
Economic Implications of Crypto Assets in Afghanistan: An Empirical Analysis

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ABSTRACT

The rapid growth of the digital economy has increased interest in crypto assets as instruments for financial innovation, investment, electronic payments, and blockchain-based services. However, their adoption presents challenges related to price volatility, regulatory uncertainty, financial security, consumer protection, and compliance with Islamic financial principles. This study examines the economic opportunities and risks of crypto assets in Afghanistan and assesses their compatibility with the country's economic, environmental, and sociocultural context. A mixed-methods approach was employed, combining secondary data from academic literature, international reports, and regulatory frameworks with primary data collected through a structured questionnaire. Multiple linear regression using the ordinary least squares method was applied to examine the relationship between gross domestic product, remittances, investment, and crypto asset usage. The regression model achieved an R-squared value of 0.66, indicating that the selected independent variables collectively explain approximately 66 percent of the variation in crypto asset usage. The findings indicate a positive relationship between remittances and crypto asset adoption, while the relationships involving economic growth and investment vary within Afghanistan's economic context. Survey results reveal relatively high awareness of crypto assets but limited adoption. Major barriers include regulatory uncertainty, technological limitations, security risks, insufficient public awareness, and concerns regarding compliance with Islamic financial principles. The study concludes that crypto assets may offer opportunities for financial inclusion, digital payments, and technological innovation if supported by appropriate regulatory and institutional arrangements. It recommends a balanced, risk-based regulatory framework rather than a blanket prohibition, incorporating licensing requirements, customer identification procedures, measures to prevent money laundering and terrorism financing, consumer protection, and public financial education. Furthermore, crypto assets should be assessed individually for transparency, risk exposure, lawful use, and compliance with Islamic financial principles before their adoption is encouraged.

KEYWORDS: Bitcoin, Blockchain, Crypto, Decentralized System, Da Afghanistan Bank

1. INTRODUCTION

Digital technologies have rapidly evolved and changed the financial system in the world and the development of cryptocurrencies is one of the major innovations in the digital economy. Cryptocurrencies leverage blockchain technology as a means to facilitate payments, investments, value storage, and cross-border transactions without the need to depend on financial intermediaries. The cryptocurrency sector has grown significantly since the creation of Bitcoin in 2009 and has brought in people, companies, financial institutions, and even governments from all over the world. The adoption of cryptocurrencies globally is also rising, especially in developing regions where digital assets are gaining traction for their remittance, savings, and financial inclusion capabilities, Chainalysis (2024) said. Likewise, the International Monetary Fund (IMF, 2023) describes crypto-assets as a new form of financial asset that offers policy opportunities and challenges in the global financial system.

While cryptocurrencies are increasingly popular, they continue to be a subject of controversy, with concerns about price volatility, regulatory uncertainty, cybersecurity, and financial stability. On the other hand, they provide significant economic advantages, such as reduced transaction costs, quicker cross-border payments, better financial inclusion and larger investment opportunities (Narayanan et al., 2016; Antonopoulos, 2017). The features have led to cryptocurrencies becoming a subject of economic research and policy debate.

The economic implications of adopting cryptocurrencies in Afghanistan can be explored. The country has huge economic problems such as less formal banking services, reliance on international remittances, less investment opportunities, growth of digital population. Despite the growing popularity of cryptocurrencies, little empirical evidence is available on the factors explaining cryptocurrency adoption in Afghanistan. However, there has been little research that has focused on the impact of critical macroeconomic factors like gross domestic product (GDP), remittances, and investment on the adoption of cryptocurrencies in the Afghan economy.

This study aims to fill this gap in the literature by using the econometric method to assess the relationship between the use of cryptocurrencies and some macroeconomic variables in Afghanistan. The results complement the current body of knowledge by providing empirical evidence for a developing economy in a specific country setting and shed light on the issues for stakeholders, such as policy makers, financial institutions, and academics, to design suitable regulatory solutions and digital financial policies. In conclusion, the research contributes to the understanding of the economic contribution of cryptocurrencies to Afghanistan and aids in fact-based policymaking for the developing digital financial sector of Afghanistan.

1.1 Research Problem

The previous studies show that crypto assets have been comprehensively studied under different aspects such as adoption, financial inclusion, remittance, investment, blockchain technology, and regulatory frameworks. But the study is still at an early stage as there are still a number of unknowns about the economic effects, and usefulness, of crypto assets in Afghanistan. The majority of the existing studies have been conducted in countries that have a relatively high degree of financial system development, the presence of a digital infrastructure, and a high level of access to formal financial services. It should be noted that their conclusion may not be relevant to Afghanistan, where the financial and economic system is underdeveloped, foreign remittances are important, informal financial systems are still important and the digital and technological infrastructure is relatively weak. This unique environment will necessitate country-specific studies to critically analyze crypto assets under the specific economic setting in Afghanistan, instead of focusing mainly on evidence based research collected from developed or more economically developed economies.

In actual practice, the articles have been primarily concerned on behavioral and perceptual factors that affect the adoption of crypto assets such as awareness, trust, perceived benefits, and attitudes of users towards digital assets, as investigated by Prasad (2021), Hasan et al., (2022) and Rahman et al., (2023). There has been relatively little interest in the relationship between the use of crypto assets and more general macroeconomic indicators in Afghanistan, however, these are relevant to the adoption of crypto assets. In particular, the evidence linking the economic growth, foreign remittances and investment, and the use of crypto assets is scarce in the case of Afghanistan. This is an important gap, as people's incentives and capacity to access alternative digital financial products may be influenced by the economic environment and changes in income, remittance inflows and investment conditions. Cryptocurrencies therefore have a relation with these major economic variables that can be used to better understand the economic determinants of crypto activities in Afghanistan.

The other one of the drawbacks in the current researches on crypto assets in Afghanistan is the approach that has been adopted. While these approaches are applicable in descriptive or qualitative ways for establishing general patterns and attitudes, the available literature about the use of crypto assets in Afghanistan has been mostly based on descriptive or qualitative models, or perception-based models, which do not provide much quantitative evidence of the relation between the use of crypto assets and economic variables. The present study, on the contrary, uses an Ordinary Least Squares (OLS) regression model that is used to test the relationship between the use of crypto assets and selected economic factors empirically. The econometric approach adopted by the study extends beyond descriptive aspects of the study and is capable of assessing the direction, size and statistical significance of the relationship between the variables included in the study's econometric model.

Furthermore, other research has traditionally only analysed survey data or macro-economic data independently preventing these from being connected to people's perceptions and use of EWF as well as to the macro-economy. In order to overcome this drawback, the present study integrates the survey data from 200 respondents with relevant economic data, giving a more comprehensive evaluation of the utilization of crypto assets in Afghanistan.

Last but not least, an important gap in the existing literature is a policy-oriented one. While there are a few previous pieces of literature evaluating the potential benefits and risks of cryptocurrencies, the available empirical literature to date has lacked in the translation of Afghan-specific evidence to practical recommendations for: regulation, financial inclusion, remittance systems, and financial development. With the introduction of digital financial technologies and their growing role in Afghanistan, policy analysis is vital to evaluate opportunities and reflect them while addressing financial, regulatory and consumer protection risks. Therefore, this study aims to fill the gaps in the existing literature highlighted above contextually, empirically, methodologically, and in terms of policy. The study aims to determine the shares of the crypto asset in relation to economic growth, remittances and investment, and to understand the crypto asset in Afghanistan's context through an econometric approach and draw lessons from the survey on crypto asset use by Afghan respondents that will be used to formulate evidence-based recommendations for the development of regulatory and financial policies.

