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CRYPTO-CURRENCY FOR SOCIO-ECONOMIC TRANSFORMATION IN TANZANIA

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ABSTRACT

The purpose of this study is to investigate the impact of crypto currency technology on socio-economic transformation. This research was motivated by the need for a secure currency that cannot be counterfeited and concerns about the safety and security of hard cash transactions. The study utilized an explanatory research design conducted in Dodoma City Council. The participants included individuals and business firms, bankers, officials from various government agencies, and Dodoma City Council officials, resulting in 104 respondents. Data were collected primarily through questionnaires and secondarily through the review of journals and published report from BoT. The collected data were analyzed using the Non-Normalized Fit Index (NNFI), the goodness of fit index (GFI), and the discriminant analysis tool. The analysis results indicate that crypto currency technology positively impacts socio-economic transformation by creating stable monetary systems, reducing transaction costs, and stabilizing market efficiency. However, the technology was not adopted due to non-formalization issues, lack of reliable database for all Tanzanian residents, and unstable internet subscription, telecommunication network and electrical energy supply. Therefore, the study recommends that policymakers address these issues to realise crypto currency technology's expected impacts on socio-economic transformation.

Keywords: *Crypto-currency, Stable monetary systems, Cashless transactions, Market efficiency, socio-economic transformation*

1. Introduction

Crypto currency is becoming the means of financial transaction to many governments in the World. Crypto currency is the digital or virtual currency that discards hard cash financial transactions (Maurya, 2019). Crypto currency uses crypto grapy technology for checking the originality regarding the security features over the actual bit coin currency should have. Thus, with the crypto currency system, counterfeit currency is easily identified through cryptography (Lee, 2019).

Usually, the Central Bank controls crypto currency, and the controls, safety and security are decentralized (Jagtiani, Papaioannou, & Tsetsekos, 2019).

Crypto currency technology contributes towards stable monetary systems because it is subjected to the maintenance of the same quantity of currency supplied or printed by the Central Bank (Caton, 2019). This indeed sustains the currency equilibrium condition over money market equilibrium (LM) which in turn balances the commodity market equilibrium (IS) i.e. the aggregate demand (I) and aggregate supply(s) (Sanches, 2016).

Crypto currency technology sustains cashless transactions (Kaur, 2019). This then helps maintain the currency's durability remain as e-money without tear and wear, thus retaining its value for a long period. Crypto currency overcomes the problem of counterfeiting and making copies of original currency in circulation (Naskar, 2019). Moreover, effective crypto currency technology adoption and use prevent money laundering (Mangate, 2020).

Crypto currency offers economic stabilization, thorough assurance over productivity and distribution efficiency (Mita, Ito, Ohsawa & Tanaka, 2019). The excessive money supply, which could result from counterfeiting, money laundering, and illegal printing/making copies, is discarded (Kang & Lee, 2019). This helps ensure combating stagflation in the economy (Handfield & Nair, 2019).

The sustainability over money market equilibrium achieved due to steady money supply, quantity and velocity of currency in circulation has been revealed to be brought by acceptance and use of bit-coin-crypto currency (Rzayeva, 2019). The enhancement of cashless transactions has been revealed to disrupt the traditional means of individuals/firms holding huge amounts of money in their pockets (Helbing, 2019). The curbed counterfeit and money laundering cases following the invention of crypto currency have been the reason for the stabilized economy and market efficiency (Nasir, Huynh, Nguyen & Duong, 2019).

Eriksson and Sandhill (2019), advocates that a significant proportion of hard cash transactions, specifically 71% are not secured and stable enough to maintain a consistent velocity of currency in circulation. This raises concerns about the sustainability of hard cash transactions compared to cash-less mechanisms, particularly in light of the increasing adoption of crypto currencies. It is therefore imperative that measures are taken to address the security and stability issues associated with hard cash transactions in order to ensure the continued viability of this mode of exchange. Manual financial systems favour individuals/firms who hold a large amount of money in their pocket, thus creating leakage to the economy not with cashless systems as with crypto currency revealed by Sukarno (2020) in Malaysia. Holding huge amounts of money in hand or at home has been a major source of creation over currency reserve for over >54% as reported by Kandpal and Mehrotra (2019) in India.

