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Blockchain Technology and Regression Methods: A Case of Conceptual Framework

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ABSTRACT

Purpose: The purpose of this paper is to review blockchain technology and to demonstrate how this technology is related to the real estate market using multiple regression methodology.
Design/ Method/ Approach: Approach: Our approach to this work is first, review the blockchain technology, which includes its history, second review the limited work of Blockchain in the real estate market, its benefits, and drawbacks.
Findings: Since this paper is a conceptual approach toward applying blockchain technology in the real estate market, estimation of model parameters, including beta cap and a formula for estimating regression coefficients for multiple linear regression, has been done.
Research limitations: The application of blockchain technology in the real estate market is minimal. Therefore, our paper has research limitations because much work is needed in this area of study.
Practical implications: This reviewed work of ours will have practical implications on the real estate market regarding blockchain technology since works related to applying this technology in the real estate market are limited.

1. Introduction

"The social scientific study of digital phenomena long ago moved past understanding the internet as an e-elsewhere, instead emphasising how digital technologies are part of a web of social, cultural, and economic ties that crisscrosses and outnumbers the internet" (Fields & Rogers, 2021, p.72). Firms invest in computers and telecommunications technologies, often known as information technology, to improve their economic performance by advancing information dissemination, decision-making, organisational capacities, organisational excellence, receptiveness, and delivery (Shin, 2001). Information technology has played a crucial role in advancing accounting information systems (Taipaleenmäki & Ikäheimo, 2013). Indeed, it enabled greater information exchange and much more complex computing tasks, launching a comprehensive approach for various advancement contributions (Yating et al., 2015). One of these contributions has to do with the concept of decentralised digital currency (Smith & Dhillon, 2017). Decentralised digital currency depends on blockchain information, which has been expected to significantly impact business culture (Ometov et al., 2020). Indeed, it is expected to dramatically impact business and society (Yingli et al. 2020) as a whole. However, the most noticeable distinction between blockchain technology and traditional digital technologies is that blockchain technology has a distributed structure peer-to-peer nature and was meant to facilitate data immutability across multiple decentralised nodes (Smetanin et al., 2020). It is a computer system that incorporates an encryption algorithm, a peer-to-peer network, distributed storage, a consensus method, and smart contracts (Hasavari & Song, 2019). Nevertheless, everybody in the system has a complete record of transactions rather than one entity managing all data in a centralised manner (Chen et al., 2020).

Although most individuals are familiar with Bitcoin and a devolved numerical trade concept, they may be unaware of Blockchain, the vital knowledge that enables Bitcoin to signify (Smith & Dhillon, 2017). Blockchain technology, which is at the heart of Bitcoin, has been widely hailed as the 21st century's most significant innovation (Sadhya & Sadhya, 2018). Indeed, it is recognised as the most important technological innovation in recent years and the most disruptive capacity piece (Yingli et al., 2019). Such capability-driven disruptions have improved corporate efficiency (Kamble et al., 2019). As a result, it is being heralded as a global revolution that will affect everything from how we vote to who we connect with online to what we buy (Lumineau et al. 2021, p.500). It is a dispersed database or a technique for confirming data using a crypto-analytic hash work in technical terms (Yingli et al., 2019). In other words, it is a standard data transportation system that updates itself in real-time; as a result, the technology may handle and resolve deals in minutes using supercomputer systems without the requirement for third-party verification (Yingli et al. 2019). The technology allows for the creation of rearranged frequencies, self-implementing numerical agreements, and the use of intellectual property in Cyberspace (Wright & De Filippi, 2015). According to Lord (2016), Blockchain uses peer-to-peer communication without the need for a central server; instead, the information is shared across a network of workstations.

Woodside et al. (2017) noted that by implementing the allocated databank structure via Blockchain, everyone notebook on the mentioned system might see a numerical record of all deals made through the system, obviating the need for a

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central mandate. As a result, such sophisticated network technology could help businesses save time and money while reducing conflicts among users of shared data infrastructure. Blockchain expertise could substantially impact the documentation of both confidential and publicly accessible data (Kramer, 2019). Thus, due to its decentralisation, intermediaries will not be used for transactions purpose. Consequently, Blockchain technologies have been viewed, in the financial accounting system, as a data structure made up of data blocks, like an associated list, that uses a distributed ledger and cryptographic techniques to ensure the correctness and security of trading data (Yang et al., 2019). This technology, which is gaining traction as an innovative technology with the potential to influence the future, has recently emerged as a new financial market paradigm (Yoo 2017, p.312). Indeed, it was hailed as an excellent financial service and was regarded as one of the highly advanced networking applications ever devised (Woodside et al., 2017). The technology is a decentralised, transparent, traceable, and resistant platform that has been designed for use in financial system (Hasavari & Song, 2019). In contrast to other digital technologies, Blockchain is distinguished by its sophistication Knewtson & Rosenbaum, 2020; and it inherently encapsulates a defined timer that increases whenever a brand-new block is mined, enhancing its potential in achieving economic justice (Kosba et al., 2016). The technology has the potential to transform many of the duties traditionally performed by accountants and auditors, such as automatically enforcing debt covenants or remitting tax payments through real-time smart contracts (Lee et al., 2019). Thus, it is anticipated to radically revamp the digital economy, disrupting the status quo in the commercial sector by innovating in transactions, reinventing industries, and pushing economic transformation worldwide (Perera et al., 2020). Because the technology is immature and shifting rapidly, widespread commercialisation is still lacking (Banafa, 2017).

Blockchain is a flexible programmable approach for managing agreements and possession, providing an inspection trail that cannot be easily altered but can be broadcast in real-time; thus, improvements have been proposed in asset ownership digitisation (Lindman et al., 2017). According to Wilfer, (2019) commercial entities using Blockchain would disclose the structural adjustments required in the legal system to address it and the legal difficulties that may arise due to Blockchain's microeconomic and macroeconomic association. The technology also enabled modern control procedures to include more self-governing or participatory pronouncement preparation (Wright & De Filippi, 2015). Blockchain technology has been generally recognised as a crucial breakthrough that has been integrated with governments and businesses in recent years (Frizzo-Barker et al., 2020). Indeed, it is a cutting-edge tool for shifting the opportunity (Yoo 2017). Although Blockchain is likely to significantly impact the online world by enabling decentralised applications, innovative contract transactions, and integration with other emerging technologies (such as Artificial Intelligence), it is currently difficult to manage the technology (Iosif et al., 2021). Fields et al., (2021, p.73) argued that a digital research programme for housing studies should avoid technical determinism favouring a greater understanding of the interrelationships between digital and broader dynamics that influence its role in changing the real estate market. Therefore, a better knowledge of blockchain adoption drivers is required Zheng et al. (2017) concerning the real estate market. This study aims to examine the application of blockchain technology in the real estate market. The remaining sections of this research are designed as follows: Section 2 defines and explains the literature review; Section 3 focuses on research methods; Section 4 analyses methodological processes; Section presents discussion and implication, and Section 5 represents conclusion which includes future research directions.

