



International Journal of Cryptocurrency Research

Publisher's Home Page: <https://www.svedbergopen.com/>



Research Paper

Open Access

Usage of Cryptocurrencies as a Financial Instrument

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Article Info

Volume 3, Issue 2, December 2023

Received : 17 August 2023

Accepted : 21 November 2023

Published : 05 December 2023

[doi: 10.51483/IJCCR.3.2.2023.45-56](https://doi.org/10.51483/IJCCR.3.2.2023.45-56)

Abstract

Cryptocurrencies represents a new form of digital asset that functions through blockchain technology, aiming to serve as an instrument of exchange. Nevertheless, the uncertainties surrounding cryptocurrencies raise concerns about their intended functions. This study aimed at assessing factors that affect cryptocurrencies usage in Uganda. The study research framework was based on the Technology Acceptance Model (TAM) to examine the suggested assumptions. The methodology was grounded on the cross-sectional research design that Employed a survey questionnaire to collect primary data from 286 Ugandan respondents. The findings Indicates that the perceived usefulness and the perceived trust had a positive effect on Usage Behavior. However, perceived ease of use indicated an insignificant effect on Usage Behavior, the findings provide value to policymakers and cryptocurrencies' intermediaries to formulate policies and business strategies.

Keywords: *Fintech, Cryptocurrencies, Perceived Usefulness, Perceived, Ease of Use, Perceived Trust, Behavior*

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1. Introduction

In the realm of Fintech Innovations, cryptocurrencies have emerged as a topic of significant interest due to its potential to reshape the existing financial Landscape (He et al., 2017), A cryptocurrency is a virtual asset that is designed to operate as a tool of exchange using cryptography to guarantee transaction flow and regulate the generation of new monetary units (Chohan, 2017). However, it wasn't until 2008 when Satoshi presented Bitcoin heralding the era of decentralized cryptocurrencies (Nakamoto, 2008). Over time, the cryptocurrency landscape has undergone continuous evolution, giving rise to other prominent players like Ethereum and Ripple, each introducing innovative features and advancements to the digital currency arena (Pilkington,2016).

By 2022, Over 320 million people worldwide were estimated to be using cryptocurrencies for a variety of financial activities and investment purposes (Owie, 2022). The broad accessibility of cryptocurrency platforms via gadgets like smartphones, Computers, and the internet has contributed to this significant usage rise (Rawhouser et al., 2022). There are currently about 19,850 different cryptocurrencies in use, and the cryptocurrency market was valued at \$2 tn in 2022 (CoinMarketCap, 2022). In comparison to the 13 cryptocurrencies that existed in May 2013 (White, 2015). This rapid growth indicates that people are interested in the digital currencies Market (Wisniewska, 2016).

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In the context of Uganda, there has been a notable shift in the business landscape with establishments like restaurants and online shops adopting cryptocurrency payment options into their financial systems (Namuli, 2019). This transition has introduced a diverse spectrum of cryptocurrency transactions, encompassing well-known cryptocurrencies such as Bitcoin, Tether, Litecoin, Ethereum, and Celo, facilitated through the local cryptocurrency exchange (Mandela, 2022). Presently, Ugandans tend to perceive cryptocurrency as a lucrative investment platform with usage steadily advancing (Asimwe, 2023).

To promote cryptocurrencies and their decentralized principles, The Uganda Central Bank have been swift to consider developing their centralized blockchain system coupled with introducing a supervisory sandbox framework designed to accommodate the expanding landscape of financial technology (fintech) entities (Coghlan, 2022). However, these developments aimed at combating the occurrence of misinformation and a general lack of understanding regarding how cryptocurrencies operate which have significantly contributed to fraudulent behavior in the cryptocurrency sphere (Biryabarema, 2022)

Usage patterns for cryptocurrencies in financial markets are still in a systematic development and acceptance process, usage behavior towards crypto money is a matter of curiosity (Giudici *et al.*, 2020). However, Considering the developments in the world and Uganda, cryptocurrencies different uses ranging from payment lines, online exchanges, digital assets for speculation, and non-monetary use cases on the internet (Baur *et al.*, 2018; Ammous, 2018; Penkov, 2017; Corbet *et al.*, 2019).

