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The Emergence of Decentralized Business Models: Blockchain Interruption and Decentralized Finance

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Abstract: ***Blockchain technology has the ability to lower transaction costs, build distributed trust, and empower decentralised platforms, providing a foundation for new decentralised business models. Blockchain technology enables the growth of decentralised financial services in the financial industry, which are more decentralised, inventive, compatible, borderless, and transparent. Decentralized financial services, driven by blockchain technology, have the potential to expand financial inclusion, allow open access, stimulate permissionless innovation, and open new doors for entrepreneurs and innovators. In this paper, we examine the advantages of decentralised finance, as well as existing business models, obstacles, and limitations. Decentralized finance, as a new area of financial technology, has the potential to transform current finance and provide a new landscape for entrepreneurship and creativity, exhibiting the benefits and drawbacks of decentralised business models.***
Keywords: blockchain; decentralized finance; decentralized platform; decentralization; fintech.

I. INTRODUCTION

Intermediaries are frequently crucial in lowering transaction costs and broadening transaction options. Intermediaries frequently assist transacting parties in finding each other, establishing confidence, and settling transactions in economic transactions[1]. Transacting parties may be unable to establish contacts, make contracts, or enforce agreements without the use of intermediaries. Nonetheless, intermediaries typically have significant authority over economic transactions, and they might use that power to further their own interests, creating concerns about their monopoly power[2]. How human society handles dominating intermediaries in economic transactions is characterised by a tension between the necessity for efficient transactions and the fear of monopoly power. This tension is most evident in the financial system, where major financial organisations facilitate and manage financial transactions.

Financial institutions have played a critical role in mediating and organising economic transactions that would otherwise be difficult to complete due to transaction costs for centuries [3]. By connecting market participants and establishing trust, financial institutions lower transaction costs [4]. Financial technology (FinTech) has begun to fill several tasks previously held by huge financial institutions as we move towards the digital economy. Digital technology can cut transaction costs, broaden transaction scope, and enable peer-to-peer transactions in some situations, sparking a new wave of FinTech innovation [5]. FinTech has reduced the necessity for financial institutions, but it has not eliminated the need for middlemen. It frequently replaces one intermediary (such as a financial institution) with another (such as a technology company). If decentralisation and disintermediation continue to gain momentum, blockchain-based decentralised finance could be the next step. Recent advancements in blockchain technology have paved the way for a new paradigm based on decentralisation and disintermediation. Through dispersed trust and decentralised platforms, blockchain technology can remove the need for intermediaries in financial transactions, allowing for peer-to-peer transactions. As a result, blockchain technology has the potential to significantly expand the breadth and efficiency of peer-to-peer transactions, allowing previously unviable business models to become viable. Financial services can become more decentralised, inventive, interoperable, borderless, and transparent thanks to blockchain technology.

This new paradigm is not the same as the one based on transaction costs (TCE). For starters, TCE emphasises opportunism, whereas this new paradigm is based on distributed trust [6], a type of trust that "flows laterally across persons" without the need for pre-existing trusted connections [7]. Because transactions recorded on a blockchain are authentic, immutable, and verifiable—they have been certified by distributed consensus and are safeguarded with powerful cryptography [8], blockchain technology can establish distributed trust. As a result, a blockchain can act as a single source of truth for all parties involved in a transaction, allowing for more efficient peer-to-peer transactions. Second, TCE acknowledges the functions of hierarchy and intermediaries in lowering transaction costs, but this new paradigm focuses on decentralisation and disintermediation to lower transaction costs [9].

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Blockchain technology, through decentralisation and disintermediation, can lower the costs of search, contracting, and enforcement while also extending transaction possibilities by linking peers directly to peers in novel ways [10].Entrepreneurs and innovators have recognised the prospects of developing an open financial system with low or no involvement from financial institutions, thanks to blockchain technology's distributed trust and decentralised platforms. They hope to lower transaction costs, increase financial inclusion, empower open access, promote permissionless innovation, and open up new business prospects by doing so. Despite the fact that this movement is still in its infancy, it demonstrates the potential of blockchain technology in generating a new set of business models based on decentralisation and disintermediation. If this movement gains momentum, it has the potential to disrupt existing industries while also opening up new opportunities for entrepreneurship and innovation.

