JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Crypto Wallet: Safe, Secure, Limitless Transactions.

Atharva Moholkar, Pranav Rao
Under Guidance of Prof. Mandar Mokashi

Abstract: *A crypto wallet is a digital wallet that allows users to securely store, manage, and transfer their cryptocurrencies. It is a perfect combination with blockchain technology and provides a secure solution for banking. Blockchain technology is the backbone of the cryptocurrency industry, and it ensures the security and immutability of transactions. Cryptocurrency wallets leverage blockchain technology to ensure that transactions are secure, transparent, and tamper-proof. Crypto wallets come in different forms, including hardware wallets, software wallets, and mobile wallets. Each type of wallet has its unique features, advantages, and disadvantages. For example, hardware wallets offer the highest level of security as they store private keys offline, while mobile wallets offer convenience and accessibility. Cryptocurrency wallets are also a perfect solution for banking because they offer users more control over their funds. Crypto wallets can offer enhanced security features, such as two-factor authentication, multi-signature support, and biometric authentication. These features help to ensure that users' funds are secure and protected from unauthorised access.*

Keywords*: Bank, Finance, UPI, Cryptocurrency, Blockchain, Crypto wallet, E-wallet.*

I. INTRODUCTION

The concept of blockchain is widely discussed in both academic and corporate circles. It is a distributed and network-based technology that involves storing information digitally in a shared, distributed database. Blockchain technology has gained popularity due to its ability to ensure security and data control. The term "blockchain" refers to the digital storage of data in blocks that form a chain, where every new record added to a block becomes part of the existing chain. A ledger-based system is used to keep a record of all transactions, making it a public ledger accessible to everyone. Blockchain technology is also the foundation on which cryptocurrency was invented, making it famous. Cryptocurrency includes digital and virtual currencies, with DAI being the first blockchain technology to use crypto money. Virtual currencies like DAI do not require the existence of a central authority to facilitate transactions and processing. DAI was first created in 2008, after the global financial crisis, to address flaws in traditional banking systems and facilitate international money transactions at a lower cost per transaction.

However, DAI's journey did not go as planned, and it ended up being widely used in activities related to money. Blockchain technology is often touted for its security and transparency, making it a popular choice for various applications beyond cryptocurrencies. Its decentralised nature eliminates the need for intermediaries, reducing ts and increasing efficiency. Moreover, the data stored on a blockchain is immutable, meaning it cannot be tampered with, making it an ideal solution for record-keeping and other applications that require secure and transparent data storage.

The development of blockchain technology has paved the way for many innovative use cases. For example, it can be used to create smart contracts, which are self-executing contracts that automatically enforce the terms and conditions set forth in the agreement. Smart contracts can be used to automate various processes, such as supply chain management and real estate transactions. The potential applications of blockchain technology are virtually endless, and as the technology continues to evolve, it is likely to be adopted in even more fields. However, there are still challenges that need to be addressed, such as scalability, interoperability, and regulatory issues. As the industry continues to mature, these challenges are expected to be addressed, making blockchain technology an even more attractive solution for a wide range of applications.

II. LITERATURE REVIEW

1. The author delves into the challenges faced by blockchain technology, particularly in the context of FinTech. While blockchain technology offers several advantages such as security and transparency, it falls short of meeting FinTech's requirements on security and privacy, particularly when it comes to transaction throughput and primitives. The author then provides an overview of the different types of blockchain-based applications that are being developed for use in finance and banking, including payment systems,

trade finance, and asset tracking. The author also discusses some of the challenges and limitations of using blockchain technology in finance and banking, such as scalability issues, regulatory uncertainty, and the need for interoperability with existing systems.

2. To address these challenges, the author discusses how DAI-beyond blockchain work bridges the gaps and suggests a solution for retaining the confidentiality of information in distributed databases without relying on tokens based on blockchain. The article also discusses the potential challenges and limitations of using blockchain technology in inter-bank transactions, such as the need for interoperability with existing systems, the potential for regulatory challenges, and the need for robust security and privacy measures. The authors explore the potential benefits of blockchain technology in inter-bank transactions and provide a comprehensive review of existing literature on this topic.

3. The authors argue that without using mining and tokens, blockchain technology would significantly unravel the procedure to maintain the confidentiality and validity of information regarding bank transactions. The authors then go on to review existing literature on the multi-blockchain model for CBDC, which involves using multiple blockchains to support the issuance and management of CBDC. They discuss the advantages of this approach, such as increased security, scalability, and interoperability, and highlight several potential challenges, such as the need for consensus mechanisms and governance models to ensure the integrity of the system. The authors highlight the potential benefits and challenges of this approach and suggest areas for future research in this field.