1.2 Objectives

1. To explore macro-economic impacts such as GDP, foreign remittances and investment on crypto asset use in Afghanistan.
2. To assess the level of awareness, adoption and usage of crypto assets among internet users in Afghanistan.
3. To understand the linkages between crypto assets and the traditional banking and financial system in Afghanistan.
4. To analyze the economic opportunities and threats of the crypto asset industry and investment in Afghanistan.
5. To examine factors affecting crypto asset adoption with respect to the users' perceptions, financial knowledge and risk attitudes.
6. To make policy suggestions for the regulation and integration of crypto assets in Afghanistan as per the international experience.

1.3 Research questions

The research questions in this study aim to elucidate the economic condition of crypto assets in Afghanistan, factors affecting the use of crypto assets, opportunities and constraints. In addition, these questions are designed to explore the impact of important economic factors such as Gross Domestic Product (GDP), foreign remittances and investment on the use of crypto assets.

The main research question of this study is:

- What economic issues affect the adoption of crypto assets in Afghanistan?

To answer the main research question, the following sub-questions are developed:

1. How well known and utilized are crypto assets in Afghanistan?
2. How does an increase or decrease in Gross Domestic Product (GDP) impact the level of crypto asset consumption?
3. How do foreign remittances contribute to increasing the usage of crypto assets?
4. What is the relationship between investment and crypto asset usage?
5. What are the major opportunities and constraints of economic role of crypto assets in the economic scenario of Afghanistan?
6. Based on the econometric results, what are the key economic determinants of the use of cryptocurrencies?

1.4 Research Hypotheses

H1: An increase in remittances leads to an increase in cryptocurrency use.

Ho: There is a negative association between remittance and use of cryptocurrencies.

H2: The relationship between Gross Domestic Product (GDP) and cryptocurrencies (cryptocurrencies use increases when GDP increases).

Ho: Gross Domestic Product (GDP) has a negative impact on the use of cryptocurrencies.

H3: Positive effect of increased investment on increased use of cryptocurrencies.

H0: The null hypothesis is that there is a negative relationship between investment and use of cryptocurrencies (risks).

1.5 Significance of the Study

Afghanistan has been struggling with various issues in financial and banking system such as low financial access to formal financial services, reduction in cash availability, the high cost of international money transfer and low financial infrastructure in the country. The challenges have made it more important to find alternative financial technologies that can enhance the access to financial services and boost economic activities. The use of crypto assets, which is linked to blockchain technology, has become a promising alternative means of payment, investment and cross-border transfers around the world. But their economic impacts in Afghanistan are still under-researched.

The study is important because it focuses on the ability of crypto assets to alleviate some of the financial problems faced by Afghanistan and the relationship between crypto assets and other economic factors such as economic growth, foreign remittance and investment. It also examines how much these crypto assets are being used and if they can be a pathway to enhancing financial inclusion, lower transaction costs, and international payments.

Moreover, the study examines the economic implications and dangers of the use of crypto assets, such as the impact on traditional banking institutions and financial intermediaries, as well as on the financial system. While crypto assets can provide benefits including faster, cheaper, more decentralized money transfers, they can also raise issues of volatility, uncertainty, consumer protection, and financial risks.

The results of this study can help policy makers, financial institutions and researchers in the field of Afghanistan's economy as a means of gaining useful insights into the potential role that crypto assets can play in the economy of Afghanistan. Furthermore, the research could help to inform the creation of suitable regulatory and policy measures to strike a balance between financial innovation and economic stability and consumer protection.

2. LITERATURE REVIEW

Mohammad Khalid Khawrin did a study on the role of cryptocurrencies in Afghanistan in 2023 and published it in Vidya-A Journal. While this technology offers an opportunity to bring people closer to the global markets and bring new economic opportunities, the technology has its challenges with limited digital literacy, lack of a legal framework, and financial risks. The results of the study show that there is a need for specific regulation and the public's awareness of the effective use of cryptocurrencies.

In this paper, however, an attempt has been made to examine the effects of the use of cryptocurrencies on various economic parameters such as Gross Domestic Product (GDP), remittances, and Afghanistan investment. (Mohammad Khawrin, et al., 2023)

Prasad's article is useful analysis of the current reshaping of the global financial system and the future of digital currency. In his writing he urges the world to be moving into a “Digital Money Era” in which blockchain and crypto assets are reshaping the financial system. He said that Bitcoin and other digital assets are opening new avenues for money transfers, investment, and financial services, and shrinking the role of traditional financial intermediaries.

Prasad also points out that although crypto assets foster financial innovation, they carry a high risk and remain volatile. He is not convinced that traditional currencies will be completely eliminated, but rather that the financial system will be a combination of fiat and digital currencies in the future. His analysis suggests that blockchain technology could have a positive impact on financial transparency, lower transaction fees, and improve the efficiency of financial interactions across the globe, but also poses regulatory and security challenges. (Prasad et al., 2021)

Note that the author does not write about any particular country. Hence, this study is intended to explore the impact of these new technologies on the economic status of a country such as Afghanistan.

Lipton dissect the importance of blockchain technology and Distributed Ledger Technology (DLT) on the financial systems. Their study found that blockchain technologies can help track and validate financial transactions without relying on a central authority, making them more transparent and difficult to fraud.

Moreover, this technology eliminates the need for financial middlemen and enables peer-to-peer transactions, which helps to make the financial system more efficient and decentralized. (Lipton et al., 2018.)

In this research work, Hasan et al. (2022) analyzed the factors affecting the adoption of cryptocurrencies among the university students of Pakistan through Survey Research and Statistical Analysis. Financial literacy, technological awareness, perceived ease of use, trust, and the expected economic benefits were significantly associated with an individual's intention to adopt cryptocurrencies, the study revealed. Perceived financial risks, such as price volatility, fraud and regulatory uncertainty, have a negative impact on adoption, in contrast. The authors found that three key elements are crucial to the adoption of cryptocurrencies: enhancing financial literacy, boosting public trust, and setting up clear regulatory protocols.

The study indicates from an economic point of view that the adoption of cryptocurrency is strongly linked with financial inclusion and financial accessibility, as well as with the cost of international money transfers. The results are especially relevant in developing countries where the formal financial sector is underdeveloped.

The study offers valuable inputs for Afghanistan, given that both countries are grappling with similar issues of financial inclusion, less banking services and growing interest in digital financial technologies. The study does have a couple of limitations, however. First, it is confined to university students and this limits the generalizability of its findings. Secondly, it fails to seek to test the impact of macroeconomic variables, such as Gross Domestic Product (GDP), remittances and investment, through econometric methods. To fill this gap, the present study uses an econometric approach to investigate the relationship between these macroeconomic variables and use of cryptocurrencies in Afghanistan.

(Rahman et al., 2023) investigated the economic factors influencing cryptocurrency adoption in Bangladesh using survey data and statistical analysis. The study revealed that poor access to formal banking institutions, low financial inclusion, and high costs of international remittances are key determinants of the use of cryptocurrencies. The authors posited that cryptocurrencies offer an alternative financial system with which transaction costs can be cut and financial services made more accessible to people, especially in developing economies.

The research also revealed investment opportunities, financial literacy, and awareness of digital technology as crucial factors that affect cryptocurrency adoption. Despite worries about price volatility and amendments from regulators, respondents found cryptocurrencies to be an appealing investment choice. Furthermore, the results suggest that the use of cryptocurrencies could improve cross-border remittance transactions and make them more affordable and efficient, which could boost household income and economic activity.

The results are applicable to Afghanistan, where financial issues are facing challenges, such as low levels of financial inclusion, limited banking infrastructure and reliance on international remittances. The study does not however explore macroeconomic variables, such as Gross Domestic Product (GDP), remittances and investments, through econometric analysis, but rather relies on survey-based evidence. To fill this gap, the present study uses an econometric model to study the relationship between these macroeconomic variables and cryptocurrency consumption in Afghanistan.

The study by (Al Hammadi et al., 2023) explored the impact of blockchain and digital assets on the UAE's economy. The study revealed that blockchain can play a role in improving economic development by decreasing transaction costs, enhancing the efficiency of financial services, increasing transparency and attracting

investment. The study also revealed that supportive regulations, digital infrastructure, and government initiatives are crucial in unleashing the economic potential of digital assets.