2. Literature Review

2.1 Historical Development of Blockchain Technology

Historically, blockchain systems known today go back as far as late 1979, when the primary system for them was proposed by earlier authors (Ometov et al., 2020). Nevertheless, the idea of a cryptographically positioned only chain of blocks was initially advanced by Haber & Stornetta, 1991; though, it was not until the introduction of Bitcoin in October 2008 that the idea of a decentralised digital system achieved significant traction (Lumineau et al., 2021, p 501). On October 31st, 2008, Satoshi Nakamoto released a paper to a few cryptography enthusiasts explaining that Bitcoin was a cryptocurrency that allowed the exchange of value tokens between two parties without disclosing any transaction details (Dimitrova et al., 2019). Further, on first November 2008, Satoshi Nakamoto made available news Shen, et al. 2016 which manifested the birth of Bitcoin and presented people the Blockchain (Yang et al., 2019). Therefore, Bitcoin was the first actual application of blockchain knowledge, conceived by an inventor known as Satoshi Nakamoto, the authorised inventor of Bitcoin, and the fundamental blockchain knowledge (Smith & Dhillon, 2017). Blockchain technology originated from the development of the digital currency of Bitcoin, which first appeared in the Bitcoin white paper (Yiyan, Ye, & Cunjin, 2020). Since its introduction through an overall curiosity, its usages have been intensifying progressively; however, the name blockchain has not been transparent yet; the expression Blockchain itself suggests back to the unique Bitcoin white paper of Satoshi Nakamoto (Mattila, 2016). Satoshi Nakamoto is a fictitious name, as the exact distinctiveness or characteristics overdo it is still unidentified (Smith & Dhillon, 2017).

Bitcoin was the first widely used implementation of peer-to-peer trustless electronic cash before many other electronic cash forms (cryptocurrencies) have been created using similar structures (Novo, 2018). Originally designed to record and verify popular cryptocurrency transactions, thanks to Bitcoin, Blockchain has been recognised as an adaptable technology that can alter many businesses (Lee et al., 2019). Indeed, Satoshi Nakamoto created Bitcoin in 2008 to compete with traditional financial markets (Breidbach & Tana, 2021). As a result, Bitcoin made Blockchain technology well known

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since Bitcoin emerged as the most popular and demanded cryptocurrency (Dimitrova et al., 2019). From its inception, bitcoin was defined primarily as a set of four components, which includes currency (token), open-source, cryptographic protocol, and register of transactions (Cermeño, 2016, p.32). Bitcoin has the most significant market capitalisation of any of the more than 1658 digital currencies currently in use, with a value of 237.62 billion dollars in December 2017. (Dimitrova et al., 2019). Since its first quarter of 2012, its market capitalisation had climbed from around 0.04 billion USD to 117.56 billion USD in 2018 (Dimitrova et al., 2019). The Bitcoin network processes 90 thousand transactions per day as of December 2014, a number that has been continuously increasing; by contrast, the worldwide payment system of Visa handled a reported 150 million transactions per day in 2010 and has risen steadily since then (Sompolinsky & Zohar, 2015).

In 2016, Blockchain had been predicted to transfigure monetary facilities, a podium for linking customers and manufacturers, and further been included in the future of ten innovative technologies; thus, Blockchain has appeared as a novel standard of the monetary marketplace (Yoo, 2017). The importance of Blockchain Technology has been demonstrated in many ways. For example, meanwhile initially, in 2016, it has been stated that the monetary sector has capitalised (over $1 billion) in the financial industry by discovering and emerging explanations with Blockchain Technology. The Bitcoin market is now worth $170 billion, and it serves as an excellent example of how individual economic actors may change the markets in which they operate (Breidbach & Tana, 2021). Further, it has been predicted that Blockchain's commercial worth will be $176 billion by 2025 (Kramer, 2019).

2.2 Adoption of Blockchain Technology

The Blockchain's notion of adoption has been studied, but primarily in the Bitcoin context, distinguishing the organisational adopters from the non-adopters (Connolly & Kick, 2015). As noted above, initially invented in 2008s, current investigate on the Blockchain has focused principally on monetary contacts and dispersed ledger arrangements (Pilkington, 2016) because within the financial sector, the Blockchain has been proposed to manage financial transactions without intermediaries such as banks (Yingli et al., 2019). The potential benefits of blockchain technology have prompted businesses to investigate adopting it, and various promising benefits have been proposed, including cost reductions, improved traceability and transparency, and improved sustainability (Kouhizadeh et al., 2021). Blockchain can supplant main finance programs and other utilisation instances involving industry procedure enhancement, transactions, health data distribution, self-propelled ownership, and polling (Woodside et al., 2017). Blockchain technology possesses the novel and unique capability to facilitate transactions without a centralised institution (Sadhya & Sadhya, 2018). Blockchain operators utilise variable-free controls that prevent them from being traced, guaranteeing their confidentiality (Dorri et al., 2019). Applications based on Blockchain technology are no longer limited to Bitcoin, Litecoin, and other virtual currency applications; even different institutions have used Blockchain technology to solve practical problems that were difficult to solve in the past (Sun et al., 2021). As a result, many nations and firms in the significant marketplaces need to participate in the blockchain segment, expand the financing level, and participate in global expansion studies (Yoo 2017). Simultaneously, different blockchain applications have been developed to implement other scenarios beyond cryptocurrencies, including new concepts, such as smart contracts and intellectual properties, which have entered the scene (Novo, 2018). Today's blockchain technology applications diverge from public means of record-keeping and private storage to linking heterogeneous deference strategies as part of the Internet of Things pattern (Smetanin et al., 2020).