II. LITERATURE SURVEY

Antonopoulos, A.M., 2017. Mastering Bitcoin: Programming the Open Blockchain, 2nd ed.The data structure of the blockchain is an ordered back-linked list of transaction blocks. The blockchain can be saved as a simple database or as a flat file. The bitcoin core client uses Google's LevelDB database to store blockchain metadata. Each block in the chain is linked "back," with each referencing to the one before it. The blockchain is frequently shown as a vertical stack, with blocks stacked on top of one another and the first block serving as the stack's foundation.

Delphi Digital, 2019. Decentralized finance (DeFi): thematic insights.Decentralized Finance (DeFi), also called as Open Finance, refers to a wide range of financial applications that are built on open, decentralised networks. The goal is to construct a multi-faceted, crypto-native financial system that recreates and improves on the legacy financial system.

Feng, Q., He, D., Zeadally, S., Khan, M.K., Kumar, N., 2019. A survey on privacy protection in blockchain system.Blockchain has recently attracted a lot of interest as a decentralised and distributed public ledger system in a peer-to-peer network. It uses a linked block structure to validate and store data, as well as a trusted consensus mechanism to synchronise data changes, allowing for the creation of a tamper-proof digital platform for data storage and sharing.

Fisch, C., 2019. Initial coin offerings (ICOs) to finance new ventures. New enterprises raise funds by selling tokens to a crowd of investors in an initial coin offering (ICO). This token is frequently a cryptocurrency, which is a digital means of trade based on distributed ledger technology.

III. DECENTRALIZED FINANCE'S PROMISES

Financial institutions are the primary mediators and controllers of financial transactions in a centralised financial system. Intermediaries aid in the reduction of transaction costs, enabling for the efficient and smooth execution of financial transactions [3]. Financial institutions, on the other hand, can expand to dominate economic activities as crucial intermediates facilitating financial transactions. When a centralised financial institution gains market domination, such as Bank of America, PayPal, or Square, it can amass disproportionate market power and profits. Financial transactions in a decentralised financial system, on the other hand, are facilitated by decentralised peer-to-peer networks rather than centralised organisations. Decentralized networks can lower transaction costs and promote network effects without incurring monopoly costs by minimising the role of centralised institutions. When a decentralised peer-to-peer network becomes dominant, no single entity can amass enough monopoly power to dominate the network and prevent others from participating, allowing everyone to profit from network effects to expand transaction possibilities[10].

Permissionless and combinatorial innovation are encouraged by decentralised finance. Although a centralised platform may allow open innovation and experimentation, platform owners frequently regulate access and have the ability to revoke access in order to exercise governance control. As a result, when platform owners make unilateral changes, third-party developers frequently face the risk of losing access to their hosting platforms. Although most platform owners are generous and flexible to third-party developers, companies have made unilateral changes in the past that have harmed developers. A decentralised platform, on the other hand, lacks a governing authority and so allows for open access and permissionless innovation—that is, developers can freely design and test new apps without seeking permission. Decentralized platforms enable developers by ensuring access to permissionless innovation, allowing them to evolve decentralised finance in organic and unanticipated ways.

Combinatorial innovation can also be aided by decentralised platforms. New financial technologies can become the building blocks for future innovations in a decentralised finance ecosystem, promoting new combinations and products. Permissionless innovation and open sourcing in the decentralised finance ecosystem enable combinatorial innovation. Decentralized financial systems and platforms, such as Bitcoin, Ethereum, and Libra, for example, frequently share their basic technology with the public via liberal open-source licencing, allowing anybody to use them and create new applications on top of them.

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In contrast, centralised financial services and platforms frequently use patents, copyrights, trademarks, and trade secrets to protect their intellectual property, preventing others from adopting important innovations. Combinatorial innovation has the ability to speed up the pace of financial innovation while also increasing market competitiveness, resulting in newer, better, and cheaper financial services.