Cash transaction is the source of volatility over domestic currency, accounting for about 81% (Arvidsson, 2019). Increasingly counterfeit cases over domestic currency, such as in the Republic of Central Africa, because of the use of hard cash transactions. Contrarily to crypto currency, the use of cash transactions in most cases with low-income families in African countries has been revealed as a source of increase in fraudulent dealings and difficult administration over tax policies

and laws overtax revenue collections accounting for 74% (Yalaman & Yildirim, 2019). Difficulties in administrating the tax due to the use of analogue non-complicated systems are the reason for little collections amounting to 45% revealed to be the source of the government budget deficit for most developing countries (Sidorenkon & Lykov, 2019).

The instability observed in the economies of developing countries, such as Tanzania, can be attributed to a combination of factors, including inflation and high exchange rate floatation. According to Georgiou (2020), the absence of crypto currency platforms exacerbates this instability. Furthermore, Kim and Chung (2019) note that the inefficient distribution of national income, goods, services, and resources accounts for a significant portion (up to 64%) of the challenges faced by developing countries due to the lack of digital systems, such as crypto currency. As a result, families in these countries often experience unequal and inefficient distribution of income, which perpetuates poverty despite the abundance of natural resources available.

The field study conducted on the Tanzanian domestic currency has revealed a significant discrepancy in the floatation of the currency used for transactions. This is primarily due to the absence of crypto currency technology, which has exposed the currency to external sources and add-ons, leading to hyperinflation. The non-use of crypto currency has also made it difficult to administer indirect tax, property tax, VAT, and another fees collection by TRA. The manual systems requiring face-to-face meetings with customers have resulted in fraudulent dealings and stiff administration.

However, the adoption of block chain technology and effective fostering of crypto currency could address these issues. With the integration of crypto currency, a correct and reliable contribution or charge could be automatically deducted from customers' or business firms' accounts. This would enable reliable and fair VAT deductions from business returns or sales, thereby eliminating unfair tax deductions that were found to be prevalent in the field area. The automation and connection of business firms to TRA systems through crypto currency would also enhance the administration of taxes and reduce fraudulent activities.

In conclusion, the adoption of crypto currency and block chain technology would be a significant step towards addressing the challenges faced by the Tanzanian domestic currency. It would lead to a fair and transparent taxation system and enhance the administration of taxes, thereby promoting economic growth and stability.

From the field area, the same as it has shown over less tax and fees collected by the government accounting to only 27% of national income from the public was also shown with non-performing loans financial institutions are incurring. From the field, it was revealed that the non-use of block chain technology had enabled loan applicants to operate distinctly or remotely from financial institutions. It was found that loan applicants were not scattered, identified, not formalized, and no single database for all resident Tanzanians (database of loan applicants). Crypto currency technology was found to be not fostered by most financial institutions to properly identify their clients, not commit adverse selection and ensure an optimal collection of repayments. For ease of identification of the clients, establishing a single database to be held, said the National Identification Authority in Tanzania, could help financial institutions tally the information provided by the credit applicant and those held in the database system of the authority.

Remote controlling of the domestic currency by the Bank of Tanzania is a centralized system in which money laundering and counterfeiting cases normally reported cannot be avoided by not adopting crypto currency. That is why this cross-sectional survey has been conducted. Though from the field, it was revealed that crypto currency might become enhancers of money laundering but being a recommendation of this study under discussion is that to avoid this prospective disaster from occurring then, decentralized crypto graph systems should be effective, safe, and secured. This study's discussion has explicitly uncovered the new policies the central Bank has to develop to achieve the said effectiveness.

2. Literature Review

This study adopted the Innovation diffusion technology and acceptance model. The Model postulates on economic contribution brought through adopting and using Crypto currency (Ashoor& Sandhu, 2019). Moreover, Bhosale and Mavale (2018) reported that cryptocurrency leads to increasing velocity of currency in circulation and retains the quantity of money in circulation. Furthermore, Adu, Buabeng, Asamoah, and Damoah (2020) pose that government revenue collection is maximised through cryptocurrency technology. Crypto currency, as commented by Liu and Tsyvinski (2018), contributed to curbing stagflation in the economy.

The theory either failed to dictate the innovative disruption the crypto currency technology has brought, i.e. socio-economic transformation, the issue which has been addressed by this study under discussion. The problems demonstrated socio-economic change brought by crypto currency found from the research area were over decentralised control, which led to stable monetary systems, and effective administration over the receipt and payment transactions because of the cash-less disruptive technology adopted. Moreover, the decentralized control mechanisms executed following the acceptance and adoption of crypto currency revealed to create market efficiency, the other issue not said by the Model thus explicitly addressed by this study under discussion.