Beck and Müller-Bloch (2017) defined blockchains as either public or private. All transactions in a public blockchain are visible to everyone on the network. On the other hand, private blockchains are exclusively accessible to a small group of people who have been granted authorisation (Chen et al., 2020). Furthermore, private blockchains can apply to a single organisation and a consortium of participating organisations (Chen et al., 2020). Further, varied factors related to Blockchain application technics, markets, and institutions, among other things, have been introduced (Janssen et al. 2020). In recent times, the claims that could work only through important consolidated objects attained an opportunity to function exclusive of continuous linking to the specialist while upholding the same sanctuary level and cultivating the general organisation functionality (Hari & Lakshman, 2016); (Ometov et al., 2020). Blockchain has been described as a concept that guarantees suitability, immutability, and nonrepudiation (Sivaram et al., 2020). Thus, it is a technology that focuses on streamlining the proper flow of information for use Hasavari & Song, 2019 and is posted to it as an unchangeable truth (Schuetz & Venkatesh, 2020). In the influential work available in 2008, Bitcoin: a peer-to-peer electronic money arrangement, Satoshi Nakamoto defines blockchain technology's support (Smith & Dhillon, 2017). The blockchain model is defined as a scientific innovation in which the intervention has a significant impact by transferring business functioning from centralised to decentralised (Sivaram et al., 2020).

For the past several years, knowledge of Blockchain has been proclaimed by many as the most significant technological breakthrough since the internet's origination (Nguyen et al., 2019). In recent years, it has attracted incredible attention from practitioners and academics in different disciplines (comprising finance, computer science, and law) due to its noticeable features, including distributed structure, immutability, security, and privacy (Dorri et al., 2019). The academic community also believes that Blockchain is an up-and-coming technology that can promote human science development (Wong et al., 2019); (Yiyan et al., 2020). For example, because a blockchain is distributed and immutable and effectively

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eliminates the need for intermediaries Lacity, 2018; Hughes et al., 2019, the technology has received increased attention from scholars and academics. The number of publications grows exponentially every year, with eighty per cent of the research focused solely on the Bitcoin blockchain (Pelt et al., 2021). Since its inception in the past ten years, Blockchain has gained popularity as an emerging technology to provide better security on data sharing among many parties without an intermediary (Firdaus & Rhee, 2021). One motive for this sparked interest is the promise of increased efficiency due to the cutting out of intermediaries (Pelt et al., 2021). However, this initial focus was on cryptocurrencies and financial-oriented applications; the transformative features of Blockchain motivated non-financial sectors to move toward this significant change (Kouhizadeh et al., 2021). However, an established theory is absent, with few recognised experts and studies that have primarily focused on the technical features and legal considerations of blockchains (Pelt et al., 2021). Frizzo-Barker et al. (2020) conducted a systematic review of blockchain research in the business literature from 2014 to 2018, and their study showed a rapid increase of studies over the five years. Still, that Blockchain remains an early-stage research domain in terms of theoretical grounding, methodological diversity, and empirically grounded work. Similarly, Almasoud et al. (2020) reviewed extending smart contracts to reputational systems based on blockchain technology and showed a similar tends.

2.2.1 Characteristics of Blockchain Technology

The primary characteristics of Blockchain are to exemplify decentralisation, agreement mechanism, antitampering, transparency, and integrity (Chen et al., 2020). Generally, three core settings often characterise the Blockchain technology ((Yingli et al., 2019); (Schuetz & Venkatesh, 2020). Unit cryptography, agreement mechanisms, and distributed storage (Li et al., 2021). Cryptography, Hash algorithms, and nodes trees are typical in cryptography, blocking the info from being tampered with (Li et al., 2021). Distributer storage maintains a distributed digital ledger of transactions shared across all collaborating nodes. Thus, the primary function of blockchain technology may be a cryptocurrency called bitcoin, a decentralised digital currency that investors typically contemplate as a necessary investment and speculative device (Yu & Sheng, 2020). The bitcoin has tagged it as the network timestamps transactions by hashing them into an unbroken chain of hash-based proof-of-work, forming a record that cannot be modified while not repeating the proof-of-work" (Nakamoto, 2008). Indeed, Bitcoin was the primary Blockchain to be conceptualised and enforced, and it is a cryptocurrency that is a digital monetary benefit (Novo, 2018). The encoding technology event can also drive blockchain technology, like applying the most recent quantum communication technology to the Blockchain, and improve protection performance (Fedorov et al., 2018). Consensus mechanisms supported the concept of a decentralised agreement protocol, which may be a crucial conception in transactions (Chen et al., 2020). The Nakamoto agreement protocol is enforced within the Bitcoin network that helped Bitcoin become the primary digital currency system to resist double-spending attacks in an exceedingly decentralised peer-to-peer network of minimal trust (Xiao et al., 2020). The network entities place confidence in the log to determine a distributed agreement on a group of rules while not forward mutual trust (Egelund-Müller et al., 2017).

New transactions area units are verified and confirmed by alternative nodes collaborating within the network, eliminating the necessity for a central authority (Dorri et al., 2019). Blockchain may be a distributed ledger system with overall flexibility and varied economic sectors sought-after ways to integrate its capabilities into their practical operations (Kumari et al., 2021). So, this position of distributed systems development had already obtained a significant impact on business, stirring upon all industries within the domain as a part of the distributed ledger technology paradigm (Smetanin et al., 2020). A blockchain may be a distributed information of records shared among network participants, with the assistance of scientific discipline hash functions, digital signatures, and distributed agreement mechanisms. Once a document enters the information, it cannot be altered while not agreeing with the opposite network participants (Nguyen et al., 2019). In straightforward terms, Blockchain refers to distributed digital ledgers that use agreement protocols to make one version of truth (Schuetz & Venkatesh, 2020). It will maintain unmodifiable and incessantly growing information records. The dealings are a fundamental concept in Blockchain, unique information wherever transactions are often value-added but not deleted, and the operations area unit is recorded as transactions (Hasavari & Song, 2019). The stored data could be payment history, e.g., Bitcoin, a contract, or personal information (Dorri et al., 2019). It will maintain unmodifiable and incessantly growing information records (Hasavari & Song, 2019). Registered entries cannot be altered because of encoding protocols, rendering the digital ledger changeless (Schuetz & Venkatesh, 2020).

