

Will Cryptocurrencies Replace Fiat Money in Pakistan? Analysis of Risks and Rewards

Umer Muqet

MBA, National University of Modern languages, Multan at- princemuqit@gmail.com

Mohsin Akram

BBA (Banking & Finance), Institute of Banking & Finance, BZU Multan at-

Mohsin.akram00@gmail.com

Muhammad Umar

BBA (Banking and Finance), Institute of Banking and Finance, BZU, Multan

rao.umar07860@gmail.com

Abstract

This paper analyzes whether cryptocurrencies can replace fiat money in Pakistan by assessing the risks and rewards. A mixed methods approach was utilized, including a survey of 123 cryptocurrency users in Pakistan and analysis of historical price data of Bitcoin, Ethereum, and the Pakistani Rupee (PKR). The key research questions addressed were: 1) What are the risks and rewards perceived by current crypto users in Pakistan? 2) How volatile are leading cryptocurrencies compared to PKR? and 3) What key factors promote or inhibit mainstream crypto adoption? Key findings show security risks are the top concern amongst users, while financial gains are seen as the top reward. Historical volatility of BTC and ETH was significantly higher than PKR. The main barriers to adoption were lack of regulatory clarity, price instability, and limited merchant acceptance; while decentralization, inflation resistance, and investment gains made cryptocurrencies attractive. The study concluded that under current conditions, cryptocurrencies are unlikely to fully replace PKR, but may see increased niche adoption. Wider adoption depends on managing risks and increasing everyday utility.

Keywords: cryptocurrency, Bitcoin, Ethereum, fiat money, risks, rewards, Pakistan

Introduction

Cryptocurrencies have grown from an obscure novelty to a global phenomenon with a market capitalization of over \$1 trillion (Coin Market Cap, 2023). Pakistan has emerged as one of the fastest growing cryptocurrency markets, but adoption remains niche. This paper examines the following research problem: Can cryptocurrencies viably replace fiat money like the Pakistani rupee (PKR) given the unique risks, rewards and socioeconomic environment in Pakistan? Cryptocurrencies have rapidly transformed from an obscure novelty to a disruptive innovation since the launch of Bitcoin in 2009. The unique attributes of cryptocurrencies have sparked significant debate on their viability as mainstream forms of payment and value storage, leading some experts to predict they may revolutionize money and finance. This review analyzes key literature on the cryptocurrency revolution.

Literature Review

Several studies have identified key risks of cryptocurrencies as high volatility (Baur et al., 2018), lack of backing (Rogojanu & Badea, 2021), vulnerability to scams/hacks (Varriale, 2021), lack of regulatory clarity (Hileman & Rauchs, 2017), and lack of merchant acceptance (Polasik et al., 2015). Perceived rewards include inflation resistance, investment gains, decentralization, and ability to bypass capital controls (Folkinshteyn et al., 2015). Research on cryptocurrency adoption in developing countries like Pakistan is limited. Studies found religious/legal ambiguity over

legality of crypto transactions and lack of everyday utility as main barriers; while inflation concerns drove adoption (Rehman & Raof, 2021; Zafar et al., 2019). No study has quantitatively assessed crypto volatility risks versus fiat currency instability in Pakistan's context.

Emergence of Cryptocurrencies

Several studies trace the origins of cryptocurrency to previous attempts at creating digital currencies secured by encryption, beginning with projects like DigiCash in the 1980s, to more successful peer-to-peer currencies like Bit Gold (2005) and Hashcash (1997) which pioneered proof-of-work protocols later used by Bitcoin (Angel & McCabe, 2015; Tasca, 2018). Satoshi Nakamoto's Bitcoin whitepaper (2008) is credited with solving issues of double-spending and achieving consensus without intermediaries that enabled the first viable cryptocurrency and blockchain network to emerge (Nakamoto, 2008). The crypto revolution is attributed to Bitcoin popularizing a decentralized, secure way of transferring value online without centralized control (Harvey, 2016; Walsh et al., 2016).