Considering the above, it's evident that cryptocurrency uses occur in online environments where trust has been a crucial component towards their Usage (Marella *et al.*, 2020; Arli *et al.*, 2021). Furthermore, previous studies indicated that simplicity of usage plays a key role in cryptocurrencies particularly among novice users as they are more likely to be influenced by perceptions of ease when adopting new technologies (Nadeem *et al.*, 2021; Namahoot *et al.*, 2022). As well as perceived benefits in terms of global use, cheap transaction costs, and transparency (Jankeeparsad and Tewari, 2018).

As a result, there is a noticeable sense of interest about how people perceive cryptocurrencies in the dynamic world of financial markets, where they have appeared as a disruptive and quickly changing asset class. Notably, scholarly research on the usage of cryptocurrencies in the setting of Uganda has been rather sparse. Therefore, it is important to comprehend why people intend to use cryptocurrency. This research gap serves as the basis for the current study, which aims to fill this vacuum by conducting a comprehensive survey with participants in Uganda.

2. Literature Review

Technology usage behavior is explained by the Technology Acceptance Model (TAM), which was put forth by Davis *et al.* (1989). Venkatesh *et al.* (2003); Featherman and Pavlou (2003) enhanced the Technology Acceptance Model (TAM) to give a general explanation of the elements that influences the behavior utilization of new technological innovation.

According to Rondan *et al.* (2015) stated that TAM uses the Theories of Reasoned Action (TRA) and planned behavior (TPB) as the foundation for its modeling of the interactions between variables, Importantly, TAM components that support user intention to embrace new technologies include perceived usefulness and ease of use (Roca *et al.*, 2006).

Furthermore, a variety of information system studies, including those on e-commerce, online banking, mobile payment services, online shopping, crowdfunding, and mobile microfinance services adopted the TAM model as a theoretical framework because of its simplicity, explanatory power, and ease of use (Fortes and Rita, 2016; Verkijika, 2020). Making it appropriate to facilitate the development of standardized measurement for recently discovered study fields (Abramova and Böhme, 2016).

Perceived Usefulness (PU) is defined as the degree to which an individual assumes that the use of technology would be helpful and beneficial to boost overall performance of any given activity (Davis, 1989). Cryptocurrencies have developed as a solution, offering faster fund transfer mechanisms with broader global accessibility with lower costs (Almajali *et al.*, 2022; Arias-Oliva *et al.*, 2019). Gil-Cordero *et al.* (2020) underscore that the perceived performance and utility of cryptocurrencies in facilitating various transactions significantly shape an individual's intention to adopt them, when engaging in financial transactions, the speed at which a transaction is processed emerges as a pivotal characteristic of payment systems (Tounekti *et al.*, 2019). Therefore, the subsequent hypothesis was suggested.

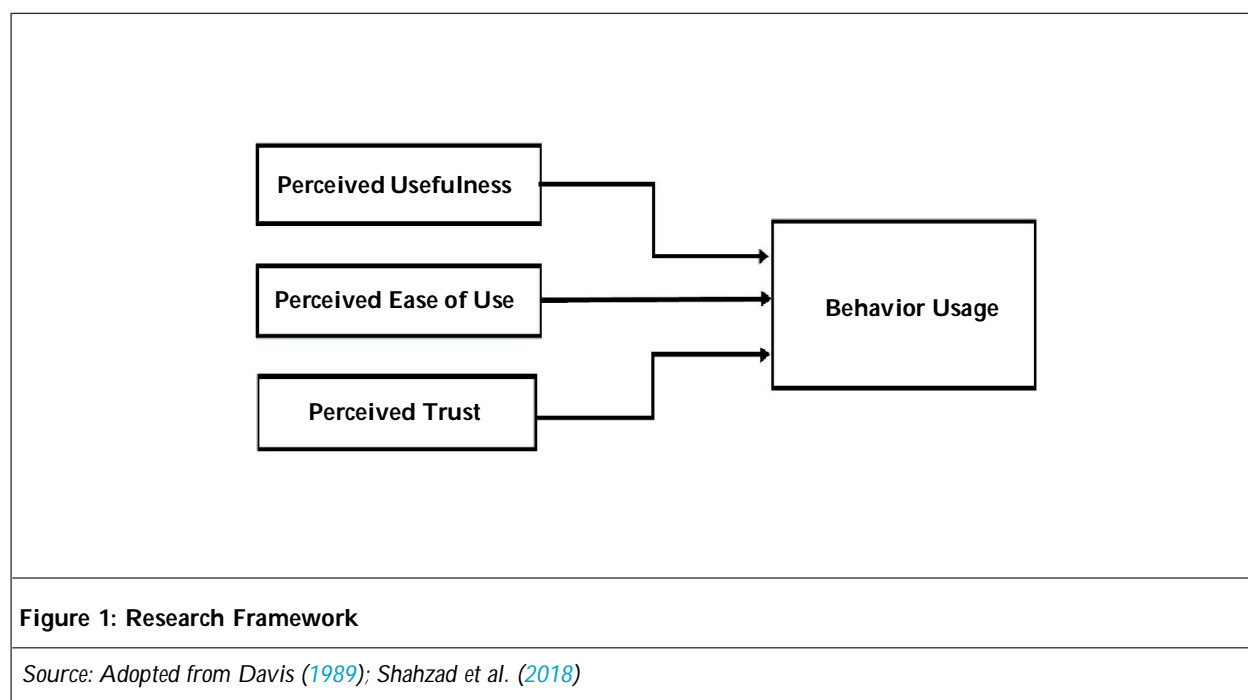
H_1 : PU influences users' engagement in cryptocurrencies transactions positively.

