strongly agree. Some questions were adapted from (Nadeem et al. 2021). In order to ensure validity and reliability of data, the researcher performed a pilot study in order to test the data collection instrument and corrected all errors. Data were analyzed by employing correlation test and regression analysis. In order to test the hypotheses, the researcher performed a non-parametric test by using bivariate correlation.

FINDINGS PRESENTATION

Respondents' particulars

The gender ratio of respondents was found to be 76.1% male by 23.9% female. Also, the age of the respondents ranged from 20 years to 50 with education from form four to PhD. Table 1 gives the demographic results in a tabular form.

Table 1: Particulars of the Respondents, N = 368

Particulars	N	%
Gender		
Male	280	76.1
Female	88	23.9
Age (years)		
20 – 30	191	51.9
31 – 40	129	35.1
41 – 50	48	13.0
Education		
Form Four/Six	32	8.8
Bachelor certificate	236	64.1
Master’s	91	24.7
PhD	9	2.4

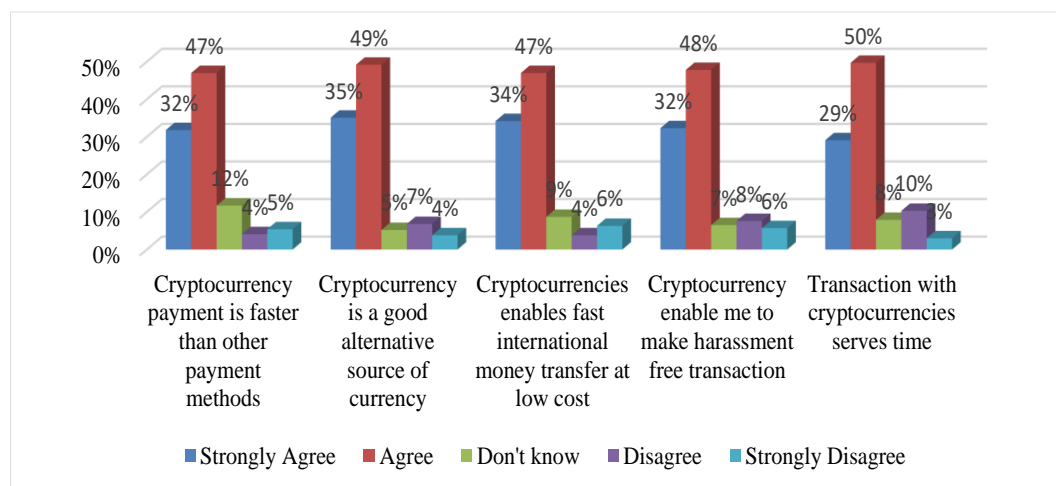


Figure 2 represents some roles of cryptocurrencies as perceived in usefulness. As it can be seen, cryptocurrencies are faster, alternative source of currency, enable faster international money transfer, make harassment free transactions and serves time.

Figure 2: Roles of cryptocurrencies as perceived in usefulness

In view of assessing risks of adopting cryptocurrencies, it was found that hacker’s attack and government fear of losing financial control are the main risks. Hacker’s attack is a cyber security attack mainly implemented by the use of malware such as ransomware. Also, government fears to lose financial control due to many factors including the decentralized and anonymous features of cryptocurrencies as well as inability to control and regulate exchange rates. Table 2 shows risks and associated responses.

Table 2: Risks of adopting cryptocurrencies

Factor	Kolmogorov-Smirnov ^a	
	Degrees of Freedom	Significance value
Transaction processing	368	<.001
Intention to adopt	368	<.001
Perceived usefulness	368	<.001
Perceived ease of use	368	<.001
Security and control	368	<.001
Challenge and Risks	368	<.001

Virtual currencies may cause government to lose financial control 33 39 10 9 9 100

Furthermore, some challenges of adopting cryptocurrencies are presented in Figure 3. It is shown that the anonymous and decentralized features of cryptocurrencies such as Bitcoin may support illegal activities such as money launders and human trafficking. This was strongly agreed by 35% of respondents while 49% voted “Agree.”

