

Enactment of Blockchain in Real Estate: A Systematic Survey

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ABSTRACT

Research has demonstrated that Blockchain has been thought to be familiar with aid change in the land library procedure. This research seeks to break down the potential of this invention to further develop land registry. The examination was directed using the Efficient Writing Survey Strategy, which is a means to distinguish, analyze, and decode the available exploration. We then go on to talk about the different sectors that have proactively introduced Blockchain into the framework, as well as the pros and cons of using Blockchain in land registry. These tidbits are meant to help establish the need of adopting the innovation, and they indicate that experts have varied perspectives on Blockchain's potential in landregistry. Generally, the majority of the calculated advantages of blockchain remain experimentally unsubstantiated. Then again, the experimental applications recommend that blockchain could, for instance, increment effectiveness, lessen time, and give evidence, straightforwardness, and robotization, even in more limited size, cross breed settings. Likewise, the applications show that blockchain could, now and again, assist with decreasing extortion and increment security and trust contrasted and incorporated computerized arrangements. At long last, the experimental bits of knowledge underline the job of political will, administrative structure, accessibility of solid advanced information, public-

private associations, and instructive viewpoints in blockchain applications.

I. INTRODUCTION

Blockchain is a decentralized exchange and information. The executives innovation grew first for the Bitcoin cryptographic money in 2008. The meaning of blockchain differs in the writing, and expressed disarray exists. Blockchain can be extensively portrayed as a grouping of computerized records or "blocks" connected utilizing cryptography. Each block is irrefutable and essentially unchangeable, disseminated, and oversaw regularly in a distributed organization. The blockchain permits exchanges to happen without a middle person, giving straightforward, carefully designed, and secure frameworks that can empower new imaginative customer and business arrangements. Blockchain additionally alludes to the supporting innovation. Many surveys have inspected blockchain's true capacity, advantages, and difficulties inside the land area yet have mostly focused on one region, like land organization. Specialists included blockchain in their deliberate exploration blend of arising information innovations in the worldwide land organization area and gave a nitty gritty viewpoint of blockchain's true capacity in land organization in 2019. Nonetheless, Bennett et al. presumed that in 2019, it was basically too soon to make more extensive cases about the possible effects of blockchain on the area.

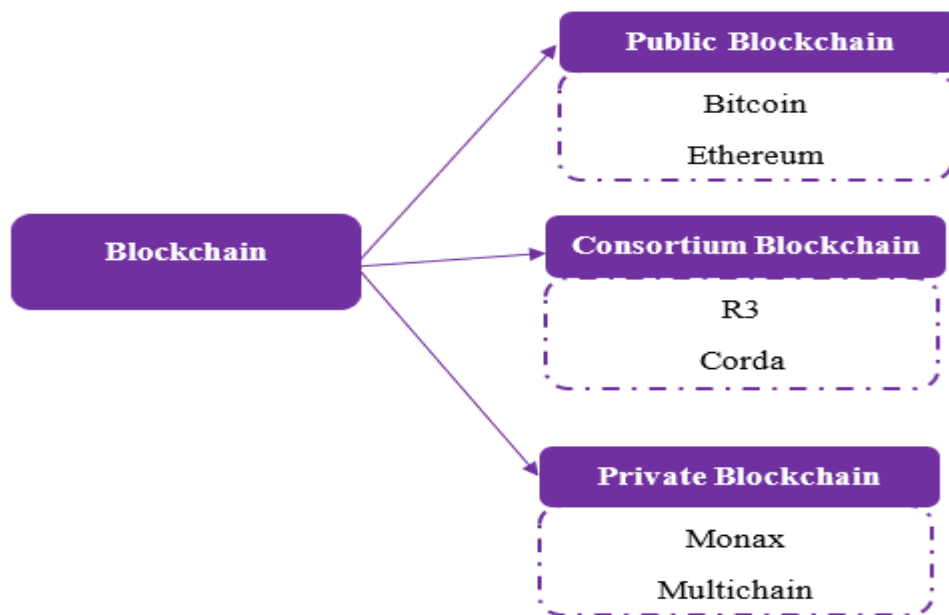


Fig. 1 Types of Blockchain

Public: There is no focal power controlling it, and it isn't confined to a solitary substance. It works with various agreement calculations, similar to confirmation of work, verification of stake, and so forth. Every one of the associated hubs have equivalent power. Normally, this is most regularly utilized blockchain and has seen productive executions like digital forms of money, bitcoin and ethereum