Perceived Ease of Use (PEOU), according to the research of Davis (1989) is the degree to which a person feels comfortable using a certain system or piece of technology. Regarding Cryptocurrencies, the perceived ease of use of technological innovation encompasses aspects of comfort, efficiency, and user-friendliness. (Yeong et al., 2022). Similarly, Gupta et al. (2021) accentuates the substantial influence of the learning curve associated with cryptocurrency technology on its overall acceptability. As illuminated by these researchers, users exhibit a heightened inclination towards embracing cryptocurrency services that seamlessly integrate into their lives, providing a blend of convenience and engaging interaction (Abbasi et al., 2021). Thus, the study hypothesized.

H_2 : PEOU influences users' engagement in cryptocurrencies transactions positively.

In line with their study Pavlou and Fygenson (2006), Perceived Trust (PT) is a belief that the trustee will act supportively to fulfill the expectation of trustees without missing its susceptibilities. The study of Huhtinen (2014) divided trust into two categories in monetary systems: trust in money and purchasing power, and trust in system functionality. Individuals' intentions to embrace cryptocurrencies as a means of exchange were likely lessened by their high rate of price fluctuation and illegal status (Shahzad et al., 2018). yet cryptocurrencies can build trust among participants in business transactions by providing a high level of transparency and accountability through an open and immutable ledger (ur Rehman et al., 2019). Consequently, the subsequent hypothesis is proposed.

H_3 : PT influences users' engagement in cryptocurrencies transactions positively.



3. Research Methodology

This study was designed as a cross-sectional triangulation of descriptive and correlational survey. Quantitative approach was employed using a survey questionnaire. Quantitative indicators and hypotheses were identified and structured into a questionnaire. The self-administered questionnaire consisted of two sections. The first section included questions on demographic traits, and the second section was designed on a 5-point Likert scale with underlying factors of the research instrument.

The measurement items for this study were adapted from past published studies with some suitable amendments to fit this present research. PU and PEOU both consisting of four items were considering Davis (1989), Shahzad et al. (2018) and Nadeem et al. (2022). The scales of PT (Four items) were based on Shahzad et al. (2018) and Fettahoglu and Sayan (2021). Finally, behavior usage including four items was measured according to Chen et al. (2016) and Shahzad et al. (2018). The questionnaire is found under Appendix 1.

The study was carried out in Kampala, the capital city of Uganda specifically with respondents from Makerere University. The target population consisted of Respondents from School of Business and Management sciences and School of computing and Information Technology. Further the study used purposive sampling method and stratified random strategy to identify the respondents. Using these methods, the researcher aimed at respondents who are likely to be aware of cryptocurrencies with varied levels of skill and engagement.

