



CRYPTOPAY:

CRYPTOCURRENCY PAYMENT AND TICKETING SYSTEM

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Abstract:

CryptoPay is a web-based cryptocurrency payment and ticketing platform designed to provide secure, transparent, and efficient digital transactions using blockchain principles. The system integrates wallet management, QR-code payments, transaction validation, and automated ticket issuance within a unified architecture. A prototype was developed using HTML, CSS, JavaScript, Python Flask, and MySQL. User perception was evaluated through a survey of more than 100 respondents to assess awareness, trust, and adoption readiness toward cryptocurrency payments. Results indicate moderate awareness of cryptocurrency, strong familiarity with QR-based payments, and positive willingness to adopt a secure and user-friendly crypto payment platform. Security, volatility, and regulation remain key barriers. The study demonstrates that combining usability features with decentralized validation can improve practical cryptocurrency adoption.

Keywords: *Cryptocurrency, Blockchain, QR Payment, Digital Ticketing, Wallet Security, FinTech.*

1. Introduction

Digital payment systems have transformed commerce through speed and convenience. However, conventional platforms depend on centralized intermediaries such as banks and payment gateways, often resulting in transaction fees, delays, and single points of failure. In parallel, digital ticketing systems still face fraud risks, duplication, and limited transparency.

Blockchain technology offers a decentralized alternative by enabling tamper-resistant records and peer-to-peer value transfer. Although cryptocurrencies are widely known, they are primarily used for investment rather than everyday payments. This creates an opportunity for practical systems that combine cryptocurrency payments with familiar user experiences such as QR-code scanning.

CryptoPay addresses this gap through an integrated payment and ticketing platform that supports wallet transactions, QR validation, and automated ticket issuance.

Objectives

- Develop a blockchain-inspired payment and ticketing platform.
- Integrate wallet functionality into a web application.
- Enable QR-based payment and ticket verification.
- Improve transparency, security, and efficiency.
- Evaluate usability and adoption readiness.

2. Literature review

Blockchain was introduced through Bitcoin as a decentralized ledger capable of recording transactions without trusted intermediaries. Prior studies highlight transparency, immutability, and reduced operational costs. Other research identifies cryptocurrency potential for global payments and lower friction in cross-border transfers.

Despite these advantages, mainstream adoption remains limited due to volatility, regulatory uncertainty, and usability challenges. QR-code payment systems, widely adopted in countries such as India, demonstrate that users prefer fast scan-and-pay models over complex manual entry systems.

Smart contracts have also been proposed for automating verification and service delivery, including ticket issuance. However, most existing studies examine blockchain payments, ticketing, and QR systems separately. Limited work focuses on integrating these features into a single consumer-oriented platform.

3. Methodology

A design-oriented research methodology was adopted to build and test a functional prototype.

3.1 System architecture

The platform uses a three-layer architecture:

- Frontend: HTML, CSS, JavaScript
- Backend: Python Flask
- Database: MySQL

3.2 Core modules

- User registration and login
- Wallet balance management
- Merchant QR generation
- QR scan payment processing
- Ticket booking and issuance
- Transaction history tracking

3.3 Security features

- Password hashing
- Session management
- Secure data storage
- Transaction verification logic

3.4 Evaluation approach

The system was tested under simulated transaction scenarios. A survey of 100+ participants measured awareness, trust factors, payment habits, and willingness to use CryptoPay.

4. Results and analysis

4.1 survey summary

Most respondents belonged to the 18–35 age group and consisted mainly of students and working professionals. These groups represent strong digital payment users and early adopters.

4.2 current payment behavior

UPI and card payments were the dominant transaction methods. QR-code payments were used daily or weekly by a majority of respondents, showing strong behavioral readiness for scan-based transactions.

4.3 cryptocurrency awareness

Participants reported moderate to high awareness of cryptocurrency. However, many had only used cryptocurrency for investment rather than direct payments.

4.4 adoption barriers

The most common concerns were:

- Security risks
- Price volatility
- Lack of regulation
- Limited merchant acceptance

4.5 adoption potential

A significant share of respondents indicated they would use a secure and user-friendly crypto payment platform. Merchant acceptance strongly improved user trust.

4.6 prototype performance

Testing showed successful wallet updates, QR payment processing, and automated ticket generation. Transaction records were stored accurately, and the system remained stable under repeated simulations.

4.7 Results and Analysis

Survey responses showed high familiarity with QR payments and moderate awareness of cryptocurrency. Users preferred secure, simple, and merchant-supported solutions.

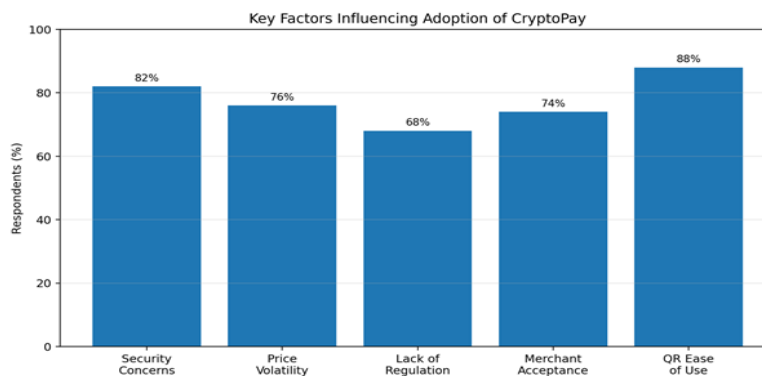


Figure 1: Key factors influencing adoption of CryptoPay among respondents

5. Discussion

The findings show a clear gap between cryptocurrency awareness and practical usage. While many users know about crypto assets, few use them in routine transactions. This supports previous research indicating that cryptocurrency is often perceived as an investment rather than a payment medium.

The popularity of QR-code payments suggests that adoption can improve when cryptocurrency systems follow familiar payment behaviors. Therefore, usability is as important as technical security.

Merchant participation also plays a central role. Even efficient systems may fail without ecosystem support from businesses and service providers. Integrating ticketing services further expands practical utility beyond peer-to-peer transfers.

Conclusion

This study evaluated the feasibility of CryptoPay, a QR-based cryptocurrency payment and ticketing platform. Survey findings show that users are comfortable with QR payments and moderately aware of cryptocurrency, but concerns regarding security, volatility, and regulation remain significant barriers.

The developed prototype demonstrated that wallet services, QR validation, and automated ticket issuance can be integrated into a unified web platform. The results suggest that future cryptocurrency adoption depends on combining secure transaction design with ease of use, merchant onboarding, and practical service applications. With further development and real-world deployment, platforms such as CryptoPay can support the next generation of digital commerce.

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