Private: The confidential block chain is constrained by a solitary power and is incorporated, not normal for the public power. These are generally utilized by associations to safeguard delicate data.

Consortium: It very well may be considered a subcategory of private blockchain as it is represented by various associations as opposed to a solitary association like in private blockchain. It is a permissioned blockchain, yet it is likewise more versatile than a confidential chain.

Blockchain stages related with the land area give a response as far as speed and security that can extensively diminish the gamble of misrepresentation. This novel idea raises concerns throughout the land exchange process, from the first marking of the primer deals arrangement to the signing of the deed of offer in front of the public accountant. Assuming this new computerized design without a doubt permits the mechanization of land exchanges, you ought to realize that its

utilization has proactively gone past the venture stage. This is very fascinating as far as where defilement or absence of straightforwardness entangle the subject of who possesses a real estate parcel. We might think of blockchain as a mechanism that can be used to picture the situation with properties and documents, granting complete admission to the historical context of the land or property in question. It is possible for banks, land organizations, buyers, and sellers to provide advice on the matter in an unprompted and unrestricted manner. The current examination plans to address the accompanying inquiries: How has the comprehension of blockchain reception advantages and difficulties in the land area created lately? What are the observational blockchain applications in the land area? What are the exact bits of knowledge contrasted and the hypothetical points of view in the land area?

Internationally, land has as of late been esteemed at over USD 280 trillion — a more important resource class than every overall stock, shares and securitized obligation consolidated and addresses the biggest store of abundance at three and a half times the complete worldwide Gross domestic product. In the US, the primary record of a home deal was kept in 1890, yet it was only after the 1910s that specialists started going about as go between for purchasers and venders utilizing walkthroughs, home organizing and yard signs to showcase a home. At the point when you users go

through the home selling or purchasing process with an accomplished specialist, they can depend on their insight around the nearby regulations and guidelines, yet additionally their assurance that the vender really possesses the home and the purchaser has the assets to pay for the home. While the showcasing strategies utilized during the 1910s are as yet major areas of strength for going, the cycles associated with trading land are fit to be disturbed with blockchain innovation. This cutting-edge advanced innovation could work with future land exchanges, for example, the procurement of new properties through digital currencies. As a matter of fact, a few new companies are currently depending on trading homes in cryptographic forms of money for of installment.

The appearance of new sorts of subsidizing implies that stages committed to trading products online are being made. In the event that purchasers are needing direction and sureness despite these very unstable monetary forms, a few financial backers find in these new installment strategies a choice to sidestep the cutoff points forced on the measures of worldwide exchanges upheld in certain nations.

II. REAL ESTATE LITERATURE'S RECENT EMPHASIS ON BLOCK CHAIN

Academics, state-run administrations, and commercial partners have all envisaged the potential open doors which this invention provides for their own operations, despite the fact that blockchain was first established to avoid the conventional middlemen in the issuing of currency. This was done in order to bypass the traditional intermediaries in the issuance of cash. Surprisingly, the financial sector, which was the one that was most immediately impacted by the creation of the bitcoin currency and consequently the blockchain frameworks, has thought of this innovation as an opportunity for employing it on their moves as well as b) utilizing the blockchain frameworks to their benefits. This is because the financial sector was the one that was most directly impacted by the creation of the blockchain frameworks. The blockchain provides unrivaled speed because it is built on the basis of decentralized smart contracts, which do not need the mediation of other parties. These digitalized agreements are equivalent in some way to paper contracts; nevertheless, they let gatherings to acquire all the data included and prevent their alteration. Additionally, they are more environmentally friendly than paper contracts.

