Relationship between Risk Perception, Trust, and Adoption of Cryptocurrency-based Payment Systems in Africa

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Abstract

The emergence of digital financial technologies (DFT) has opened up many possibilities for payment systems within African economies. Such possibilities arise in the presence of low levels of financial inclusion, expensive remittances, unequal access to conventional banking services, and the expansion of mobile connectivity. Under these circumstances, the use of financial technologies that utilize cryptocurrencies has been proposed as a potential means of making payments from one person to another and from one country to another. Their uptake, however, has not been uniform and can be influenced by people's attitude toward technology, payments platforms, and institutions, as well as risks involved. This paper reviews existing literature to examine the relationship between perceived risk, trust and the adoption of cryptocurrency-based payments in African economies. The review draws on the Technology Acceptance Model (TAM), Diffusion of Innovations, perceived-risk theory and trust-based technology adoption perspectives. Particular attention is given to studies that focus on African economies and distinguish the use of cryptocurrencies for payments from cryptocurrency investment or speculation. According to the literature, the perception of risk influences consumers' decisions on the use of financial technology using cryptocurrencies, though there might be some variation in that depending on the context. Trust is another critical factor as the users should feel confident about the safety of the technology and payment system, as well as privacy of the information and institutions involved. The adoption of cryptocurrency in African countries can also be influenced by such factors as technological readiness, mobile financial infrastructure, regulation, and access to financial services. Nonetheless, having cryptocurrency or investing in it does not necessarily mean that the users employ them for payment purposes. This paper thus advances a conceptual framework that integrates these variables. It posits that perceived risk has an inverse effect on adoption of cryptocurrencies for payments whereas trust has a direct effect on adoption and may also influence the effect of perceived risk on adoption. The technological and regulatory contexts are seen as important conditions. In integrating these behavioral, technological, and institutional factors in the African context, the paper advances propositions that can be tested in further empirical studies. These propositions might prove valuable to academics, banks, technology companies, and policy makers in building secure and ethical digital payment systems.

Keywords: cryptocurrency adoption; cryptocurrency payments; perceived risk; trust; fintech; blockchain; digital payments; Africa; financial inclusion; regulatory environment

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Introduction

Financial technologies through digitization have revolutionized the way individuals, corporations, and governments conduct their financial transactions. Technologies such as mobile payments, internet banking, e-wallets, blockchain technologies, and cryptocurrencies have facilitated access to financial products and services. One type of digital finance technology includes the use of cryptocurrency payment technologies. This technology enables individuals to conduct P2P transactions without needing a central bank.

Since Nakamoto's (2008) proposal, Bitcoin has become the starting point for the development of cryptocurrencies. The potential of blockchain technology for payments, banking, commerce and other applications has attracted considerable interest from academics and policymakers. However, cryptocurrency systems also face a range of challenges, including price fluctuations, consumer protection, cybersecurity, regulation, privacy, functionality and governance. Böhme et al. (2015), for example, discussed Bitcoin's use as a payment system as well as the security and regulatory concerns surrounding it.

This makes Africa an important context for examining cryptocurrency-based payment systems. Mobile financial service delivery in Africa has been quite extensive in some countries in Africa. However, there is no uniformity in access to financial services, digital technologies, and financial literacy levels among the various countries in the continent. There are also varying remittance rates in the various countries. The growth of mobile money shows how financial services can reach people beyond the conventional banking system, making it relevant to discussions about the adoption of other forms of digital finance. As such, crypto technology has been proposed as another element of the continent's maturing digital-finance ecosystem at times.

However, it should not be taken for granted that cryptocurrency adoption is a homogenous trend across Africa. There are various aspects of behaviour such as owning cryptocurrencies, investing in them, trading and making payments with them, and using cryptocurrencies for remittance. The mere presence of cryptocurrency investment does not necessarily mean that people often use cryptocurrency to buy products and services. This is significant because the present paper will concentrate specifically on payment systems based on cryptocurrencies.

Perceived risk vs trust is another major topic when it comes to the implementation of cryptocurrencies payments. In financial dealings, it is essential that individuals feel confident that the money, personal information, transactions, and accounts will be protected. However, the risks such as volatility of price, frauds, lack of cyber security, complex

technology, mistakes, and lack of legal protection can create the sense of higher perceived risk. Trust could be the key factor in reducing uncertainties that may increase confidence in technology, service provider, platform, and the institutions.