Krejcie and Morgan (1970) sample size determination table was used to get a sample of 368 customers out of which only 286 responded to the study questionnaires with 5 screened out for incomplete responses thus the response rate representing 76%, which is considered more is satisfactory according to Mugenda and Mugenda (2003).

In addition, efforts were made to reduce the response error through the introduction of the purpose and importance of the study (Pasek and Krosnick, 2010) and to increase the quality of primary data, questionnaire respondents were guaranteed confidentiality and anonymity and given a brief before they started filling out questionnaires and assured the responses will be used for research purposes only. The questions were also precise and concise making them easy to comprehend and respond to. This led to increased response rates and ensured quality of data collected.

Content Validity Index (CVI) utilized to measure the validity of the instrument by determining the relevance of the questions through an expert judgment method where two experts gave their expert view on whether the questionnaire would capture the intended data. All responses gave a CVI of over 0.8. The aggregate Cronbach alpha test computation was done for reliability of questions for the study from a pre-test on 15 respondents before the actual survey. A Cronbach alpha coefficient of 0.90 was achieved for the 16 items which was a satisfactory level of internal consistency (Taber, 2018).

Data collected from the primary sources were compiled, sorted, edited and coded in a Microsoft excel sheet. Further the excel sheet data was imported then analyzed using the Statistical Package for Social Sciences (SPSS) V26. Cross tabulation was used to give a general description of categorical demographic information such as age, gender and Education Level of respondents. Correlation and regression were used to establish the strength and direction of the relationship between the variables.

Descriptive statistics were computed and thereafter correlation and regression tests were conducted for the study. The study model specification went as follows for the inferential tests:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

where

Y = Crypto currencies usage

β_0 = Constant.

X_1 = Value for PU

X_2 = Value of PEOU

X_3 = Value of PT

e = Error Term

4. Data Analysis and Results

4.1. Demographic Characteristics

In this section, the findings of the analysis conducted on the data collected are presented. Table 1 presents the results of the frequency analysis performed on the demographic data of the respondents.

The results in Table 1, on gender indicate that majority respondents were Male (59.8%) with female (40.2%) and both genders were fairly represented. Second, majority of respondents on were aged below 30 years (61.2%) followed by 36.7% who were between the ages 31 to 49. The rest of the respondents were of 50 years and above representing 2.1%. Therefore, there was fair representation as the views of the entire population regardless of age was reflected nevertheless most of the cryptocurrencies users are likely to be the youthful and middle-aged customers. Regarding education level, most of the respondents were categorized in undergraduate

Table 1: Demographic Information of the Respondents

Variable		Frequency	Percentage
Gender	Female	113	40.2%
	Male	168	59.8%
Age	Below 30 Years	172	61.2%
	31 to 49	103	36.7%
	50 and above	6	2.1%
Education	Postgraduate	104	37.0%
	Undergraduate	177	63.0%

Source: Primary Data

level (63.0%) followed by postgraduate level (37.0%). Therefore, the level of education was diverse and relatively represented. This could also attest to the level at which the questionnaire questions and hence the research questions were understood and answered to the best of knowledge of the respondents.

4.2. Inferential Statistics

4.2.1. Correlation Analysis

Table 2 presents the results of Pearsons correlation coefficient statistic (ρ). This test statistic method was used to measure the relationship and significance between the study variables.

Table 2: Pearson Correlation Matrix

		Usage	PU	PEOU	PT
Usage	Pearson Correlation	1	.642**	.539**	.560**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	281	281	281	281
PU	Pearson Correlation	.642**	1	.791**	.744**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	281	281	281	281
PEOU	Pearson Correlation	.539**	.791**	1	.655**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	281	281	281	281
PT	Pearson Correlation	.560**	.744**	.655**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	281	281	281	281

Note: ** Correlation is significant at the 0.01 level (2-tailed).

The findings indicated that usage of cryptocurrencies is positively correlated with the three independent variables. The results show that usage is positively and significantly associated with PU at ($r = 0.642, p < 0.001$). With PEOU, usage of cryptocurrencies is positively and significantly correlated at ($r = 0.539, p = 0.001$).

Usage is positively correlated to PT ($r = 0.560, p < 0.001$). Therefore, any improvements in the independent factors mean an improvement in the level of Usage and vice versa.