4. The article highlights how blockchain technology can address the problem of cryptography consensus and ensure that financial activity and transaction actions are stored in a particular database without the need for central authority intervention. The authors also discussed the potential challenges and limitations of implementing blockchain technology in the banking industry, including regulatory and legal issues, scalability concerns, and the need for industry-wide standardization. They highlighted several ongoing initiatives and experiments by major banking institutions aimed at exploring the potential of blockchain technology and argued that the technology has the potential to fundamentally transform the banking industry in the coming years.

5. The author analyses the main design and technological features of blockchain technology and presents scenarios where blockchain applications can be applied. Overall, the article provides a critical analysis of the challenges facing blockchain technology and proposes solutions to address these challenges, particularly in the context of FinTech. The authors proposed an architecture for an inter-bank payment system based on an enterprise blockchain platform. They described the various components of the system, including the ledger, smart contracts, and the consensus mechanism. They also discussed the potential benefits of using an enterprise blockchain platform for inter-bank payments, including enhanced privacy, scalability, and interoperability. As blockchain technology

continues to evolve and mature, it is expected that these challenges will be addressed, making it an even more attractive solution for a wide range of applications.

6. The paper presents a novel approach to creating an elderly mutual aid time bank based on blockchain technology. The proposed time bank allows the elderly to exchange their spare time for mutual aid services. The authors suggest that blockchain technology provides several benefits for such a system, including trust, security, and transparency. The paper reviews the potential benefits of using blockchain technology in time banks and explores the use of smart contracts to automate the exchange process. The authors also suggest that the use of blockchain technology can help to address some of the challenges of traditional time banks, such as trust issues and the lack of a reliable record-keeping system. Overall, the paper provides a useful exploration of the potential for blockchain technology to transform the operation of mutual aid time banks for the elderly.

7. The authors evaluate the innovation decision-making process of banks with respect to the adoption of blockchain technology. They argue that the decision to adopt blockchain is influenced by several factors such as perceived relative advantage, compatibility, complexity, and uncertainty. The study is based on a survey conducted among senior executives of US banks, and the results show that perceived relative advantage and compatibility are the most significant factors that influence the decision to adopt blockchain technology. The authors also provide recommendations for banks to improve their innovation decision-making process by increasing their understanding of blockchain technology and its potential benefits, fostering a culture of innovation, and developing partnerships with fintech companies. Overall, this paper provides valuable insights into the adoption of blockchain technology in the banking sector and highlights the importance of effective decision-making processes.

III. EXISTING TECHNOLOGY

1) UPI (UNIFIED PAYMENT INTERFACE)

Unified Payment Interface (UPI) is a mode of payment system that offers quick, efficient, and secure transactions among banks. Developed by the National Payments Corporation, UPI provides users with a single mobile application to manage multiple bank accounts, merging all the features of banking into a single cluster. Transactions on the platform are done in real-time, and users can make payments by scanning QR codes, which debit their accounts instantly. This eliminates the need for users to wait in long queues to deposit money, making the payment processing system more efficient. Additionally, UPI offers two-factor authentication, ensuring the security of transactions. By combining the functionality of UPI with e-wallets, users can easily make payments by scanning QR codes, and the amount is deducted directly from their bank accounts. This provides users with a convenient way to make payments in real-time and with minimal hassle. UPI is a revolutionary payment system that has transformed the way people make transactions. It has made banking more accessible and efficient, allowing users to make payments and manage their accounts with ease. The platform is highly secure, providing users with peace of mind while making transactions. It also offers a range of features such as bill payments, peer-to-peer transfers, and mobile recharges, making it a one-stop solution for all your banking needs.

The UPI platform is highly user-friendly and offers a seamless payment experience. With its easy-to-use interface, users can navigate the platform without any difficulty. Transactions are also processed quickly, allowing users to make payments on the go. Moreover, UPI is interoperable, which means that users can make transactions between different

banks without any hassle. This has made banking more inclusive, allowing people from all backgrounds to access banking services.

UPI has been a game-changer in the banking industry, making payments faster, more secure, and more accessible. With its user-friendly interface, robust security features, and interoperability, UPI has set a new standard for payment systems. Whether you are making a payment, managing your accounts, or recharging your phone, UPI offers a convenient and efficient solution to all your banking needs.

