Cryptocurrency adoption and its implications for traditional financial systems

Abstract

In recent years, cryptocurrencies have become significant financial systems. The goal is to offer a currency that is not tied, created, or backed by a government. Blockchain technology serves as the financial infrastructure for cryptocurrencies. The rate of acceptance of cryptocurrencies has surged, and the market has expanded significantly. there is not enough literature on cryptocurrency adoption by user. So, in this paper we survey and evaluate about the adoption of Cryptocurrencies and its implication for traditional financial system by different users. Survey method was used to find out public perception regarding cryptocurrency. Random sampling used and total 100 people surveyed using online survey. As per the survey analysis it was found that around 42% of the respondents are unaware of cryptocurrency and its use. This paper can be extended in multiple directions for future research. The finding of this research help researchers, regulators and cryptocurrency developers better understand their consumer's intention towards cryptocurrency adoption.

Keywords:

Blockchain Technology, Cryptocurrency, Cryptocurrency Adoption, Traditional Financial Systems, Transactions.

Introduction

Cryptocurrency is a digital or virtual form of currency that uses cryptography for security and operates on decentralized systems known as blockchains (Mukhopadhyay et al., 2016; Vidal-Tomás, 2022) Unlike Unlike traditional currencies issued and controlled by governments, cryptocurrencies are typically independent of any central authority. The most well-known and widely adopted cryptocurrency is Bitcoin, which was introduced in 2009 by an anonymous person or group known as Satoshi Nakamoto (Ducrée, 2022). Since then, thousands of cryptocurrencies, often referred to as altcoins, have emerged, each with its own unique features and use cases.

Cryptocurrencies are built on blockchain technology, which is a distributed ledger that records all transactions across a network of computers. The blockchain serves as a transparent and immutable record of every transaction, making it difficult to alter or tamper with the transaction history. This technology ensures the security and integrity of cryptocurrency transactions (Nasir et al., 2020; Ghosh et al., 2020). Due to its usefulness, transparency, accuracy, and efficiency in terms of time and cost, blockchain is an emerging technology that could change the world. Increased familiarity, confidence, successful usage cases, and testimonials as well as necessary legislative changes are required for the use of blockchain in finance to grow (Hashemi Joo et al., 2020).

One of the key features of cryptocurrencies is decentralization. Traditional financial systems rely on central authorities such as banks or governments to facilitate and regulate transactions. In contrast, cryptocurrencies operate on decentralized networks, where transactions are verified by a consensus mechanism, often through mining or staking. This

decentralized nature eliminates the need for intermediaries, reduces transaction costs, and provides individuals with direct control over their funds (Wątorek et al., 2021).

Cryptocurrencies offer several potential advantages over traditional financial systems. First, they enable faster and more efficient cross-border transactions. Traditional international transfers can be time-consuming and costly due to intermediaries and various regulatory requirements. Cryptocurrencies allow for direct peer-to-peer transactions, bypassing many of these complexities and enabling near-instantaneous transfers (Matkovskyy et al., 2020).

Another advantage of cryptocurrencies is their potential for financial inclusion. In many parts of the world, people lack access to traditional banking services, but they may have access to the internet and mobile devices. Cryptocurrencies provide a means for individuals to participate in the global economy and access financial services, such as sending and receiving payments or accessing loans, without the need for a traditional bank account.

Cryptocurrencies also offer enhanced security and privacy. Transactions conducted on a blockchain are secured through cryptographic algorithms, making it extremely difficult for malicious actors to alter or forge transactions (Raikwar et al., 2019). Additionally, cryptocurrencies provide varying levels of privacy, allowing users to control the visibility of their transactions. While the transactions themselves are public on the blockchain, the identities of the individuals involved can often remain pseudonymous or even anonymous.

The goal of present study is to examine adoption decision of the cryptocurrency and its implication for traditional finance systems. We examined different factors influencing its adoption and also provide in-depth analysis of each factor by survey method. In this study, we tried to observe the increased adoption level and its potential disruptions, challenges, opportunities, regulatory implications, and the overall impact on financial stability and innovation.