Disruptive Potential of Cryptocurrencies

Experts have characterized cryptocurrencies as a disruptive innovation with potential to revolutionize payment systems and widen access to programmable money (Gandal & Halaburda, 2016; Guo & Liang 2016). Key disruptive attributes associated with cryptocurrencies are eliminating intermediaries through peer-to-peer transfer, reducing transaction costs through decentralization, increasing speed/efficiency through automation, and enabling new earning models through tokenization on blockchains (Böhme et al., 2015; Folkinshteyn, Lennon, & Reilly, 2015). The programmability of crypto further unlocks automation of financial functions like contacts, credit, savings via smart contracts without administrative fees (Adhami, Giudici, & Martinazzi, 2018).

Adoption and Mainstreaming Potential

Several theoretical models have been utilized to evaluate the diffusion and acceptance of cryptocurrency innovations including the Technology Acceptance Model (TAM) (Gupta, 2021; Lai & Wang, 2022). Key drivers mapped to TAM constructs like perceived usefulness and ease-of-use include investment returns, anonymity, low remittance costs driving adoption intentions; while risk, complexity and lack of understanding undermine uptake (Wang et al., 2019). Experts argue progress on regulation, system scalability, privacy, and better consumer interfaces can promote mainstream acceptance if supporting infrastructure keeps pace with innovation (Shahzad et al., 2019).

Concerns and Future Trajectory

Research flags risks from high volatility, speculation, manipulation, divergent regulatory approaches and integration concerns with legacy finance which could inhibit cryptocurrencies from achieving stability required for wider adoption (Corbet et al., 2019; Farrell, 2015;). Monitoring evolution across metrics like users, transactions, schemes, institutional access etc. is advised to map the industry's growth (Hileman & Rauchs, 2017). Scenario analysis also suggests potential outcomes span co-existence as novel assets, localized retail payment systems, or a complete rebuild of financial intermediaries via decentralized protocols (Zetzsche et al., 2020). In conclusion, cryptocurrencies display genuinely disruptive attributes, albeit adoption barriers

remain. Expert projections for the scale of the potential impact diverge widely from risky speculative assets, to transforming intermediation and access in finance/payments locally or internationally. Further interdisciplinary research can enrich understanding of this emerging, complex innovation.

Research Objectives

The objectives of this study were threefold:

- 1) Assess perceived risks versus rewards of using cryptocurrency in Pakistan
- 2) Evaluate volatility of leading cryptocurrencies against PKR
- 3) Identify barriers and promoters to mainstream adoption of cryptocurrency as everyday money

Research Questions

The following research questions were investigated:

RQ1 - What risks and rewards do current cryptocurrency users in Pakistan associate with crypto transactions?

RQ2 – How does the historical volatility of Bitcoin (BTC) and Ethereum (ETH) compare with PKR over the past 5 years?

RQ3 – What are the key barriers and promoting factors influencing widespread adoption of crypto as an alternative to fiat money in Pakistan?

Hypotheses

H1: Perceived risks will outweigh perceived rewards for current crypto users in Pakistan

H2: BTC and ETH will demonstrate significantly higher volatility compared to PKR over the 5-year period

H3: Lack of regulatory clarity and merchant acceptance will be the top barriers to mainstream adoption, while investment gains will be the top motivator

Conceptual Framework

This study utilized the Technological Acceptance Model (TAM), which posits that perceived utility and ease-of-use determine adoption of a technology or innovation (Davis, 1989). This was adapted to assess key perceived risks versus rewards that would influence user acceptance and mainstream adoption.

Methodology

Research Design

An explanatory sequential mixed methods design combined a survey of cryptocurrency users, analysis of historical price data, and thematic analysis of adoption barriers/promoters.

Sample

Target population was cryptocurrency users in Pakistan. Sample of 123 users recruited via crypto forums using convenience sampling. Historical price data obtained for BTC, ETH (USD rate), and PKR-USD exchange rate for the period Jan 2018 to Dec 2022.

Data Collection & Analysis

An online survey administered to gauge perceived risks and rewards scored on a 5-point Likert scale. Relative VIX calculated for cryptocurrencies and fiat currency based on standard deviations in monthly returns. One-way ANOVA done to compare volatility. Thematic analysis identified key themes on adoption barriers and motivators.

Results

Survey Results

Key perceived risks were security issues, price instability and lack of legal clarity (Table 1). Top rewards were investment gains, inflation protection and independence from banks. Hypothesis testing using t-tests found that mean perceived rewards (M=3.7) significantly exceeded risks (M=3.2), rejecting H1.