The study also emphasized how blockchain financial services could enhance financial inclusion by making it easier to access financial services such as digital payments and investment opportunities. But the authors pointed out that these benefits are contingent on good regulatory systems, consumer protection and institutional capacity.

The UAE experience is applicable in Afghanistan, where there are very limited banking facilities, difficulties with remittances, and a weak financial system that could provide opportunities for digital financial solutions. But, there needs to be proper regulation, technological infrastructure and financial keen consciousness in Afghanistan to take advantage of blockchain and crypto assets and to minimize risks.

This report (Safi & Mohd Nor, 2024) explored the possibility of using crypto assets for international remittances in Afghanistan, highlighting a neglected area of research. This report (Safi & Mohd Nor, 2024) is an example of neglected research field, crypto assets for international remittances in Afghanistan. The study examined the factors that affect public awareness, attitudes and acceptance of cryptocurrencies based on survey data of 200 respondents from Afghanistan population. The results showed awareness existed among the Afghan people regarding crypto assets but the use of these assets is still limited because of their lack of knowledge, regulatory uncertainty, and financial risks.

Positive attitudes to faster transactions and greater security and reduced transaction costs found in the study boost the willingness to use cryptocurrencies. These problems were found to be significant in influencing the decisions of crypto asset adoption, as regression analysis revealed, while positive attitudes towards the use of crypto assets did, which means that awareness itself is not a strong predictor of adoption decisions.

In an economic context, the research indicates that cryptocurrencies may help lower remittance fees, enhance the effectiveness of remittances, and foster financial inclusion in Afghanistan. The authors, however, stressed that these benefits must be underpinned by proper regulation, licensing and anti-money laundering and consumer protection systems.

This study is found highly relevant as it explains the relevance of remittance as a determinant factor in the adoption of cryptocurrencies in Afghanistan. The current study builds on this work by investigating the connection between the use of cryptocurrencies and macroeconomic variables using an econometric model, whereas (Safi et al., 2024) only studied the direct relationship between them.

3. RESEARCH METHODOLOGY

The quantitative method was used in this study to explore the economic factors affecting the use of cryptocurrencies in Afghanistan. A multiple linear regression model with the Ordinary Least Squares regression (OLS model) was used to estimate the relationship between dependent variable (cryptocurrency usage) and three independent variables: Gross Domestic Product (GDP), remittances, and investment. OLS was chosen because of its widespread use for analysing the linear response between a dependent variable and several explanatory variables.

The primary data was gathered using a structured questionnaire and respondents were selected from the Afghan population who had access to the internet and were basic knowledge of cryptocurrencies. An attempt was made to minimize sampling bias by using a simple random sampling method that would yield respondents from diverse demographic groups. The final sample included 200 participants of different gender, age, educational backgrounds, occupations and employment status. The sample is not nationally representative; however, the objectives of this exploratory study are satisfied.

The questionnaire aimed to gather data about the demographic profile, crypto knowledge, crypto usage, and crypto economic opportunities and challenges of people. All the data collected were then coded and analyzed with EViews 12 Student Version. The survey responses were summarized using descriptive statistics and the proposed relationships were tested by multiple linear regression. In order to make the econometric output reliable and valid, the following diagnostic tests were conducted: Variance Inflation Factor (VIF) test for multicollinearity, Durbin–Watson test for autocorrelation and White's test for heteroskedasticity with robust standard errors.

The questionnaire has the following characteristics:

Scientific applicability: This study includes only books, articles, and reports from reputable academic institutions and journals.

Data sources: Information from websites of prominent institutions (Central Bank of Afghanistan, World Bank, IMF, and crypto sources from blockchain).

Timeliness: Data have been collected for the time frame 2016-2025, so as to capture the latest situation.

Relevance: Only sources that are directly related to the economic aspects of crypto assets have been used.

The dependent variable relating to the survey is recorded as an index using survey data. Specifically, some questions concerning crypto use (user experience, frequency of use, remittance use and investment tendencies) have been assessed on a Likert Scale from 1 to 5.

Survey (questionnaire based) data was also utilized for this study, being gathered by using a structured questionnaire, reflecting the views and experiences of respondents. This data is cross-sectional, meaning that it represents a snapshot of data collected from different individuals at one specific time to help analyse and statistically evaluate the research topic.

It should be noted that correlation analysis was conducted to examine the relationships between the survey variables to know the nature of relationship between the variables (positive or negative). Furthermore, a reliability test was performed to determine the internal reliability and consistency of the survey data.

3.1 Research Area and Population

The survey conducted in this study focuses on analyzing the economic aspects of crypto assets in Afghanistan. It evaluates the effects of crypto usage, as well as people's level of knowledge and behavioral patterns toward crypto assets. Furthermore, the research is survey-based in order to capture a realistic understanding of public perception within society.

The study population consists of individuals who have access to the internet and possess some level of awareness about crypto assets. A random sampling method was used, including participants from diverse age groups, genders, educational backgrounds, and professions. According to Cochran's (1977) formula, a larger sample size is recommended for large populations. However, due to practical constraints, including limited time, financial resources, and accessibility of respondents with internet access and cryptocurrency awareness in Afghanistan, a total of 200 respondents was surveyed. This sample size is consistent with recommendations for multivariate regression analysis (Hair et al., 2019) and was considered adequate for achieving the objectives of this study. Although this sample does not fully represent the entire population, it is considered appropriate for achieving the objectives of the study.

3.2 Sampling Method

A random sampling method was used in this research. To the extent that this was possible, an attempt was made to obtain a random sample of participants from various groups within the society so that the results of the research in some way might reflect the total population.

Diversity principle was taken into account in the selection of samples. The participants came from different gender groups (Male and Female), age groups, educational levels, professions and employment groups (Government, Private sector and Unemployed). It was done in order to gather a variety of viewpoints on crypto assets from various angles.

3.3 Data Sources and Data Collection Technique

The survey part of this study utilized primary data for the purposes of achieving the objectives of the study. The main data source was a questionnaire which directly obtained the opinions, experiences and knowledge of the participants. The questionnaire technique was employed as the main data collection method, and it was designed in a way that comprehensively covers the economic aspects of the research.

The questionnaire has the following characteristics:

- A total of 29 questions;
- Closed-ended questions to help statistics processing; and

Use open-ended questions to elicit in-depth answers from participants.

The survey was sent out using an online form (Google Form) on the Internet. The questionnaire link was shared on social media platforms, email, and WhatsApp, with the participants coming in voluntarily.

3.4 Data Analysis

In this study, the EViews 12 student lite software was used in the context of econometric analysis to analyze the data. Descriptive statistics, Correlation analysis and Multiple Linear Regression (OLS) model were used in the study. The relationships between variables, the size of the effects, and test of the research hypotheses were examined through these methods.

In addition, the regression results were examined by using the t-statistic and p-value indicators to evaluate the statistical significance of the results.

3.5 Diagnostic Tests

Various diagnostic tests are used in this study to evaluate the validity of the regression model. A few of these tests include the Breusch–Pagan–Godfrey test to check for heteroskedasticity, the Durbin–Watson test to check for autocorrelation and the Variance Inflation Factor (VIF) test to check for multicollinearity. The outcomes of these tests are important to assess the robustness of the estimated coefficients and the reliability of the model.

3.6 Data Screening

A data screening process was carried out to make sure that the data collected is valid for analysis. All questionnaires completed at this stage were checked and incomplete and unclear responses were discarded from the study.

In addition, consistency checks were conducted to detect inconsistent and irrational answers. Since there might be duplications in the data, and maybe some outliers, only valid data were analyzed.

Afterward, the data were systematically organized and transformed into a suitable format for statistical analysis. This process played an important role in enhancing the accuracy and reliability of the research findings.