Review Literature

Over the past ten years, the use of digital currencies has steadily grown. A survey by the Cambridge Centre for Alternative Finance estimates that there were 35 million unique users of digital currencies in 2021, and that number is anticipated to rise. A rising number of companies, both online and offline, are also starting to accept digital currencies as payment. Apart from that, a small number of significant businesses dominate the digital currency market. In 2023, the market capitalization of Bitcoin, the first and biggest digital currency, will be above $421.35 billion. With market capitalizations of over $100 billion apiece, Ethereum, Ripple, and Litecoin are three other significant participants.

The market value of cryptocurrency increased at more than $800 billion by the end of 2017. Though, the market capitalisation is extensively impacted by the excessive price volatility. Although the figure of cryptocurrency users cannot be precisely counted, it can be estimated. We can check it by looking at the expected totals for wallet creation, unique address count, and exchange site users. By 2024, there will be 200 million bitcoin users, according to predictions (Alzahrani and Daim, 2019).

The sixth-largest currency in use worldwide as of November 2019 is bitcoin. The average daily trading volume of cryptocurrencies now exceeds 1% of the trade volume on foreign exchange markets, the largest market in the world (Saiedi et al., 2021).

In the present study, by survey method it was used to analyze public perception regarding cryptocurrency adoption and its impact on traditional finance system. This study provides

actual information regarding cryptocurrency and bitcoin as provided by random peoples as compared to other study which were based on secondary data or literature.

Methodology

We conducted an online survey (see the questionnaire Table 1) with random sampling technique as shown in Figure 1. An online survey is a low-cost method of research in comparison to other approaches (Bell et al., 2022), which implies quick questionnaire distribution and short response collection time. The questionnaire consists total 14 questions asked to 100 people. To motivate respondents and, hence, increase the response rate, the survey invitation offered a small lottery incentive in return to a fully answered questionnaire.

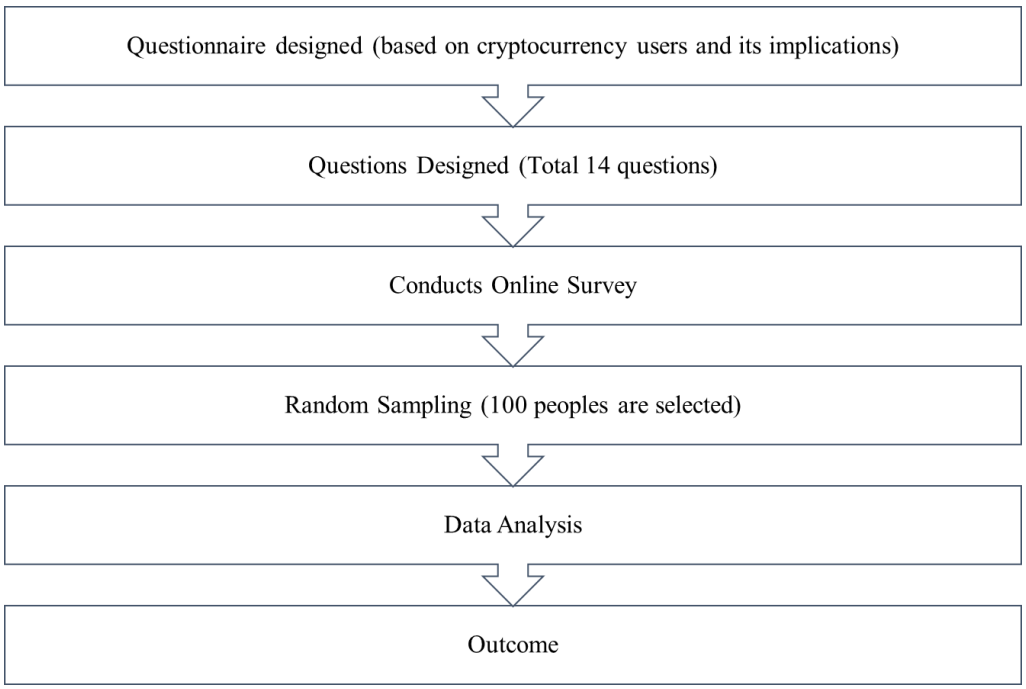

Figure 1- Flow diagram representing the methodology used in this research.