The importance of trust in determining people's choices with respect to cryptocurrency payment has recently been discussed in many empirical works. For instance, Mutambik et al. (2024) analyzed determinants of trust in cryptocurrency transactions, which include information privacy, traceability, and other factors such as cultural ones. Such problems have also been studied in relation to Africa. For example, Koroma et al. (2022) analyzed the connection between citizens' behavior, transparency of blockchain technology, and trust in cryptocurrencies of the Mano River Union.

On the contrary, research done on investment in cryptocurrency shows that distrust in the traditional financial system does not mean that people like cryptocurrency investments. Auer and Tercero-Lucas (2022) observed that there was no indication that the motivation for cryptocurrency investment was mistrust in fiat money or conventional finance. This conclusion is drawn from American consumer data. This is proof of the need to be careful with the African cryptocurrency literature and the need to differentiate payment from investment behaviour.

In this background, the present paper explores the perceived risk and trust and their possible impact on cryptocurrency payment adoption in African economies. It also considers the contextual factors of technology infrastructure and regulation in regard to adoption.

Background of the Study

However, a lot has been achieved in the digital-financial space in Africa, with mobile money, digital banking, fintech, and even Internet connectivity becoming increasingly common. Mobile money services have demonstrated their ability to provide financial services to individuals who might be out of reach of traditional banks.

Cryptocurrencies are developing in this context. Depending on the type of cryptocurrency and infrastructure used, such systems can enable peer-to-peer and even international transactions. Blockchain systems can offer a distributed transaction record and digital wallets can allow users to engage with digital assets via mobile or internet-connected devices.

The tech is available, but it doesn't necessarily mean that the technology will be adopted. Payment technologies should offer enough perceived usefulness, usability, security, reliability and trust to the user. Cryptocurrency transactions can also, in addition, be affected by the

regulatory environment, as users and businesses will see if the transactions are legally allowed, secured, and predictable.

However, the financial systems of African economies are also very different. There are countries with more advanced mobile-money ecosystems, and other countries with less digital infrastructure. There are also differences in regulation of cryptocurrencies. Hence, it is difficult to argue that the determinants of cryptocurrency payment adoption are similar in all countries of Africa.

This variety is demonstrated in the current evidence. According to Chainalysis, Sub-Saharan Africa accounted for a relatively low percentage of all cryptocurrency transactions in the world, but also had a number of countries with significant levels of cryptocurrency activity; the 2024 report listed Nigeria as the second country in the world in terms of the number of coins and tokens transactions per day. Chainalysis also ranked Ethiopia, Kenya, and South Africa among the top 30 countries in cryptocurrency activity. These indicators are related to cryptocurrency activity in general, and are not directly related to everyday cryptocurrency payment adoption.

The separation is crucial: payment adoption relies on users' willingness to pay, whether or not merchants accept it, whether users think it is appropriate to pay with it, whether there are conversion mechanisms, and whether the overall legal and technical environment helps or hampers the adoption of payment.

Research Problem

Although cryptocurrency activity has grown in several African economies, the literature reviewed here does not yet provide a sufficiently integrated behavioral and institutional explanation of cryptocurrency-based payment adoption across the diverse African context.

While some are relevant to the study, there are several dimensions explored in existing literature that will be discussed: perceived risk, trust, technology acceptance, blockchain transparency, regulatory conditions, financial inclusion, and digital infrastructure. However, these factors have often been examined separately, with limited attention to the wider African context. In addition, much of the research on cryptocurrency has focused on investment and ownership rather than its use for making payments.

This gives rise to three associated issues.

The first one is the absence of conceptual integration of perceived risk and trust for explaining the adoption of cryptocurrency payments.

Second, some studies treat cryptocurrency ownership or investment as evidence of adoption, although neither necessarily indicates that people use cryptocurrencies to make payments.

Third, there are notable differences in the regulatory, technological, financial and institutional settings among various African economies. In turn, it is therefore not possible to transfer findings from other geographical environments to the African payment context automatically.