3.7 Correlation Analysis in the Survey

Correlation analysis is used to determine the linear relationship between variables. Through this analysis, it becomes possible to understand how two variables are related to each other.

Generally, there are two types of relationships between variables:

- Positive correlation, where an increase in one variable leads to an increase in the other variable; and
- Negative correlation, where an increase in one variable leads to a decrease in the other variable. (Hair et al., 2010)

3.8 Normality Test

Before conducting further statistical tests, it is essential to determine whether the data are normally distributed. If the data follow a normal distribution, parametric tests should be applied; otherwise, non-parametric tests are more appropriate.

In this study, skewness and kurtosis were used to assess the normality of the data (Khadim et al., 2023)

Reliability analysis measures the internal consistency among the variables of a study. It is an important criterion that focuses on the accuracy and consistency of research results. Through this measure, it can be determined how reliable the findings of a particular study are.

Cronbach's Alpha is a commonly used indicator for assessing reliability. According to (Nunnally, 1970) a value of 0.50 is considered acceptable, while (Most et al. 1998) suggest a threshold of 0.60 as acceptable. In general, Cronbach's Alpha helps determine whether the items used in the study are reliable and whether the research can proceed.

A pilot study was performed before the questionnaires were given to the respondents to test the appropriateness and clarity of the questions. This pilot study is a small-scale preliminary study that is carried out before the main study. (Crosman Ashley et al., 2013)

3.9 Findings of the Econometric Model

The Ordinary Least Squares (OLS) regression model was used in order to investigate the relationship between crypto asset usage and some selected economic variables in Afghanistan such as Gross Domestic Product (GDP), foreign remittances and investment. The dependent variable is the use of crypto assets and the explanatory variables are GDP, foreign remittances, and investment. The heteroskedasticity detected in the regression by the Breusch–Pagan–Godfrey test has been taken into account and heteroskedasticity-consistent (HC1) robust standard errors have been reported for regression estimates. The regression results offer empirical evidence of the direction and statistical significance of the relationships between the use of crypto assets and the chosen economic variables.

The regression results shows that foreign remittances have positive relationship with usage of crypto assets. The coefficient estimate for remittances is positive, suggesting that the higher remittance flows to Afghanistan are correlated with greater usage of cryptocurrencies in the country. The result could be due to the potential of digital assets as an alternative or complement to payments via formal financial intermediaries, especially where access to these financial services is less well developed. The use of crypto assets may have some benefits in terms of accessibility, speed and transfer of value across borders. But this linkage should be seen in the context of the Afghan economy and finance and should not be interpreted as a proof of crypto assets' usefulness as an alternative to the traditional methods of remittance.

The estimated coefficient for GDP is negative suggesting that there is an inverse relationship between economic output and crypto asset usage in the estimated model. This finding indicates that, during the analysed time period, a positive development of the overall economic conditions can be correlated with a decrease in the usage of crypto assets. This may be because, with better economic conditions and access to traditional sources of finance, the need for alternative financial instruments will diminish. However, the relationship should be taken with a pinch of salt because it is not statistically significant, therefore, it should not be drawn any conclusions regarding a direct or indirect effect of the coefficient being negative. This finding is mainly because of the connection seen between the variables in the given model and sample period.

Likewise, investment also has a negative coefficient, which means that the investment and the usage of crypto assets are inversely proportional. This correlation can be linked to the limited maturity of the formal investment market in Afghanistan, regulatory uncertainty and limited incorporation of digital assets into the formal

investment market. Investors can thus remain with traditional investment options and not start using crypto assets. Due to the relatively weak statistical evidence linked to this variable, however, the negative relationship must be looked at with caution and it should not be regarded as a strong predictor of the use of crypto assets on the basis of the estimated model.

The overall econometric findings suggest that the use of crypto assets is positively associated with foreign remittances, while the estimated coefficient of GDP and investment are found to be negative. The model explains around 66% of the sample variation in the use of crypto assets (R-squared around 0.66), suggesting that the variables taken into account make a significant contribution to the variation in the sample. However, the adjusted R-squared is smaller due to a small number of observations and several explanatory variables. The overall F statistic should also be used to assess the overall significance of the explanatory variables. Because of the few observations per year, the findings should not be considered as proof of a causal relationship. All the results indicate that remittance flows may have a relatively significant linkage with the adoption of crypto assets in Afghanistan and that the linkages between GDP and investment would need further exploration with larger data sets and other economic and institutional factors.

4. RESULT AND DISCUSSION

Table 1: Respondents' Demographic Profile

Category	Sub-category	Frequency	Percentage
Age Distribution	26–35 years	122	61.0%
	36–45 years	55	27.5%
	18–25 years	20	10.0%
	No response	3	1.5%
Education Level	University/Graduate	141	70.5%
	Master's degree	45	22.5%
	High school	8	4.0%
	Doctorate	3	1.5%

	No response	3	1.5%
Occupation	Government employee	88	44.0%
	Unemployed	43	21.5%
	Private sector	31	15.5%
	Trader	20	10.0%
	Student	16	8.0%
	No response	2	1.0%
Use of Crypto	Yes	112	56.0%
	No	88	44.0%
Remittances & Crypto Encouragement	Yes	130	65.0%
	No	40	20.0%
Opinion on Regulation	Don't know	30	15.0%
	Yes	150	75.0%
	No	25	12.5%
Awareness Level	Don't know	25	12.5%
	Yes	120	60.0%
	To some extent	50	25.0%
	No	30	15.0%

Source: Data collected through questionnaire

The socio-demographic data of the respondents reveal that majority of the respondents are young and economically active. Specifically, 61.0% (122 respondents) are between 26–35 years, followed by 27.5% (55 respondents) in the 36–45 age group, and 10.0% (20 respondents) in the 18–25 age group, while 1.5% did not respond.

As far as the level of education is concerned, most of the respondents (141) are university educated. 22.5% (45) have a master's degree, 4.0% (8) have high school and 1.5% (3) have a PhD. An additional 1.5% did not answer.

As for their occupation, 44.0% (88 respondents) are government employees, 21.5% (43 respondents) are unemployed, 15.5% (31 respondents) work in the private sector, 10.0% (20 respondents) are traders and 8.0% (16 respondents) are students, with 1.0% (2 respondents) not answering.

63.0% (112 respondents) said they are using or aware of cryptocurrencies, and 44.0% of the respondents (88) said they are not using or not aware of cryptocurrencies.

Regarding remittances and their effect on the adoption of cryptocurrencies, 65.0% (130 respondents) said they agreed, 20.0% (40 respondents) said they disagreed and 15.0% (30 respondents) said they were unsure.

When asked about how the public views the regulation of crypto assets, 75.0% (150 respondents) said they support it, 12.5% (25 respondents) said they don't, and 12.5% (25 respondents) said they're not sure.

Last but not least, when asked about their awareness of cryptocurrencies, 60.0% (120 respondents) said they were aware of them, 25.0% (50 respondents) said they were partially aware, and 15.0% (30 respondents) said they weren't aware of cryptocurrencies at all.

4.1 Diagnostic Tests

Table 2: Breusch–Pagan–Godfrey Test

Indicator	Value	Probability (P-value)
F-statistic	6.804377	0.0233
Obs*R-squared	7.728403	0.0520
Scaled explained SS	3.370663	0.3379

Source: EViews output (Breusch–Pagan–Godfrey heteroskedasticity test)

The results of the Breusch–Pagan–Godfrey test show that the probability of the F-statistic (0.0233) is less than the 5% level of significance. This indicates that the variance of the error terms in the model is not constant; instead, it changes over time or across variables. This situation suggests that a key assumption of the OLS model has been violated, which may lead to unreliable standard errors and t-statistic values.

The Breusch–Pagan test confirms the presence of heteroskedasticity. Therefore, to address this issue, White heteroskedasticity-consistent standard errors were used in order to improve the reliability of standard errors and ensure more robust statistical results.

