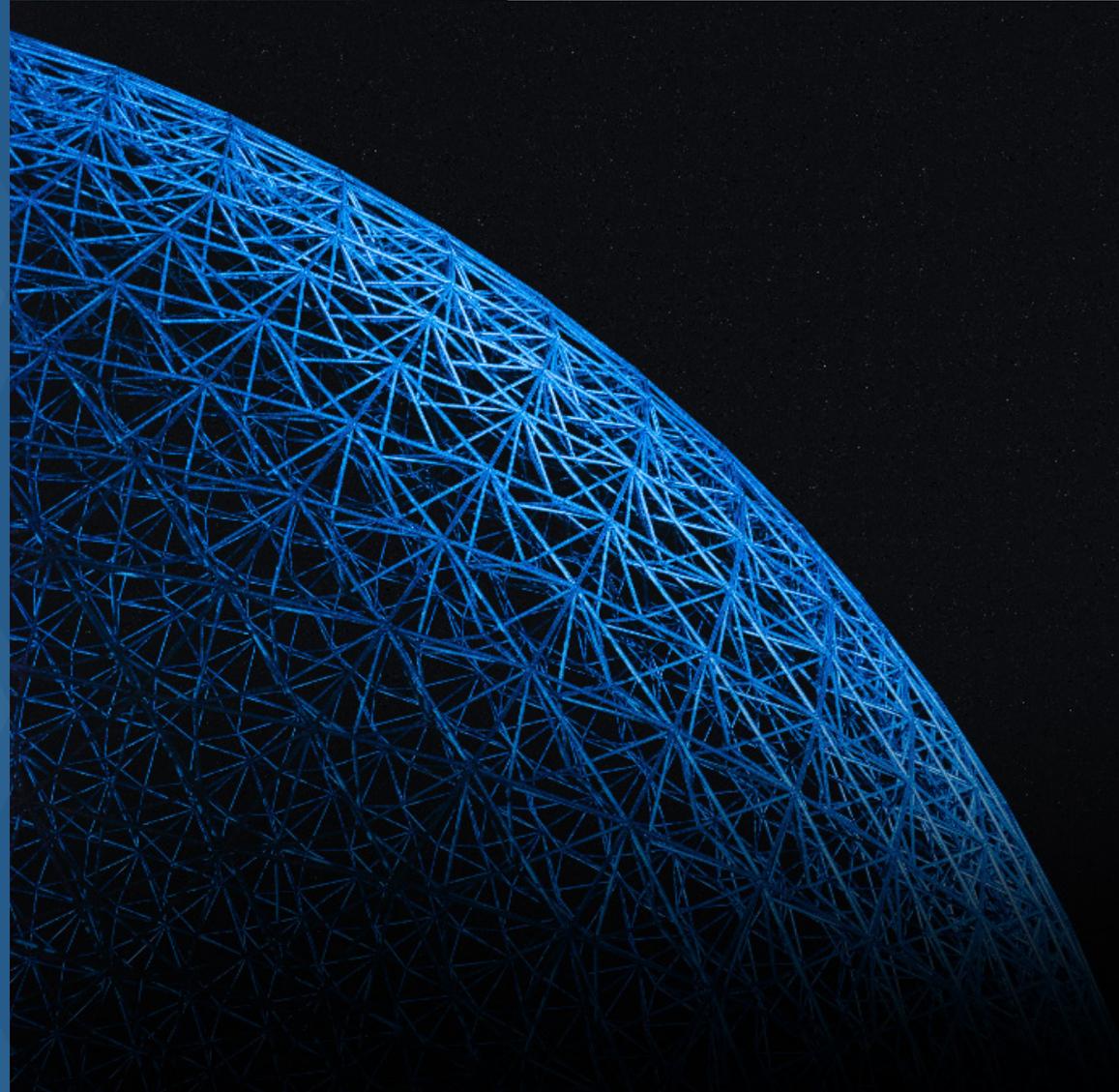


Agpaytech's Research
7th April 2022



Blockchain Technology : The New Revolution in Fintech Industry

Agpaytech



Executive summary

One of the most significant contributions of the Cryptocurrencies boom is the Distributed Ledger Technology (DLT) that powers it, commonly known as the Blockchain. This technology has the potential of becoming the backbone of the Fintech Industry. Blockchain frameworks are built on several principals, such as, various rules of participation, network, specifications, and mechanisms. Some are open, permissionless networks, and some are closed design frameworks; individual use cases and utility are used to determine it. Some pertinent examples of blockchain networks apart from Bitcoin and Ethereum are NXT, Corda, Fabric and Quorum.