According to Díaz, de-Córdobab, and Puchc (2019), the adoption and use of cryptocurrency were revealed to reduce inflation to <1% in China. Moreover, following the adoption of cryptocurrency technology, foreign exchange floatation was reported to come to a <2% in England (Deshwal, Kaurav& Thakur, 2019). Crypto currency has more over found to speed up payment and receipts transactions (Howell & Potgieter, 2019).

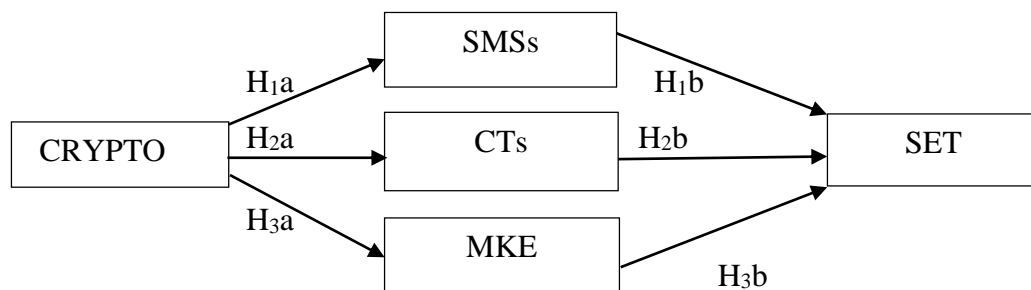
In Rwanda, the adoption of crypto currency was reported to be maximising government collection by 54% from 28% before the invention of the technology (Kesa&Mahoro, 2019). In South Africa, crypto-currency was revealed to curb the counterfeit dealings of Rand (Rs) to <12%, which is different from what it was before when the fake cases reported were acute to >80% (Mutambara, 2019). In Indonesia (from Jakarta provincial government), the adoption of crypto currency was revealed to maximise government tax revenue collection by 67% (Wang & Sari, 2019).

Crypto currency has been found to increase the efficient over-allocation and distribution of financial resources (Yanagawa& Yamaoka, 2019). The marginal productivity and outputs have been reported to stabilise by >75% following inventions over the crypto-currency (Zhang & Yang,

2019). Crypto currency has been revealed to sustain money market equilibrium (Mita, Ito, Ohsawa, & Tanaka, 2019).

Financial discipline and budgeting have been the attitudes individuals and firms have adopted following inventions over crypto currency technology (Nabilou, 2019). The behavior of holding large amounts of money for transactions was discarded with the invention of Crypto currency in Tanzania (Limba, Stankevičius&Andrulevičius, 2019). Crypto currency has been found to facilitate steady cashless transactions by 70% (Corbet, Larkin, Lucey, Meegan &Yarovaya, 2020). The studies shown above have revealed the positive influence of crypto currency on the economy. However, how explicitly socially and economically the transformation has been achieved has not been stipulated, which has been the area of focus of this study under discussion. The disruption addressed by this study underhand came following inventions of crypto currency technology revealed to be rooted in decentralized control through the use of secured and safe cryptography. The use of decentralized cryptography secured system has created a stable money system, effective e-money transactions, and market efficiency. Moreover, the other difference between the studies reviewed above and this one under discussion was over the surveyed area population. Indeed while other studies revealed to be used mostly to be case studies and descriptive research designs, this one underhand employed survey research design. While other studies reviewed above indicated to be used for thematic data analysis being presented using simple percentages and graphs, this study under discussion used structural equation modelling

Operationalisation of variables as it has been reviewed under theoretical and empirical literature reviews above were guided by the conceptual framework shown as Figure 1 below:-



Note: CRYPTO= crypto currency; SMSs = stabilization of monetary systems; CTs = Cash less transactions; MKE= Market efficiency; SET = socio-economic transformation

Source: Ashoor& Sandhu (2019); Bhosale &Mavale (2018); Liu &Tsyvinski (2018)

3. Methodology

The study was conducted in Dodoma City Council. This area was chosen as the surveyed population was accessible and reachable. Dodoma City Council is the area metallurgical found with the institutions responsible for transformation over inventing on crypto currency. Because crypto currency is subjected to decentralized control, most of the controlling and regulatory authorities' head offices responsible for thorough transformation, such as NIDA, BoT, BRELA, and ot Crypto currency is becoming the means of financial transaction many governments in the

World are adopting and used to. Crypto currency is the digital or virtual currency that discards hard cash financial transactions (Maurya, 2019). Crypto currency uses crypto grapy technology for checking the originality regarding the security features over the actual bit coin currency should have. Thus with the crypto currency system, counterfeit currency is easily identified through cryptography (Lee, 2019). Usually, the Central Bank controls crypto currency, and the control, safety and security are decentralized (Jagtiani, Papaioannou, &Tsetsekos, 2019).