Interoperability can be improved through decentralised finance. Traditional finance works in silos, which raises transaction costs. Because different financial organisations must keep their own books, one financial service may not be compatible with another. As a result, moving capital and value between silos can be expensive and time-consuming. Decentralized finance, on the other hand, is based on public blockchains and open standards, allowing for more interoperability across different businesses. Financial capital and value can flow effortlessly across multiple services and borders with high interoperability, potentially establishing an internet of value.

Despite the high interoperability of projects created on the same public blockchain, decentralised finance has yet to achieve full interoperability due to the absence of compatibility among blockchains. To achieve full interoperability, entrepreneurs and innovators are looking into two options. The first alternative is to promote the development of a single dominating platform and urge all projects to use it. Ethereum is currently the most popular decentralised finance platform, and all Ethereum-based projects are highly interoperable. As seen in Fig 1, Ethereum is used in 87 percent of all publicly funded projects, both within and outside of decentralised finance. In the future, establishing interoperability through the dominance of a single platform may be undesirable, as a single blockchain may not be able to support projects with a wide range of requirements. Increased interoperability between blockchains is a superior choice, allowing projects to be established on different blockchains while yet maintaining full compatibility. Many projects, including as Cosmos and Polkadot, are now striving to connect different blockchains in order to achieve full interoperability.

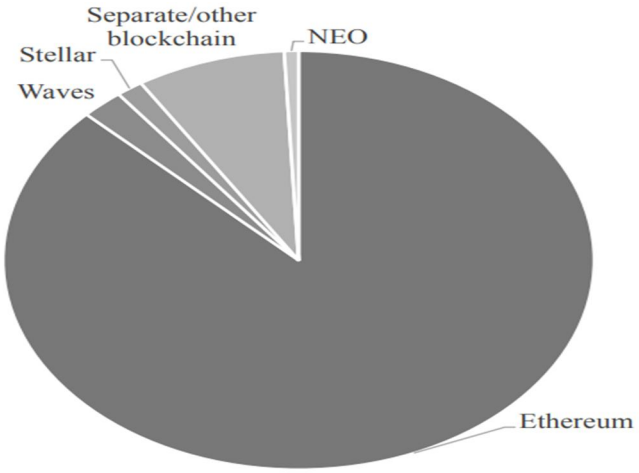


Fig 1. Dominance of Ethereum blockchain

Because centralised finance is connected to certain physical places and fiat currencies, it cannot truly be borderless. As a result, capital and value transfer across borders is frequently fraught with friction and delays. Decentralized finance, on the other hand, is naturally transnational and hence allows for borderless finance because it is not bound by geography or fiat currencies. It is not bound to specific geographic places and may be used by anyone anywhere in the world because it is based on borderless cryptocurrencies. Furthermore, it is independent of any central bank or government. As a result of decentralised finance, transferring money across borders might become as simple as sending an email, erasing barriers to global value transfers.

Decentralized finance can also improve financial system transparency. Because centralised financial institutions must secure their centralised ledgers by restricting access, full transparency is impossible. Decentralized finance, on the other hand, uses distributed consensus and radical transparency to safeguard its public ledgers. It keeps track of transactions on public ledgers that are freely accessible and verifiable. Decentralized finance generates distributed trust using public ledgers, allowing transacting parties to transact with one another without the need for established relationships or a trusted middleman, hence boosting the scale and scope of prospective transactions [6]. Furthermore, decentralised finance is frequently designed with open source code, allowing third parties to audit business logics and uncover any hidden dangers or biases, thereby ensuring and safeguarding transacting parties.

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IV. MAJOR DECENTRALIZED FINANCE BUSINESS MODELS

Blockchain technology has the potential to enable the development of previously unviable business concepts. Blockchain technology has the potential to diminish the involvement of centralised institutions in the financial sector, foster experimentation, and increase access to financial services. The rise of several company models is displayed in Fig 2. Contracting and payments are currently the most popular models, followed by decentralised currencies.