Keywords:

Blockchain technology

Centralized

Decentralized

Cryptocurrency

Agpaytech

Contents

| | |
|---|----|
| Executive summary | 2 |
| Methodology | 4 |
| Introduction | 4 |
| What is blockchain technology | 5 |
| Understanding of Centralized CBDCs | 7 |
| Why choose closed blockchain technology | 8 |
| Countries who choose CBDCs | 8 |
| Importance of Decentralized cryptocurrency | 9 |
| How can users access and store private cryptocurrencies | 10 |
| The Emergence of New features Crypto Assets | 12 |
| Challenges and Risks of using the Crypto Assets | 14 |
| Difference between the Centralized or Decentralized | 17 |
| How blockchain will change the payment infrastructure | 18 |
| Blockchain helps to transform financial services | 18 |
| Conclusion | 20 |
| Agpaytech | 3 |

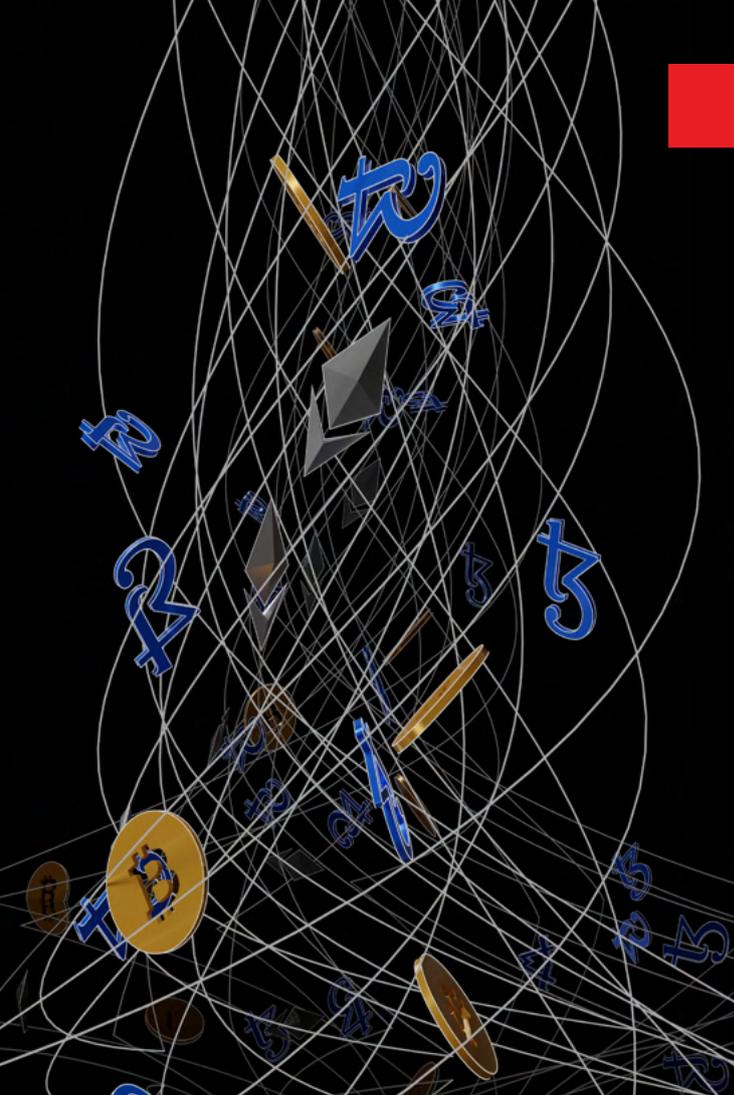
Methodology

Blockchain is a vast but emerging technology. To understand this concept, we use the secondary data. To undertake deep research, we have gone through crypto-asset papers released by the World Bank, articles published about blockchain technology, and several books written on Blockchain Technology.

Introduction

Blockchain has greatly influenced payment methods, e-commerce, and cross-border transfer. Blockchain technology is also widely used in cryptocurrencies and more than 5000 blockchain-based cryptocurrencies have emerged in the past ten years.

In a rapidly changing digital world, increased transactions are processed online, while paper money is used less. Following such developments, governments worldwide are turning to digital fiat currencies. Legal tender, the currency issued by the government, such as the US dollar, the Euro, and the RMB, are all solid examples of legal tender. There are significant differences between Bitcoin (a decentralized blockchain-based cryptocurrency) and fiat currencies that are more stable and governed by regulatory authorities. It is essential to understand why some researchers (Zhang and Huang, 2022) argue that decentralised cryptocurrencies cannot be an option for digital fiat currencies. This report, therefore, provides an overview of decentralised and centralised blockchain technology.