Moreover, the study applied the cross-sectional survey design. Either simple random sampling was used to derive 104 respondents from 480,000 surveyed population. Using a calculator 130 (+) random numbers were created but only 104 were used to make a sample frame. This sample frame was chosen from 4 columns with 25 simple random numbers. The 104 sample size derived from 130(+) to a total of 480,000 population employed a confidence level of 10% (Mudge&Houlahan, 2019). The distributive unit of inquiry chosen was as shown in Table 1 below: -

Table 1: Deduction of sample size

Surveyed population	Sample frame	Sample size
NIDA officials	50	5
BoT officials	500	10
BRELA officials	150	5
DodomaCityCouncil officials	150	10
TRA officials	150	14
Bankers	4,000	10
Individuals/ firms	475,000	50
TOTAL	480,000	104

Source: Pilot Survey (2020)

Data from a sample frame shown in Table 1 were gathered primarily through a questionnaire. Data were collected by reviewing the literature, journals, and publications. The collected and processed data were analysed using inferential statistical tools, including the non-normalised fit index (NNFI), goodness of fit index (GFI) and discriminant analysis. The non-normalised and goodness of fit indices were applied to confirm for variables model fitting while decriminant analysis was conducted aiming to the determine regression effect. Factors loading was sustained by employing partial least square structural equation modeling (PLS-SEM) using a Smart PLS3 software.

The structural models guiding the inferential statistical analysis are shown in path analysis model 2 below. The structural models were appropriate because the recommended level for variables is between 10- 20 and the indictors is to be in the size of ≥ 10 from which each factor (variable) has to retain 3 indicators (Scherer, Siddiq &Tondeur, 2019).

SMSs

SMSs

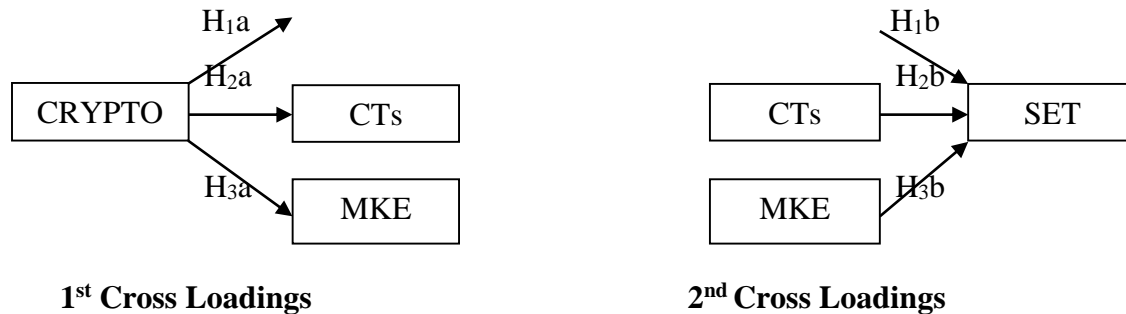


Figure 2: Path Analytic Models

From the data analysis models and hypothesis testing tools to reveal that the variable fit the Model or the relationship between variables is statistically significant the following assumptions presented in Table 2 hold: -

Table 2: Data Analysis Models' Assumptions

Analysis Model Assumptions

1. NNFI >The variable is said to fit the Model if NNFI>0.95 for 1st cross loading
>The variable is said to fit the Model if NNFI>0.47 for 2nd cross loading
>The P<0.01 capture for errors

Source: Mirkin (2019).

2. GFI >The variable is assumed to fit the Model for GFI<0.08 for 1st cross loading
>The variable is assumed to fit the Model for GFI<0.04 for 2nd cross loading
>The figure P<0.01 is for errors capturing

Source: Schepsmeier (2019)

3. Discriminant analysis >The variable is said to fit the Model if $\lambda > 0.9$ for 1st cross loading
>The variable is said to fit the Model if $\lambda > 0.45$ for 2nd cross loading
> The standardized $\lambda < 0.9 = \lambda < 0.45$ is for normality testing
>The figure 'standard error' (<0.05 = <0.025) is for capturing errors

Source: Linden (2020)