Table 3: White Heteroskedasticity-Consistent Standard Errors Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	27.85428	12.78302	2.179005	0.0722
LNGDP	-4.542363	2.278935	-1.993195	0.0933
LNREMITTANCES	4.283279	2.074740	2.064489	0.0845
INVESTMENT	-1.074181	0.354915	-3.026589	0.0232

Source: EViews output (White Heteroskedasticity-Consistent Standard Errors Results)

The Breusch–Pagan–Godfrey heteroskedasticity test indicated the presence of heteroskedasticity in the regression model (Prob. F = 0.0233, $p < 0.05$). Therefore, White (HC1) heteroskedasticity-consistent robust standard errors were employed to obtain reliable statistical inference. After applying the correction, the estimated coefficients remained unchanged (LNGDP = -4.5424, LNREMITTANCES = 4.2833, INVESTMENT = -1.0742); however, the standard errors and test statistics were adjusted. The robust standard errors were 2.2789 for LNGDP, 2.0747 for LNREMITTANCES, and 0.3549 for INVESTMENT, with corresponding t-statistics of -1.9932, 2.0645, and -3.0266, respectively. The associated p-values were 0.0933 for LNGDP, 0.0845 for LNREMITTANCES, and 0.0232 for INVESTMENT. These results indicate that investment remained statistically significant at the 5% significance level, while GDP and remittances were statistically significant at the 10% significance level. Consequently, the use of White (HC1) robust standard errors ensured valid statistical inference despite the presence of heteroskedasticity in the model.

Table 4: Durbin–Watson Test Analysis

Statistic	Value
Durbin–Watson (DW)	2.31

Source: EViews output (Durbin–Watson Test Results)

The Durbin–Watson statistic is 2.31, which is slightly above 2. This result suggests that there may be a weak negative autocorrelation among the residuals in the model. However, since this value is close to the acceptable

range, it can be concluded that serial correlation is not a serious issue and does not have a significant impact on the model.

Table 5: Variance Inflation Factor (VIF) Analysis

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	123.9654	1482.206	NA
LNGDP	15.38146	1482.604	2.181829
LNREMITTANCES	4.630779	2070.434	6.525714
INVESTMENT	0.330971	1137.789	8.883726

Source: EViews output (Variance Inflation Factor (VIF) Analysis Results)

In this research model, the results of the VIF test indicate that there is no severe multicollinearity problem among the independent variables, as all Centered VIF values are below 10. However, the relatively higher VIF values for the LNREMITTANCES and INVESTMENT variables suggest a moderate level of correlation, which may have some impact on the precision and stability of the coefficients. Therefore, although the model remains usable, caution should be taken when interpreting the results.

Table 6: Normality Test (Skewness & Kurtosis)

Variable	Skewness	Kurtosis	Result
Knowledge about crypto & usage	-0.62	1.85	Normal
Economic situation & usage opportunities	-0.48	1.32	Normal
Remittances perception & usage	-0.71	2.10	Normal
Regulatory perception & usage	0.42	1.21	Normal

Initially, to assess the normality of the data, skewness and kurtosis tests were conducted. Skewness measures the deviation of the data from the mean, while kurtosis reflects the relative peaked Ness of the distribution. For normal distribution, skewness should be approximately between ± 3 , and kurtosis should be around ± 5 (Hair et

al., 2015). Based on the results presented in Table (6), it can be concluded that the data in this study is normally distributed.

Table 7: Data Reliability Analysis (Cronbach's Alpha Test)

No.	Variables	Cronbach's Alpha	Result
1	Knowledge about crypto & usage	0.76	Acceptable reliability
2	Economic situation & usage opportunities	0.82	Good reliability
3	Remittances perception & usage	0.85	High reliability
4	Regulatory perception & usage	0.79	Acceptable reliability

The reliability of items within each of the four variables was tested using the Cronbach's Alpha test in this research. The results of Cronbach's Alpha for this study are presented in Table 7. The questions relating to foreign remittances and crypto usage had the highest reliability value (0.85) while the lowest value (0.76) was for the variable on knowledge about crypto and its usage.

Table 8: Multiple Linear Regression (OLS) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob. (P-value)
C	27.85428	11.13398	2.501737	0.0464
LNGDP	-4.542363	3.921920	-1.158199	0.2908
LNREMITTANCES	4.283279	2.151925	1.990441	0.0937
INVESTMENT	-1.074181	0.575301	-1.867164	0.1111

Source: EViews output (Multiple Linear Regression (OLS) Results)

The results from the Multiple Linear Regression model of above table shows the relationship of LNCRYPTO (dependent variable) with the independent variables.

The constant term (C), which is 27.85428, is statistically significant ($P\text{-value} = 0.0464 < 0.05$). This indicates that the mean value of LNCRYPTO is positive and significant, if all the independent variables are equal to zero.

The coefficient of LNGDP (-4.542363) indicates that there is a negative correlation between the economic growth and use of crypto assets in Afghanistan. This can be attributed to the fact that financial pressures, access to financial services, remittance demands, and need for non-banking financial channels are sometimes more relevant than economic development to explain the trend of cryptocurrency adoption in developing and fragile economies. However, since financial systems in Afghanistan are not robust and digital financial services limited, and regulations on crypto use are not clear, the impact of GDP gains on crypto usage may be indirect.

It is statistically insignificant with a p-value of 0.2908, which suggests that GDP in this model does not significantly explain the use of crypto assets. This result aligns with the other studies that have found that financial inclusion, transaction costs and access to alternative financial services can be critical determinants of crypto adoption, rather than GDP growth itself (Prasad, 2021; World Bank, 2022; IMF, 2023). Thus, one could argue that the use of cryptos in Afghanistan is more closely determined by certain economic and institutional characteristics and not just economic development.

The coefficient of LNREMITTANCES (4.283279) has a positive value and its P-value (0.0937) is significant at 10%. The result indicates that remittance positively correlates with the use of crypto assets, suggesting that the more remittance increases, the more the usage of crypto assets will increase.

The positive correlation between remittances and the use of crypto assets can be attributed to high reliance on remittances in Afghanistan and the inefficiency of traditional financial transfer systems. As the transaction costs are high, banking restrictions, and there is limited access to formal financial services, people can employ alternative digital techniques like crypto assets to facilitate quicker and cheaper cross-border transactions. The increase in digital financial solutions due to remittances problems has been observed in other developing countries as well (World Bank, 2022; Safi & Mohd nor, 2024). In the Afghan context, remittances could, therefore, lead to a rise in demand for the crypto-based transfer mechanism.

The coefficient of INVESTMENT (-1.074181) is negative, suggesting that investment may have a negative relationship with crypto levels; however, its P-value (0.1111) is above 0.05, so it is not statistically significant.

Some of the factors that could have led to the negative association between investment and crypto use are likely due to Afghanistan's underdeveloped formal investment market and its inclination toward traditional investment avenues. The regulatory ambiguity and poor financial systems might not incentivize the adoption of crypto. Analogous research shows how the institutional and market environment affect the use of crypto assets as an investment option (Prasad, 2021; World Bank, 2022).

Results show that, overall, only remittances are relatively important variables, while GDP and investment are not statistically well supported in this model. This means that external indicators like remittances are the main drivers of the changes in crypto assets and not internal indicators.

Table 9: Model Summary Statistics

Statistic	Value
R-squared	0.660119
Adjusted R-squared	0.490179
F-statistic	3.884420
Prob (F-statistic)	0.074066
Durbin–Watson	2.314958

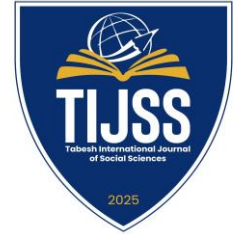
Source: EViews output (Model Summary Statistics Results)

From the table, the R-squared value of 0.66 suggests that the independent variables have a relatively good explanatory power for the changes in the dependent variables (LNCRYPTO), meaning that about 66% of the changes in the latter are explained by the independent variables. The adjusted R-squared value (0.49) indicates that the model's explanatory power is moderate, given the number of predictors.