2) CRYPTO E- WALLET

An E-wallet is a software application that stores payment information such as credit and debit card details in a secure digital format. It is designed to make online transactions easier, faster and more secure.[22] E-wallets have become increasingly popular as they provide a convenient way to make payments without the need to carry physical cash or card. They can be used for a range of services like paying bills, shopping online, transferring money to another person, and more.

E-wallets can be linked to bank accounts, credit and debit cards or digital payment platforms like UPI. To use an e-wallet, a user needs to create an account and add money to it. The wallet then uses encryption technology to secure the user's payment information and transaction details. Users can access their e-wallets via mobile devices, computers or other devices that are connected to the internet.

In addition to making transactions easier, e-wallets also offer a layer of security as they require authentication before any transaction can take place. Many e-wallets also offer two-factor authentication, biometric authentication or PIN protection to ensure that the user's account and payment information are protected.

3) TRADITIONAL E WALLETS

An E-wallet is a virtual wallet that allows the user to store money and use it for transactions. Unlike traditional wallets, it does not require the existence of a physical card. The E-wallet can be created by adding money to it, and it can be used for various transactions, such as making payments directly from the user's bank account using UPI, or by using the wallet itself.

After each transaction, the database is updated to reflect the mode of payment that was adopted, and the same will reflect in the customer's wallet or bank account. This feature ensures transparency and allows users to track their transactions with ease. One such example of an E-wallet is Paytm, which offers both prepaid and post-paid options to its users. The post-paid mechanism ensures that the customer is able to spend the money from the wallet up to a certain limit, making it more flexible and convenient.

However, the E-wallets require the availability of an internet connection, and they are designed to work with handheld devices such as smartphones. These wallets can be accessed through browsers to facilitate transactions that are opted by the users

IV. PROPOSED TECHNOLOGY

Cryptocurrency wallets are digital wallets that store private and public keys and utilise blockchain technology to send and receive digital currencies. However, due to the growing concerns over the security of the traditional wallet, the implementation of crypto wallets using blockchain has become popular. The blockchain-based crypto

wallet stores the encrypted key on the blockchain network, which enhances its security and protection against hacks or breaches. A blockchain-based wallet allows users to perform various operations, including sending and receiving cryptocurrencies, monitoring their balance, and trading coins on a portfolio using the wallet. The use of the blockchain network also ensures transparency in transactions and eliminates the need for intermediaries, thus reducing the cost of transactions. The wallet also provides a higher degree of privacy as it uses a hexadecimal address of the wallet instead of personal identifiable information. Furthermore, the blockchain-based wallet does not store the cryptocurrency in a centralised location. Instead, all transactions are recorded in the form of blocks on the blockchain network, which is transparent and immutable. This means that the cryptocurrency stored in the wallet is always available, and the user can access it at any time, from any location with an internet connection. Overall, the implementation of crypto wallets using blockchain technology has revolutionised the traditional wallet system. With enhanced security, transparency, and privacy, blockchain-based wallets have become increasingly popular and continue to provide users with more convenient, efficient, and secure means of handling their digital assets.

Implementing these parameters can significantly enhance the security of transactions using blockchain-based E wallets–

a. Firstly, using a phrase instead of traditional login credentials like a password, mobile number or email address can make the wallet more secure as the phrase is unique to the user and not easily guessable by hackers.
b. Additionally, monitoring transaction activity via email can provide an extra layer of security as it ensures that only the verified user can access the wallet and initiate transactions Recording each transaction on the blockchain also increases transparency and ensures that all transactions are tamper-proof.
c. Finally, using a wallet address instead of personal information can protect the customer's identity and prevent potential fraud. By incorporating these parameters, the banking system can provide a more secure and efficient way of conducting transactions using blockchain-based e-wallets.

V. RESULTS AND DISCUSSION

Using blockchain technology in the core banking system can greatly enhance transaction security and reduce the risk of fraudulent activities. By decentralising the data and storing it across a distributed network of databases, the blockchain based system can prevent unauthorised access and ensure that each transaction is authenticated and initiated by the user.

Cryptocurrency	Transactions per Second	Average Transaction Confirmation Time
Bitcoin	3–7	60 min
Ethereum	15–25	6 min
Ripple	1500	4 s
Bitcoin Cash	61	60 min
Stellar	1000	2–5 s
Litecoin	56	30 min
Monero	4	30 min
IOTA	1500	2 min
Dash	10-28	15 min

Fig. 1 – Crypto transaction speed

Figure 1 tabulates the data regarding transaction speed and average transaction confirmation time. We can see the Ripple coin's transaction time is very less and it's transactions per second are also very high. Also same for the Stellar crypto currency. While Bitcoin takes too much time comparatively because it's volume nowadays is very high compared to other cryptocurrencies.