Table 1 - A questionnaire related to cryptocurrency adoption and its implications for traditional financial systems.

SI. No.	Questions	Answer Options
1	What is your age?	20 - 30 years; 31 - 40 years; 41 - 50 years
2	What is your gender?	Female; Male
3	Knowledge of IT, Finance?	No knowledge; novise; medium; advanced; expert
4	Knowledge about cryptocurrencies such as Bitcoin, Ethereum?	No knowledge; novise; medium; advanced; expert
5	Are you familiar with the concept of blockchain technology, which underlies cryptocurrencies?	Yes; No

6	Have you ever used or owned any cryptocurrencies?	Yes; No
7	If yes, what motivated you to adopt cryptocurrencies?	Decentralization and control over personal funds; Potential for high returns on investment; Lower transaction fees compared to traditional financial systems; Faster and more efficient cross-border transactions; Security and privacy features; Other
8	If no, what are the reasons preventing you from adopting cryptocurrencies?	Lack of understanding about cryptocurrencies and blockchain technology; Concerns about security and potential risks; Volatility and unpredictability of cryptocurrency prices; Lack of acceptance and usability in daily life; Trust in traditional financial systems and existing currencies; Other
9	In your opinion, how do you think the adoption of cryptocurrencies will impact traditional financial systems?	Increased financial inclusion for unbanked populations; Disruption of traditional banking and payment systems; Greater efficiency and speed in transactions and settlements; Reduced reliance on intermediaries and trusted third parties; Regulatory challenges for governments and regulators; Other
10	Do you believe cryptocurrencies have the potential to replace traditional currencies in the future?	Yes; No
11	What do you consider the biggest challenges for widespread cryptocurrency adoption?	Lack of regulation and legal frameworks; Price volatility and market instability; Limited merchant acceptance and usability in daily life; Education and awareness about cryptocurrencies; Technical barriers and complexity for mainstream users; Other
12	Are you aware of any initiatives or collaborations between traditional financial institutions and the crypto industry?	Yes; No
13	Would you be willing to use cryptocurrencies for everyday transactions if they were widely accepted and easily accessible?	Yes; No
14	Is there anything else you would like to share or comment on regarding cryptocurrency adoption and its implications for traditional	

	financial systems?	

Results and Discussion

The gender and age of respondents shown in Figure 2 and indicating that the male respondents are 67% and 33% are females. Most of them are aged 31-40 years (38%), 20-30 years (35%) and 27% of 41-50 years (Table -2).

Table 2- Gender and Age of Respondents.

Variables	Categories	Number of Respondents	Share of Respondents
Gender	Male	67	67%
	Female	33	33%
Age	20-30	35	35%
	31-40	38	38%
	41-50	27	27%