Hence, the research question for this study would be: How do risk perception, trust, technological infrastructure, and regulatory framework influence the adoption of cryptocurrency-based payments in Africa?

Research Objectives

The study has four aims (or objectives):

1. To analyse the association between perceived risk and cryptocurrency-based payment uptake in the African economies.
2. To analyse the importance of trust in technology, cryptocurrencies platforms and institutional arrangements in cryptocurrency-based payment adoption.
3.To explore the contextual conditions of cryptocurrency payment adoption through technological infrastructure and regulatory landscape.

For developing a theoretical framework that will be used to analyze the relationship between the use of cryptocurrencies and risk perception and trust in Africa.

Research Questions

The study aims to answer the following research questions:

RQ1 was answered through the identification of perceived risks from the literature related to the use of cryptocurrency for payments in African economies.

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RQ2: What is the relationship between trust and the use of payments based on cryptocurrencies?

RQ3: How would perceive risk influence the use of cryptocurrency-based payment systems?

RQ4: What is the relationship between technological infrastructure and regulatory environment with the use of cryptocurrency-based payments systems in Africa?

Significance of the Study

Theoretically, it brings together perceived-risk and trust perspectives with existing theories of technology adoption to examine the factors associated with the adoption of cryptocurrency-based payment systems.

Contextually, this research centers on African countries, in which there are variations regarding the use of mobile money, access to financial services, and regulation, among others. It is therefore appropriate for understanding technology adoption among populations within this area.

From a practical perspective, the findings of the research would contribute to knowledge concerning the factors that influence cryptocurrency acceptance or rejection as means of payment.

As far as policy is concerned, consideration of perceived risk and trust would help stakeholders to consider consumer protection, cybersecurity, regulatory transparency, digital literacy, and development of the payment system.

Literature Review

Cryptocurrency-Based Payment Systems

Cryptocurrency-based payment systems are payment systems that make use of digital currency and blockchain technology in order to facilitate payments between individuals. Bitcoin is very well-known cryptocurrency which came about as a means to facilitate peer-to-peer transactions (Nakamoto, 2008).

There are quite a few distinctions between the networks that cryptocurrencies use and those used by traditional financial systems. Some of these distinctions are transaction verification, price fluctuations, user wallet and key management, exchange processes, and regulation mechanisms. These factors may influence how cryptocurrencies are used in payments relative to electronic payments. According to Böhme et al. (2015), Bitcoin is a technological payment innovation and a system of economic, security and regulatory significance. The payment potential is thus evaluated against the actual dangers that come with cryptocurrency use.

For this study, cryptocurrency adoption is defined as the intention and the act of adopting cryptocurrency in making payments rather than an investment.

Cryptocurrency Adoption in African Economies

African context is a distinct environment for innovation in digital finance. Mobile money has demonstrated that digital technologies can facilitate access to payment services for those individuals who have very limited access to traditional financial institutions.

On the other hand, cryptocurrency adoption depends on the country. Financial institutions, levels of digital knowledge, internet availability, the exchange presence, regulations, monetary situation, and consumer behaviour may affect the adoption of cryptocurrencies.

This is why cryptocurrency adoption in Africa should be studied individually by considering each country separately and not as one uniform African market.

In the context of the Mano River Union, Koroma et al., (2022) studied people's trust in the block chain, transparency and also citizens' behaviour around cryptocurrencies, giving direct evidence that trust-related mechanisms are applicable for African cryptocurrency study.

At a broader level, it has been documented that even if the volume of cryptocurrency transactions on the continent is low, relative to its economic size, it has not been insignificant.

The observations highlight the need to differentiate cryptocurrency activity and cryptocurrency payment adoption.

Perceived Risk

Perceived risk is a person's subjective evaluation of uncertainty and negative outcomes of a choice or technology (Featherman & Pavlou, 2003).

Cryptocurrency payment systems have four main dimensions of perceived risk.

Financial Risk

Financial risk means the risk that comes about because of the fluctuations in the value of cryptocurrencies, transaction costs, exchange rates, among others.

Security Risk

Security risk issues contain hacking, fraud, phishing, wallet insecurity, credentials loss, and other types of security risk

Regulatory Risk

Regulatory risk is the uncertainty over the legal status and regulation, taxation, consumer protection, licensing and legal uses of cryptocurrency.