By and by, most of brilliant agreements are utilized in the robotization of significant worth

trades as virtual monetary forms, the crypto resources. All the bookkeeping sections comparing to these trades of computerized values are consequently kept in the blockchain, making the exchanges noticeable and unchanging. The states of these shrewd agreements rule out uncertainty or translation present in our regular exchanges. Beginning around 2020, the land writing has begun to focus closer on blockchain reception. Curiously, regardless of whether the general blockchain writing keeps on proposing ideas and advantages in the four general classifications depicted over, the land zeroed in blockchain writing focuses fundamentally ashore organization. Tokenization additionally gets some consideration, however exchanges and land the executives get just restricted consideration. This tracking down infers that regardless of whether, hypothetically, blockchain could be embraced in four classes in the land area, the new writing recommends that not this large number of classifications are as of now important.

In the event that as of now, savvy agreements could permit land moves to be made, it is additionally conceivable to envision that they could be modified by the resources and the various partners. Moves could in this way be completed in a programmed manner as per the circumstances recently characterized in the agreement. One could likewise envision consequently paying the lawyers, appraisers, representatives and all elaborate gatherings when a property is sold. Blockchain altogether speeds up the typical cycles of the housing market. As clients approach all the data put away in the blockchain, they save a lot of time in getting information connecting with a property or land — title deeds, land library, specialized data and studies, co-proprietorship data, every last bit of it opens up day in and day out, with ongoing information and moment approval. This innovation is a genuine upheaval for realtors and financial backers the same.

Assuming that the web has upset the business area lately through the advancement of commercial centers, the blockchain stands to change the land area concerning smoothness and appropriation of data and exchanges. As the blockchain could stir up whole areas of our worldwide economy, all land callings are presently worried about the blockchain, from recording and financing to exchanges, from land speculation to examinations to resource the executives.

III. NEED OF BLOCK CHAIN IN REAL ESTATE

In 2021, organizations from different enterprises spent about \$6.6 billion to carry out blockchain innovation in their cycles. It is practically half more than in 2020. However, that is not when the interests in that frame of mind down. As per the IDC Overall Blockchain Spending Guide, the worldwide spending on this

advancement will develop by a normal of 48% yearly over the conjecture period from 2020 to 2024. It demonstrates the quick speed of blockchain innovation reception internationally. Incidentally, various enterprises have begun to apply this innovation to work on the viability of their administrations and save costs. The accompanying outline shows which areas put resources into the blockchain the most:

Global Blockchain Market Share, By Industry, 2021

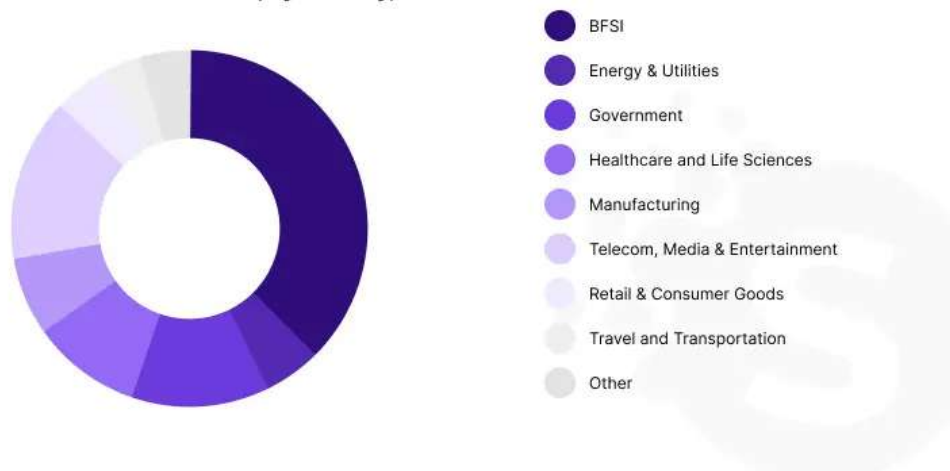


Fig. 2 Global Blockchain Market Share, 2021

Consequently, as a piece of the retail business, land can profit from blockchain execution for organization development. Researchers should figure out additional about the benefits and detriments of blockchain in land. A blockchain is a shared, immutable record that is designed to operate with the process that is used to keep track of resources and transactions in a company. Because of the availability of a single, publicly accessible form of data, the level of trust that is necessary between a buyer and a dealer may be reduced. This is because the vendor can more rapidly establish their responsibility for the property, and the buyer can more quickly demonstrate their assets in the area. In point of fact, blockchain technology has the potential to alter the manner in which people invest their resources in land even beyond the confines of a single real estate transaction. By tokenizing a property on a blockchain, a designer eliminates the requirement for customary bank funding and liberates themselves from the conventional deals timetable limitations on venture property. On the purchaser's side, extending or diminishing a position is basically as simple as tracking down a purchaser or dealer for a portion of the property. Straightforwardness is at the center of each and

every exchange. While we attempt, however much as could reasonably be expected, to consolidate it in all that we do, ultimately the current, clouded approach to trading homes will be a relic of past times. Blockchain is, obviously, not the response to every one of the issues in the land business.

Nonetheless, with the blockchain, we currently have a framework that increments trust and lessens land intermediary reliance, while working on cost effectiveness, speeding up moves of homes and, in particular, opening up roads for systems administration by making a computerized stage different administrations can integrate with. Other than this, the current issues in the ongoing land area recognized are [10]:

- ❖ Inconsistency in the straightforwardness of the dispersed economy.
- ❖ An immediate connection between the resource holders (host) and financial backers (occupant) is not present;
- ❖ High mediator or financier expenses;
- ❖ Counterfeit audits and portrayal of the property and its quality — resulting in inaccurate property data;
- ❖ A variable interior incorporated information base of online property posting;

- ❖ Above cost and time in recognizing and keeping up with property posting;
- ❖ High tedious interaction — assembling and approving important report

It has been suggested that the use of blockchain technology may make it possible to realize the disintermediation of the land conveyancing and land enrollment procedures [13]. This would address the bulk of the problems that have been raised.

IV. CHALLENGES OF BLOCK CHAIN:

Each item in this part falls into one of these three categories: the security of blockchain, the attributes of blockchain, and concerns linked to the general public. These assessments aggregate and explain the obstacles that Blockchain brings in land registration. These are connected in their own right with the three primary challenges that have been outlined in the writing: the part of the security Blockchain, worries relating to the characteristics of blockchain, and imperatives related to society. The complexity may be seen as characteristics or outcomes of Blockchain that do not add to the land repository and that also add to barriers that prevent the reception of transactions. In order to guarantee the degree of data security that is demanded by both standards and clients, arrangements that relies on blockchain technology need to apply current methodologies.

Challenge 1 - Ownership: which arises from the nature of blockchain data, which, by its very nature, is identically owned everywhere it is used. However, standards demand that there be one owner who is accountable for the security of all information when it comes to personal information.

Challenge 2 - Erasure: is difficult since blockchain records are permanent. Even in the case that the material is updated, there is still a record of how it was first presented. In any way, several customers want the capacity to totally remove their own information from a framework in order to fulfill their requirements. In addition to that, the protection standards anticipate that capability.

Challenge 3 - Brilliant Agreements: A blockchain has the capability of including tiny bits of code that, when executed, would follow through on the terms of an agreement. One example of this would be the transfer of assets when a certain event takes place. These kinds of deals are referred to be astute agreements. However, blockchain transactions are irreversible and thus need intelligent contracts that include a mechanism for exposing and correcting any errors that may have been made.