Most of those ideas (cryptocurrencies, changeless distributed ledgers, sensible contracts) represent a radical shift regarding the standard approach of pessimism about the foundations of monetary systems and Law, commerce, economy, society, and trust itself (Cermeño, 2016). Blockchain is often outlined as decentralised ledgers containing transactions as information blocks by a scientific discipline pointer coupled to their predecessors. The chain continues to the originator, first, union, so whenever a brand-new block is introduced to the system, it gets connected to its forerunner (Kouhizadeh et al., 2021). the public ledger of bitcoin, referred to as the Blockchain, consists of an expanding sequence of blocks comprising a group of approved transactions (Janssen et al., 2020). The Bitcoin protocol's core plan is to substitute the centralised management of cash transmission generally haunted by massive institutions like banks, financial firms, and alternative cash transmitters with an intensive peer-to-peer network. It may be a turbulent protocol for the distributed digital currency that depends on scientific discipline to secure its operation (Sompolinsky & Zohar, 2015).

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Blockchain is a changeless timestamp ledger of blocks used for storing and sharing information in an exceedingly distributed manner that was first introduced in an exceeding cryptocurrency referred to as Bitcoin. Since then, it has been widely utilised in alternative cryptocurrencies called altcoins (Dorri et al., 2019). The contacts are hashed into a solitary block, and everyone blocks produce the chain, henceforward the designation blockchain (Smith & Dhillon, 2017). Blockchain has been formed to prevent double expenditure within cryptocurrency. Its completion has been essentially a distributed record arrangement. Members create blocks by refining precise contacts with the chain showing because of the ledger (Smith & Dhillon, 2017). As a blockchain could be a devolved distributed ledger, various contributors who structure the blocks might hold a ledger copy. In technical terms, every single affiliate within the Blockchain has a duplicate of the book called a "node." As all nodes transmit a copy of the ledger, it implies that the catalogue is distributed and does not occur in a single web site, that avoids a dominant specialist from sterilisation the log in any manner as all node's necessity "agree to" any accompaniments to the register (Smith & Dhillon, 2017). This means that erstwhile blockchain functions as an associate distributed ledger that chronicles dealings between various revelries well-organised, demonstrable, and steady (Iansiti & Lakhani, 2017). Since the late 2008s, cryptocurrencies, the underlying blockchain technology, have attracted interest from traders (Xiao et al., 2020).

The origin of this wave of interest around distributed ledger technologies comes from the conception of Blockchain, which appeared as a building block of the primary outlined cryptocurrency theme, Bitcoin. It has been upgraded to an additional general class of technologies, the distributed ledgers (Cermeño, 2016). From the hashing algorithm's quality and security to the equipped nature of its distribution and handling, the Blockchain has been creative (Woodside et al., 2017). It is a comprehensive technology application that mixes encoding algorithms, peer-to-peer networks, distributed storage, agreement rule, and sensible contracts ((Hasavari & Song, 2019). A suburbanised access management design sensible contracts on blockchain-based access management are economical and changeless, achieving higher security and potency in maintaining the network (Abou et al., 2020).

2.3 Real Estate Market

The real estate market is one of the most complex and essential elements of the market system. It has long been a valuable distributed resource that fulfils basic human needs for living space and security (Kalyuzhnova, 2018). It is also the foundation of many diverse types of businesses, a source of national wealth, and a source of government revenue (Kalyuzhnova, 2018). The entire value of assets in the global real estate industry had been expected to be $ 217 trillion, with $ 1.4 trillion in transactions in 2017 (Axford, 2017); (Kalyuzhnova, 2018). The heterogeneity and immobility of real estate assets are the two most important qualities (Nijland & Veuger, 2019). Depending on the type of transaction, the step being taken, and the country, real estate conveyance is a heterogeneous phenomenon in which many intermediaries and governmental services may be involved (Garcia-Teruel 2020). Due to these two conditions, the real estate purchase market is illiquid, localised, and highly segmented, with privately negotiated deals and high transaction costs due to many trusted third parties' involvement (Nijland & Veuger, 2019). Because of these features and the prospects Blockchain provides, the commercial real estate acquisition process and the players involved may be significantly impacted by this technology phenomenon (Nijland & Veuger, 2019). When examining the potential impact of blockchain technology on the real estate sector, it is critical to distinguish between the type of transaction and the country (Garcia-Teruel 2020).

Blockchain technology is the first recognised technology to solve the "double spending problem" as well as the problem of the "Byzantine General" simultaneously (Wörner et al., 2016). Because of these characteristics, blockchain technologies are appealing technical solutions for simplifying transactions between parties with differing interests, such as lenders, borrowers, suppliers, and customers (Schuetz & Venkatesh, 2020). Blockchain's game-changing potential is fueled by a lack of transparency, high transaction costs, and the demand for digitisation in commercial real estate firms (Nijland & Veuger, 2019). The focus here might be on the added value of Blockchain as a data-sharing program, creating a more secure and safe manner of sharing data (Nijland & Veuger, 2019). Real estate is a desirable candidate for blockchain technology because it has a complicated transaction process designed to avoid fraud and provide rigorous ownership protection (Mashatan & Roberts, 2017). It is a distributed ledger made up of a rising number of blocks, each of which contains a set of approved transactions (Sompolinsky & Zohar, 2015). These are the characteristics required by the real estate market, and Blockchain can be used to improve the transparency of a system, allowing regulators to discover and prevent fraudulent activities (Mashatan & Roberts, 2017). Blockchain's architecture also allows for constructing an immutable record that cannot be altered or lost, which is not achievable with traditional electronic or paper documents (Mashatan & Roberts, 2017). As a result, the suggested secure real estate transaction mechanism based on digital ledger technology is implemented on the content addressed interplanetary file system (Singh & Vardhan 2019). Each interplanetary file system node in the peer-to-peer network has its own interplanetary file system address and is connected to the system's other interplanetary file system nodes, acting as miners (Singh et al., 2019). In a peer-to-peer network, the ledger is digital and decentralised or, in other words, distributed electronically to all the users or participants (Goforth, 2019, p.54).