Operational Risk

The operational risk relates to anything that can go wrong with the system or with transactions, or with the platform, or with the wallet, or with any type of failure that can happen with technology.

Such risks could make users less likely to use cryptocurrency payment systems, especially if they lack experience with or knowledge of digital financial technologies.

Trust in Cryptocurrency Payment Systems

Trust is especially significant in the case of financial transactions that are conducted online, where the transactions cannot be directly seen by the users involved.

There are three levels to trust in payment systems of cryptocurrency.

Technological Trust

Technological trust refers to the trust in technical infrastructure, cryptographic security, transaction histories and blockchain technology.

Platform Trust

Platform trust relates to the trust that is placed in cryptocurrency exchanges, wallets, payment applications, and service providers.

Institutional Trust

The institutional trust refers to the trust given in the regulators, governments, financial institutions, legal frameworks, and consumer protection arrangements.

Specifically for cryptocurrency payments, recent studies show that information confidentiality, identifiability, and traceability can be factors that foster trust in cryptocurrency payments, highlighting that trust in cryptocurrency payments is not unidirectional but rather multidimensional (Mutambik et al., 2024).

Technology Acceptance Model

*The Technology Acceptance Model (TAM) suggests that the perception of usefulness and ease of use are factors that affect the acceptance of technologies (Davis, 1989).

The TAM is a useful base to build upon for the research of cryptocurrency payments, as users can assess cryptocurrency payments based on their usefulness, convenience, efficiency, and ease of use.

But it might be important to do cryptocurrency payment research beyond TAM, as the risks and institutional uncertainties of

cryptocurrencies are unique. Therefore, perceived risk and trust should be combined with the traditional technology-acceptance factors.

Diffusion of Innovations Theory

The Diffusion of Innovations (DOI) theory is a theory that will explain how innovations spread through social systems over time, as presented by Rogers (2003).

The theory emphasizes the features of relative advantage, compatibility, complexity, trialability and observability. These concepts apply to cryptocurrency payments, as users can evaluate whether cryptocurrency payments offer any benefits over traditional payment methods, if cryptocurrency is compatible with their financial habits, and if the complexity of cryptocurrency makes it an unattainable goal.

Moreover, the diffusion process of African economies can depend on existing mobile money systems in addition to the social transmission of electronic payments.

While TAM emphasizes perceived usefulness and perceived ease of use, Diffusion of Innovations (DOI) uses an entirely different perspective, namely, relative advantage, compatibility, complexity, trialability, observability, and social diffusion. In turn, perceived risk theory evaluates the likelihood of potential losses. Trust-based theories analyze the level of trust that users place in the technology itself and in the means of its distribution. Each theoretical perspective explains a different aspect of technology adoption. The constructs they address may also interact.

Level of trust is closely related to perceived risk. Trust on a higher level can decrease uncertainty, and trust at a lower level can cause the person to think of risk.

Pavlou (2003) combined these two constructs, trust and risk, with technology acceptance, showing that both constructs are important for understanding the adoption of electronic-commerce.

The connection is not, however, to be taken as universal. Various types of trust can deal with various types of risk. For example, regulatory risk perception may be influenced by institutional trust, whereas platform trust is likely to be related more to operational and security concerns.

Cryptocurrency Payment Adoption Versus Cryptocurrency Investment

The principal difference in this research is between investment in cryptocurrencies and their use as payment.

The general idea behind cryptocurrency investment is to buy and store cryptocurrencies with the goal of making a profit. Payment adoption

refers to the use of cryptocurrency to buy things or services, to move value, or to complete transactions.

The reasons for and the dangers of these behaviours may vary. Indeed, Auer and Tercero-Lucas (2022) did not observe such a motive in their U.S. data. What they found, therefore, should not be assumed to be evidence of the payment users of cryptocurrencies in Africa.
This distinction is important for the current study as it avoids the automatic assumption of evidence regarding investment behaviour to payment adoption.

Technological Infrastructure

Technological infrastructure is the environmental capacity needed for the smooth functioning of the payment system of cryptocurrencies.