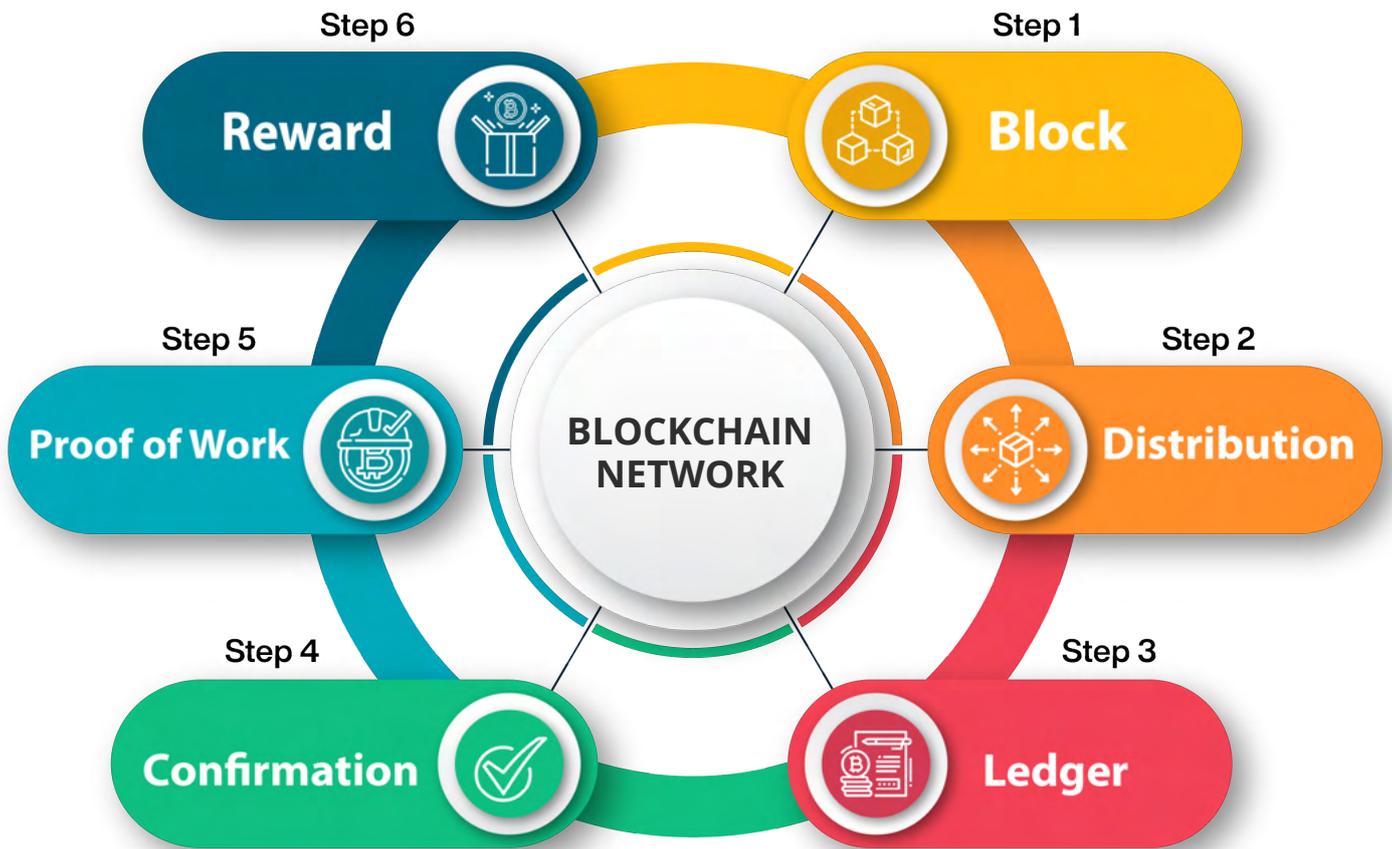


What is Blockchain Technology?

Blockchains primarily function as a data store (database); it replicates the stored data and saves it on a peer-to-peer network using cryptographic methods to ensure security. It works on the following principles.

1. A data store(database) keeps records of changes in the data. The most common use case is financial transactions. However, the network can store and record changes to any data from any industry or sector.
2. It replicates the data and stores it across multiple systems in real-time. Platforms such as Bitcoin and Ethereum broadcast such data and changes made to the entire network to ensure that systems remain updated and validated on demand. Whereas, other technologies are more selective about where information is transmitted.
3. Blockchain works on a peer-to-peer network rather than client-server framework architecture.
4. Cryptographic methods such as digital signatures prove ownership and authenticity.

Figure 1: How does a blockchain work?



Source: Agpaytech Research

Understanding of Centralized CBDCs

Central Bank Digital Currency (CBDC) is the digital iteration of a fiat currency. However, CBDC must be used for all payments using various technologies. When discussing CBDCs, we need to understand that it is based on a centralised model. The central bank is the only issuer and owner of this centralised model. The central bank controls and operates all the transactions. A central bank has a significant role in the functioning of the CBDCs. At the wholesale level, there could be other players such as broker-dealers and central counterparties, non-bank intermediaries and payment services providers. According to Lagarde, the private and public

partnerships between central banks and private banks is necessary for the digital currency to be effective in real world use cases; wherein, individuals will have to hold regular deposits with regulated financial institution and their transactions will be settled in digital currency between authorised financial institutions. However, such private institutions will have no right to issue any Central Bank Digital Money.

According to a Bank for International Settlements (BIS) survey, almost 25% of Central Banks have, or will soon have, the authority to issue a CBDC, while a third do not, and about 40% remain unsure.



Why choose closed blockchain technology?

Closed Blockchain Technology solved a significant challenge for financial institutions that relied on a centralised ledger to store their data. In a conventional centralised ledger (client-server model with no distributed elements), the payer executes a transaction by connecting to the central ledger keeper and initiating a funds transfer to the recipient's account.

This attribute made the central ledgers a constant target of hackers, who may want to disrupt the smooth functioning of the payments process. Consequently, making it difficult for customers to trust such third parties to keep their data (money) safe. Furthermore, since a single entity controls such networks, data privacy compromise remained a constant threat.

A closed blockchain framework solves such problems for the central banks and its regulated financial institutions. Where-in Blockchain networks given their design are more secure, trustless, immutable and can better withstand cyber-attacks.

Countries and their CBDC Development

As stated earlier, CBDCs are the digital iterations of traditional fiat currencies, it gives their holders a direct claim on the central bank. It allows businesses and individuals to make electronic payments and transfers, faster and in a more secure environment. Most of the countries choose to introduce CBDCs as they expect it to assist in cutting out middlemen in the financial ecosystems and enable transactions to take effect directly from person to person or customers to vendors. It is expected to enhance consumer risk mitigation in an economy.