As a disruptive innovation, Blockchain will lead to the emergence of new, more efficient business models, regulation, consumption, and so forth (Frolov, 2020), which can be used in the real estate market. Blockchain technology presents a unique packaging of this distributed digital ledger, a decentralised consensus mechanism, and cryptographic security

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measures (Janssen et al., 2020). First, Blockchain is a distributed technology that increases the visibility and transparency of the stored transactions (Yingli et al., 2019). Second, as an immutable ledger, Blockchain ensures a single version of the truth that helps build trust in the stored information (Queiroz et al., 2019). Third, a blockchain allows for the automatic execution of transactions (Schuetz & Venkatesh, 2020). These features enable Blockchain to realise a range of benefits that are aligned with supply chain management objectives (e.g., (Kshetri, 2018); (Queiroz et al., 2019); (Queiroz & Wamba, 2019). For example, because a blockchain is distributed and immutable, it effectively eliminates the need for intermediaries (Hughes et al., 2019) by allowing for the automated execution of contracts (Schuetz & Venkatesh, 2020). Blockchain-based supply chains can operate more efficiently and with lower costs without intermediaries and with the automatic execution of contracts which is the fundamental n real estate markets.

2.3.1 Benefits and Downsides of Blockchain

It is essential to note that the technology is still in its initial stages of development and thus is not yet suited for use in the real estate sector (Nijland & Veuger, 2019). Blockchain technology, regarded as a disruptive technology that could revolutionise society and its operations with a similar impact to the Web, is a record-keeping distributed database of shared public ledgers where digital events are executed and shared among the participants (Chen et al., 2020). There are advantages and disadvantages to using it. These advantages and disadvantages are explained in the following subsections.

2.3.1.1 The Benefit of Blockchain

The significant advantage of Blockchain is that it is public; hence everyone participating can see the blocks and the transactions stored in them (Banafa, 2017). However, this does not mean everyone can see the actual content of others' transactions; yet their private key is protected (Banafa, 2017). The Blockchain is a distributed database that does not need a central authority and eliminates the need for third party verification (Novo, 2018). The critical characteristics of distributed consensus are secure, traceable, verified, and transparent information (Kouhizadeh et al., 2021). The blockchain architecture also enables the creation of an immutable record that can be trusted not to be modified or lost, something which is not possible with traditional electronic or paper records (Mashatan & Roberts, 2017). As an essential property of blockchain technology, decentralisation allows all parties to check on any information of participants. Thus, there is no need to appraise the trustworthiness of the intermediary or other participants in the network, which leads to antitampering, transparency, and integrity (Chen et al., 2020). There are many advantages to decentralisation. For example, a centralised agency needs to verify transactions in a transaction management system, and decentralisation can achieve decentralised validation, saving costs and alleviating centralised institutions without supervision or intervention by a trusted third party (Wu, Dai, & Wang, 2020). A blockchain system is also attractive because it could reduce the total transaction time to complete a sale (Mashatan & Roberts, 2017). The real estate industry has historically been slow to adopt new technologies, and so in many areas, real estate transactions have competed primarily through paper-based processes (Kelly et al. 2017), (Mashatan & Roberts, 2017). Digitising and automating the processes with smart contracts could significantly reduce waiting times (Swan 2015) (Mashatan & Roberts, 2017). Potential uses may bring considerable benefits to the industry and give birth to a whole new generation of services (Novo, 2018).. The token is issued in a decentralised way through the protocol. The protocol allows transacting online, in a secure, pseudonymous, global, instant, and almost freeway and the register contains every transaction.

It is public, and there is no central administrator; every participant in the bitcoin network can have a copy. (Cermeño, 2016, p.33). These protected contacts can be attractive to any organisation interested in maintaining information securely yet efficiently, such as medical or banking records (Smith & Dhillon, 2017). Another advantage of blockchain technology is that it reduces fraudulent activities. Real estate fraud can come in many forms. Per the Globe and Mail, title fraud usually occurs when a criminal pretends to be the legitimate owner of a property, takes out credit against it, then flees with the funds (Mashatan & Roberts, 2017). Blockchain technology prevents malicious entities from misappropriating funds by coordinating simultaneous transactions with the same funds and offers the mechanisms to establish consensus in a network plagued by the presence of potentially untrustworthy entities (Sadhya & Sadhya, 2018). Real estate criminals may also sell a property they do not own, likely the most damaging for property owners (Mashatan & Roberts, 2017). Recorded entries cannot be altered due to encryption protocols, rendering the digital ledger immutable, and what is posted to the Blockchain can be regarded as the one unchangeable truth (Schuetz & Venkatesh, 2020). When a broker represents both buyers and sellers of a property, this form of fraud can occur. Brokers can conceal bid information from sellers to collect a second commission from the purchasers they represent, lowering the seller's price unlawfully (Malik and Foxcroft 2016) (Mashatan & Roberts, 2017). Blockchain systems could likely be designed to help reduce these types of fraud by providing greater transparency to title ownership records and the bidding process (Mashatan & Roberts, 2017). The potential uses of blockchain technology (Novo, 2018). It has (1) decentralised control: It is a decentralised scheme in which no central authority dictates the rules. (2) Data transparency and audibility: A full copy of every transaction executed in the system is stored in the Blockchain and is public to all peers. (3) Distribute information: Every network node keeps a copy of the Blockchain to avoid having a centralised authority privately keep all that information. (4) Decentralised consensus: The transactions are validated by all network nodes instead of a central entity. This breaks with the paradigm of centralised consensus. (5) Secure: The Blockchain is tamper-proof and cannot manipulate malicious actors.

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2.3.1.2 The drawback of Blockchain Technology

Decentralisation also has several drawbacks. The energy consumption of blockchain technology is a significant sustainability concern (Kouhizadeh et al., 2021). The tremendous computing power necessary for critical proof-of-work consensus systems uses hundreds of megawatts of electricity, which means more significant carbon emissions are produced (Kouhizadeh et al., 2021). Bitcoin makes and verifies transactions using public-key cryptography, peer-to-peer networking, and proof of work, and being a programmed system, and it creates a new block every 10 minutes (Novo, 2018). Decentralised ledgers also need higher computational power and resources to maintain the security of data and entries duplicated, which ultimately leads to greater energy consumptions (Kouhizadeh et al., 2021). For the transactions, distributed ledgers required an expensive computing calculation to solve mathematical riddles to validate (Puthal & Mohanty, 2018). Malicious parties may also attempt to disrupt this synchronisation to double-spend by redirecting already processed payments, allowing them to spend the same money twice (Sompolinsky & Zohar, 2015). Thus, blocks must contain a proof-of-work, which is computationally complex to construct, to overcome the double-spend problem (Sompolinsky & Zohar, 2015). This task's difficulty is adaptively tuned to create a block once every 10 minutes throughout the whole network (Sompolinsky & Zohar, 2015).