Relevant factors include:

•internet connectivity;

•smartphone availability;

•mobile-network reliability;

•digital-wallet accessibility;

•transaction-processing capability;

•cybersecurity infrastructure;

•platform interoperability.

The African digital-financial industry is one such case where mobile technology plays a role in facilitating financial services to the masses. However, infrastructure is not evenly distributed across different nations and their urban and rural populations.

In this study, technological infrastructure is thus defined as one of the contextual factors that can facilitate or hinder adoption of cryptocurrency payment.

Regulatory Environment

The following are some of the potential areas where regulation could affect the adoption of cryptocurrencies: legal certainty, consumer protection, taxation, licensing, anti-money laundering regulations, and cybersecurity laws.

Clear regulations can assist in reducing uncertainties and creating legitimate perceptions. However, on the other side, there is a possibility of higher risk perception because of regulatory uncertainties.

There may also be compliance requirements under regulations that affect the availability and affordability of crypto services. So one must not make the mistake of saying that "more regulation means more adoption" because it would be incorrect. The relevant question is whether the regulatory framework is clear enough and consumer-friendly while fostering the required confidence in institutions and development of technology.

Methodology

Research Design

The research is based on an integrative and structured literature review and conceptual analysis design.

The study does not aim to statistically test the proposed model using primary survey data. Instead, the study is based on the concept of synthesizing the existing theoretical and empirical studies to look for the common relationships among perceived risk, trust, technological infrastructure, regulatory environment, and cryptocurrency payment adoption.

This approach is suitable as the research question involves the integration of different theoretical viewpoints and the formulation of a conceptual model to be tested in the future.

It is then possible to carry out a formal systematic review, following the protocol outlined below, but the number of databases and screening results found must be entered from the researcher's actual search not estimated.

Literature Search Strategy

The literature search should include significant databases such as:

•Scopus;

•Web of Science;

•ScienceDirect;

•Google Scholar.

Research should include phrases about:

Payments using cryptocurrency, crypto-asset, or blockchain payments.

AND

The act of being adopted OR accepted OR used OR paid OR taken up OR paid for

AND

The conditions use risk, perceived risk, security, and/or trust. Risk, perceived risk, security, or trust could be the conditions.

AND

OR Africa OR African OR Sub-Saharan Africa OR Nigeria OR Kenya OR South Africa OR Ghana OR any other economy in Africa.

The review covers studies conducted from 2018 to 2025, but also retains previous seminal works to help in understanding the theoretical background of the topic. The reproducibility of the review can be assured by documenting the year each database was searched, the specific search strategy used to search each database, and the number of records returned and number left after each screen in the manuscript of the review. This information can be captured using the actual search and screening information of the authors.

Inclusion and Exclusion Criteria

The inclusion criteria for studies to be used in this review were as follows:

1. Studies that made any discussion about cryptocurrency, blockchain-based payments and digital financial technologies in general.
2. Studies that made any study on adoption, acceptance, use, trust, risk perception or other factors affecting the use of the technology.

3. Studies that contained theoretical or empirical evidence in relation to the research question.

4. Studies focused on African economies or had comparative evidence with relevance to Africa.

5. Peer-reviewed academic journals or authoritative institution's report.

The exclusion criteria for studies to be used in this review were as follows:

1. only predict cryptocurrency prices, but not behavioral;
2.Show interest in blockchain technology with no financial implications;

3.Discuss cryptocurrency mining that does not involve payments; and

4. is missing methodological/conceptual information;

5.duplicate another publication;

6. Only consider investment behaviour and offer no transferable relevance to the adoption of payments.

Data Extraction

The information that a structured extraction process needs to collect from each source should include the following:
Information to Extract

Bibliographic information – Author(s), year, title, journal (or book)

Country/region: Country or African sub-region

This research covers the areas of payment, investment, fintech and blockchain.

Sample Population and sample size (if applicable)

Approach: Quantitative, qualitative, review, or conceptual.

Empirical studies: TAM, UTAUT, DOI, trust or perceived-risk theory, or other relevant frameworks.

Dimensions of perceived risk: Financial, security, regulatory, and operational risks, how each is defined and measured.

Dimensions of trust: Technological trust, platform trust, and institutional trust, how each is defined and measured.