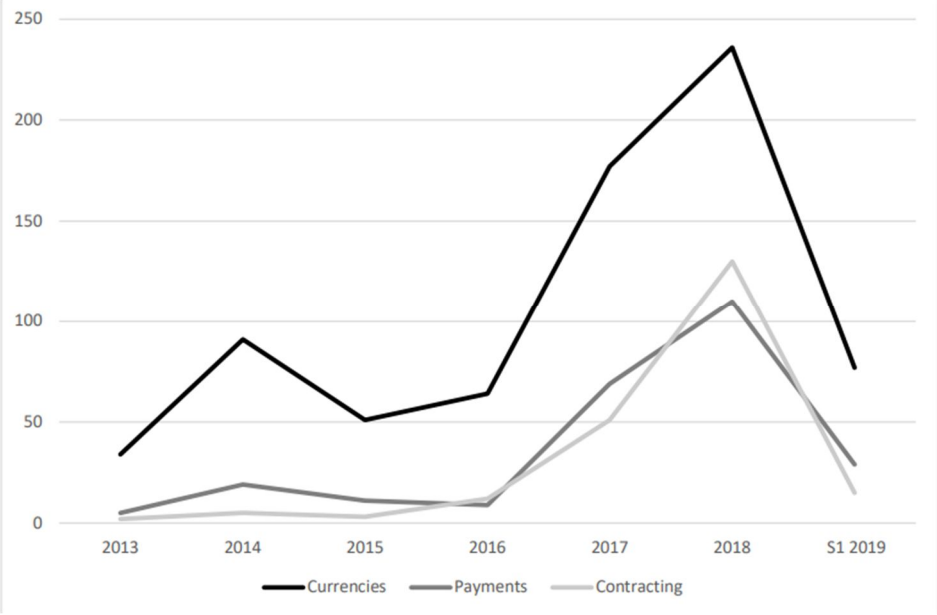


Fig 2. The emergence of financial services based on blockchain

A. Currencies

For ages, national fiat currencies have existed. Until a few decades ago, currencies were backed by precious metals like gold, and central banks were responsible for managing the gold backing of currencies. Fiat currencies, on the other hand, are no longer backed by gold in recent years. Nowadays, the value of a fiat currency is solely determined by people's faith in the economy, government, and central bank of a given country. Bitcoin was the first decentralised cryptocurrency to be created via a decentralised technology rather than by a government. Bitcoin's supply schedule is fixed and cannot be adjusted at will, unlike other currencies issued by central banks, making it anti-inflationary. Bitcoin has become the dominant store of value in the blockchain industry due to its decentralisation, and it is often referred to as digital gold. Bitcoin, like gold, is borderless and can be stored and transferred without the need for a central authority. Other significant decentralised cryptocurrencies, in addition to Bitcoin, include Ether, Litecoin, Monero, Dash, and Zcash.

B. Payment Services

Online and offline commerce is facilitated by centralised payment networks such as Visa, PayPal, and SWIFT, but they typically demand very high fees for their services, particularly for cross-border payments. Even after the internet has considerably decreased the costs of a wide range of services, the cost of payment services remains high. Decentralized payment networks, such as Libra and the Bitcoin Lightning Network, offer low-cost, quick, and worldwide payments, addressing issues with existing payment methods. The Bitcoin Lightning Network, for example, provides instant, secure, and irreversible payment services for a small cost. Merchants can considerably reduce their costs and increase their profitability thanks to the reduced transaction fees. Furthermore, retailers who are currently underserved by conventional payment providers can now take advantage of low-cost payment options. More importantly, as payments become free or nearly free, new business models that are currently unviable (e.g., micropayments) may become possible, perhaps triggering a new wave of innovation and entrepreneurship. Square, a centralised platform, is planning to integrate Bitcoin Lightning Network into its payment systems in the near future. Cross-border payments may now be made quickly and cheaply thanks to decentralised payment services that rely on blockchain technology and cryptocurrencies that are fundamentally global. Ripple is a forerunner in this field, having worked with a number of financial institutions to improve the efficiency of crossborder money transfers.

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C. Fundraising

Investors may only trust and invest in businesses with strong network relationships in traditional venture financing, which can cause significant friction in the fundraising process. The fundraising landscape is being reshaped by blockchain technology. An initial coin offering (ICO) is one of the most common types of decentralised financing (ICO). An ICO is a fundraising method in which a project creates a project-specific token on a public blockchain and sells it to potential investors to raise funding for early-stage development. ICOs have developed as a novel funding technique for early-stage enterprises in recent years, allowing entrepreneurs and inventors to raise billions of dollars from international investors.