4. i) $H_{1a} \longrightarrow$ For $\chi^2 \geq 0.05$ accept the hypothesis otherwise reject <**The cryptocurrency positively and significantly contribute to stabilized monetary systems**>
ii) $H_{1b} \longrightarrow$ For $\chi^2 \geq 0.025$ accept the hypothesis otherwise reject (**The stabilized monetary systems influence positively and significantly towards socio-economic transformation**>

Source: Visvalingam (2020)

5. i) $H_{1a} \longrightarrow$ For $\chi^2 \geq 0.05$ accept the hypothesis otherwise reject <**The cryptocurrency positively and significantly influence cashless financial transactions**>
ii) $H_{1b} \longrightarrow$ For $\chi^2 \geq 0.025$, accept the hypothesis; otherwise, reject <**Cash less financial transactions positively and significantly lead to socio-economic transformation**>

Source: Tian & Pho (2019)

6. i) H_{1a} —————> For $\chi^2 = 0.05$ accept the hypothesis otherwise reject <crypto currency technology influence the market efficiency positively and significantly>
 ii) H_{1b} —————> For $\chi^2 = 0.025$ accept the hypothesis otherwise reject <market efficiency influence socio-economic transformation positively and significantly>

Source: Shankar (2019)

Results & Discussion

Results analysis

Non-normalised fit index Analysis test

This analysis revealed the strength of the association between crypto currency (independent variable) and stabilization in monetary systems (mediating variable) in the 1st cross-loadings. Indeed, the same tool was applied to test the strength of the relationship between the mediating variable, stabilized monetary systems (SMSs), and socio-economic Transformation (SET-dependent variable) for the 2nd cross-loadings. The results from the field were presented in Figure 2, Table 2 and 5.

Table 2: Crypto currency, stabilisation of monetary systems and socio-economic transformation

S/N	Value		
	1 st canonical loading	2 nd canonical loading	p.value
1. Money supply	0.95	0.47	0.003
2. Demand for money	0.96	0.48	0.001
3. Velocity of currency in circulation	0.95	0.48	0.002
4. Quantity of money in circulation	0.97	0.49	0.001
5. Storage of value of domestic currency	0.95	0.47	0.004

Source: Researchers' computations (2020)

With NNFI values ≥ 0.95 for 1st ≥ 0.47 for 2nd canonical loadings revealed over crypto currency to positively lead to stable monetary systems and socio-economic transformation. This was proven over the NNFI regarding money supply = 0.95; demand for money = 0.96; velocity of money in circulation = 0.95; quantity of money = 0.97; storage of value of domestic currency = 0.95. These results were ≥ 0.95 equals ≥ 0.47 (the accepted 1st and 2nd cross-loadings), showing the variable to fit the Model. Consistently the results were over the statistical significance revealed between the inventions over cryptocurrency technology and stability of monetary systems, which later give rise to socio-economic transformation with $\chi^2 \geq 0.05$ equals to $\chi^2 \geq 0.025$ for the 1st and 2nd canonical loadings (Refer Table 5 and Figure 2)

The goodness of fit index analysis test

The analysis was conducted to reveal the strength of the association between the crypto currency (independent variable) and cashless transactions (mediating variables) in the 1st cross-loadings. The same tool was applied to test the strength of the relationship between the mediating variable,

cash-less transactions (CTs), and socio-economic Transformation (SET), the dependent variable for the 2nd cross-loadings. The results from the field are shown in Figures Table 3 and 5.

Table 3: Crypto currency, cash-less transactions, and Socio-economic Transformation

S/N		Value		
		1 st canonical loading	2 nd canonical loading	Sig.
1.	Maximization of revenue collection	0.07	0.035	0.000
2.	Counterfeit proceedings reduction	0.07	0.035	0.000
3.	Durability of currency in circulation	0.06	0.030	0.001
4.	Fraudulent practices	0.06	0.030	0.002
5.	Risks of holding huge amounts of money	0.07	0.035	0.000

Source: Researchers' computations (2020)

The GFI for all five sub-constructs to bear its values ≤ 0.08 equals to $\text{GFI} \leq 0.035$ for 1st and 2nd canonical loadings, respectively, showing the variable cashless financial transactions to fit the Model. It is a proven fact that the adoption and use of cryptocurrency positively impact the socio-economic transformation mediated by cash-less transactions. The cash-less transactions to be facilitated was over increasingly in revenue collections, $\text{GFI} = 0.07$; reduction in counterfeit cases $= 0.07$; durability of the currency in circulation retention $= 0.06$; fraudulent practices cases curbed $= 0.06$ and reduction in risks of holding large amounts of money $= 0.07$. Despite the positive results shown through running the goodness of fit index, the statistical significance was shown to be sustained with the revealed $\chi^2 \geq 0.05$ equals $\chi^2 \geq 0.025$ for 1st and 2nd canonical loadings, respectively (See Table 5 and Figure 2).