Adoption measure Intention, actual use, payment use

Main findings - Principal relationships

Restrictions Any significant restrictions that were found.

Relevance Contribution to the proposed framework

Analytical Procedure

The literature is examined thematically in terms of five main constructs:
1.perceived risk;
2.trust;

3.technological infrastructure;

4.regulatory environment;
5.cryptocurrency payment adoption.

It includes the comparison of the findings against each other to identify similarities, differences, and variations in contexts.
However, research on cryptocurrencies varies in its relevance to this study. Studies focusing on payment behaviour, trust, perceived risk and the African context are given greater theoretical weight.

Findings from the Literature Synthesis

Perceived Risk as a Barrier to Adoption

The significance of risk in employing the digital financial technologies has been highlighted in the literature again and again. The risks associated with cryptocurrency-based payment systems include market risk, cybersecurity, technical risk, and regulatory risks.
However, the effect of risk depends on the nature of cryptocurrency activity under investigation.

Volatility may be an important concern for investors, but payment users may be more concerned about other risks, such as transaction security, fraud prevention, platform stability, privacy and law enforcement.

Therefore, the hypotheses to be tested in this study are as follows:
Hypothesis 1: It is believed that perceived risk will have a negative relationship with the intention to adopt cryptocurrency payment systems. The hypothesis is based on the theoretical synthesis, not a statistically established result from the present paper.

Trust and Cryptocurrency Payment Adoption

Trust becomes a key element in the adoption of cryptocurrency. Users should assume that:

•transactions will be processed reliably;

o digital assets will be available;

•payment will go as usual;

•personal and financial information will be adequately protected;

•There are appropriate regulatory institutions.

The studies conducted in the Mano River Union context suggest a connection between blockchain transparency, trust and cryptocurrency-related actions.

Research that targets cryptocurrency payments also shows that the perceptions of information and security play a crucial role in the creation of trust.

Therefore:
Proposition 2: Greater trust in cryptocurrency technology, payment platforms, and relevant institutional arrangements is expected to be positively associated with intention to use cryptocurrency-based payment systems. This proposition requires empirical testing.

Trust: A Moderator.

There is theory from the literature which suggests that trust can moderate the association between risk perception and adoption of cryptocurrencies. Despite the fact that cryptocurrencies are risky according to consumers' perception, users may still decide to use cryptocurrency if they trust the system.
In contrast, with low trust, a moderate perceived risk can hinder adoption.

This is therefore proposed to be the relationship between the two:

Perceived Risk → Cryptocurrency Payment Adoption

with:

Trust moderating the strength of this relationship.

Thus:

Proposition 3: Trust can serve as an intervening variable between perceived risk and the intention to adopt cryptocurrency-based payment systems, whereby the negative relationship will become less intense when the trust level is high. But if such an interaction exists, then its strength needs to be verified using empirical evidence, which has yet to happen through this literature review.

Technological Infrastructure

The technological structure forms the basis of employing payment methods based on cryptocurrencies. Having reliable internet connection, a mobile phone, a digital wallet, a platform, and payment interface might be more convenient when using such systems.
However, access to the technology alone does not guarantee its adoption. People may own a smartphone and have internet access but still choose not to use cryptocurrency for payments for various reasons, including risk aversion and a lack of trust.

Therefore:

Proposition 4: Stable internet connectivity, mobile devices, digital wallets, and payment infrastructure could present favorable conditions for the adoption of crypto-based payment systems. Infrastructure can only provide enabling conditions but cannot ensure the adoption of such payment systems.

Regulatory Environment

Regulation is another significant element in the context. Clear regulatory frameworks will help enhance the perception of legitimacy and ensure better protection for consumers. Uncertainty in the legal status of payments made using cryptocurrencies and the level of protection that users will have against any fraud may pose higher risks. It is necessary to look at this connection in relation to quality of regulation.
Thus:

Proposition 5: Appropriate and well-protected regulatory regimes are expected to have positive implications on cryptocurrency payment acceptance, although the extent of such implications would depend on the nature of the policies of the country.

Financial Inclusion

Another factor of relevance in the debate on using crypto currency is financial inclusion, especially in areas where the availability of financial services is limited or where it is hard and expensive to access financial services.