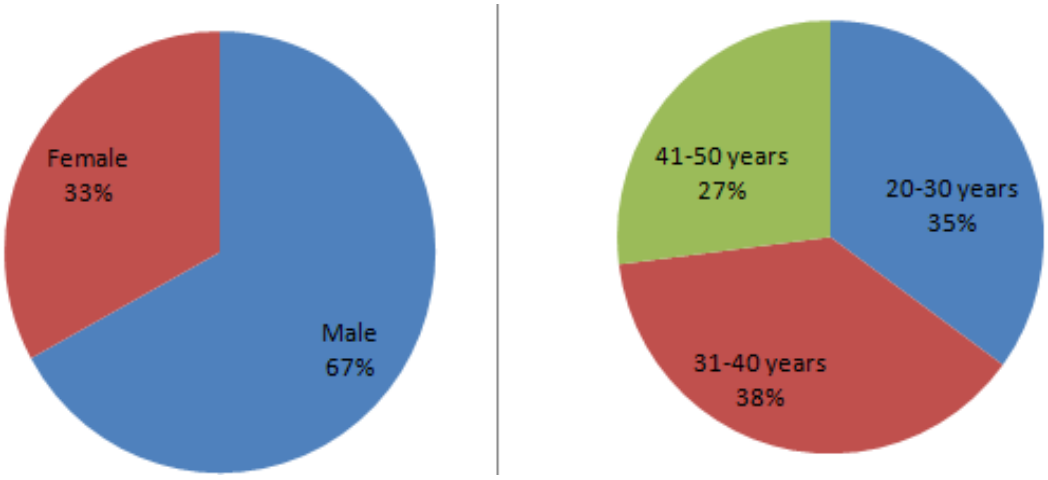

Figure 2– Percentage of gender and age group of respondents.

The majority of respondents analyzed their own level of IT, finance, bitcoin and ethereum knowledge as medium (34%, 29%, 32% and 31%, respectively), advanced (31%, 31%, 18% and 22%), or expert (24%, 15%, 15% and 13%), as show in Figure 3 and Table 3. Ermakova et al., 2020 studied that the knowledge of IT and finance as medium was 20.98% and 34.27%, respectively; advanced 27.97% and 25.87%; or expert 39.86% and 23.78%. Around 16% of the respondents have no knowledge of bitcoin; what bitcoin is or how it is used. Bitcoin is not restricted to a specific region, administration, or bank, so there are no barriers to sending money internationally. The cryptocurrency bitcoin has attracted a lot of interest. Together with Ethereum, they form the nucleus of contemporary cryptocurrency development, with an emphasis on smart contracts (Vujičić et al., 2018).

Table 3- Respondent knowledge assessment

	No knowledge	Novice	Medium	Advanced	Expert
Knowledge of IT	4%	7%	34%	31%	24%
Knowledge of Finance	7%	18%	29%	31%	15%
Knowledge of Bitcoin	16%	19%	32%	18%	15%
Knowledge of Ethereum	19%	15%	31%	22%	13%