2.3.2 Relevant Studies of Blockchain in Real Estate

Latifi (2019) focused on developing a blockchain application that can improve the transaction process of office buildings in the Netherlands. The researchers questioned multiple parties through design science research to determine the process's primary pain points. Then the results of the interviews were used to create a blockchain solution that addresses the issues. After designing, the researcher requested interviewees to validate the proposed model in practice. Their study result showed difficulty in defining the characteristics of a property due to a lack of data structure and quality. Hoxha & Sadiku (2019) investigated the interaction between blockchain technology and numerous crucial features of real estate transactions, including transparency, security, and cost reduction, from the perspective of buyers and sellers. Their research is based on quantitative data. A questionnaire with closed-ended questions was employed for this research. The questionnaire was sent out to both buyers and sellers. Using stratified probability sampling, 1,000 persons were included in the study. The study employs factor analysis to investigate the relationship between blockchain technology and other research variables like transparency, security, and cost savings. Their study result showed that buyers and sellers believed that transparency and cost reduction have the most significant impact on their decision to use Blockchain Technology in a real estate transaction system, followed by transaction security. Garcia-Teruel (2020) aimed to investigate the technology's potential problems, constraints, and opportunities in the real estate market and how its adoption will affect traditional intermediaries. They examined the current real estate intermediaries in the European Union (EU), their functions, and how Blockchain can improve the security of these transactions while reducing transaction time. The author approaches it from a legal standpoint. Their research result indicated that the real estate industry has obstacles and opportunities due to Blockchain and smart contracts.

On the one hand, it can improve procedures, allow EU transactions, and connect government agencies. However, this Blockchain should include some unique features, such as updated management, to avoid limiting parties' rights. Ullah et al. (2021) evaluated this DDT adoption and innovation constraints in the Australian real estate market. They identify twenty-one significant impediments to digitisation and innovation based on a comprehensive evaluation of 72 carefully retrieved and shortlisted papers. A Fault tree is used to categorise the barriers into the technology-organisation-external environment (TOE) groups. Data were collected from 102 real estate and property managers to score and rank the identified impediments. The findings showed that most respondents are aware of the DDTs, with AI (22.5 per cent), big data (12.75 per cent), and virtual reality (12.75 per cent). These were being the most critical technologies not yet adopted due to costs, organisational policies, awareness, reluctance, user demand, tech integration, government support, and funding is the top reasons given. The researchers argued that several impediments must be overcome to prepare the path for DDT acceptance and innovation in the Australian real estate market and a step towards innovative real estate. Rabiei-Dastjerdi et al. (2021) used a gap analysis approach to discover the gap between theory and practice in presenting information on location-based choice by developing a seven-factor categorisation tool and evaluating international property websites. Despite the availability of digital earth data, the findings show that real-estate websites do not provide enough location information to facilitate efficient spatial decision-making. Based on a case study in Dublin, Ireland, Rabiei-Dastjerdi et al. (2021) found that the gap continues despite neighbourhood digital earth data availability to aid decision-making. They believed there are two reasons behind this. To begin with, converting location data into useable information is a technical problem. Second, the market may be hesitant to offer location information that could be construed as negative

Table: 1 Different applications of Blockchain

Authors & times	Data	Methodologies	Results
(Latifi et al., 2019)	Interviews	design science research	Findings – One of the major pain points identified concerning the transaction process of an office building is that it is difficult to define the characteristics of a property due to a lack of data structure and quality. The

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			proposed application improves the way specific assets are understood by structuring physical and contractual
(Hoxha & Sadiku, 2019)	the questionnaire with close-ended questions	quantitative research method	Findings – The findings of this study indicate that the buyers and sellers perceive that transparency and cost reduction have the most decisive influence on the intention to adopt blockchain technology in a real estate transactions system, followed by the security of transactions.
(Garcia-Teruel 2020)		legal methodology	Findings – Blockchain, combined with smart contracts, has both challenges and opportunities for the real estate sector. On the one hand, it may improve procedures, allow EU transactions and the interconnection between public administration. However, to not reduce parties rights, this Blockchain should have some special features, such as the possibility of being amended.
(Ullah et al., 2021)	From 102 real estate and property managers		The results show that most of the respondents are aware of the DDTs and reported AI (22.5% of respondents), big data (12.75%), and VR (12.75%) as the most critical technologies not adopted due to many reasons.
(Rabiei-Dastjerdi et al., 2021)	Digital earth data	A gap analysis methodology	The results suggest that real-estate websites do not provide sufficient location information to support efficient spatial decision-making.
(Nijland & Veuger, 2019)	Field study	Semi-structured interviews	The findings revealed that the pre-marketing and due diligence phases are best to utilise Blockchain.

3. Research Model

Using regression methods to identify bubbles raises problems about model specification, estimation methodologies, and results in interpretation (Bourassa, Hoesli, & Oikarinen, 2019). One challenge is the decision between parsimony and a broader collection of variables when constructing housing supply and demand models (Bourassa et al., 2019). According to theory, several variables are thought to be crucial to the demand and supply sides of the housing market (Bourassa et al., 2019). On the demand side, these include aggregate income and interest rates, and on the supply side, construction costs, regulatory restraints, and topography (land limits). One disadvantage of a "completely" described model is that it may explain too much, such as the emergence of bubbles rather than just long-term equilibrium price levels. For example, interest rates have been identified as contributing factors to housing market asset bubbles (Kouwenberg & Zwinkels 2015).

Furthermore, interest rates tend to be mean reverting in the long run, meaning that they cannot explain long-term fluctuations in housing prices. This offers a lean modelling technique that focuses on aggregate income, with distinct models for each metropolitan region to ensure that the projected income elasticities represent the supply restrictions in each place (Bourassa et al., 2019). Both multivariate and parsimonious (univariate) models are estimated by (Bourassa et al., 2019). The multivariate models include real aggregate income, population, unemployment rates, real interest rates, real construction costs, rate spreads between 10-year and 3-month government securities. Consumer sentiment indexes on the left side and a variety of variables used in the literature on the right side, including real aggregate income, population, unemployment rates, real interest rates, real construction costs, rate spreads between 10-year and 3-month government securities, and consumer sentiment indexes (Bourassa et al., 2019). In economic terms, supply refers to the quantity of a product or service supplied at various price points. In contrast, demand refers to the amount of a product or service purchased at multiple price points. Aggregate demand modelled generally fall under three main methods: (1) historical trend: using such simple assumptions as current per capita consumption or current average annual levels; (2) regression models: using either macroeconomic indicator (such as GDP, population, unemployment rate, etc.) and (3) construction input factors: these may be either space-based (i.e., tons per sq. ft. of different types of construction).

