

A Comparative Study on Crypto vs Traditional Payment Systems in Coimbatore

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Abstract

The rapid evolution of digital finance has transformed the way payments are processed globally, leading to a growing comparison between cryptocurrency-based payment systems and traditional payment systems. Traditional payment systems, such as banks, credit cards, and online payment gateways, have long been the backbone of financial transactions, offering reliability and regulatory oversight. However, these systems often face challenges related to transaction speed, high processing costs, and centralized security risks. In contrast, cryptocurrency payment systems leverage blockchain technology to enable decentralized, peer-to-peer transactions that promise faster settlement, reduced transaction fees, and enhanced transparency. This study compares crypto-based payment systems and traditional payment systems across three critical dimensions: speed, cost, and security.

Keywords: *Transaction finality, settlement time, interchange fees, foreign exchange, Chargebacks.*

INTRODUCTION

The global payment landscape has undergone significant transformation with the advancement of digital technologies and the increasing demand for faster, cost-effective, and secure financial transactions. Traditionally, payment systems have been dominated by banks, credit card networks, and centralized financial institutions that act as intermediaries to facilitate transactions between individuals and businesses. While these systems have established trust and regulatory compliance over decades, they often suffer from inefficiencies such as delayed transaction processing, high service charges, and vulnerability to centralized system failures. With the emergence of cryptocurrencies and blockchain technology, a new paradigm of payment systems has been introduced. Cryptocurrencies such as Bitcoin, Ethereum, and stablecoins enable direct peer-to-peer transactions without the need for intermediaries. These systems operate on decentralized networks where transactions are validated through consensus mechanisms and recorded on immutable digital ledgers. As a result, crypto-based payment systems have gained attention for their potential to improve transaction speed, lower costs, and enhance security and transparency.

STATEMENT OF THE PROBLEM

Traditional payment systems such as banks, credit cards, and international remittance services continue to dominate global financial transactions; however, they often suffer from limitations related to transaction speed. Cross-border payments in particular can take several hours or even days to settle due to the involvement of multiple intermediaries, banking hours, and centralized clearing processes. In an era where digital commerce demands near-instant transactions, these delays present a significant challenge for businesses and individuals who rely on fast and efficient payment solutions. In addition to speed constraints, traditional payment systems are associated with high transaction costs. Fees such as interchange charges, foreign exchange costs, and service fees increase the overall cost of transactions, especially for international payments and small-value transfers. Cryptocurrencies, built on blockchain technology, claim to reduce or eliminate intermediaries, thereby lowering transaction fees and enabling cost-effective peer-to-peer payments.

SCOPE OF THE STUDY

This study focuses on a comparative analysis of cryptocurrency-based payment systems and traditional payment systems, with particular emphasis on transaction speed, transaction cost, and security. The research examines how quickly transactions are processed and settled in both systems, considering factors such as confirmation

time in blockchain networks and clearing time in conventional banking systems. The scope is limited to commonly used traditional payment methods (such as bank transfers and card payments) and widely adopted cryptocurrencies, ensuring the comparison reflects real-world payment practices. In terms of cost, the study evaluates the fees associated with each payment system, including transaction fees, intermediary charges, and foreign exchange costs where applicable. The analysis is restricted to observable and measurable costs incurred by users during domestic and cross-border transactions.

RESEARCH QUESTION

- How do cryptocurrency-based payment systems compare with traditional payment systems in terms of transaction speed and settlement time?
- What differences exist in transaction costs between cryptocurrency payments and traditional payment methods for both domestic and cross-border transactions?
- How effective are the security mechanisms of cryptocurrency payment systems compared to those of traditional payment systems in preventing fraud and unauthorized access?
- What challenges and risks influence the adoption of cryptocurrency payment systems relative to traditional payment systems with respect to speed, cost, and security?

OBJECTIVES.

- To analyse the transaction costs associated with cryptocurrency payments and traditional payment methods.
- To assess the security features and vulnerabilities of cryptocurrency payment systems in comparison with traditional payment systems.
- To determine the suitability and effectiveness of cryptocurrency payment systems relative to traditional payment systems based on speed, cost, and security performance.

RESEARCH METHODOLOGY

SOURCE OF DATA

Primary Data

Through questionnaires and interviews, Coimbatore locals and small business owners provided primary data for this study. According to the data, traditional payment methods like cards, cash, and UPI are all commonly used, with UPI being the most popular. Despite the fact that a large number of respondents are aware of cryptocurrencies, their use for everyday payments is extremely restricted because of low merchant acceptance, price volatility, and ambiguous government regulations.