An initial coin offering (ICO) is a potentially powerful approach for a project to raise funding while also generating network effects. Because of the transparency of blockchain technology, smart contracts, and open source code, it allows a project to raise capital from investors all over the world. Decentralized fundraising can eliminate friction in fundraising, make cash more accessible, and thereby foster entrepreneurship and innovation by relying on distributed trust provided by blockchains. Furthermore, an ICO is a novel way for a project to enlist the help of stakeholders in order to kickstart the development of a new ecosystem. When a coin has inherent utility in the project's products or platforms, an ICO might be highly beneficial. This type of token is known as a utility token since it can be used to pay for services or act as the primary medium of trade. Security tokens, which reflect direct ownership or claims on cash flows, may be issued by some projects. Initial exchange offerings (IEOs) are a novel type that has just appeared. Unlike ICOs, IEOs rely on cryptocurrency exchanges to confirm that potential projects are trustworthy and to connect high-quality companies with potential investors. Cryptocurrency exchanges frequently assess possible projects in IEOs, providing full information on promising ones and endorsing high-quality projects with their own reputation. The increase of ICOs and IEOs in recent years is depicted in Fig 3.

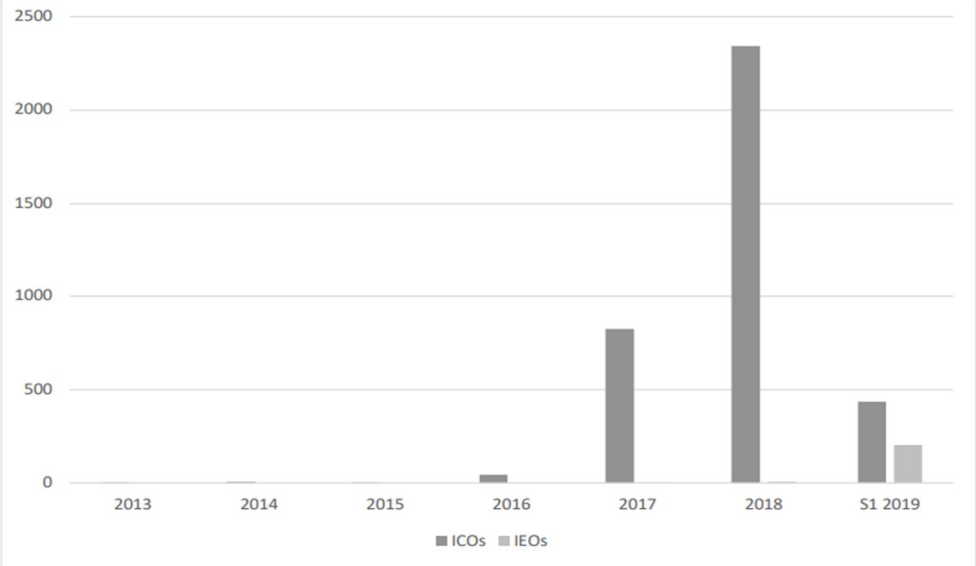


Fig 3.The emergence of ICOs and IEOs

D. Contracting

Markets, firms, and individuals all benefit from contracts because they make collaboration and transactions easier. However, because to the costs of negotiating, drafting, enforcing, and renegotiating contracts, they can be intricate and costly. Adverse selection and moral hazard, in particular, can stymie financial contracting, raising transaction costs while limiting transaction options. Transacting parties have traditionally relied on financial intermediaries to establish confidence and lower transaction costs. Over the last few years, blockchain technology has begun to simplify financial contracting by substituting smart contracts for financial intermediaries, resulting in the emergence of peer-to-peer financial contracting.

Smart contracts are "programmes that execute automatically when pre-specified circumstances (i.e., rules) in protocols are met". Smart contracts, with their transparency, immutability, automaticity, and programmability, promise to minimise the complexity and cost of contracting. Smart contracts broaden the scope of contracting, lower costs, and make it easier to innovate and transact. Smart contracts, for example, are used by decentralised platforms like MakerDAO, Compound, and Dharma to support decentralised lending and borrowing, lowering costs, friction, and delay.