Discriminant analysis test

The analysis revealed the strength of the association between the crypto currency (independent variable) and cashless transaction (mediating variable) in the 1st cross-loadings. Indeed, the same tool was applied to test the strength of the relationship between the mediating variable, cashless transaction (MKE), and socio-economic Transformation (SET)-the dependent variable for the 2nd cross-loadings. The results from the field are presented in Figures 2, Table 4, and 5.

Table 4: Crypto currency, market efficiency, and socio-economic Transformation

	1 st Canonical loading	Wilks' lambda	Unstandardised	Standard	Standardised
		λ	λ	error	λ
1.	Allocative efficiency	0.92	0.03	0.03	0.84
2.	Distributive efficiency	0.94	0.03	0.04	0.76
3.	Stabilisation in economy	0.91	0.01	0.02	0.63

2 nd Canonical loadings					
1.	Allocative efficiency	0.46	0.006	0.015	0.42
2.	Distribution efficiency	0.42	0.008	0.020	0.38
3.	Stabilisation of Economy	0.45	0.003	0.010	0.31

Source: Researchers' own computations (2020)

Given the Wilks' lambda, λ values >0.9 equal to $\lambda>0.5$ for 1st and 2nd canonical loadings, respectively, shows that market efficiency is the output over sustainable adoption and acceptance of the crypto currency. These facts indicate that crypto currency technology adoption is the function of socio-economic transformation brought by significant allocative efficiency, $\lambda=0.92$; distribution efficiency = 0.94, and economic stability =0.91. Moreover, with $\chi^2=0.3$, statistical significance exists between crypto currency technology and market efficiency and later between the market efficiency and socio-economic transformation.

Table 5: Chi2 Test Analysis

Variables	Value			
	1 st canonical loading	2 nd canonical loading	d.f	P-value
SMSs	2.50	1.25	(5, 99)	0.000
CTs	2.50	1.25	(5, 99)	0.001
MKE	0.90	0.45	(3,101)	0.000

Null hypothesis: CRYPTO=SMSs (**H1a**); CRYPTO=CTs (**H2a**); CRYPTO =MKE (**H3a**)/ SET=SMSs (**H1b**); SET=CTs (**H2b**); SET = MKE (**H3b**)

Discussions

Crypto currency and stable monetary systems for Socio-economic Transformation

Crypto currency technology has been revealed to stabilize monetary systems. The stable economic system said is due to the sustained money supply. It is because of the absence of negative externalities or external sources, which are the source of the creation of currency reserves over the currency circulation. Retention of the same quantity of money supply is because of curbing smuggling and illegal business; for now, registration is the priority for organizations/businesses/individuals included in the system. It was found that the cause of excessive money supply is the changes in the forces of demand and supply and not because of external illegal activities, indeed money laundering.

Crypto currency has been revealed to maintain the demand for money. This is because the trade-off between the money required for business transactions, investment, and consumption balances with the money supply. Crypto currency technology has been found to discourage jobless as receipts and income is generated by someone involved in the business, say of selling products or offering services. With crypto currency technology, a steady circular of income is attained, which is consistent with that of Fujiwara and Islam (2020). A firm's production becomes a source of wages that defines the limit of someone's expenditure. Crypto currency, therefore, requires individuals/firms to be smart in executing financial discipline, planning, and budgeting by regarding the income in e-money form. It is contrarily revealed that a demand for money might be sustained if the tax charged on a firm/business on a product is not fair, which causes the production or operating expenses to exceed the income in virtual e-money systems.

Moreover, as shown in Table 2, the positive relationship between crypto currency and a stable monetary system is over the steady velocity of currency in circulation, the same facts reported by (Duffie, 2019). It is either through credit/credit cards/mobile phones where float money is used to settle obligations. This either has a caution to be taken by individuals/firms to be transformed in mind that e-money is the effective and complicated contingency to catalyze business transactions. This also revealed a dilemma from the research area as they have used the system in the past now

and then. The problem of hard cash transaction in relation to lowering the speed of currency in circulation is that pocket money favors none or slow moving due to excessive savings, which might happen when the individual or firm does not transact and invest.