Secondary Data

Journals, research articles, newspapers, and websites were the sources of secondary data. According to earlier research, Coimbatore has seen a sharp increase in digital payments, particularly UPI. Because of regulatory uncertainty and security concerns, the literature also demonstrates that cryptocurrencies are primarily used for investments rather than payments.

AREA OF STUDY

The study focuses on comparing cryptocurrency and traditional payment systems in Coimbatore, analysing adoption rates, transaction speed, costs, security, user experience, and regulatory factors. It aims to evaluate their impact on consumers, businesses, and the local economy, highlighting the advantages and challenges of each system.

SAMPLING TECHNIQUE AND SAMPLE SIZE

Probability Sampling: Used to select respondents from traditional payment service users to ensure unbiased and representative data. Non-Probability Sampling: Applied to select cryptocurrency users and blockchain experts based on availability and expertise. Combined Sampling Approach: Both methods are used together to improve data quality and support comparison of speed, cost, and security.

PERIOD OF STUDY

November 2025 – January 2026

STATISTICAL TOOLS OF STUDY

- Simple percentage analysis
- Chi-square
- Average score

LIMITATION OF STUDY

The study is limited to 52 respondents and data was collected through Google Forms. The results might not apply to other areas because the study was only conducted in Coimbatore. Due to differing levels of cryptocurrency awareness, the responses may be subjective and depend on a small sample of businesses and consumers. While limited merchant adoption of cryptocurrency limits comparative analysis, rapid changes in technology and regulations may also impact the results' applicability.

REVIEW OF LITERATURE

Nakamoto. S, (2020)¹ has introduced Bitcoin as a decentralized peer-to-peer payment system designed to eliminate intermediaries in financial transactions. The study emphasized blockchain technology as a secure and transparent ledger that enhances transaction speed and reduces costs compared to traditional banking systems. It highlighted cryptographic proof and consensus mechanisms as core security features preventing double-spending and fraud. The research laid the foundation for cryptocurrency payments by demonstrating their potential to improve efficiency, lower transaction fees, and enhance trust without relying on centralized authorities.

Gomber et al (2021)² has analysed the role of financial technologies in reshaping payment systems. The study compared traditional payment methods with blockchain-based solutions, highlighting faster transaction processing and reduced operational costs in crypto payments. It found that traditional systems rely heavily on intermediaries, leading to delays and higher fees. The research also discussed security concerns, noting that while blockchain enhances transparency and data integrity, regulatory uncertainty remains a challenge. The study concluded that fintech innovations are transforming payment efficiency and customer expectations.

Bohme (et. al) (2022)³ has examined Bitcoin from an economic and technological perspective. The study revealed that cryptocurrency payments offer faster settlement times and lower cross-border transaction costs compared to traditional systems. It emphasized strong cryptographic security and decentralized verification as major advantages. However, the research also highlighted risks such as price volatility and lack of consumer protection. The study concluded that while cryptocurrencies improve speed and cost efficiency, governance and regulatory frameworks are essential for widespread adoption.

Kahn & Roberds (2023)⁴ has focused on settlement risks in traditional payment systems. The study found that centralized clearing and settlement processes often result in delays and increased systemic risk. It highlighted how multiple intermediaries contribute to higher transaction costs and vulnerability to operational failures. When compared with blockchain-based systems, the study suggested that decentralized settlement could reduce delays and improve transparency. The research emphasized the importance of system design in ensuring payment security and efficiency.

Yermack. D (2024)⁵ has effectiveness as a medium of exchange compared to traditional currencies. The study found that cryptocurrencies enable faster and low-cost transactions, particularly for international payments. However, it also identified limitations such as price volatility and limited merchant acceptance. From a security perspective, the study acknowledged blockchain's resistance to fraud while pointing out risks related to digital wallets and exchanges. The research concluded that cryptocurrencies complement rather than fully replace traditional payment systems.