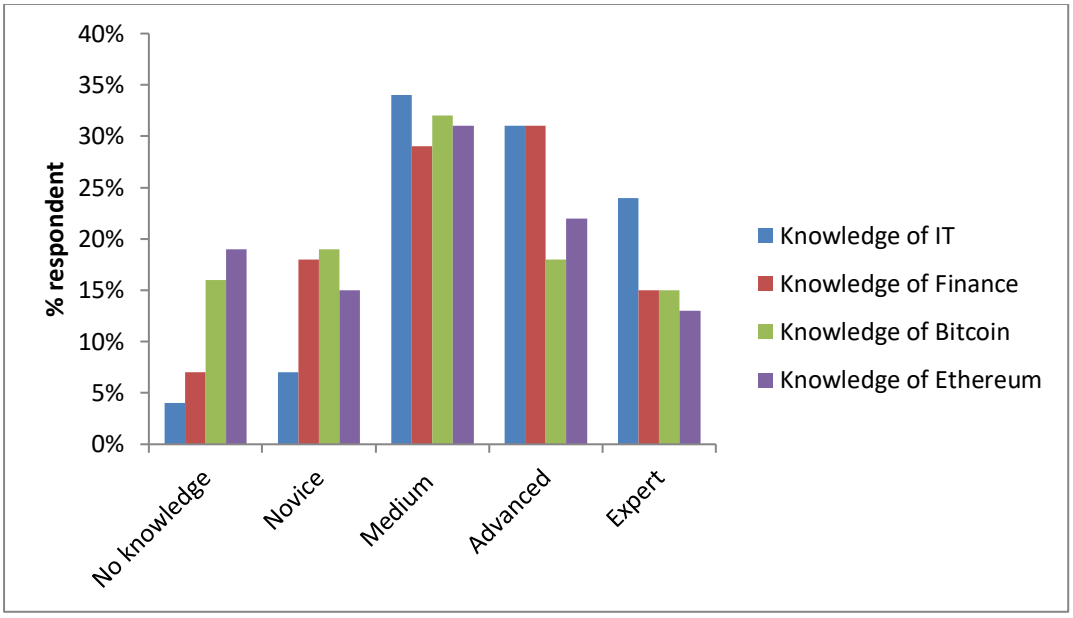

Figure 3- Respondent knowledge about IT, Finance, Bitcoin, Ethereum.

Blockchain technology

The Internet of Things (IoT) eco-system is one of many other fields where the blockchain (BC), the technology behind the Bitcoin cryptocurrency system, is thought to be crucial in providing the backbone for ensuring better security and privacy for numerous applications. Blockchain is currently being used in numerous sectors of international research being undertaken in academia and industry. BC security is maintained by the Proof-of-Work (PoW) mathematical challenge, which keeps a digital transaction ledger that is thought to be unchangeable. Around 22% of the respondents are familiar with blockchain technology. Industry participants will likely experience increased regulatory scrutiny as blockchain technology is integrated into the finance and financial services sectors, cryptocurrencies become more common, and the potential for additional blockchain applications continues to grow. This is true even as the regulatory environment changes and evolves along with the technology (Michael et al., 2018).

Cryptocurrency was used by 58% of the respondents and rest 42% respondent have not used cryptocurrencies (Table - 4). Cryptocurrencies leverage the Blockchain technology to gain transparency, decentralisation, and immutability (Meunier, 2018). Decentralization and control over personal funds are the main motivated in 18% of the respondents to use cryptocurrency followed by lower transaction fees compared to traditional financial systems

(17%), potential for high returns on investment (14%), faster and more efficient cross-border transactions (5%), security and privacy features (2%) and others (2%). Around 20% of the respondents not adopted cryptocurrency and want to prevent from it because of lack of understanding about cryptocurrencies and blockchain technology, 8% due to volatility and unpredictability of cryptocurrency prices and 3% concerns about security and potential risks.

In general, the security of cryptocurrencies is built on cryptography, neither by people nor on trust (Narayanan et al., 2016). For instance, "Elliptic Curve Cryptography" is a method used by Bitcoin to guarantee the security of its transactions (Wang et al., 2020). A form of public-key cryptography called elliptic curve cryptography uses mathematics to secure the security of transactions. By brute forcing the aforementioned encryption system, a person would need to try 250 billion different possibilities every second for one-tenth of the universe's lifespan to obtain a value match (Fang et al., 2022).

Table 4- Respondents view about use of Cryptocurrencies.

Have you ever used or owned any cryptocurrencies?	
Yes	58%
No	42%
If yes, what motivated you to adopt cryptocurrencies?	
Decentralization and control over personal funds	18%
Potential for high returns on investment	14%
Lower transaction fees compared to traditional financial systems	17%
Faster and more efficient cross-border transactions	5%
Security and privacy features	2%
Other	2%
If no, what are the reasons preventing you from adopting cryptocurrencies?	
Lack of understanding about cryptocurrencies and blockchain technology	20%
Concerns about security and potential risks	3%
Volatility and unpredictability of cryptocurrency prices	8%
Lack of acceptance and usability in daily life	6%
Trust in traditional financial systems and existing currencies	5%
Other	-

All digital currencies, including Bitcoin, are still relatively new financial systems with ambiguous governmental and legal frameworks (John et al., 2022). Some governments treat virtual currency as a commodity, while others are still debating whether or not the nation should adopt and recognize it. The lack of legal protections and oversight over illicit behaviour involving Bitcoins may contribute to its unstable reputation, high rate of exchange volatility, erratic demand, and slow uptake by enterprises. Since currency value only depends

on demand and investments, it is very volatile, correlated with internal and external events, and thus unpredictable (Baumann et al., 2014). According to the respondents surveyed, the adoption of cryptocurrency will impact tradition financial system highly due to increased financial inclusion for unbanked populations and reduced reliance on intermediaries and trusted third parties followed by disruption of traditional banking and payment systems, greater efficiency and speed in transactions and settlements, regulatory challenges for governments and regulators and others reasons.