With crypto currency technology, the amount of the printed domestic currency maintains its size for a long time before a central Bank re-prints new money to replace the revealed worn and torn money or as new money is re-printed as a stimulus package. This maintained quantity of currency in circulation has been revealed to sustain business transactions. Moreover, the price of commodities; resources are retained not to cause excessive money supply due to persistent price increases. The crypto currency and its impacts on the stability of cost, the fact is consistent with that of classical theory by King Fisher (1952) ($MV = PT$); ($M = 1/V PT$) where M = quantity of money in circulation; V = velocity of currency in circulation held constant transaction. The constant transaction from the equation model above is a fact that proves that King Fisher's theory of quantity of money, as it is with crypto currency technology, maintains the purchasing power and value of domestic currency.

Crypto currency and Cashless Transactions for socio-economic transformation

It is the over-adoption of e-money transactions that derive money from individuals'/firms' pockets and hands (Fabris, 2019). The cashless transactions following inventions over crypto currency technology as the positivism (See Table 3) and statistical significance (See Table 5) revealed the maximization of revenue collection. The increase in revenue collections is because of reduced illegal bargaining transactions. Maximization over revenue collection was revealed to be caused by the curbed tendency of the business money to be invested in non-business entities called personal withdrawals. Normally money from the business held in the pocket is easily misallocated and invested non-productively if not the business entity's money ends up consumed. None-invested or non-productively allocated money to the business becomes a leakage to the economy.

The cashless transaction brought through crypto currency technology was revealed to curb the counterfeit proceedings cases (Thommandru & Chakka, 2022). This is true, but only if the decentralized control is subjected to furnished and effective crypto graph technology. It is a fact that if crypto currency is not secured, then, it might be a root cause of money laundering. This then was the same as what was revealed from the field in which individuals and business firms that if the crypto graph is ineffective, then much of the receipts might be laundering money which might become a disaster and cries to most businesses.

From the research field, it was revealed that crypto currency technology limit individual/firm hold money in their pockets and hands, which then the discrepancy of wear and tear become not part of the system. None torn and worn currency retains its value for a determinable long time: durability. With this crypto currency technology, notes and coins lose their security features in several cases and are therefore subjected to rejection or non-acceptance by society for transactions (Hazlett & Luther, 2020).

Crypto currency technology from the field revealed to eliminate the problem of fraudulent practices. Crypto currency was revealed to curb corruption, taxpayers' bribes, and bill settlers not to pay the required and receptive obligations (Rahman & Jin, 2023). That is why and indeed, as it has also been noted above is that it is from reduced corruption and fraud in which the government

receives its correct amount of tax and other allowances or incentives. It is e-money transactions enabled that do not allow non-business bargaining and therefore allow for transparency and effective administration such as tax collections. In Rwanda, adopting crypto currency technology has been found to create economic tax collections which are the major sources of government revenue. Indeed in Sweden, Crypto currency was found to discard illegal bargaining between business firms/investors and provincial officials during the collection of fees, penalties, and duties (Arvidsson, 2019). Here what is important to foster collection is just used to identity card numbers, the code number supplied by the owner/business firms/individuals. This is why it requires consistency to what was revealed from the research area in which it was reported that for effective crypto currency technology, there should be a single database for individuals/business firms. This has been revealed to foster encryption, but again, the regulatory authorities have one or single point of accessing the information of individuals/business firms as it is to NIDA in Tanzania. That means having one database system, for instance, in Tanzania revealed to increase the ease of retrieval of information about individuals or firms by BRELA (the business firm registration government organ); financial institutions (the profile of the credit/loan applicants); TRA (the tax collectors). Crypto currency technology was effective in the environment of networked systems fostered through block chain technology.

The cash-less transaction fostered through crypto currency technology found to secure individuals/firms who hold huge amounts of money in their pockets. It is from the same case curbed, which has revealed retaining the crypto currency to be secured and safe financial transaction systems. The robbery and thieves cases revealed to be curbed as someone to access e-money transactions just a code number, ID number, PIN, Debit card, Credit card, and pass-port revealed important. From the field, it was pinpointed that the systems/infrastructures over steady internet subscription, telecommunication network, and electricity should be sustained to implement crypto currency effectively. With a stable internet system to be maintained, Tanzania must be supplied with wireless internet. Moreover, for remote rural individuals/firms in Tanzania where the use of smartphones of which crypto currency is to be enabled through mobile apps (app store, play store), crypto currency is to be enabled just in simple non-internet enabled hand phones. This does not require using a control number for payment because just through the use of an ID number then, the money is withdrawn from the owners' account to the recipient (payee).