Different difficulties connected with the properties of block chain are recorded underneath:

Permanence - To be accomplished, confidential keys should be utilized - when hacked or lost, there is no broad answer for reestablish it [15].

Namelessness - Locations could be deanonymized by various computerized fingerprints, for example IPs, ways of behaving. Secrecy might cloak tax evasion, funding psychological warfare, or other unlawful action [8].

Normalization of information - Current land information are not made or held in a standard configuration and everybody talked with talked about the test looked by information normalization [22].

Adaptability of the organization - It's hard to execute continuous, enormous volume dealing with. Over-burden with the exchanges makes the issue of high exchange charges and cost instability.

Protection leakage - The blockchain is designed to be publicly viewable, and if anyone saves information that should be confidential but everyone can see the information, then there will be no security achieved [23].

Misrepresentation in Programming - Aggressors are able to take advantage of the fakes that are included inside the code to take away attributes that are associated with Blockchain [12].

The **disclosure of secret keys** allows aggressors to seize control of a record by obtaining that record's confidential key. This may be accomplished quickly by launching attacks on the organization or by capturing the hubs that are physically present [7].

Overshadow attacks are those in which the adversaries attempt to prevent the actual hubs from establishing a connection with the legitimate allies [4].

Appropriate disavowal of administration attack — The Blockchain assets are depleted by the adversaries with the aid of coordinated assaults.

V. RESEARCH GOALS AND QUESTIONS:

In spite of the fact that there are a few examinations on blockchain applied to land, as far as anyone is concerned, it doesn't exist one which contains such countless benefits and difficulties and determines in which nations blockchain is as of now executed. In this manner, we created three directing exploration questions:

Question 1: The use of blockchain technology to the procedure of land registration raises the question of what the potential benefits of this change would be?

Question 2:What are some of the obstacles that will need to be overcome in order to successfully utilize blockchain technology in the land registration process?

Question 3:Which examples of blockchain initiatives have previously been implemented for the land registry?

This analysis included all of the prior work that has investigated how blockchain technology may impact the real estate industry. The search term "blockchain AND real estate" was used to locate any results about the blockchain and real estate. We avoided the more specific phrase "land registry" in favor of the more generic "real estate" to indicate the breadth of potential uses for Blockchain technology in this sector. The search terms were used to look for publications in the following places: titles (Springer, IEEE, and Google Scholar), abstracts (ACM), both titles and abstracts (AIS and EBSCO), and abstracts, titles, and keywords (Scopus).

VI. IMPACT OF BLOCK CHAIN IN REAL ESTATE

The business land industry has encountered a drop in development throughout recent years. It dealt with certain issues that remain issues with this market development. Simultaneously, blockchain improvement makes answers for resolve these issues. In this way, how about we uncover what the basic land industry issues are and how blockchain applications can assist with beating them:

6.1 Lack of Transparency

One of land's most concerning issues is the absolute absence of straightforwardness between the project workers, which causes defilement, misrepresentation, and illegal tax avoidance and forestalls industry development. However, one of the fundamental advantages of blockchain in land is shared secure data sets. Renting, buying, and deal exchange records become common sense, so real estate professionals don't wind up offending one another. Numerous posting administrations, which group property-level data from the confidential data sets of representatives and specialists, are a great representation of why this new tech is so basic.

Numerous autonomous gatherings can likewise utilize the blockchain-empowered information base, yet just those that ought to genuinely approach it. Thus, just project workers engaged with land the board, like the proprietors, occupants, banks, financial backers, administrators, and other specialist co-ops, can continuously have steady and quick access and capacities to adjust or add required data. With blockchain, land members can access and have the equivalent blockchain tech. They don't have to have the information honesty fears they once did. In this manner, blockchain permits constructing a stage for all gatherings for secure, straightforward, and quicker correspondence, mechanization, tokenization, and admittance to ongoing data, which are all exceptionally esteemed in land.