One of the most highly anticipated advantages of Bahama's Sand Dollar, world's first CBDC, is the ability of the government to directly provide financial benefits to citizens of remote islands in the event of a natural disaster.

Table 1: Countries and their CBDC Development

| CBDCs Launched | CBDCs on Pilot Phase | CBDCs on development |
|-----------------------------------|----------------------|---------------------------------|
| Bahamas | China | India |
| Nigeria | Sweden | Eurozone |
| Eastern Caribbean Union Nation | Jamaica | The United States Of America |
| N/A | Ukraine | Russia |
| N/A | N/A | Brazil |

Source: Agpaytech Research

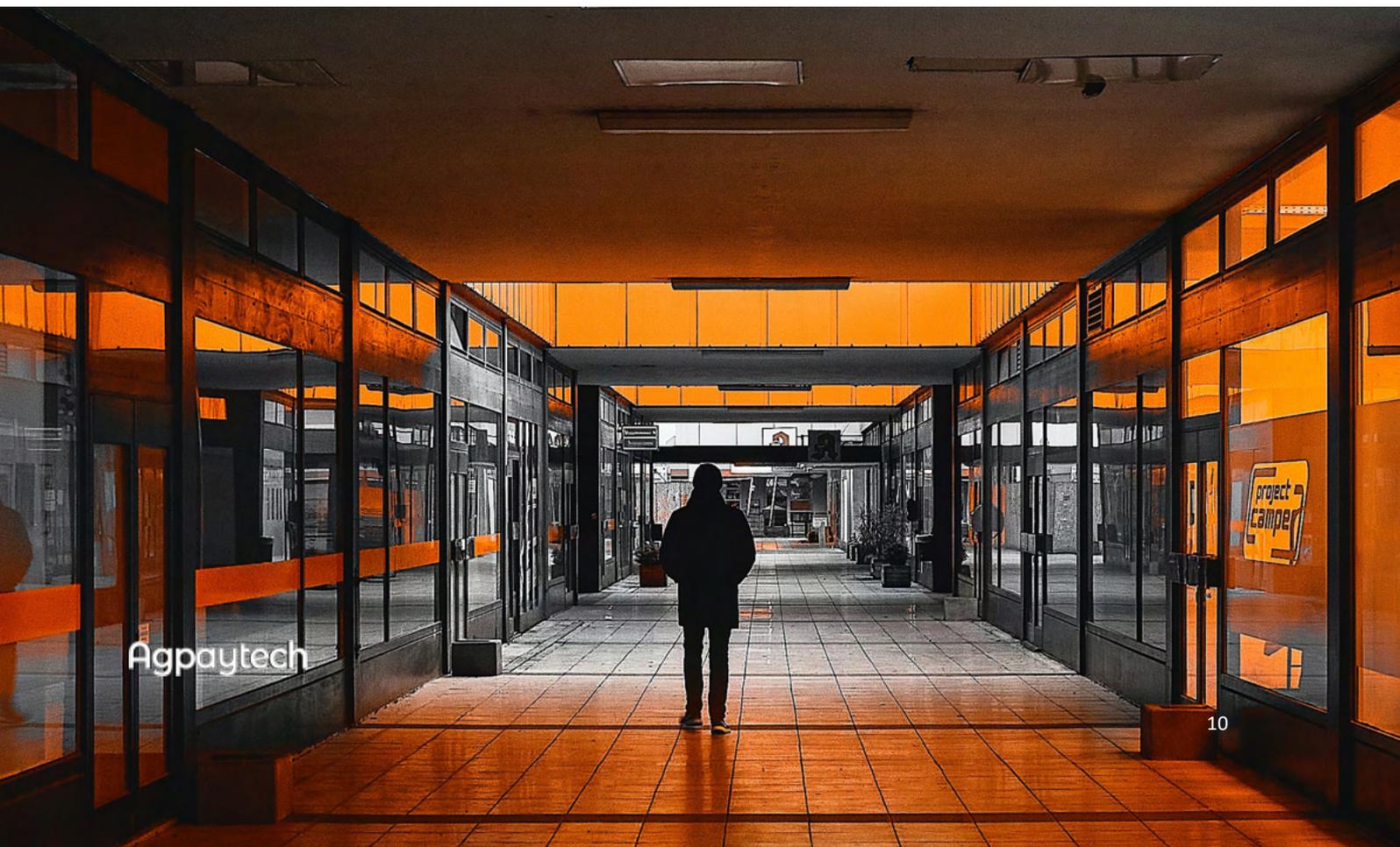
Importance of Decentralized Cryptocurrency

Decentralised currency does not rely on any governing authority; it is a peer-to-peer electronic cash system to enable online payments directly from one party to another. It performs in an unregulated environment. Decentralised services are the best way for retail consumers to use these systems without any additional fees levied by a payments provider (although there are networks that charge a commission for validating transactions).

Bitcoin, Ethereum, Safex Cash and Safex Token are excellent examples of decentralised cryptocurrencies. Bitcoin is the most well-known and widely spread cryptocurrency.

How can users access and store private cryptocurrencies?