4.2.2. ANOVA Table

ANOVA is utilized to establish the fitness of the model and justify the significance of the correlation between usage of cryptocurrencies and the independent variables herein (Table 3).

Table 3: Testing for Fitness of Model and Significance						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118.835	3	39.612	69.238	.000 ^b
	Residual	158.474	277	0.572		
	Total	277.309	280			

Note: a. Dependent Variable: Usage of Cryptocurrencies.
 b. Predictors: (Constant), Perceived Trust, Perceived Ease of Use, Perceived Usefulness.

Findings show a significant relationship between the dependent and independent variables given the level of significance 0.001 which is below p -value of 0.05. Therefore, the model was a reasonable fit that had a significant correlation between usage of cryptocurrencies and the independent variables.

4.2.3. Regression Analysis

Regression analysis was undertaken to identify the nature of the relationships that exist between the study variables. The standardized coefficients represent a change in the usage levels of cryptocurrencies due to one unit change in each independent variable, other factors held constant as shown in Table 4.

Table 4: Regression Coefficient Results						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.686	0.143		11.777	0.000
	Perceived Usefulness	0.435	0.079	0.469	5.512	0.000
	Perceived Ease of Use	0.042	0.062	0.052	0.686	0.493
	Perceived Trust	0.176	0.068	0.177	2.577	0.010

Note: a. Dependent Variable: Usage of Cryptocurrencies.

Results show that PU is positively and significantly related with usage of cryptocurrencies ($\beta = 0.469, p = 0.001$). A unit increase in PU translates to 0.469 increases in usage and therefore PU positively affects usage of cryptocurrencies. Relatedly, PT positively and significantly influences Usage ($\beta = 0.177, p = 0.001$). This means that a unit increase in PT leads to 0.177 increase in usage levels when other factors in the model held constant. However, PEOU showed a positive and Insignificant relationship with Usage ($\beta = 0.052, p = 0.493$).

For the model $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$, therefore, shows that all other variables have a value of zero when adoption level is at 1.686.

4.2.4. Regression Model Summary

The result of model summary of the multiple linear regression analysis is presented in Table 5.

Table 5: Model Summary of the Regression Analysis				
Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.655 ^a	0.429	0.422	0.75638

Note: a. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use, Perceived Trust. b. Dependent Variable: Usage of Cryptocurrencies.

The R^2 indicates the extent of variation in the dependent variable caused by the independent variables. This indicated that about 42.9% of the difference in the Cryptocurrencies usage is attributed to Perceived Usefulness, Perceived Ease of Use and Perceived Trust while the rest of the variations are attributed other factors.

4. Conclusion

The motivation behind this study was to investigate to individuals' intentions to use cryptocurrencies as a financial instrument among the people of Uganda, for this purpose the study adopted the TAM in addition with a key factor of perceived trust which defines the online aspects of technology.

The result regarding the relationship between usefulness and cryptocurrencies usage is consistent with the findings of Mendoza-Tello *et al.* (2019) that there is a positive relationship between usefulness and cryptocurrencies usage. According to Mendoza-Tello *et al.* (2019), respondents who perceive the new cryptocurrencies technology as a currency that give them transaction freedom, support them to complete various transactions, is cheaper than other modes of payment, and cryptocurrencies transactions are faster and time saving are more likely to adopt cryptocurrencies.

It was also observed from the study that Trust and cryptocurrency adoption is significantly related. This study indicated that respondents who will adopt cryptocurrencies required having the trust generated from Cryptocurrencies being a more reliable currency, secure from cyber-attacks, backed by Government for security, and the information about cryptocurrency financial system transparency, this is in line with (Shahzad *et al.*, 2018).

However, the result shows that there is no significant impact between ease of use and cryptocurrencies usage (Nadeem *et al.*, 2021). If cryptocurrency usage is desired to be increased to a high level, ease of use should be emphasized. Because of their complex structures and the difficulty in understanding them, participants may be reluctant to use cryptocurrencies in a similar way, Abramova and Böhme (2016) indicated in their study that perceived ease of use was determined to have the weakest effect on system use.