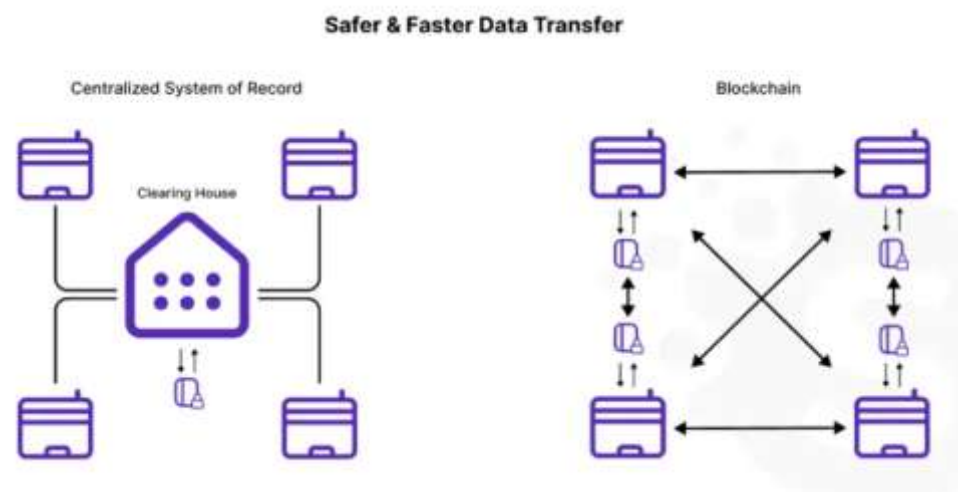


Fig. 3 Blockchain transparency solution

6.2 Smart Contracts

When it comes to storing records, the real estate business has been focusing on blockchain

technology. Smart contracts, on the other hand, suggest a future in which buying and selling real estate will be as simple as online shopping.

Contracts that are "smart" are made up of lines of code that are kept on a blockchain and automatically carry out their terms and conditions when such conditions are satisfied. They are, at their most fundamental level, programs that operate in accordance with the parameters that were established for them to operate in by the individuals

who designed them. Instead of the convoluted procedure that is presently in place, in which each person participating in the transaction contributes to an increase in the price of a piece of property by means of their fee, participants might establish confidence with one another by adhering to a singular version of the truth.

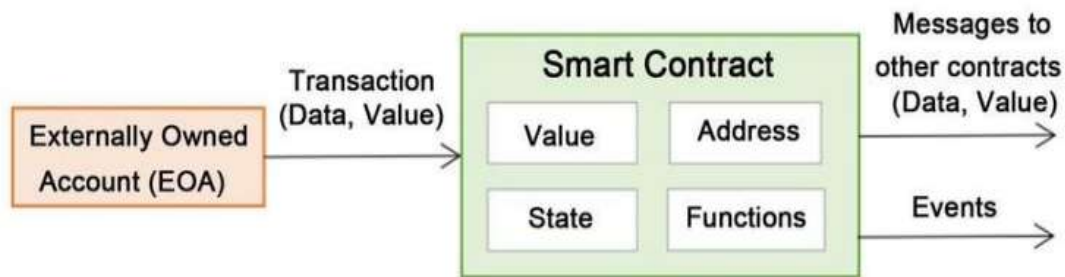


Fig. 4 Smart Contracts

If a mortgage lender can access your identifying data that is recorded on a blockchain, they will be able to make a decision on your credit much more quickly. The next step would be for the bank, the agent, and the mortgage lender to come to an agreement over the terms of a "smart contract." This would ensure that the mortgage lender would keep the property after the funds have been transferred to the agent, and that the process of repaying the debt would begin in accordance with the terms that had been previously stipulated. Because the transaction is recorded on a blockchain and disseminated among the participants, who may check the progress of the operation at any time, it is possible for ownership to be changed without the involvement of any humans beings.