Bitcoin's blockchain technology allowed for a new way of solving the "double spending problem" intrinsic to digital currencies, without relying on a central clearinghouse or trusted third party (Saiedi et al., 2021). The traditional financial system will be replace by cryptocurrency 56% of the respondents are agreed while 44% refused (Table- 5). Price volatility and market instability, lack of regulation and legal frameworks, limited merchant acceptance and usability in daily life, education and awareness about cryptocurrencies, technical barriers and complexity for mainstream users these are the biggest challenges of widespread adoption of cryptocurrency.

Table 5- Response on impact and challenges of cryptocurrencies

In your opinion, how do you think the adoption of cryptocurrencies will impact traditional financial systems?	
Increased financial inclusion for unbanked populations	23%
Disruption of traditional banking and payment systems	16%
Greater efficiency and speed in transactions and settlements	15%
Reduced reliance on intermediaries and trusted third parties	23%
Regulatory challenges for governments and regulators	8%
Other	5%
Do you believe cryptocurrencies have the potential to replace traditional currencies in the future?	
Yes	56%
No	44%
What do you consider the biggest challenges for widespread cryptocurrency adoption?	
Lack of regulation and legal frameworks	23%
Price volatility and market instability	26%
Limited merchant acceptance and usability in daily life	21%
Education and awareness about cryptocurrencies	18%
Technical barriers and complexity for mainstream users	9%
Others	3%

Collaborations between traditional financial systems and the crypto industry are emerging to bridge the gap between the two worlds. Around 43% of the respondents are aware about the initiative and collaboration between these and 60% respond that they are willing to use cryptocurrencies for everyday transactions if they were widely accepted and easily accessible (Table- 6). Many traditional financial institutions, such as banks and asset management firms, have started investing in cryptocurrencies or offering cryptocurrency-related products to their clients. For example, large banks like JPMorgan Chase, Goldman Sachs, and Morgan Stanley have begun offering Bitcoin-related investment products or services to their institutional clients (Mashiach, 2021), (Dutta, 2022). Companies like Fidelity Investments, one of the largest asset managers, have launched their own cryptocurrency custody solutions. Coinbase, a prominent cryptocurrency exchange (Feeney, 2022), has collaborated with multiple banks and payment processors to enable seamless fiat-to-crypto transactions.

Table 6 – Awareness about initiative for cryptocurrency

Are you aware of any initiatives or collaborations between traditional financial institutions and the crypto industry?	
Yes	43%
No	57%
Would you be willing to use cryptocurrencies for everyday transactions if they were widely accepted and easily accessible?	
Yes	60%
No	40%

The adoption of cryptocurrencies has significant implications for traditional financial systems, bringing both disruptions and opportunities:

1. Disruptions to Traditional Financial Systems:

- **Disintermediation:** Cryptocurrencies enable direct peer-to-peer transactions, reducing the need for intermediaries such as banks and payment processors. This can disrupt the traditional business models of financial institutions, potentially leading to a loss of revenue and market share.
- **Cross-Border Payments:** Cryptocurrencies offer faster and more efficient cross-border transactions, challenging the traditional correspondent banking system. This could lead to a reduction in the role of intermediaries in facilitating international transfers.
- **New Financial Infrastructure:** The blockchain technology underlying cryptocurrencies allows for decentralized financial applications, including smart contracts and decentralized finance (DeFi). These innovations could replace or complement certain functions traditionally performed by intermediaries, such as lending, borrowing, and asset tokenization.