There are private cryptocurrency digital wallets that help make you a custodian of such digital investments. In a decentralised cryptocurrency network, a user has private keys that validates their ownership of the asset. Such keys could be stored in digital wallets that are helpful in directly making transacting funds without the involvement of any external third party. The decentralised wallets are open-source and have a significant existing user base.



The Emergence of New features Crypto Assets

In recent years crypto assets are becoming an alternate choice of investment worldwide. Crypto assets that typically operate on open, decentralised computer networks is an immutable distributed ledger are the latest phenomenon. Thanks to its peer-to-peer transactions platform, it helps users store, transfer, and receive funds 24/7 globally with a faster response time that eradicates the need for intermediaries. It is challenging the traditional ways financial transactions have been conducted until now. However, experienced private cryptocurrencies can demonstrate immense volatility; hence, to mitigate such risks, stable coins have emerged as a new crypto asset. A stable coin is a form of private currency that is pegged to a globally accepted and currency such as the US Dollar. This feature grants such assets the stability that investors seek while investing in any asset class.

Furthermore, Decentralised finance (DeFi) has emerged as a smart contract-based crypto-assets financial ecosystem. According to CoinMarketCap, in November 2021, US\$190 billion was indulged with DeFi projects. The Ethereum network has emerged as the dominant DeFi platform globally. According to an IMF observation in 2021, crypto-assets activity is poised to grow exponentially. Some industry experts claim that over 200 million people worldwide own or use crypto assets. Where-in, large international banks, payment card companies and payment processors have started to offer crypto-asset wallets and related services to become a part of this emerging global phenomenon.

Table 2: Estimates of Crypto-assets Adoption

Panel A: Statista Global country survey: share of Respondents who indicated that they used or owned Crypto assets (2020)

| SN | Country | Share % |
|----|----------------------|---------|
| 1 | Nigeria | 31.9 |
| 2 | Vietnam | 21.1 |
| 3 | Philippines | 19.8 |
| 4 | South Africa | 17.8 |
| 5 | Thailand | 17.6 |
| 6 | Peru | 16.1 |
| 7 | Turkey | 16.1 |
| 8 | Colombia | 15.3 |
| 9 | Argentina | 14.4 |
| 10 | Indonesia | 13 |
| 11 | Brazil | 12.5 |
| 12 | Malaysia | 12.3 |
| 13 | Chile | 11.7 |
| 14 | Saudi Arabia | 11.4 |
| 15 | Switzerland | 11.1 |
| 16 | Greece | 11.1 |
| 17 | Kenya | 10.5 |
| 18 | Dominican Republic | 10.3 |
| 19 | Netherlands | 10 |
| 20 | United Arab Emirates | 10 |
| 21 | Mexico | 9.7 |
| 22 | Ireland | 9.6 |
| 23 | Singapore | 9.6 |
| 24 | Spain | 9.4 |
| 25 | Morocco | 9.3 |
| 26 | Czechia | 9.2 |
| 27 | India | 8.8 |

| SN | Country | Share % |
|----|--------------------|---------|
| 28 | Lithuania | 8.7 |
| 29 | Egypt, Arab Rep. | 8.3 |
| 30 | Norway | 8.1 |
| 31 | Portugal | 8.1 |
| 32 | Australia | 7.8 |
| 33 | Korea, Rep. | 7.6 |
| 34 | Serbia | 7.5 |
| 35 | Russian Federation | 7.3 |
| 36 | Austria | 7.2 |
| 37 | Poland | 7.2 |
| 38 | China | 6.9 |
| 39 | Hungary | 6.4 |
| 40 | Romania | 6.4 |
| 41 | Belgium | 6.3 |
| 42 | United States | 6.2 |
| 43 | France | 5.6 |
| 44 | Pakistan | 5.6 |
| 45 | Canada | 5.2 |
| 46 | Germany | 5.2 |
| 47 | Finland | 5.1 |
| 48 | New Zealand | 5.1 |
| 49 | Israel | 4.9 |
| 50 | United Kingdom | 4.7 |
| 51 | Italy | 4.7 |
| 52 | Denmark | 4.4 |
| 53 | Sweden | 4.3 |
| 54 | Japan | 3.7 |

Source: Statista Global Consumer Survey.



Table 3: Chainalysis Top 20 Global Crypto-assets Adoption Index (2021)

| Country | Index Score | Overall Index Ranking | Ranking for individual weighted metrics feeding into Global Crypto Adoption Index | | |
|--------------------|-------------|-----------------------|---|--------------------------------|---------------------------|
| | | | On-chain value received | On-chain retail value received | P2P exchange trade volume |
| Vietnam | 1.00 | 1 | 2 | 4 | 3 |
| India | 0.37 | 2 | 3 | 2 | 72 |
| Pakistan | 0.36 | 3 | 12 | 11 | 8 |
| Ukraine | 0.29 | 4 | 5 | 6 | 40 |
| Kenya | 0.28 | 5 | 28 | 41 | 1 |
| Nigeria | 0.26 | 6 | 10 | 15 | 18 |
| Venezuela | 0.25 | 7 | 22 | 29 | 6 |
| United States | 0.22 | 8 | 4 | 3 | 109 |
| Togo | 0.19 | 9 | 42 | 47 | 2 |
| Argentina | 0.19 | 10 | 17 | 14 | 33 |
| Colombia | 0.19 | 11 | 23 | 27 | 12 |
| Thailand | 0.17 | 12 | 11 | 7 | 76 |
| China | 0.16 | 13 | 1 | 1 | 155 |
| Brazil | 0.16 | 14 | 7 | 5 | 113 |
| Philippines | 0.16 | 15 | 9 | 10 | 80 |
| South Africa | 0.14 | 16 | 16 | 18 | 62 |
| Ghana | 0.14 | 17 | 37 | 32 | 10 |
| Russian Federation | 0.14 | 18 | 6 | 8 | 122 |
| Tanzania | 0.13 | 19 | 45 | 60 | 4 |
| Afghanistan | 0.13 | 20 | 38 | 53 | 7 |