Nevertheless, the fact that there is an opportunity for improvement in financial inclusion doesn't necessarily imply that crypto currency is superior to traditional financial systems.

Rather, there are some key elements identified in the literature which make digital financial inclusion possible, namely, infrastructure, cost, literacy, security, consumer protection, and institutional structures.
The role that cryptocurrency payment systems can play in this digital-financial system must therefore be carefully evaluated in relation to other digital-financial components.

Proposed Conceptual Framework

The synthesis is supporting an integrated framework that involves:
Independent Variable

Perceived Risk

•financial risk;

•security risk;

•regulatory risk;

•operational risk.

Moderator

Trust

•technological trust;

•platform trust;

•institutional trust.

Contextual Variables

Technological Infrastructure

•internet access;

•mobile access;

•system reliability;

•digital-payment capability.

Regulatory Environment

•regulatory clarity;

•consumer protection;

•licensing;

•institutional support.

Dependent Variable

Cryptocurrency-Based Payment Adoption

•intention to use;

Accepting cryptocurrency as payment;

•how often people pay using cryptocurrencies;

•actual payment behaviour.

Conceptual Relationship

Perceived Risk is the determinant of Cryptocurrency Payment Adoption.

Trust ——————————————————→ Cryptocurrency Payment Adoption

The proposed relationships are not represented by a multiplicative equation. Trust and perceived risk are distinct constructs whose direct and possible interaction effects should be specified as separate paths and tested empirically.

Technological Infrastructure —→ Cryptocurrency Payment Adoption

Cryptocurrency Payment Adoption depends on the Regulatory Environment.

It should be noted that the suggested framework is just a conceptual model and cannot be regarded as empirically valid.

Discussion

From the literature review, it can be noted that the use of cryptocurrencies as a method of payments is more than just technology and requires further research. The use of cryptocurrencies is a multidimensional issue involving human behavior, technology, institutions, and regulation.

Perceived risk is one of the most important relationships for cryptocurrencies. If the payments with cryptocurrencies are considered risky enough by the users in terms of finances or other risks related to the operation or regulation of cryptocurrencies, then it will stop the use of cryptocurrency for transactions. However, the nature of the risk may vary for different users of the payment systems and investors.

The other relationship exists within the trust context. Trust can help reduce uncertainty and user distrust towards technological and payment systems. Research studies that have directly examined cryptocurrency payments have found the importance of trust-related perception, particularly the issue of information security and privacy.

The third relationship involves the concepts of risk and trust. This model is not considering trust as just an independent variable but rather sees it as a moderator. There can be variations in the impact of the risk perceptions on adoption according to the trust level of the user regarding the product.

The fourth one concerns the technological infrastructure. For cryptocurrencies payment systems, reliable technology infrastructure is required. In that case, bad connectivity, device availability, cybersecurity, and payment systems may hinder the implementation of cryptocurrencies despite having a positive attitude towards cryptocurrencies.

Regulation is the fifth linkage that can be identified. Clear regulatory frameworks can assist in reducing uncertainties and increasing confidence in terms of consumer protection and accountability of institutions. However, regulatory frameworks should also consider the heterogeneity of technologies and economics of the African countries.

Thus, from this literature, there is no justification for doubting the necessity of an integrated approach, where the conditions for behavior, technology, and institutions are interrelated.

Contribution to Knowledge

Theoretical Contribution

This research integrates the theories of perceived risk, trust-based adoption, the Technology Acceptance Model, and the theory of Diffusion of Innovations by analyzing them in terms of the cryptocurrency payment system.

The model suggests considering the peculiar uncertainties associated with cryptocurrency payments in addition to the perceived usefulness and ease of use.

Conceptual Contribution

The paper proposes a theoretical framework for the paper in five sections:

1.perceived risk;

2.trust;

3.technological infrastructure;

4.regulatory environment;

5.cryptocurrency payment adoption.

Trust is considered a moderator here, instead of using it for two different purposes i.e. mediator and moderator.

Contextual Contribution

This study is about the economies of Africa and considers the disparities in digital infrastructure, financial inclusion, regulation and mobile financial services in the region. The authors note the fact that it

would not be appropriate to consider Africa as one market of cryptocurrencies due to its diversity of countries and financial systems.