It is essential in aggregate resources to forecast demand because the forecast facilitates an evaluation of the sufficiency of the resource supply to meet the expected demand. We developed an economic model using the multiple regression method to forecast aggregate supply and demand. The regression method is widely used in many study areas because simple assumptions can be easily modelled. This method measures the degree of influence of the independent variables on a dependent variable. A regression with two or more explanatory variables is called a multiple regression. Multiple regression is used to test the effects of n independent (predictor) variables on a single dependent (criterion) variable.

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The study employs rigorous procedures to examine these relationships, and therefore, the general model of multiple regression is given:

$$Y = \beta_0 X_0 + \beta_1 X_1, \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (1)$$

Equation (Eq. 1) is the general regression equation written. Later, we will demonstrate it in terms of the matrix equation. Now let us assume that data are to be collected. Let n data points be collected. Assume that all observations are random. In this case, the data matrix will be the dependent variable on the left side of the equation and the independent variable on the right side of the equation.

$$Y_i = \beta_0 + \beta_1 X_{i1}, \beta_2 X_{i2} + \cdots + \beta_p X_{ip} + \varepsilon_i \quad (2)$$

If it is written for all observation, that is, up to the n term, then:

$$\begin{cases} Y_1 = \beta_0 + \beta_1 X_{11} + \beta_2 X_{12} + \ldots + \beta_p X_{1p} + \varepsilon_i \\ Y_2 = \beta_0 + \beta_1 X_{21} + \beta_2 X_{22} + \ldots + \beta_p X_{2p} + \varepsilon_i \\ \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \\ Y_n = \beta_0 + \beta_1 X_{n1} + \beta_2 X_{n2} + \ldots + \beta_p X_{np} + \varepsilon_n \end{cases}$$

If it is written in matrix form, then it can be shown as follows:

$$y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_{i1} \\ \vdots \\ y_n \end{bmatrix}_{nx1} \quad x_{nxp} = \begin{bmatrix} 1 & x_{11} & x_{12} & \cdots & x_{1p} \\ 1 & x_{21} & x_{22} & \cdots & x_{2p} \\ \vdots & \vdots & \vdots & \ldots & \vdots \\ j & x_{i1} & x_{i2} & \cdots & x_{ip} \\ \vdots & \vdots & \vdots & \cdots & \vdots \\ j & x_{n1} & x_{n2} & \cdots & x_{np} \end{bmatrix}_{nx(px1)} \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \ldots \\ \vdots \\ \beta_p \end{bmatrix}_{(p+1)x1)} + \begin{bmatrix} \epsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_i \\ \vdots \\ \varepsilon_n \end{bmatrix}_{nx1}$$

The resultant model for matrix forms as multiple regression can be written as:

$$y = X\beta + \varepsilon_i \quad (3)$$

Where:
Y = nx1
X = nx(P+1) and is data matrix or design matrix
B = is (P+1) x1 and is regression coefficient
Ei = nx1 and the error terms.

4. Methodology

4.1 Sampling

Collect Sample of Size n

$$x = (x_1, x_2, \ldots\ldots, x_n)^T$$

the sample mean can be computed as:

(4)

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

The standard deviation can be computed as:

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$$s = \frac{1}{n-1}\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^T} \tag{5}$$

4.2 Estimation of Model Parameters

$$\varepsilon_i = N(0, \sigma_y^2) \tag{6}$$

$$\sigma^2 = \sigma_y^2 = \sigma_{y_1}^2 = \sigma_{y_2}^2 = \cdots \text{ for all observation}$$

Suppose that there are two error terms for y_i and for y_k then the covariance between these two will be zero as:

$$\varepsilon_i, \varepsilon_k \tag{7}$$

$$\text{cov}(\varepsilon_i, \varepsilon_k) = 0 \tag{8}$$

Which are uncorrelated error terms. So, as there are n errors, so if the covariance between the error terms is observed, then the n cross n matrix will be diagonal elements which is the variance of diagonal elements and should be 0 as:

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}_{nxn}$$

Uncorrelated error terms and normality of error follow a normal distribution with sigma square variability mean 0. So, these are the assumptions. We will test all those assumptions later when we fit the regression equation, and it is required to be tested, so once we are satisfied with the data that are examined, then when we find out that those assumptions are reasonably valid. Then we will go for a fitting, that is, estimation modelling or estimation of parameters.

4.1.1 Estimations of Parameters $(\hat{\beta})$

to estimate the beta where:

$$y = X\beta + \varepsilon_i \tag{9}$$

This is the multiple linear regression in equation (2), if we recall and can be rewritten as:

$$Y_i = \beta_0 + \beta_1 X_{i1}, \beta_2 X_{i2} + \cdots + \beta_p X_{ip} + \varepsilon_i \tag{10}$$

If little modification is done, here then this will be:

$$\varepsilon_i = y_i - \sum_{j=0}^{p} \beta_j x_{ij} \tag{11}$$

If a square of it is made, then the equation will be as follows:

$$\varepsilon_i^2 = \left[y_i - \sum_{j=0}^{p} \beta_j x_{ij} \right]^2 \tag{12}$$

This is for a particular observation. Still, there are n observations, so if summation over n is taken, the quantity is total error sum square error sum of square errors. So, it can be expressed as

$$\sum_{i=1}^{n} \varepsilon_i^2 = \sum_{i=1}^{n} \left[y_i - \sum_{i=1}^{p} \beta_j x_{ij} \right]^2 \tag{13}$$

Where:

$$\sum_{i=1}^{n} \varepsilon_i^2 = \text{SSE}$$

Now we will choose beta j values so that SSE will be minimum, so our ultimate optimisation used here is to choose beta in such a manner that SSE is the minimum. So, this can be done by going for the derivation of ∂SSE by $\partial\beta_j$ equal to zero subject to ∂^2SSE by $\partial\beta_j\, \partial p_k$, and this is greater than zero:

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$$\frac{\partial \mathrm{SSE}}{\partial \beta_j} = 0 \tag{14}$$

Subject to

$$\frac{\partial^2 \mathrm{SSE}}{\partial \beta_j \, \partial p_k} > 0 \tag{16}$$

This is indeed a Hessian matrix and is a positive definite. By positive definite, we mean that suppose A is a square matrix. Given any vector X, if X transpose X is greater than 0 as follows:

$$X^T X = 0 \tag{17}$$

That means A is positive definite, so that the Hessian matrix must be positive definite then it is the minimum condition. Now, let us write in terms of the matrix then we found out that epsilon is:

$$\varepsilon = \varepsilon_1 + \varepsilon_2, \ldots\ldots, \varepsilon_n \tag{18}$$

Which an n by one matrix.