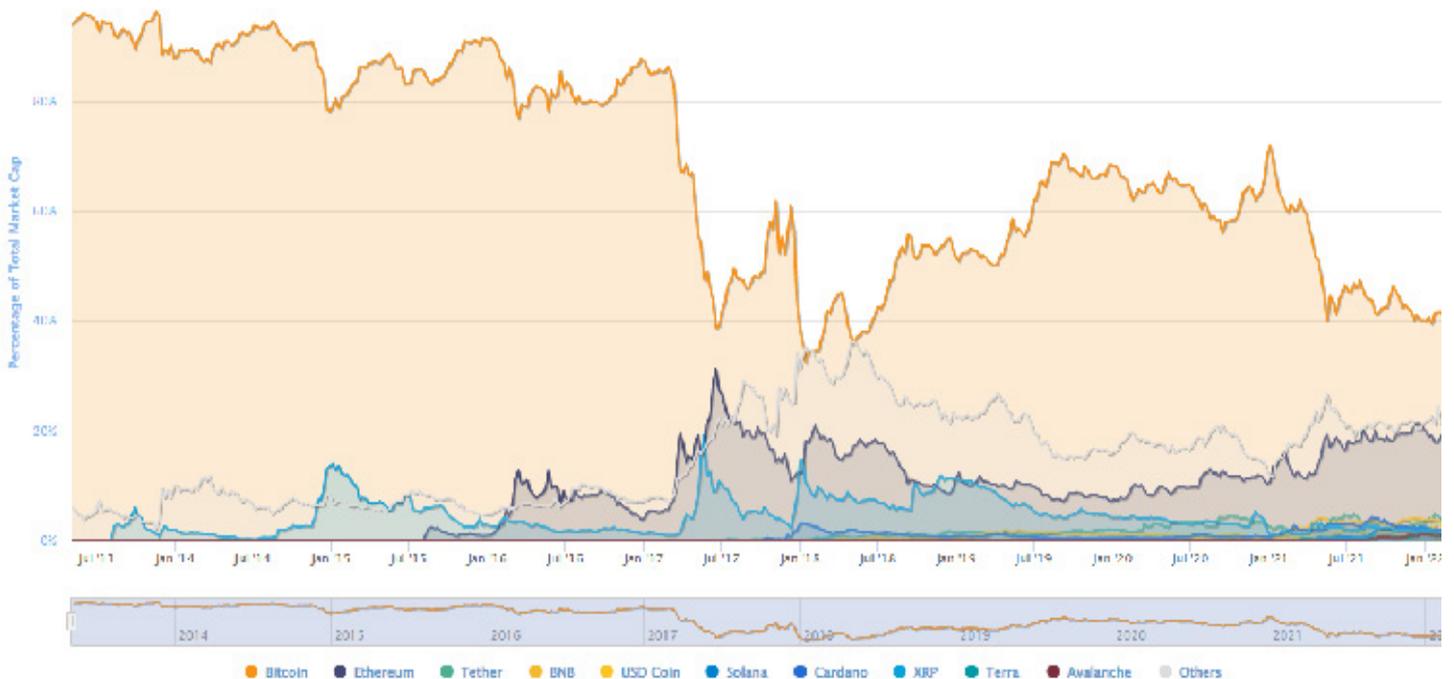
Sources: Statista; Chainalysis.

Challenges and Risks of using the Crypto Assets

It is important to understand that though the trends are in favour of emerging crypto-asset class, however, it will encounter significant challenges in the short, medium, and long terms. Recently G20 concluded that Crypto assets present issues related to consumer and investor protection, market integrity, tax evasion, money laundering and terrorist financing; furthermore, crypto assets lack the key attributes of sovereign currencies. G7 countries concluded that stable coins too pose legal, regulatory, and oversight challenges, including issues related to monetary sovereignty, data, privacy, and cyber resilience. Therefore, various banking institutions have decided to team up and committed to work together towards guiding and monitoring developments in this area. Examples include FATF's (Financial Action Task Force) update and guidance for a risk-based approach regarding money laundering and illicit finance of virtual assets and virtual asset service providers. BCBS (The Basel Committee on Banking Supervisions) has worked on a consultative document on the prudential treatment