Comparing cryptocurrency and traditional payment systems highlights key differences in terms of speed, cost, and security

Traditional payment systems often involve intermediaries such as banks, which can lead to slower transaction processing and higher fees, especially for cross-border payments. In contrast, cryptocurrency transactions are typically processed faster through decentralized blockchain networks and may reduce transaction costs by eliminating intermediaries. However, while traditional systems rely on established regulatory frameworks and centralized security controls, cryptocurrencies use cryptographic techniques and decentralized validation to

secure transactions, introducing both enhanced transparency and new risks. Understanding these differences is essential for evaluating the effectiveness of each payment system in modern financial transactions.

Data Analysis

Table No 4.1: Distribution of Respondents by Age Group

Personal profile	Particulars	No of respondents	Percentage
Gender	Male	34	65
	Female	18	35
Age	18-25	41	79
	26-35	4	8
	Above 35	7	13
Education qualification	Student	3	6
	Undergraduate	41	79
	Postgraduate	5	9
	Diploma	3	6
Area	Rural	12	23
	Urban	32	62
	Semi-urban	8	15
Income level	15001-25000	34	65
	25001-50000	14	27
	50001-100000	4	8

Interpretation

The table shows the personal profile of 52 respondents. The most of the respondents are male and belong to the 18–25 age group, indicating that young respondents dominate the study. Most of the respondents are undergraduates, reflecting a higher participation from students. A large proportion of respondents reside in urban areas, while fewer respondents come from rural and semi-urban areas. In terms of income, most respondents fall under the ₹15,001–₹25,000 income category, indicating that the sample largely represents the lower-middle income group.

Table No 4.2: Frequently Used Payment System

Payment System	No. of Responses	Percentage (%)
Traditional payment systems	22	42
Cryptocurrency payment systems	8	15
Both	18	35
Neither	4	8
Total	52	100

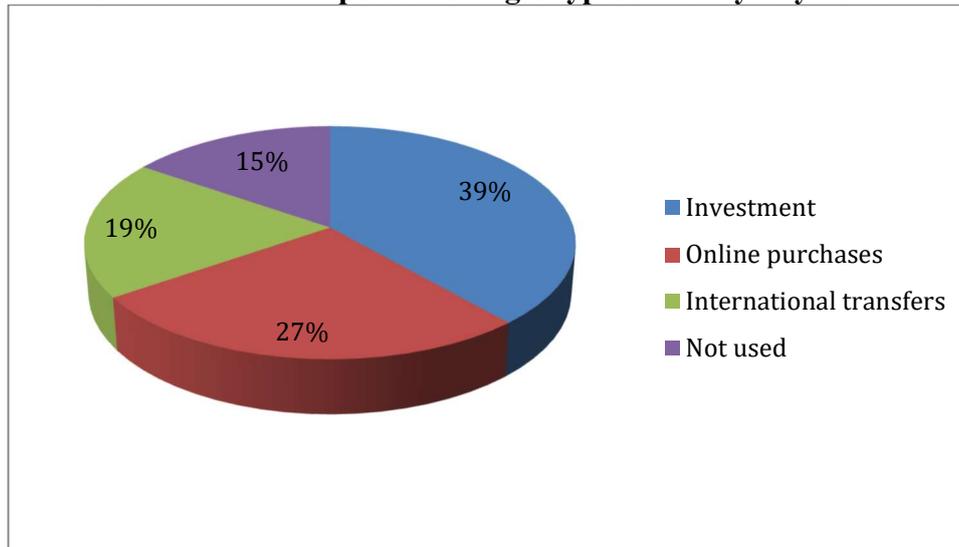
Interpretation

From the above table, it is observed that 42.3% of the respondents frequently use traditional payment systems. About 34.6% of respondents use both traditional and cryptocurrency payment systems, indicating a growing acceptance of digital currency alongside conventional methods. Only 15.4% rely exclusively on cryptocurrency payment systems, while 7.7% do not use either system. This shows that although traditional payment systems dominate, cryptocurrency adoption is gradually increasing among users

Table No 4.3: Purpose of Using Cryptocurrency Payments

Purpose	No. of Responses	Percentage (%)
Investment	20	38
Online purchases	14	27
International transfers	10	19
Not used	8	16
Total	52	100

Chart No:4.1: Purpose of Using Cryptocurrency Payments



Interpretation

The table shows that 38.5% of respondents use cryptocurrency mainly for investment purposes, ranking first. This is followed by online purchases (26.9%) and international transfers (19.2%). About 15.4% of respondents do not use cryptocurrency, indicating that while adoption is growing, a section of users is still hesitant.