Crypto currency and market efficiency for socio-economic Transformation

Crypto currency's allocative efficiency was revealed to be sustained (See Tables 4 and 5). This is because even what is to be consumed should have its income regeneration to sustain a circular flow of income. Either allocative efficiency over financial resources to the productive sector is from the financial descriptive the individuals/ business firms must have to remain in the systems. With crypto currency, there is no way the household /individuals/ factor owner/firm may consume more than the revenue/receipt (Zhang, Chan, Ch & Sulieman, 2020). This means if the financial resources in e-money form are not allocated productively, then the individual/ firm cannot transact, and by default, the system will eliminate that individual/firm. This will either make the user of the system become off of the system, which is then a leakage to the economy. Crypto currency and

through allocative efficiency over business transactions (T) and investment, crypto currency is an economic injection.

Since crypto currency technology require details of every resident citizen regardless of geographical locality (i.e. rural and urban), gender (male and female), and small and large scale firms, then this ensures distribution over national income. The efficient distribution of goods and services was revealed to be sustained due to the curbed pull and push demand inflation (See Tables 4 and 5). Normally inventions over crypto currency run in line with changes in forces of demand and supply. It is because of retained money market equilibrium that allows for sustainability in distribution efficiency (Mniwasa, 2019).

Economic stability was revealed to be attained through the invention of crypto currency technology. This was rooted in the combated counterfeit, excessive money supply resulting from illegal printing or making copies of domestic currency, maximum tax collection, efficient allocation of resources, and efficient distribution of goods and services. The economic additions called injections following the productive allocation of financial resources create a steady circular flow of income which curb stagflation in the economy, which comply with what was also reported by Manahov (2023).

Conclusion & Recommendations

Conclusion

Crypto currency is the technology that uses a crypto graph as a secure and safe currency in circulation. The cryptograph is a decentralized, secured system. The central Bank takes control of it. Crypto currency technology is used to e-money for enhancing different business transactions and thoughts of investments. From the field, it was found that crypto currency contributes positively towards stabilized monetary systems, cashless financial transactions and market efficiency. This then revealed to change in the way individuals/firms were usually used by being used to hard cash transactions, which required them to hold large amounts of money in their pockets which then found to be unsafe and unsecured financial systems. Indeed a transformation was revealed over the efficient administration of the government revenue collections that curbed counterfeit and money laundering problems. Despite crypto currency's positivistic and statistical significance on socio-economic transformation, the technology was often not effectively adopted from the surveyed area. This was revealed to be caused by most business firms and individuals not formalised; the absence of a single identifiable database for all individuals/firms from which other regulatory authorities such as BRELA and TRA could easily retrieve information of interest from either customer/individual/firm from that system indeed since crypto currency is effectively enhanced in the environment of block chain technology, non-steady subscription of internet, telecommunication network and inadequate supply of electricity found to be another dilemma for crypto currency to be ineffective as revealed from the field.

Recommendations for action

The dilemma found from the surveyed area for crypto currency not effectively fostered, thus, the study recommends the following to the target population: -individuals/firms should be prepared minds for transformation, and individuals/firms are to register their businesses. To financial institutions/BRELA and TRA recommends that: -creating the enabling environment for crypto currency disruption technology; the senior managers have to be prepared to support the change;

the infrastructures, hardware and programs which are to facilitate change have to be made available in place; and the whole change process towards in adopting and accepting crypto currency technology should be planned. Regarding the Central Bank, the current study suggests that the vitalisation of policies for effective implementation of cryptography and the Central Bank has to ensure that the decentralized cryptographic control is to be effective. Either the current recommends the following to the government that it has to call for MKURABITA so that individuals/firms get registered; the government has to ensure a single database to be held, say, by NIDA for all resident Tanzanians, and the government has to ensure steady internet subscription, telecommunication networks and electrical energy supply

Recommendations for further studies

With relevance to this study underhand, other scholars may research in the future called further studies, including: -the crypto currency and stability in monetary systems; the crypto currency and enhancement of cash-less transactions; the crypto currency and sustainability of market efficiency. Moreover, other researchers may investigate crypto currency and economic stability, the impacts of stabilized monetary systems, effective government revenue collection administrations, market efficiency brought through crypto currency technology and socio-economic transformation.

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