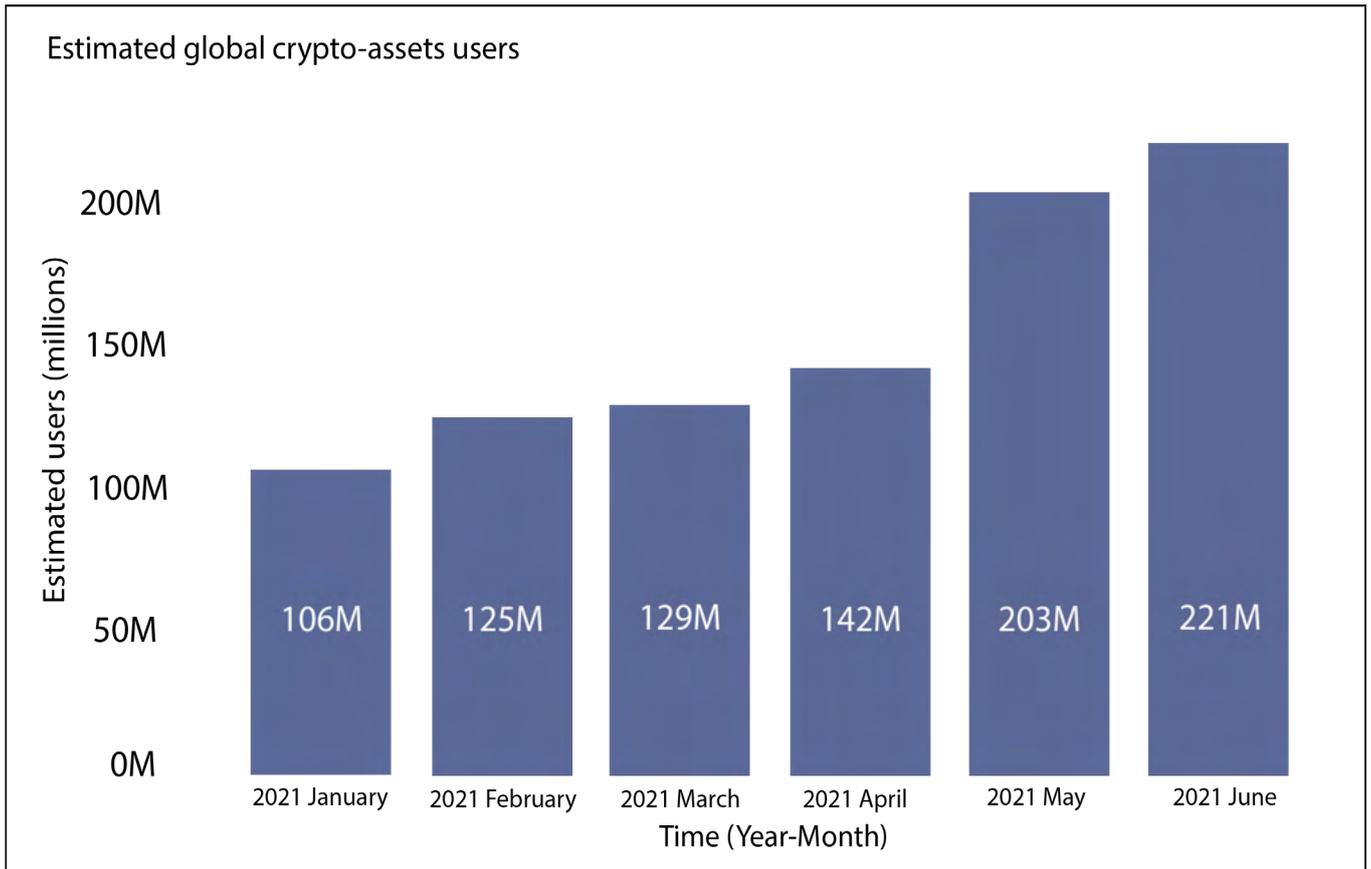
of crypto assets. FSB (The Financial Stability Board) has presented a report on the regulation, supervision, and oversight of Stablecoin arrangements. A joint report was also submitted by the CPMI (Committee on Payments and Market Infrastructures) and IOSCO (International Organization Of Securities Commissions) on the applicability of the principles of Financial Market Infrastructures to Stablecoin arrangements. Such developments indicate the seriousness with which the regulators and global financial systems controllers demonstrate toward this emerging asset class.

Figure 2: Crypto Assets: Market Capitalization



Source: CoinMarketcap.com

Figure 3: Estimated Global Crypto Users (in millions)



Source: Messari; TradingView; Coinmetrics; Federal Reserve; Crypto.com. The estimated users figures should be interpreted with caution as data gaps remain significant



Difference between the Centralized or Decentralized

Centralised and Decentralised are two different concepts, centralised is a form of organisation where the management takes all decisions, whereas, decentralised is another form of organization where in decision making authority is set across multiple across geographies, in the case of blockchain it is set across multiple nodes.

Table 4: Difference between Centralized and Decentralized

| Centralized | Decentralized |
|---|---|
| Decision making by the management | Decision making capabilities delegated across multiple levels |
| Vertical | Open and Free |
| It is suitable for a small sized organization | Suitable for large-sized organizations |
| Comparatively slow | Relatively faster |
| Third-party involvement | No Intermediators |
| Exchange fees higher | Less Fees |
| No safety and security | Safety and Security of measurement |

Source: Agpaytech Research

How blockchain will change the payment infrastructure

Blockchain innovations are helping to eradicate the dependence on financial intermediaries. Theoretically, one of the reasons behind Bitcoin's creation is to reduce the costs of banking transactions. One of the existing blockchain-based projects has come that could help change how to pay for things online. The project allows consumers to transfer money from their bank accounts directly to merchants within a second.