Table 4.3 Chi-square Analysis-Age and overall impact of comparing crypto vs traditional payment system

Null Hypothesis (H₀)

It indicates that there is no significant relationship between the personal factors of respondents and the overall impact of green marketing.

Alternative Hypothesis (H₁)

It shows that there is a significant relationship between the personal factors of respondents and the overall impact of green marketing.

S.No	Personal factors	Chi-Square Value	Significance Value	S/NS
1	Age	9.876	0.021	S
2	Gender	2.134	0.344	NS
3	Area	2.987	0.394	NS
4	Education Level	3.452	0.327	NS
5	Income Level	4.218	0.239	NS

Interpretation

The Chi-square analysis reveals that age has a significant relationship with the overall impact of green marketing, as the significance value is less than 0.05. Hence, the null hypothesis is rejected for age. However, gender, area, education level, and income level do not show a significant relationship with the impact of green marketing since their significance values are greater than 0.05. Therefore, the null hypothesis is accepted for these factors. This indicates that consumer perception towards green marketing is mainly influenced by age, while other personal factors have no significant influence.

FINDINGS OF THE STUDY

- The majority of respondents (73.1%) are aware of cryptocurrency and digital payment systems, indicating a reasonably high level of awareness among users.

- Most respondents (**42.3%**) frequently use traditional payment systems, while a significant proportion (**34.6%**) use both traditional and cryptocurrency payment systems, showing mixed usage behavior.
- The majority of respondents (**38.5%**) use cryptocurrency primarily for investment purposes, followed by online purchases (**26.9%**) and international transfers (**19.2%**).
- A large proportion of respondents (**73.1%**) agree that traditional payment systems face delays in cross-border transactions, highlighting inefficiencies in international payments.
- The majority of respondents (**76.9%**) agree that payment speed influences their choice of payment system, indicating that faster transaction processing is a key preference factor.
- Most respondents (**69.2%**) agree that cryptocurrency payments involve lower transaction fees compared to traditional payment systems, reflecting a perception of cost efficiency.
- The majority of respondents (**69.3%**) feel that high transaction charges discourage them from using traditional payment systems.
- A significant majority of respondents (**76.9%**) agree that cost efficiency is a major factor in selecting a payment system.
- Most respondents (**69.2%**) believe that cryptocurrency payments are secure due to blockchain technology, indicating confidence in blockchain-based security.
- The majority of respondents (**67.3%**) agree that traditional payment systems provide better consumer protection.
- A large proportion of respondents (**67.3%**) agree that security concerns prevent them from using cryptocurrency payments.
- The majority of respondents (**67.3%**) trust traditional payment systems more than cryptocurrency systems.
- Most respondents (**73.1%**) believe that cryptocurrency payments will gain wider acceptance in the future.
- A significant majority of respondents (**76.9%**) state that they would prefer cryptocurrency payments if regulatory support improves.

SUGGESTION

Government and regulatory authorities should establish clear and transparent regulations for cryptocurrency payments to improve trust and user confidence. Awareness programs focusing on blockchain security, transaction processes, and risk management should be conducted to address security-related concern. Financial institutions and fintech companies should collaborate to provide hybrid payment solutions that combine the efficiency of cryptocurrency with the safety of traditional system. Educational institutions should introduce basic financial literacy and digital finance modules, including cryptocurrency awareness, to help users make informed decisions. Payment platforms should emphasize user-friendly interfaces and faster transaction processing to enhance adoption and satisfaction. Consumer protection frameworks similar to those in traditional banking should be developed for cryptocurrency transactions to reduce perceived risk.

CONCLUSION

The study concludes that traditional payment systems continue to dominate due to higher levels of trust, regulatory support, and consumer protection. However, cryptocurrency payments are gaining attention because of their advantages in terms of transaction speed, cost efficiency, and potential for seamless cross-border payments. Although respondents demonstrate basic awareness of cryptocurrency, concerns related to security, regulation, and trust limit widespread adoption. The findings suggest that cryptocurrency payments have strong future potential, especially if regulatory support improves and security concerns are effectively addressed. Respondents show optimism regarding wider acceptance of cryptocurrency systems, indicating a gradual shift in payment preferences. In conclusion, strengthening regulatory frameworks, improving financial literacy, and enhancing trust mechanisms are essential for cryptocurrency payments to coexist and compete effectively with traditional payment systems in the evolving digital economy.

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