V. LIMITATIONS

Due to various problems such as fraud, volatility, usability, and regulatory uncertainty, decentralised finance has yet to fulfil its full potential. For starters, decentralised finance can be prone to both fraud and the spread of unproven financial innovations. Decentralized finance must establish a healthy environment that supports responsible innovation in order to screen out fraudulent actors if it is to flourish. Second, decentralised finance is based on volatile cryptocurrencies, which hinders stability and client adoption. Stablecoins (such as Tether), whose value is commonly tethered to fiat currencies, are now solving this problem. Third, rather than market pull, decentralised finance tends to follow the trend of technology push. "Too many projects started with the technology, tried to figure out how to earn money from it, and worked from there," according to the Financial Times. As a result, many initiatives tend to prioritise technological advances over utility and usability. Decentralized finance must become more user-centric and offer genuine value for consumers in order to break into the mainstream market. Fourth, decentralised finance is subjected to a great deal of regulatory uncertainty and scrutiny, which can discourage entrepreneurship and innovation. Facebook's entry into cryptocurrencies and decentralised banking, for example, has been faced with significant regulatory scrutiny, prompting several business partners to withdraw their support. A robust legal framework supporting responsible innovation is required for decentralised finance to flourish in a positive way. Although there are many obstacles, with the advancement of blockchain technology and decentralised finance, many of them can be overcome.

However, there may be some fundamental limitations that are more difficult to overcome, thus limiting what blockchain-based decentralised finance may achieve. The nature and characteristics of decentralised platforms and distributed trust are frequently cited as examples of these limitations. For starters, establishing distributed trust on decentralised platforms can be expensive. A decentralised network often shares available information to all participants publicly, validates information through distributed consensus, and stores replicated information across peers to create distributed trust using blockchain technology. The expenses of preparing, processing, and storing data can increase if dispersed trust is achieved. As a result, distributed trust is frequently associated with a high cost, which may limit its applicability.

While transparency is a cornerstone of decentralised platforms and distributed trust, excessive transparency might put privacy at risk. Transaction records are frequently retained and available on public blockchains to create distributed trust, but they can be abused to compromise user privacy. Some public blockchains, like as Monero and Zcash, use powerful cryptography to disguise user names and transaction data while still keeping public records of all transactions to guarantee user privacy. While this strategy can improve user privacy, it also diminishes transparency and raises information processing costs due to higher computational overheads. While the immutability of public ledgers and smart contracts increases transparency and confidence, it also introduces rigidity and inflexibility. Decentralized finance, which is based on blockchain technology and smart contracts, is prone to rigidity and inflexibility, which can stifle experimentation, learning, and discovery. Although smart contracts and decentralised platforms can be upgraded by distributed consensus, finding widespread support among key players to undertake large updates can be difficult.Progress can be slowed when there is a lack of unanimity. Decentralised financing may be unreliable in terms of accountability. It can be difficult to determine who should be held accountable for wrongdoings in a decentralised financial ecosystem because central bodies are rarely involved. There may be no central party to turn to in tough and controversial situations. When problems emerge, no central party can take action to halt transactions, resolve issues, and return operations to normal. Decentralized finance may face major constraints if there isn't enough accountability.

Finally, rather than human judgments, decentralised finance operations tend to rely heavily on the rule of code. The use of the rule of law can be beneficial since it reduces subjectivity, uncertainty, and agency costs. It can, however, become a severe constraint if it fails to exploit human tacit knowledge and subjective judgement, potentially restricting the benefits of decentralised finance. These restrictions, if not solved, may limit the potential utility of blockchain-based decentralised finance.