The benefit is that every transaction is recorded on the blockchain platform. On the other side, it helps save time and avoid fees associated with a credit card and bank transfer payments, and merchants receive money faster.

Blockchain helps to transform financial services.

Although cryptocurrencies are highly volatile and unregulated assets, there are no solutions that can offer to handle the current volume of financial transactions that every second. Currently, transferring money across borders in a timely and cost-effective manner remains a significant challenge. Even today, it takes almost three days to transfer \$10,000 using established Money Transfer Operators especially in non-peak sectors. However, blockchain has the potential to build a new decentralised global financial system that could provide the facility worldwide.

Table 5: Blockchain Transformation of Financial Services

| Funtion | Blockchain Impact | Stakeholder |
|--|--|--|
| 1. Authenticating Identity and value | Verifiable and robust identities cryptographically secured | Rating agencies, consumer data analytics, marketing, retail banking, wholesale banking, payment card networks, regulators |
| 2. Moving value - make a payment, transfer money and purchase goods and services | Transfer of value in very large and very small increments without intermediary will dramatically reduce cost and speed of payments | Retail banking, wholesale banking, payment card networks, money transfer services, telecommunications, regulators |
| 3. Storing value - currencies, commodities, and financial assets are of value. | Payment mechanisms combined with a reliable and safe storage of value reduces need for typical financial services, bank saving and checking accounts | Retail banking, brokerages, investment banking, asset management telecommunications, regulators |
| 4. Lending value - credit card debt, mortgages, corporate bonds, municipal bonds, government bonds, asset-backed securities, and other forms of credit | Debt can be issued, traded, and settled on the blockchain; increases efficiency, reduces friction, improves systemic risk | Wholesale, commercial, and retail banking, public finance, credit rating agencies, credit score software companies |
| 5. Exchanging value - speculating, hedging, and arbitrating, matching orders, clearing trades, collateral management and valuation, settlement custody | Blockchains takes settlement times on all transactions from days and weeks to minutes and seconds. | Investment, wholesale banking, foreign exchange traders, hedge funds, pension funds, retail brokerage, clearing houses, stock, futures, commodities exchanges; commodities brokerages, central banks, regulators |
| 6. Funding and investing in an Asset, company start-up capital appreciation, dividends, interest, rents, or some combination | New models for peer-to-peer financing, recording of corporate actions such as dividends paid automatically through smart contracts | Investment banking venture capital, legal audit, property management, stock exchanges, crowdfunding, regulators |
| 7. Insuring-value and Managing Risk-protect assets home, lives, health, business property and business practices, derivative products | Using reputational systems, insurers will better estimate actuarial risk, creating decentralized markets for insurance | Insurance, risk management, wholesale banking, brokerage, clearing houses, regulators |

Source: Blockchain Revolution: Reinventing financial services



Conclusion

The usage of blockchain technology in the payments industry can help resolve several issues. It may be concluded that blockchain innovation may prove to be genuinely beneficial for both businesses and customers. It helps to enhance security and bring efficiency in transaction processing. Blockchain is a significant step towards the future of the fintech industry.

References

https://www.infogion.com/blockchain-in-business-how-will-it-shape-future/#How_blockchain_can_change_the_payment_system

<https://101blockchains.com/blockchain-in-payment/>

<https://indexaco.com/education/what-is-cbdc-and-why-do-central-banks-need-them>

https://www.g20-insights.org/policy_briefs/digital-money-is-here-g20-thinking-must-go-digital-a-systemic-agenda-is-necessary-to-steer-the-risky-transition-process-and-reap-long-term-benefits/

<https://imiblockchain.com/complete-guide-to-cbdc/>

<https://theglobalfintechintelligencer.com/2021/08/11/retail-central-bank-digital-currency-cbdc-technical-platform-criteria/>

<https://medium.com/conflux-network/centralized-vs-decentralized-digital-currency-and-why-it-matters-6df64df1736d>

<https://blog.reef.io/the-sand-dollar-and-other-centralized-digital-currencies/>

<https://www.gemini.com/cryptopedia/blockchain-network-decentralized-distributed-centralized>

https://www.researchgate.net/figure/Design-of-the-centralized-KYC-system_fig6_321084141

<https://www.irjet.net/archives/V4/i3/IRJET-V4I3711.pdf>

https://www.researchgate.net/figure/Design-of-the-centralized-KYC-system_fig6_321084141

<https://www.euronews.com/next/2022/03/09/cbdcs-these-are-the-countries-are-using-launching-or-piloting-their-own-digital-currencies>

[Crypto-Assets-Activity-around-the-World-Evolution-and-Macro-Financial-Drivers.pdf](#)

About the Company

Agpaytech is a company pioneering in the Fintech Space with a focused approach on building robust technologies for eCommerce Card Processing Solution for Payment Service Providers (PSPs). Additionally, we provide Compliance and Regulatory Umbrella, Remittance-as-a-Service, White-Label Solution, Foreign Exchange, Cross Border Payments, digital currency technology. We have partnered with multiple banks, non-banking financial institutions, and corporate organisations to create a solid service delivery model for them and their international remittances and payments concerns. info@agpaytech.com



AGPAYTECH LTD.
3rd Floor, 86-90 Paul Street,
London, EC2A 4NE, UK
info@agpaytech.com