The study's research implications originate from the possibility that financial institutions and technology could evolve so quickly that the current ones become outdated, giving rise to cryptocurrency "The currency of the future". This study provides a strong theoretical base concerning the importance of sympathetic citizen intentions to use cryptocurrencies as a mode of exchange and investment in Uganda. This study also makes a great contribution to the building of cryptocurrencies literature, which demonstrates the similarities and differences in terms of global adoption. Furthermore, this study is valuable for policymakers and government organizations, to understand the citizen perception toward the adoption of cryptocurrencies as a financial Instrument, which assists to create parameters for cryptocurrencies usage.

This study also has some limitations with respect to the collection of data from only Makerere, Kampala capital city, instead of the rest of Uganda. So, this might be representing the behavior of this city instead of Uganda, which left room for future researchers to prepare a comparison between different cities of Uganda. Furthermore, this study utilized a quantitative method. Future studies should therefore consider qualitative or mixed methods which will enrich the comprehension of the findings. Future researchers may also investigate the relationship between various factors like the effect of the Regulatory Framework and Government Support which was not measured by this study.

Conflicts of Interest

The author declares no conflict of interest.

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Appendix 1

Questionnaire

Dear Respondent,

I am Yassin Asimwe, **Tel. +256701700264 (asimweyasin@gmail.com)** a master's student at Makerere University College of Business and Management Sciences in Uganda am conducting a study titled, **"Usage of Cryptocurrencies as financial Instrument"**. As part of my research, you have been selected as a respondent for this study due to your possession of Knowledge and Exposure to Cryptocurrencies. This questionnaire is intended to facilitate the collection of data purely for the academic purposes of this study. Please be assured that the information provided will be treated with strict confidentiality and shall be used only for academic purposes.

The researcher will ensure that all research ethical considerations are upheld in the collection and uptake of the information provided in this study. Thank you very much for your valuable time.

Section A: Background/General Information

1. My current age (please tick the age bracket) in years.
 - 18 and above
 - 31 – 49
 - 50 and above

Appendix 1 (Cont.)

- 2. Gender
 - Female
 - Male
- 3. My level of education
 - Postgraduate
 - Undergraduate

Section B: Perceived Usefulness, perceived ease of Use, Perceived Trust, and Cryptocurrencies Usage.

For questions in section B, please indicate the extent to which you agree or disagree with the statements provided on Cryptocurrencies adoption in Uganda. The rating scale for your level of agreement is.

Scale rate	5	4	3	2	1
Option	Strongly agree	Agree	Neutral	Disagree	Strongly disagree

Tick "✓" the box.

Variable Details		5	4	3	2	1
Perceived Usefulness (PU)						
PU 1	Cryptocurrencies is Cheaper than other modes of Payment					
PU 2	I think cryptocurrencies can meet my performance expectations to complete various Transactions					
PU 3	I think cryptocurrencies are more desirable than government moneybecause of their anonymity.					
PU 4	I think using Cryptocurrencies for payments is faster and save me time					
Perceived Trust (PT)						
PT 1	I believe that Cryptocurrencies are more reliable currency.					
PT 2	I Believe Cryptocurrency Platforms are very secure from Cyber-attacks.					
PT 3	I think the Cryptocurrencies decentralization nature empower me with the control of my money.					
PT 4	I think the information about Cryptocurrency financial system is sincere.					
Perceived Ease of Use (PEOU)						
PE 1	I perceived that Cryptocurrencies are an easy phenomenon to understand					
PE 2	I believe that interaction with Cryptocurrencies would be ease					

Appendix 1 (Cont.)

Variable Details		5	4	3	2	1
Perceived Ease of Use (PEOU)						
PE 3	I think it's simple to learn Cryptocurrencies operations					
PE 4	I think can afford the Basic Resources required to access Cryptocurrencies platforms.					
Cryptocurrencies Usage (CU)						
CU 1	I intend to use Cryptocurrencies as an alternative source of currency.					
CU 2	I believe using Cryptocurrencies are helpful to timely fulfill my obligations.					
CU 3	I intend to use Cryptocurrencies regularly .					
CU 4	I will encourage others to use Cryptocurrencies as a mode of exchange.					

Cite this article as: Asimwe Yassin. (2023). Usage of Cryptocurrencies as a Financial Instrument. *International Journal of Cryptocurrency Research*, 3(2), 45-56. doi: 10.51483/IJCCR.3.2.2023.45-56.