6.3 Data Management

Another land issue is ill-advised record-keeping, which is basic for quick business processes. With blockchain, all elements get computerized characters that can't be mixed up or appropriated. It prompts more straightforward record-keeping with property titles, liens, or supporting. Presently, this innovation permits making title organizations to be disintermediated through blockchain.

6.4 Tokenization

Tokens are a computerized store for esteem. In land, tokenization happens when a possession premium happens through a token and can be addressed by numerous things like responsibility for resource, value in the

responsibility for resource, some portion of the obligation got by the property, income from the property, and others. However like a land speculation trust, tokenized land contrasts in that resources are substantially more adaptable and have less expenses from go between. The significant advantages for tokenizing land, as well as all illiquid resources are: extra liquidity, lower speculation hindrances, programmable protections and security and permanence.

A token is a document of a number that is held by a certain address but which may be divided up and transmitted to another address. This record may be split up and sent to another address. Tokens are able to be split up and distributed to a number of different addresses. Because a token is a component of the ledger and can be distinguished as a distinct unit of consideration, it is the technology through which users may build legal links by tying it with specific property rights [8]. Because a token is an element of the ledger and can be identified as a one-of-a-kind unit of account, it is the technology that users may form legally binding transactions with one another via. Tokens are a digital representation of the economic worth and ownership of property, and as a technological term, they are the closest response to the legal idea of titles [22,8]. Tokens may also be thought of as a digital version of physical titles. Tokens are a digital representation of the ownership of a piece of property as well as its monetary worth. Users now have the ability to issue new tokens, update current tokens, delete tokens, and transfer tokens inside the

blockchain thanks to a mechanism that is based on public-key cryptography.

6.5 Decentralization

Trust is a significant piece of the land business and blockchain can empower trust, however co-opetition between murky organizations. While most of the land business has been centered around blockchain for record-keeping, a couple of cutting-edge players have rushed to see the benefits both brilliant agreements and tokenization could offer. These players will be all around arranged to assist their clients with making the most of the potential future open doors empowered by blockchain innovation.

Despite the fact that blockchain can possibly disturb the business, whether it's a \$18 million arrangement in Aspen or a brilliant agreement that makes purchasing a home as simple as looking for toothpaste, realtors will keep on flourishing. This element has a few results, for example, the preclusion of the erasure of information, meaning whenever something is distributed - an exchange or client's information - , it can't be modified which raises worries about security [9]. Albeit decentralized administration is appealing, useful execution isn't feasible now and some extra improvement at the specialized, political, and authoritative level is required

6.6 Slow and Dangerous Exchanges

Numerous land exchanges accompany contingent statements, need a long-lasting to continue, and should be moved securely. Subsequently, the exchange can be all the more productively executed through blockchain. For instance, a buy deal exchange could rely upon title clearances or credit endorsements. With blockchain, land elements can check whether those exchanges have been authorized and conditions have been met. One more issue with land is that it should be safer and safeguarded against malware. Blockchain settles that by giving a higher security standard of information encryption. Thus, blockchain in business land organizations can guarantee wellbeing and high velocity of exchanges.

6.7 Property The executives Mechanization

The utilization of blockchain innovation in land will dispose of manual desk work and the need to utilize various programming programs. That will be all swapped by blockchain tech for improvement and up-degree. A solitary decentralized application with blockchain-upheld brilliant agreements will make the entire property the executives interaction

effective. It will prompt diminished expenses and time spent on authoritative errands.

6.8 Shared Possession and Venture

Blockchain innovation changes land by empowering fragmentary proprietorship and speculation. Buying land requires critical speculation, particularly given the consistent ascent in property costs. Through the blockchain, financial backers can pool their assets and purchase their portion of a property they couldn't buy freely. Moreover, shared proprietorship empowers financial backers to sell their possession stake at whatever point they need. It additionally permits them to stay away from self-administration of land: its upkeep or rent, which frequently requires significant exertion.