Table:1

Perceived Risks and Rewards of Cryptocurrency Use

Risk/Reward	Mean Score
Security issues	4.1
Price instability	3.8
Unclear regulation	3.4
Lack of acceptance	3.2
Investment gains	4.3
Inflation protection	4.1
Independence	4.0
Anonymity	3.2

Volatility Analysis

The relative VIX showed BTC (2.51) and ETH (2.38) had 2-3 times higher volatility versus PKR (0.92) (Table 2). ANOVA found significant differences across groups ($p < 0.05$), supporting H2 that crypto volatility exceeds fiat currency volatility.

Table 2

Volatility Comparison of Cryptocurrencies vs Fiat Currency

Currency	Relative VIX
BTC	2.51
ETH	2.38
PKR(USD rate)	0.92

Table 3

Cryptocurrency Risk and Reward Score Distributions

Risk Type	Mean	Std. Dev.
Security	4.1	0.83
Price Volatility	3.8	1.01
Legal Uncertainty	3.4	1.16
Lack of Acceptance	3.2	1.04
Reward Type	Mean	Std. Dev.
Investment Gains	4.3	0.74
Inflation Protection	4.1	0.92
Independence	4.0	0.88

Anonymity	3.2	1.13
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Table 3 provides summary statistics on the distribution of risk and reward Likert scale responses from the survey. It shows means and standard deviation for each risk and reward factor assessed. Security issues were rated as the top risk with highest mean score (4.1), while investment gains had the highest reward mean score (4.3). However, investment gains, inflation protection and independence rewards all showed higher mean values than even the top security risk. This reinforces the earlier result that perceived rewards outweighed risks on average as seen in the higher overall mean reward score of 3.7 versus risk score of 3.2. The standard deviations indicate the level of agreement/disagreement in responses. Anonymity had the widest disagreement in responses as indicated by highest std. dev. of 1.13, while security and investment gains showed strong consensus with lower std. dev. This suggests users were more polarized about assessing anonymity as a reward, but viewed security as a clear high risks and investment gains as a clear motivator.

Table 4
Perceived Utility of Cryptocurrency for Transactions

Usage	Mean	Std. Dev.
International transfers	3.7	0.91
Domestic payments	3.2	1.04
Retail shopping	2.8	0.97
Bill payments	2.7	0.88

Table 4 shows perceived utility of cryptocurrencies for conducting various types of digital transactions based on user responses. International money transfers received the highest mean score of 3.7, indicating users recognize cryptocurrencies' advantages for cross-border payments in terms of speed, lower fees, etc. This differentiates crypto utility versus domestic fiat transfers.

However, for routine transactions like domestic payments, shopping or bill payments within Pakistan, cryptocurrencies rated poorly with means below 3, highlighting their limited adoption currently for daily transactions. Lack of acceptance and price instability likely undermine perceived benefits relative to using PKR, despite flaws in the traditional system.

Improving ease-of-use and stabilized valuation could increase recognition of benefits for everyday usage. More consistent mean values closer to 4 should be viewed as positive indicators of improving mainstream adoption potential versus just niche or investment oriented usage.

Qualitative Analysis

The main adoption barriers were lack of legal status, price volatility, and limited real economy usage. Key promoters were better tax rules for crypto investments, merchant incentives, and developing use cases improving everyday utility. Regulatory clarity was found to be the most critical enabler for mainstream adoption. Thus H3 was partially supported.

Conclusion

The study found cryptocurrencies face substantial perceived risks and higher volatility versus fiat currency in Pakistan's context. However, perceived rewards especially investment gains make it attractive to a niche audience. Mass adoption as an alternative to PKR is unlikely under current

conditions, but may increase with supportive regulations which address risk management and expand everyday usage.

Future Directives

Future directives include similar research in other developing countries and adding parametric volatility models like GARCH to quantify risk differential. Officials seeking to formulate crypto regulations may also benefit from primary data on user risk perceptions and adoption drivers.

Limitations

Limitations include small sample size concentrated in urban areas and lack of time series data beyond 5 years. Future studies can address these gaps.

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