Then by making SSE mean square sum square error, it can be written as follows

(19)

$$\mathrm{SSE} = \varepsilon^t \varepsilon$$

$$(1xn)(nx1) = nx1$$

Which gives a scalar quantity. If this is true, it can be written as follows:

$$\varepsilon^t \varepsilon = (y - x\beta)^T (y - x\beta) \tag{20}$$

because the regression equation (See: eq. 3) is:

$$y = X\beta + \varepsilon$$

By taking derivatives against beta, then equation 14, which is a square term, can be derived as follows:

$$\frac{\partial \mathrm{SSE}}{\partial \beta_j} = -2x^T (y - x\beta) = 0 \tag{21}$$

By deriving the derivatives for beta, then the following equation as minus X transpose y plus X transpose X beta equal to 0 is:

$$2x^T y + x^T x\beta = 0 \tag{22}$$

So, it can be written as X transpose X beta equal to X transpose y is equal to zero as:

$$x^T x\beta + x^T y = 0 \tag{23}$$

If both sides are multiplied by the inverse of X transpose X, then:

$$(x^T x)^{-1} (x^T x)\beta = (x^T x)^{-1} x^T y \tag{24}$$

Then to estimate the regression coefficients, it can be written as:

$$\hat{\beta} = (x^T x)^{-1} x^T y \tag{25}$$

Therefore equation 25 is a formula for estimating regression coefficients.

5. Discussion and Implications

Blockchain is an evolving technology with a wide-ranging array of implicit operations, which underpins cryptocurrency and provides an inflexible, decentralised, and transparent distributed database of digital means for use (Mathivathanan et

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al., 2021). Blockchain technology enables a network of actors who don't know or trust each other to agree on a participated administration state without counting on human intervention, a central point of control, or nonsupervisory supervision (Pelt et al., 2021). These characteristics render blockchain technologies as desirable specialised results for easing deals between parties that frequently have different interests, similar to lenders and borrowers or suppliers and guests (Schuetz & Venkatesh, 2020). Blockchain maintains a distributed digital of deals that are participated across all sharing bumps with new deals are vindicated and verified by other nodes sharing in the network, therefore barring the need for a central authority (Dorri et al., 2019).

Further, a blockchain allows for the automated prosecution of contracts (Hughes et al., 2019); (Yingli et al., 2019). Blockchain-ground can operate more efficiently and with lower costs (Ying et al. 2018); (Queiroz et al., 2019). While some countries consider cryptocurrencies digital plutocrats, others treat them as goods (Janssen et al., 2020). This demonstrates that the business community sees Blockchain as having a bright future (Yiyan et al., 2020). Still, with the emergence of bitcoin as an investment option due to its tradability as a unit of value, a heated debate over whether this prominent digital coin is a currency, a commodity, or a synthetic commodity has replaced the discussion on whether it is a currency, a commodity, or an artificial commodity (Ji et al., 2019). It has been claimed that there are challenges to broader blockchain relinquishment despite the openings it offers (Janssen et al., 2020). Indeed, with the pledges of blockchain technology, relinquishment has been slow (Kouhizadeh et al., 2021). The development of Blockchain is considered promising and provident in the modern world (Kumari et al., 2021). because it can promote cryptocurrency technology and change the traditional profitable model (Schilling & Uhlig, 2019); (Berg, 2020). The Blockchain can achieve decentralisation of online deals, and advanced specialised conditions are assessed on the Blockchain, similar to enforcing sale-sharing, thereby adding the speed of sale processing (Liu et al., 2018).

Still, numerous specialised challenges live to espouse this technology (Kouhizadeh et al., 2021). The unique dilemma of Blockchain is that no matter how good the technology is, it cannot ensure the authenticity of offline data because the data in question will be permanently stored on the Blockchain if the data source fails (Chang et al., 2020). The arenas of operation for blockchain technology are potentially innumerous. Still, while its benefits look promising, the relinquishment and deployment of Blockchain in diligence are facing numerous specialised and non-technical challenges (Pelt et al., 2021). Switching to new disruptive technology like the Blockchain involves disruptive changes for a company within the environment of technological and non-technical practices, including internal and external bones, that can be delicate to justify (Kouhizadeh et al., 2021). As a result, in 2019, Blockchain had been deposited in the order trough of disillusionment in their hype cycle for arising technologies, elevation technologies where interest has dropped as trials and executions fail to deliver (Pelt et al., 2021). There are numerous specialised challenges in using blockchain technology in banking sectors, like scalability, interoperability, and reversibility. But concentrating on security challenges is essential for this study. The top knowledge overdue Blockchain itself was in the perception of trust (Beck et al., 2016); (Hawlitschek et al. 2018); (Ometov et al., 2020). This idea is because actors cooperating inside the arrangement don't ineluctably distinguish or believe independently others nevertheless still have a chance to handle forcefully (Ometov et al., 2020). By these means, Blockchain's use eradicates the essential for the participation and ongoing conservation by the central' trusted' authority, thereby allowing the system to serve in a wholly dispersed way (Ometov et al., 2020). What should be mentioned is that the technology is in an early stage of development and thus not yet suitable for the perpetration in the real estate sector. Although multiple aviators and stoner cases could be mentioned, the technology needs to overcome some obstacles to be a better success in the current buying process of marketable real estate (Nijland & Veuger, 2019)

6. Conclusion

The Blockchain, which has already attracted attention as an innovative technology, brings about changes in the academic world. In this regard, we first provided the core aspects of blockchain technologies application in different fields of studies and provided an overview of its historical background. We discussed the application of blockchain technology in the real estate market and the advantages and disadvantages of its application in this field of study. We argued that a simple multiple regression methodology could explain the relationship between blockchain technology and the real estate market. In our future study we will focus on both simple linear regression method and multiple regression method to demonstrate the relationship between blockchain technology and housing market to ensure the valid result of the link between blockchain technology and the real estate market based on results and findings.

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