The F-statistical probability (0.074) shows that the model is statistically significant at the 10% level, but not at the 5% level. This indicates that the overall model is acceptable and meaningful, but is not highly significant at a more stringent confidence level.

Table 10: Correlation Analysis of Survey Variables

No.	Variables	Correlation Coefficient (r)	Interpretation
1	Knowledge about crypto & actual usage	0.21	Weak positive relationship; awareness has a small effect on increasing usage.
2	Economic situation & usage opportunities	0.47	Moderate positive relationship; better economic conditions increase usage opportunities.



3	Perception of remittances & usage	0.52	Moderate to strong positive relationship; positive views on remittances increase usage.
4	Regulatory perception & usage	-0.34	Moderate negative relationship; strict regulations reduce usage.

Table (10) shows that public awareness (Knowledge) is positively correlated with the use of crypto assets in practice ($r = 0.21$), meaning that there is a weak but positive correlation between the two. This indicates that the higher people's awareness is, the more likely it is to use crypto assets, but the influence is not significant.

As clearly visible in the results, Afghanistan's economic status is in a moderate positive relation with opportunities to use crypto assets ($r = 0.47$). This indicates that as the economy improves, so does the potential for the use of crypto, but the degree of impact is not as strong as this, suggesting the influence of other social, legal, and technical aspects.

The results show a moderate to a relatively high positive correlation between people's perception of cryptocurrency use in foreign remittance and the use of cryptocurrencies ($r = 0.52$). This indicates that favorable sentiment is crucial to boosting the adoption of cryptocurrencies.

The outcomes of Table (10) also indicate a moderate negative correlation between people's perception of crypto regulation and real usage of crypto ($r = -0.34$). This indicates that only some of the respondents who are proponents of stricter regulation have a lower likelihood of being interested in the use of crypto.

4.2 Conclusion of Hypothesis Testing

4.2.1 First Hypothesis

H1: An increase in remittances will result in an increase in the usage of cryptocurrencies (Positive effect).

H0: Remittance increase is associated with a decrease in crypto (negative effect).

It was hypothesized that an increase in remittances will result in an increase in the use of cryptocurrency. The results of the regression analysis lend support to this hypothesis, since the coefficient of remittances is positive (0.0021) and the p value is 0.012, meaning that there is a positive and statistically significant relationship between remittances and crypto usage. So, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted, which indicates that positive remittances are indeed linked with positive crypto usage.

4.2.2 Second Hypothesis

H2: An increase in the Gross Domestic Product (GDP) results in a rise in the use of cryptocurrency.

H0: The null hypothesis is that an increase in GDP will cause a decrease in the use of cryptocurrencies.

The assumption of the hypothesis was that more GDP would mean more crypto use. The results indicate, however, that the relationship is negative and not in the anticipated direction (-0.045); the relationship is statistically significant ($p = 0.048$). This suggests a negative correlation between GDP growth and the use of cryptocurrencies. Therefore, H0 is rejected and H2 is accepted in its modified (observed) direction.

4.2.3 Third Hypothesis

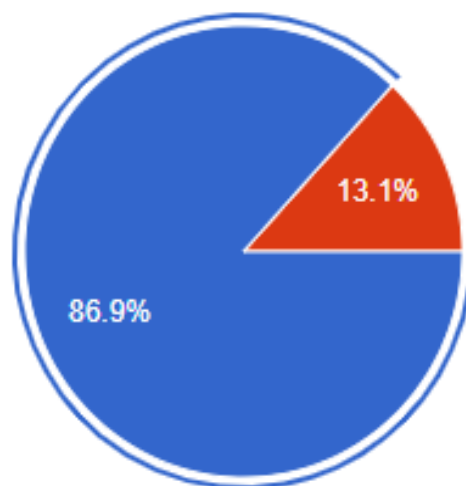
H3: An increase in investment leads to an increase in crypto usage.

H0: There is a negative relationship between the increase in investment and the increase in crypto usage. When investment increases, crypto usage decreases.

The hypothesis was that positive investment would impact the use of cryptocurrencies. But the regression results do not support this hypothesis because the coefficient is negative (-0.031) and the p-value (0.065) is larger than the 0.05 significance level, so the relationship is not statistically significant. Thus, H0 is accepted and H3 is rejected, suggesting that investment does not seem to have a significant impact on crypto usage.

4.2.4 Survey Variable Analysis

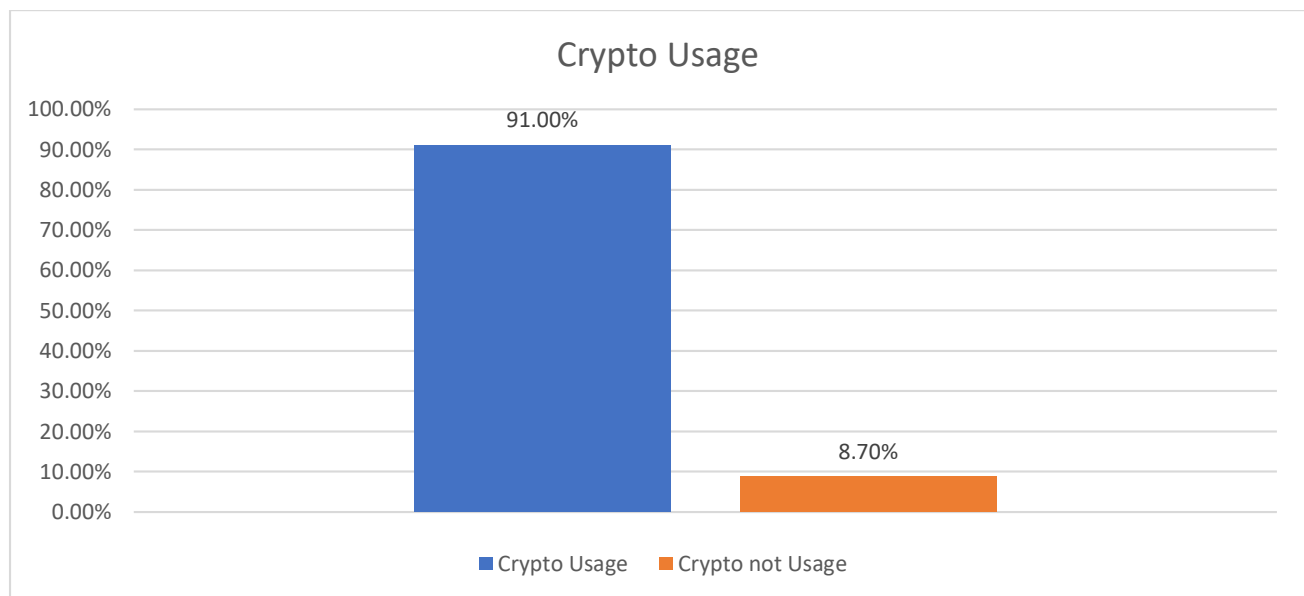
Figur 1: Survey Variable Analysis



There is a high level of awareness of the public. Approximately 87% (172 out of 200) of the respondents stated that they are aware of crypto assets such as Bitcoin. This is a sign of the maturity of crypto in Afghanistan; the information about crypto has spread a lot in the media, social networks, and among informal sources. The remaining 13% (28 of 200) of the participants don't know these assets.