2. Challenges:

- **Regulatory Uncertainty:** Cryptocurrencies often exist in a regulatory gray area, as governments and regulators struggle to define their legal status and establish appropriate frameworks. This lack of clarity creates challenges for both

cryptocurrency businesses and traditional financial institutions that seek to engage with cryptocurrencies.

- **Consumer Protection and Fraud**: The decentralized nature of cryptocurrencies can make it challenging to enforce consumer protection measures, leading to potential risks such as scams, fraud, and market manipulation. Regulators need to strike a balance between protecting consumers and fostering innovation.
- **Money Laundering and Illicit Activities:** Cryptocurrencies can be used for money laundering, tax evasion, and illicit activities due to their pseudonymous or anonymous nature. Regulators face the challenge of implementing effective anti-money laundering (AML) and know-your-customer (KYC) measures without stifling legitimate use cases.

3. Opportunities:

- **Financial Inclusion:** Cryptocurrencies can provide financial services to the unbanked and underbanked populations, particularly in regions with limited access to traditional banking infrastructure. This can empower individuals by granting them control over their funds and facilitating access to financial services.
- **Innovation and Technological Advancements**: The adoption of cryptocurrencies has driven significant innovation in areas such as blockchain technology, smart contracts, and decentralized applications. These advancements have the potential to improve efficiency, transparency, and security across various financial processes.
- **Lower Transaction Costs:** Cryptocurrencies can reduce transaction costs, especially for cross-border transactions. Traditional financial systems often involve multiple intermediaries, resulting in higher fees. Cryptocurrencies' peer-to-peer nature eliminates some of these intermediaries, potentially lowering costs for users.

4. Regulatory Implications:

- **International Coordination:** Cryptocurrencies operate across borders, making it necessary for regulators to collaborate internationally to address challenges such as AML, KYC, tax reporting, and investor protection. Harmonizing regulations can help create a more cohesive and efficient global ecosystem for cryptocurrencies.
- **Balancing Innovation and Regulation:** Regulators face the challenge of creating frameworks that foster innovation and protect consumers without compromising financial stability or facilitating illicit activities. Striking the right balance is crucial to ensure the responsible growth and adoption of cryptocurrencies.

5. Financial Stability and Innovation:

- **Volatility and Market Stability:** Cryptocurrencies are known for their price volatility, which can impact financial stability. Sharp price fluctuations can affect investor sentiment, potentially leading to market instability. However, the integration of cryptocurrencies into traditional financial systems could bring more stability as liquidity and market infrastructure develop.
- **Technological Advancements**: Cryptocurrencies and blockchain technology drive innovation in financial systems, offering opportunities for automation, increased transparency, and efficiency. Traditional financial institutions can leverage these advancements to improve their processes, such as faster settlement, improved identity verification, and streamlined compliance procedures.

Conclusion

The goal of this paper is to investigate the cryptocurrency adoption decision and its implication for traditional finance systems. We examined the factors influencing the adoption and also provide in-depth analysis of each factor by survey method. Here, we tried to observe the increased adoption level and its potential disruptions, challenges, opportunities, regulatory implications, and the overall impact on financial stability and innovation. Cryptocurrencies have emerged as a transformative technology with the potential to disrupt traditional financial systems. They offer benefits such as decentralization, faster cross-border transactions, financial inclusion, enhanced security, and privacy. However, challenges related to regulation, price volatility, scalability, and usability need to be addressed for cryptocurrencies to achieve widespread adoption and coexist effectively with traditional financial systems. As the technology continues to evolve, it will be crucial to strike a balance between innovation, regulation, and consumer protection to harness the full potential of cryptocurrencies. This paper can be extended in multiple directions for future research. The finding of this research help researchers, regulators and cryptocurrency developers better understand their consumer's intention towards cryptocurrency adoption.

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