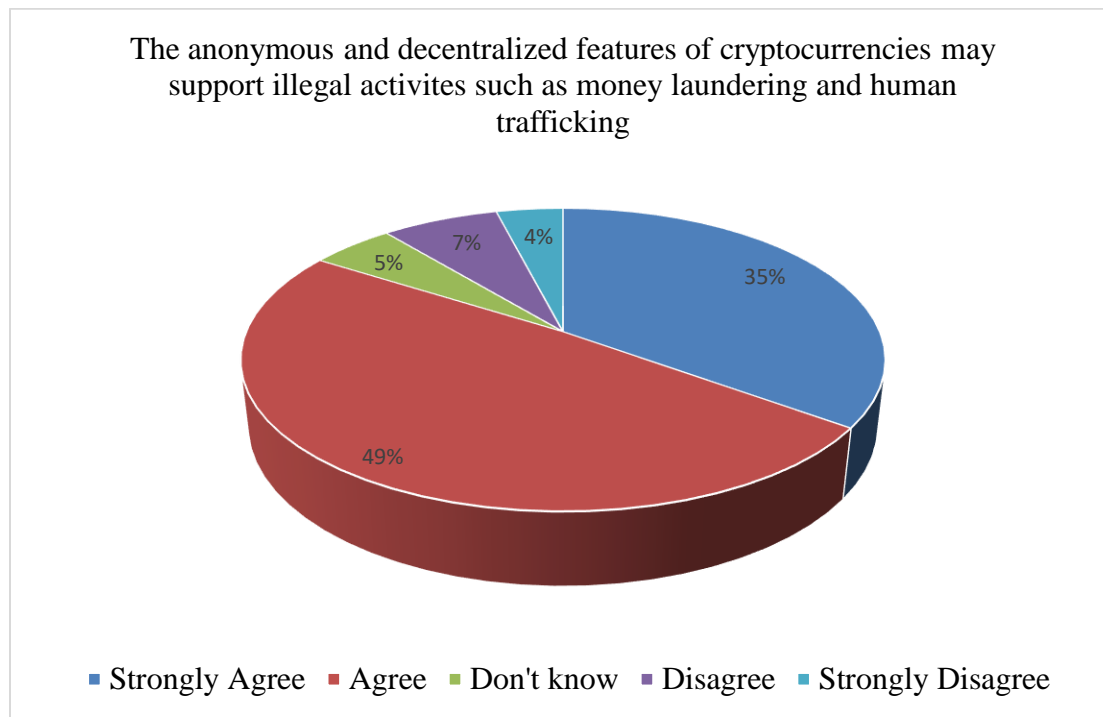


Figure 3: Challenges of adopting cryptocurrencies

Regression and correlation analysis

The test of normality followed Kolmogorov-Smirnov method since the sample size was greater than 50. Result data was found to be highly statistically significance by <0.001 p-value. See Table 3. The study used 0.05 significance level. Since 0.001 is less than 0.05, the data is said to be not normally distributed.

Table 3: Results for the normality test significance

Factor	Kolmogorov-Smirnov ^a	
	Degrees of Freedom	Significance value
Transaction processing	368	<.001
Intention to adopt	368	<.001
Perceived usefulness	368	<.001
Perceived ease of use	368	<.001
Security and control	368	<.001
Challenge and Risks	368	<.001

Lilliefors Significance Correction

The study applied ordinal regression method. The significance for model fitting was <0.001 which indicated that the model was fitting well to the data set since it is less than 0.05. Also, the goodness of fit obtained under Pearson was 0.584, indicating that the model was fitting well to the data set because it is greater than 0.05. Table 4 is represents correlation matrix of hypotheses factors.

Table 4: Factors correlation matrix

Factors	TP	IA	PU	PEU	SC	CR
Transaction Processing	1					
Intention to Adopt	.135**	1				
Perceived Usefulness	.150**	.141**	1			
Perceived Ease of Use	.174**	.143**	.983**	1		
Security and Control	.126*	.166**	.143**	.165**	1	
Challenges and Risks	.399**	.121*	.068	.030	.240	1

** . Correlation is significant at the 0.01 level

* . Correlation is significant at the 0.05 level

Table 5 shows hypothesis correlation results. As it can be seen, the perceived ease of use had positive association on the perceived usefulness. The perceived ease of use and the perceived usefulness had positive association on the intention to use cryptocurrencies. Moreover, transaction processing had positive association to both perceived usefulness and ease of using cryptocurrencies. Furthermore, the perceived security and control had positive relationship to both the perceived ease of use and the perceived usefulness. Finally, risks and challenges of adopting cryptocurrencies showed no significance to both perceived usefulness and ease of using cryptocurrencies.

Table 5: Cryptocurrency adoption hypotheses correlation results

Variable relationship	Correlation coefficient	p-value	Remarks
Perceived ease of use to perceived usefulness	0.983	<0.001	Proved
Perceived ease of use to the intention to adopt	0.143	0.006	Proved
Perceived usefulness to intention to adopt	0.141	0.007	Proved
Transaction processing to perceived usefulness	0.150	0.004	Proved
Transaction processing to the perceived ease of use	0.174	<0.001	Proved
Perceived security and control to perceived usefulness	0.143	0.006	Proved
Perceived security and control to perceived ease of use	0.400	<0.001	Proved
Risks and challenges to perceived usefulness	0.068	0.194	Rejected
Risks and challenges to perceived ease of use	0.030	0.560	Rejected