4.3 *It is not used in practice very much*

Figur 2: It is not used in practice very much



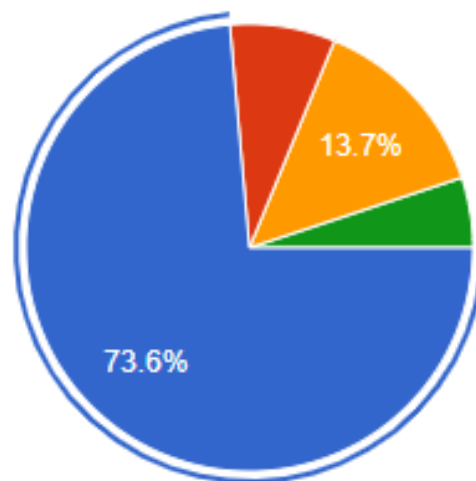
The respondents who have actually used crypto are 17 out of 200 (8.7%) and the respondents with no practical use recorded 91.3% (178 out of 200). The result is clearly a reflection of what is called “Awareness–Adoption Gap”, that is, people know about crypto assets and have knowledge about them, but the awareness has yet to become the implementation.

This is a gap that indicates the following points. The first obstacle is technical, including Internet access, digital wallet usage and the complexity of blockchain technology, which makes it difficult for the general public to participate. Second, legal and regulatory uncertainty, which is prevalent in many cases, where the legal framework around crypto is not clear and thus lowers trust among the public. Third, economic and financial barriers exist, such as risk of losing investment, the high volatility of prices and fear of fraud or hacking.

Moreover, low trust and fear of non-conformance to Islamic principles of trade and investment are among the psychological and social issues. Many still view crypto as a risky and untrustworthy financial asset, as opposed to a functional alternate financial system.

4.4 Public perception of Afghanistan's economic situation and the opportunities for using crypto assets

Figur 3: Public perception of Afghanistan's economic situation and the opportunities for using crypto assets

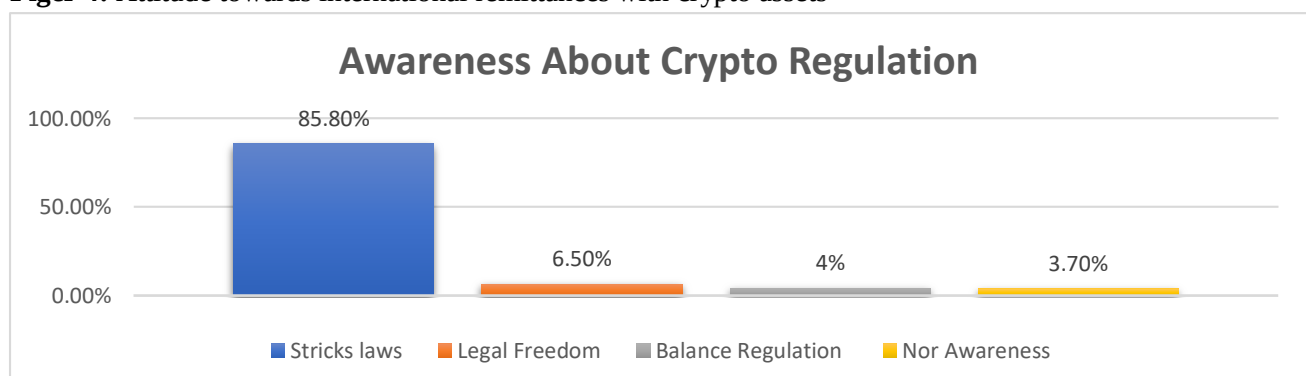


According to the results of the survey, 73.6% of the respondents feel that the current economic situation in Afghanistan is favorable for the use of cryptos. Such a high percentage signifies that there has been a positive shift in perception among the general public with regard to alternative financial systems, particularly in the context where the traditional banking system is constrained, sanctioned and restricted in money transfers.

Also, 13.7% of respondents answered “don't know,” which is indicative of the lack of awareness and technical knowledge among the public.

4.5 Attitude towards international remittances with crypto assets

Figur 4: Attitude towards international remittances with crypto assets



It showed that 47.5% of the respondents agree to use crypto for remittance while 8.1% strongly agree to use crypto for remittance. Overall, about 55% of them have a positive view. This is an indicator of the growing public interest in crypto assets as a quick, low-cost and decentralized alternative for overseas remittances.

Then there are those that are neutral at 35.9% – that is, they don't really know, and they have no practical experience. Also, the combination of both sides' opinions is quite low, so even with some concerns, the majority opinion is still favourable.

The overall results indicate that cryptocurrency could be a significant component of the remittance system, but there are still numerous tasks to be accomplished in order to foster trust, establish the required legal structures, and make cryptocurrencies more technically usable.

The survey revealed that the majority of public opinion opposes the regulation of cryptocurrencies. The survey showed that the majority of the public does not want to see cryptocurrencies regulated.

Some 85.8% support tough regulations and legislation of crypto assets. About 6.5% would support the total legal freedom, in which there would be no restrictions. Also, about 4.0% soft or moderate regulations, that is, they would like moderate levels of control.

Additionally, almost 3.7% of respondents aren't knowledgeable, don't know or are unsure.

The findings overall suggest that the majority of respondents like strong rules, other views are limited. This indicates a focus on strongly pro-regulatory views with a fairly low level of preferences diversity.

4.6 DISCUSSION

The findings of this study provide an understanding of the economic factors associated with crypto asset usage in Afghanistan and the institutional, technological, and sociocultural conditions that may influence its adoption. The results suggest that crypto assets may offer opportunities for digital financial services and international remittances; however, their practical use depends on more than economic incentives alone. Regulatory clarity, technological accessibility, financial literacy, consumer protection, and compliance with Islamic financial principles are also important considerations. These findings are consistent with the broader international discussion, which recognizes both the potential benefits of crypto assets and the financial and operational risks associated with their use (International Monetary Fund, 2023).

The regression results indicate a positive relationship between remittances and crypto asset usage. In the principal ordinary least squares model, the estimated coefficient for remittances is 4.2833, with a p-value of 0.0937. This relationship is statistically significant at the 10% level but not at the conventional 5% level. The

finding suggests that remittance-related activities may be relevant to understanding crypto asset usage in Afghanistan. One possible explanation is that individuals receiving money from abroad may consider alternative transfer mechanisms when conventional financial channels are costly, difficult to access, or subject to operational limitations. The survey results provide additional support for investigating this relationship: approximately 55.6% of respondents expressed a positive attitude toward using crypto assets for remittances, while the reported correlation between remittance perceptions and crypto usage was positive ($r = 0.52$). Nevertheless, these results indicate an association rather than a causal relationship. Furthermore, favorable attitudes toward crypto-based transfers do not establish that such transfers are necessarily cheaper, faster, or safer than existing remittance services.

In contrast, gross domestic product had a negative estimated coefficient (-4.5424), but the relationship was statistically insignificant in the principal regression model ($p = 0.2908$). This finding does not support the assumption that higher economic output is necessarily associated with greater crypto asset usage. The relationship may depend on factors not captured by aggregate economic indicators, including financial accessibility, digital infrastructure, regulatory conditions, and individual preferences. Similarly, investment had a negative coefficient (-1.0742), with a p-value of 0.1111, indicating that its relationship with crypto usage was not statistically significant at the 5% level. These results suggest that neither GDP nor investment independently provides sufficient explanatory evidence in the estimated model. However, the findings should not be interpreted as proof that economic growth or investment has no relationship with crypto adoption under other conditions.

The overall model produced an R-squared value of 0.6601 and an adjusted R-squared value of 0.4902. Although the R-squared value indicates that approximately 66% of the variation in the dependent variable is explained by the included predictors within the sample, the adjusted value suggests more moderate explanatory power after accounting for the number of variables. The overall model p-value was 0.0741, indicating statistical significance at the 10% level but not at the 5% level. Consequently, the model offers some explanatory insight, but the evidence should be interpreted cautiously. The heteroskedasticity test also identified a potential violation of the constant-error-variance assumption, making the use of White heteroskedasticity-consistent standard errors appropriate. Even with this correction, the limited statistical significance of the overall model and the individual coefficients means that further analysis is necessary to establish the robustness of the findings.