Methodological Contribution

This paper introduces a framework which will be useful for future empirical studies. Researchers can operationalize and measure the discussed constructs and test the relationships using data obtained through surveys of cryptocurrency users, potential users, merchants, fintech specialists and others.

Practical Contribution

The framework highlights that for technology providers:

•platform reliability;

•cybersecurity;

•transparency;

•user education;

•privacy protection;

•accessible interfaces.

The framework points to the significance for financial institutions and regulators of:

•regulatory clarity;

•consumer protection;

•cybersecurity standards;

•digital literacy;

•responsible innovation.

Limitations and Future Research

One such limitation is that this paper does not contain any primary research data or any tests on the relationships proposed. In addition, the manuscript provided lacks the search and screening results required to reproduce the review. The discussion therefore must be considered a narrative review and set of propositions only.

The second limitation comes from the heterogeneity of the African economies. Variation in infrastructure for digital technologies, access to

finance, regulations and mobile financial services means that the results and propositions will not necessarily hold true for all countries. However, results should not be extrapolated to the continent as a whole because of the varying extent of regulation, financial institutions, mobile-money adoption, internet access, digital literacy and economic development.

One limitation is the difference between definitions and measurements of cryptocurrency usage. There are some studies that assess ownership or investment, and others that assess behavioral intention or payment usage. Clearly defined measures for paying should be used in future studies.

The fourth restriction relates to the dynamic cryptocurrency landscape. All of these factors, including the regulatory structure, technological systems, market conditions and user behaviour can shift quickly. Therefore, there may be a greater likelihood of finding evidence of change in adoption over time from a longitudinal study.

The suggested theoretical framework should be evaluated empirically in the future using primary data. Researchers may examine:

•perceived financial risk;

•perceived security risk;

•perceived regulatory risk;

•perceived operational risk;

•technological trust;

•platform trust;

•institutional trust;

•technological infrastructure;

•regulatory environment;

•cryptocurrency payment intention;

•actual payment behaviour.

This can be explored through the validation of measurement scales used in quantitative studies and further analysis using structural equation modelling. Comparative study between countries with different regulatory and mobile-financial environment would also be useful for identifying whether the relationships suggested in this paper are context specific.

Future studies should further differentiate between:

The cryptocurrency investment is followed by cryptocurrency holding, cryptocurrency trading, cryptocurrency remittance, and cryptocurrency payment.

This separation would help to avoid the literature lumping all cryptocurrency behaviour together.

Conclusion

The shift of digital finance is a major aspect of payment systems based on cryptocurrencies. They could be important for the African economies as mobile financial services, cross-border transactions, digital entrepreneurship and ongoing quest for deeper financial inclusion grow. However, the acceptance of cryptocurrencies as a mode of payment is not just purely technological.

From literature, it is suggested in this paper that perceived risk and trust are important behavioral elements that affect cryptocurrency usage in payment transactions. Users might be deterred from using cryptocurrency payment systems due to financial, security, regulatory, and operational risks. On the other hand, banks can build confidence on the technological infrastructure, payment platforms, information protection, and institutional arrangements, all of which can drive adoption.

The evidence also suggests that it is vital to distinguish between the use of cryptocurrency payments and cryptocurrency investments. However, while research on investment in cryptocurrencies or their ownership might give some context, it does not automatically imply consumer payment behavior.

Based on this, the paper suggests a framework that integrates perceived risk as a negative link between perceived risk and cryptocurrency payment adoption, the positive link between perceived trust and payment adoption, and the moderating effect between perceived risk and payment adoption by perceived trust, along with the technological infrastructures and the regulatory environment as contextual factors.

The suggested framework is not an empirical model, as such. Rather, it provides a theoretical basis for further primary research. Future research might take advantage of the findings made from consumers, traders, fintech individuals, and financial institutions from Africa in order to determine how the relationships differ depending on the country and the regulations of the country. It will be imperative that future research will have to consider the bigger picture of the digital financial environment that surrounds the usage of cryptocurrency payment systems. Factors such as access to technology, security of the platform, cybersecurity, regulation,

digital literacy, consumer protection, and financial inclusion can have an impact but the degree of impact will vary.

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