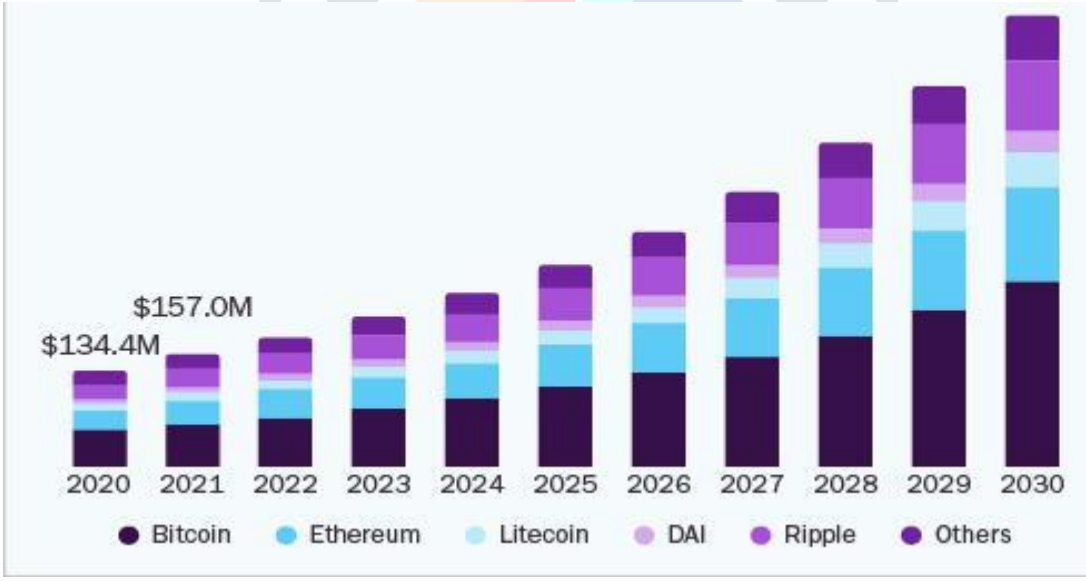

Fig. 2 – Cryptocurrency Market

As we can see in the figure 2 cryptocurrency market is increasing by almost 16% per annum it is quiet higher rate compared to digital currencies. Mainly Bitcoin and Ethereum are the two leading cryptocurrencies in the crypto market.