DISCUSSION OF THE FINDINGS

Roles of cryptocurrencies

Considering the hypotheses correlation results presented in Table 5, Hypothesis 1 was verified since the perceived ease of use had a very strong positive correlation on the perceived usefulness. The result was similar to that obtained in studies done by Davis (1986); Tahar et al. (2020); Davis (1989) and Jahangir & Begum (2008). Furthermore, Hypotheses 2 and 3 were verified since perceived ease of use and perceived usefulness had positive association to the intention to use cryptocurrencies. The study conducted by Nadeem et al. (2021) and Nuryyev et al. (2020) had the same result on these hypotheses. In percentage, 75% of the responses showed the intention to use cryptocurrencies to fulfil various roles such as making online purchase, trading it as a speculative business, using it as alternative source of currency and for making international money transfer. In addition, Hypotheses 4 and 5 were verified since transaction processing had a positive significance on the perceived usefulness and ease of use. Similar result was obtained by (Nadeem et al. 2021). 81% of the responses showed that transacting with cryptocurrencies such as Bitcoin was easy and useful. Transaction with cryptocurrencies enables to make instant international money transfer, low transaction charges, making free anonymous transaction and for online purchases.

Risks and challenges of Adopting Cryptocurrencies in Tanzania

From Table 5, Hypotheses 6 and 7 intended to evaluate security and control features of cryptocurrencies as a financial technology. It was found that security and control had positive relationship on both perceived ease of using cryptocurrencies and perceived usefulness. However, the study done by (Nadeem et al. 2021) found no relationship between these variables. But, according to Nabilou, (2020); Nuryyev et al., (2020); Kesa & Mahoro, (2019) security and control are among the dark side of cryptocurrency financial technology. This means there exist security gaps that may cause loss of cryptocurrencies (Ng and Griffin 2018). Cryptocurrency wallets and exchanges are the most targets of attackers (CoinMarketCap, 2021; Garrick & Rauchs, 2017).

Moreover, the risks and challenges of adopting cryptocurrencies was found to have no significance on both perceived usefulness and ease of using cryptocurrencies. Hence H8 and H9 were rejected. Studies done by Daojing He et al. (2020); Kfir (2020) and Philemon (2020) found that cryptocurrency wallets are susceptible to hackers and data loss. Also, Jokić et al. (2019) reported that online wallets are susceptible to various online frauds while mobile wallets are susceptible to malware and key logger. Finally, Ng and Griffin (2018) verified that the risks of cryptocurrencies to the central banks include security gap, the unknown response of decentralized systems to a global financial crisis situation, data privacy leaks and overall governance of the platform. Anonymous feature may attract illegal business such as money laundering and human trafficking (Taylor et al., 2020; Kesa & Mahoro, 2019; Böhme et al., 2015).

CONCLUSION AND RECOMMENDATION

Conclusion

Firstly, the study concludes that, cryptocurrencies have various roles to fulfill in Tanzania. These roles include making instant international money transfer, trading as speculative business and making online payments. Also, cryptocurrencies serve time as it doesn't involve intermediaries. Moreover, cryptocurrencies such as Bitcoin can be used as an alternative source of currency. In addition, cryptocurrencies can be used to make harassment free transactions. This is made possible because the system operates freely without the involvement of traditional financial institutions and government authorities. Users are free to make transaction of any amount at anytime and anywhere provided that there is internet access.

Secondly, the study concludes that cryptocurrencies comes with risks. One of the risks include digital wallets being susceptible to hacker's attack. The attack may lead into financial loss as the hackers may change account information or transfer funds into their accounts. Since there is no responsible authority to be consulted in case of loss, the researcher found this risk as critical. Another risk found in this study is government to lose financial control. This risk comes because public cryptocurrencies such as Bitcoin are not regulated by any government bodies such as central banks. Therefore, it is difficult for the government of Tanzania to control foreign exchange markets, exchange rates and tracing transactions.

Finally, the study concludes that there exist open challenges in cryptocurrency financial technology. The major challenges are the anonymous and decentralized features of cryptocurrencies which may support illegal activities such as money laundering and human trafficking. Bitcoin is the most known cryptocurrency made from public block chain technology. This being the case, accepting Bitcoin means accepting anonymous and decentralized challenge. Another challenge is inadequate public education. Most of the Tanzanians are not aware of cryptocurrencies.

Recommendation

Since cryptocurrencies such as Bitcoin has proven to fulfil certain roles, the researcher recommends to the Bank of Tanzania to carefully review its foreign exchanges policy in order to accommodate this new financial technology.

Since cryptocurrency exchanges can be regulated just as banks, the researcher proposes to the Bank of Tanzania and the government to consider establishing its own cryptocurrency exchange that will be regulated by the Bank of Tanzania.

The study recommends that detailed researches and constructive discussions need to be done before the Bank of Tanzania considers introducing this monetary system in Tanzania. Also, public education should be provided via televisions, radios, and social medias in order to reduce the knowledge gap. Moreover, syllabus on blockchain technology particularly cryptocurrencies should be introduced in all levels of education.

The study recommends to the government of Tanzania to come up with cryptocurrency based in Tanzania. The study suggests a name to be TanCoin.

The study recommends to the government of Tanzania to strengthen financial cyber security and forensic department in order to help in solving digital transactions challenges.

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