VI. CONCLUSION

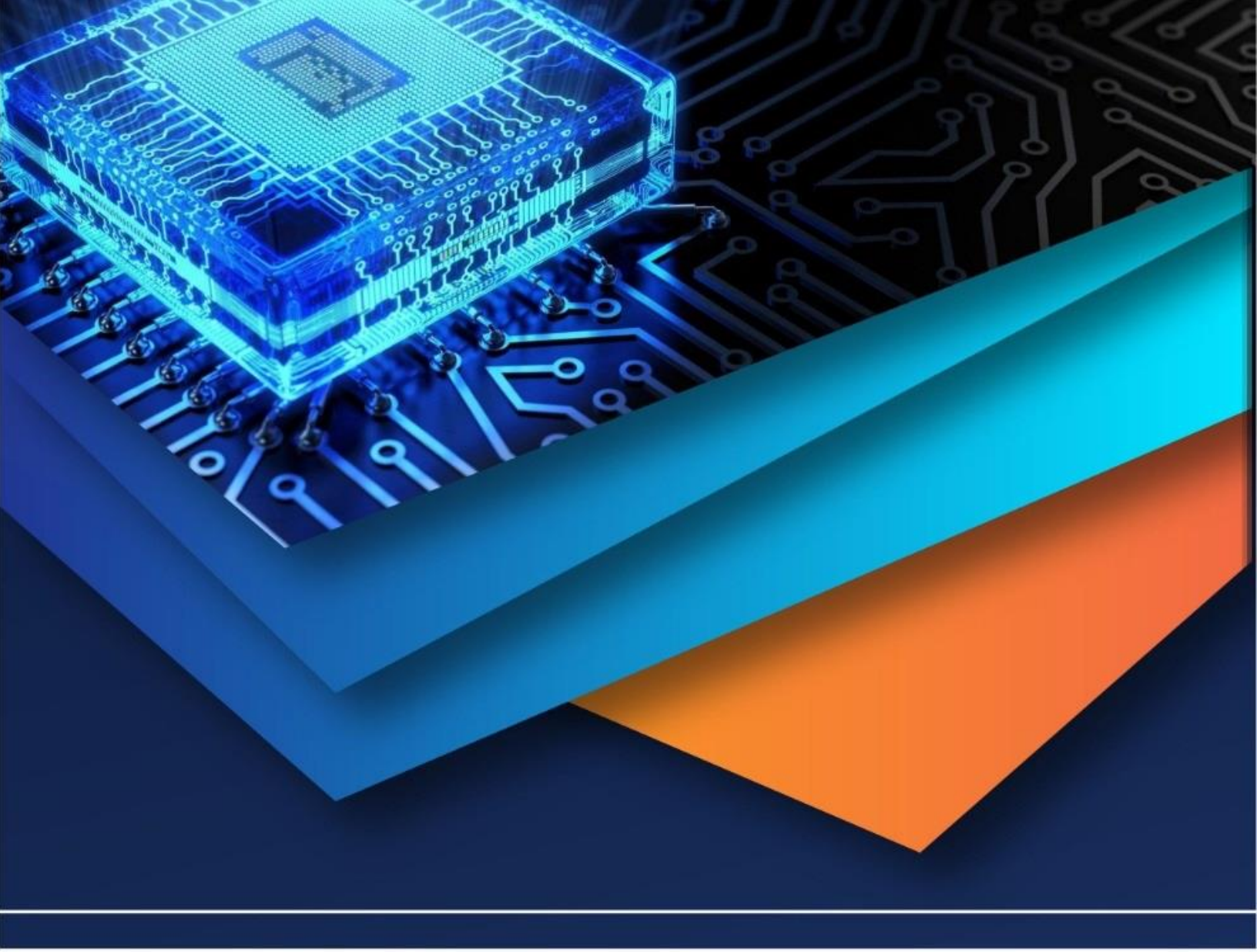
Blockchain technology has the potential to lower transaction costs, broaden transaction scope, and enable peer-to-peer transactions, ushering in a new era of decentralised business models. Decentralized finance, which uses blockchain technology to establish an alternative financial system that is more decentralised, inventive, interoperable, borderless, and transparent, has emerged as a result of this new paradigm. Despite the fact that various problems remain, entrepreneurs and inventors have been experimenting with decentralised business models that would not have been possible without blockchain technology. Decentralized business models, if successful, have the ability to transform established industries and usher in a new era of entrepreneurship and innovation. Furthermore, they may push researchers to develop new theories to explain the benefits and drawbacks of decentralisation.

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