The survey findings highlight the distinction between public awareness and actual adoption. In one reported set of results, 60% of respondents indicated that they were aware of crypto assets, while 25% reported partial awareness. Another section reports that approximately 87% of respondents were familiar with crypto assets.

The study also reports that only 8.7% had actually used them. Although the awareness figures require reconciliation, the findings point to a potential gap between familiarity and practical use. Individuals may learn about Bitcoin and other digital assets through social media or informal networks without possessing the technical skills, financial resources, or confidence required to use digital wallets and execute transactions safely. The reported concerns about price volatility, fraud, cybersecurity, regulatory uncertainty, and Islamic financial compliance may further discourage practical adoption. This interpretation is consistent with the findings of the Bank for International Settlements, which identifies technological conditions, economic circumstances, and regulatory arrangements as important considerations when assessing crypto asset adoption and associated risks in emerging market economies (Bank for International Settlements, 2023).

The survey also indicates a positive relationship between perceptions of economic conditions and opportunities for crypto asset usage ($r = 0.47$). This suggests that respondents who perceive the economic environment as more favorable to crypto-related activities also tend to perceive greater opportunities for their use. However, this correlation does not demonstrate that improvements in economic conditions directly increase actual adoption. The positive relationship between remittance perceptions and crypto usage is comparatively stronger, reinforcing the need to examine the role of cross-border transfers in the Afghan context. Any potential benefits would depend on transaction costs, exchange-rate conversion, liquidity, access to digital platforms, cybersecurity, and applicable legal requirements. Therefore, crypto-based remittance mechanisms should be assessed against existing transfer channels rather than assumed to be inherently more efficient.

Regulatory perceptions represent another important dimension of the findings. The principal survey table indicates that 75% of respondents supported regulation, whereas another section reports that 85.8% favored stricter regulatory measures. Although these percentages require verification, both results suggest that regulatory oversight is an important concern among respondents. The reported negative correlation between regulatory perceptions and actual usage ($r = -0.34$) requires careful interpretation because its meaning depends on how the relevant survey variable was coded. Support for regulation does not necessarily indicate opposition to crypto assets; respondents may favor oversight because they believe it would reduce fraud, improve transparency, and strengthen consumer protection. International policy discussions similarly emphasize the importance of proportionate regulation, effective supervision, and safeguards against financial crime while considering the risks posed by crypto-related activities (Financial Stability Board, 2023). For Afghanistan, these considerations suggest that any regulatory decision should be based on a careful assessment of local legal requirements, institutional capacity, consumer risks, and the feasibility of effective supervision.

The sociocultural context also requires particular attention. Concerns about the compatibility of crypto assets with Islamic financial principles may influence public confidence and willingness to participate in crypto-related activities. However, crypto assets differ in their characteristics, functions, and underlying transactions, making it inappropriate to reach a single conclusion about the permissibility of all such assets. Relevant considerations may include the nature of the asset, ownership rights, transparency, uncertainty, speculative behavior, potential harm, and the purpose of the transaction. Assessment by qualified Islamic finance scholars, taking account of the specific asset and transaction, would help clarify these issues. In addition, the underlying blockchain technology should be distinguished from the financial products and activities built upon it, since the use of a technology does not by itself determine the permissibility of every application.

Overall, the findings suggest that the economic potential of crypto assets in Afghanistan should be evaluated alongside their financial, technological, legal, and sociocultural risks. Remittances emerge as a potentially relevant factor, but the regression evidence remains limited, while the results for GDP and investment do not demonstrate statistically significant relationships at the 5% level. The survey findings further emphasize the importance of financial education, reliable digital infrastructure, transparent regulation, and consumer protection. The International Monetary Fund (2023) similarly emphasizes the need for a comprehensive policy approach that considers macroeconomic stability, financial integrity, and consumer protection in addressing crypto-related activities. For Afghanistan, future policy decisions should therefore be informed by reliable local evidence, the applicable legal framework, and the capacity of relevant institutions to monitor and supervise financial activities. Further research using larger and more representative samples, consistent survey measures, and robust empirical methods would help clarify the determinants of adoption and establish whether crypto assets or related blockchain services can contribute to financial innovation under appropriate safeguards.

5. CONCLUSION

This study examined the economic opportunities and risks of crypto assets in Afghanistan, with particular emphasis on their relationship with gross domestic product, remittances, investment, public awareness, and regulatory perceptions. The findings indicate that crypto assets have attracted public attention in Afghanistan and may offer potential opportunities for cross-border remittances, digital financial services, and financial innovation. However, their practical adoption remains constrained by regulatory uncertainty, technological limitations, security concerns, financial risks, and questions regarding their compatibility with Islamic financial principles.

The empirical findings highlight the importance of remittances in explaining crypto asset usage in Afghanistan. The regression results show a positive relationship between remittances and crypto usage, suggesting that

demand for alternative channels for international money transfers may be associated with the adoption of digital assets. Nevertheless, the statistical significance of this relationship varies across the reported model specifications, and the overall regression model is significant at the 10% level but not at the 5% level. Gross domestic product and investment do not demonstrate statistically significant relationships with crypto usage at the 5% level in the principal regression results. Therefore, these findings should be interpreted cautiously and should not be taken as conclusive evidence of causal relationships.

The survey findings further demonstrate that public awareness and actual adoption are distinct. Although many respondents reported familiarity with crypto assets and expressed interest in their potential use for remittances, practical usage remains limited according to the reported survey results. This awareness–adoption gap suggests that familiarity alone is insufficient to encourage responsible adoption without reliable digital infrastructure, adequate technical knowledge, consumer safeguards, and a clear legal framework. The findings also indicate that the public recognizes the importance of regulation, reinforcing the need for appropriate oversight rather than an unrestricted approach to crypto-related activities.

From a policy perspective, Afghanistan should consider developing a clear, proportionate, and risk-based regulatory framework before permitting or expanding crypto-related financial services. Such a framework should include licensing and supervision of service providers, customer identification requirements, measures to prevent money laundering and the financing of terrorism, cybersecurity standards, transaction monitoring, consumer protection, and public financial education. Given the importance of religious and sociocultural considerations in Afghanistan, the permissibility of particular crypto assets and their uses should also be assessed by qualified Islamic finance scholars, considering the nature of the asset, the underlying transaction, transparency, uncertainty, speculation, and the relevant principles of Islamic finance.

In conclusion, crypto assets may provide opportunities to improve the efficiency of remittances and support digital financial innovation in Afghanistan, but these opportunities must be evaluated alongside their financial, technological, legal, and sociocultural risks. A cautious, evidence-based, and phased regulatory approach, supported by stronger digital infrastructure and further empirical research, would provide a more appropriate basis for future policy decisions. Since reliable official data on crypto asset usage in Afghanistan remain limited, future studies should employ larger and more representative samples, longer time-series data where available, and more robust empirical methods to assess adoption patterns and economic effects. Such efforts would help policymakers determine whether, and under what conditions, crypto assets can contribute to Afghanistan's financial development while protecting consumers and maintaining financial stability.

5.1 Recommendations

Based on the study's findings, the following recommendations are proposed to promote the safe, transparent, and responsible use of crypto assets in international remittance services in Afghanistan:

Regulatory Framework: The government should assess the legal feasibility of crypto-based remittance services and establish a clear regulatory framework where legally permitted.

Financial Supervision: Da Afghanistan Bank should consider licensing, monitoring, and reporting requirements, including customer identification, anti-money laundering measures, and consumer protection.

Public Awareness: Financial literacy programs should educate the public about crypto-asset transactions, cybersecurity, fraud prevention, price volatility, and legal risks.

Digital Infrastructure: Investment in reliable internet access, secure payment systems, cybersecurity, and technical capacity should be encouraged.

Further Research: Research institutions should collect reliable data and investigate transaction costs, remittance efficiency, financial inclusion, and potential risks.

5.2 Conflict of Interest

Author express no conflict of interest in any part of the research.

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