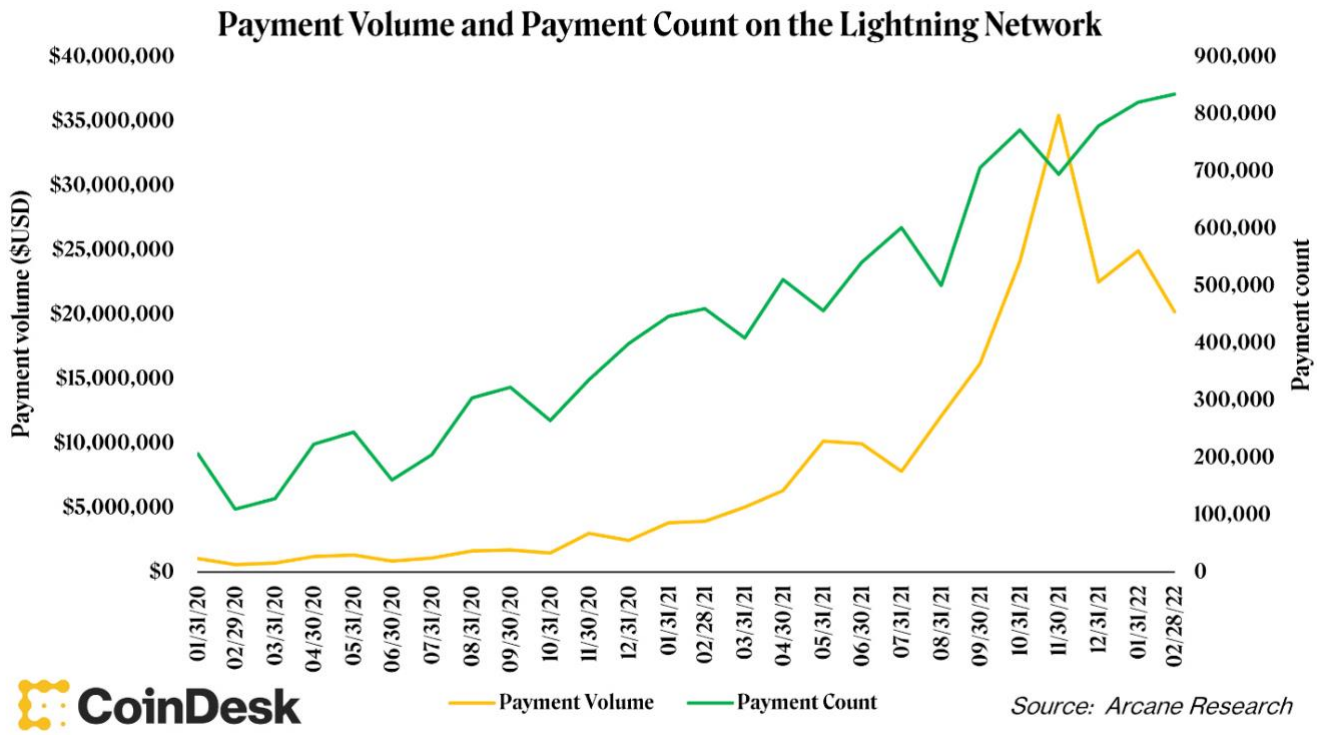

Fig. 3 – Crypto Payment Volume and Count

As shown in the graph in figure 3 Crypto payment count and payment volume is increasing day by day. As the payment count increases payment volume also increases gradually.

Furthermore, the adoption of this technology can significantly reduce the security overhead that comes with a traditional banking system which relies on centralisation. The blockchain-based system ensures that data and customer information are secured and protected from external threats. With the implementation of blockchain-based wallet systems and banking systems, the centralisation of data is dismantled and replaced with a distributed and decentralised approach.

VI. CONCLUSION

The blockchain-based banking system is not only tamper-proof, but it also eliminates the need for intermediaries, reduces transaction times and costs, and increases transparency. By using smart contracts, the blockchain-based banking system can automate processes such as loan approvals, KYC compliance, and other banking operations. The use of blockchain technology in the banking system can also prevent fraud and money laundering as each transaction is recorded on a distributed ledger and can be traced back to its origin. Furthermore, with the use of blockchain-based E wallets, customers' private keys are kept secure, ensuring that their funds are safe. In conclusion, crypto wallets are a perfect combination with blockchain technology and offer a secure solution for banking. They provide users with more control over their funds and offer enhanced security features to protect their assets. As the cryptocurrency industry continues to grow, crypto wallets will play an increasingly important role in the future of finance.

VII. REFERENCES

1. Eyal, I. (2017). Blockchain Technology: Transforming Libertarian Cryptocurrency Dreams to Finance and Banking Realities Computer MDPI AG
2. Wu, T., Liang, X. (2017). Exploration and practice of inter-bank application based on blockchain ICCSE 2017 - 12th International Conference on Computer Science and Education Institute of Electrical and Electronics Engineers Inc.,
3. Sun, H., Mao, H., Bai, X., (...), Hu, K., Yu, W. (2018). Multi-blockchain model for central bank digital currency Parallel and Distributed Computing, Applications and Technologies IEEE Computer Society
4. Cocco, L., Pinna, A., Marchesi, M. (2017). Banking on blockchain: Costs savings thanks to the blockchain technology Future Internet MDPI AG
5. Wang, X., Xu, X., Feagan, L., (...), Jiao, L., Zhao, W. (2018). Inter-Bank Payment System on Enterprise Blockchain Platform IEEE International Conference on Cloud Computing, CLOUD IEEE Computer Society
6. Cui, L., Yuan, K., Zhao, X., Mou, L.Y.D. (2019). Construction of elderly mutual aid time bank based on blockchain Proceedings - IEEE International Conference Institute of Electrical and Electronics Engineers Inc. give literature review
7. Dozier, P.D., Montgomery, T.A. (2019). Banking on Blockchain: An Evaluation of Innovation Decision Making IEEE Transactions on Engineering Management Institute of Electrical and Electronics Engineers Inc. give literature review
8. Guo, Y., Liang, C. (2016). Blockchain application and outlook in the banking industry Financial Innovation Springer Open.
9. Harris, W.L., Wong limpiyarat, J. (2019). Blockchain platform and future bank competition Foresight Emerald Group Publishing Ltd.
10. Farrell, S. (2019). Blockchain standards in international banking: Understanding standards deviation Journal of ICT Standardization River Publishers.