6.9 Worldwide Resource Dissemination

The vast majority of what we referenced above, like land tokenization, expanded liquidity, savvy agreements, and better exchange straightforwardness, is considerably more critical assuming you take a gander at it universally. The utilization of blockchain in land exceeds all logical limitations. This innovation makes it conceivable to make a widespread procedure for trading property with devices justifiable to clients and dealers around the world. Brilliant agreements will empower you to robotize all deals exchanges and affirm their legitimacy progressively. Shrewd agreements in business land will empower you to computerize all deals exchanges and affirm their legitimacy continuously.

Despite business hours or ends of the week, all exchanges on the blockchain are handled quickly. Subsequently, blockchain innovation for land diminishes the limits brought about by geological factors and offers a general framework for selling property. Indeed, these utilization cases for blockchain in land have shown you how promising this innovation is around here area.

VII. OPPORTUNITIES OF RESEARCH IMPLEMENTATION

This section includes a table that summarizes the benefits that Blockchain technology brings to the realm of land registration. The qualities or possibilities of Blockchain that contribute to or add benefit to land registration are what are referred to as the benefits, and they are detailed in the papers that were just reviewed up above.

P2P (peer to peer) transactions are able to take place without the participation of a reliable third party like a bank, notary, broker, or cadastre.

All participants have **unrestricted access** to the data and/or may conduct transactions without interference from the system. All individuals and organizations have simultaneous access to the information, which is presented in a unified data format.

Increased productivity and speed thanks to the simple installation, connection, and expansion of the system. The input for internal operations and analysis may be formed from data that is both structured and standardized.

Decentralization is one of the most beneficial aspects of blockchain technology since it eliminates the possibility of a network having a single point of failure, hence increasing its resistance to malicious assaults.

Tokenization - The process of tokenizing real estate involves the distribution of digital tokens that each reflect a fractional ownership stake in the underlying property.

Immutability of records - The data stored in a blockchain is, in theory, incapable of being changed, and as a result, it cannot be arbitrarily manipulated.

The use of **smart contracts** will revolutionize the real estate industry by lowering transaction costs and improving accessibility as well as speed.

VIII. CONCLUSION

Indeed, blockchain for land improvement has a few challenges. Specialized and legitimate protests are presently the main difficulties to blockchain in land. Blockchain land projects can't get totally going until this innovation is examined and consummated. The market is as yet encountering issues since there aren't an adequate number of specialists in blockchain improvement. Lawful guidelines in all states have not yet taken on blockchain. While some blockchain advancements are now being used across different land applications, a few buyers have no faith in them yet as they are not legally supported. Once the blockchain is all the more generally acknowledged and perceived, anticipate that it should turn into a genuine staple of the land business. Blockchain reception in land is anticipated to require 10 to 15 years. Yet, it is coming, and when the pieces start to make sense all the more quickly, expect a total upgrade of the business that will help all interested parties. Additionally, there are as yet numerous unseen things about utilizing blockchain joined with computer-based intelligence, ML, enormous information, and IoT advancements that can permit

building answers for different issues in the land business today. Blockchain land exchanges might appear to be a piece new right now. Be that as it may, they have such countless commonsense applications in security, simplicity of information access, and the different focuses recently referenced.

The flow research has given a complete, cutting-edge evaluation of blockchain potential and applications in the land area by spanning hypothetical viewpoints with experimental bits of knowledge. It adds to general blockchain research by obviously recognizing hypothetical and exactly evaluated blockchain advantages and difficulties. Blockchain land recommendations have arisen in four classes: land organization, land exchanges, tokenization, and land the executives, however late improvements have zeroed in basically ashore organization and tokenization. Past exploration exhibited that Blockchain as of now has a spot in land conveyancing. Despite this reality, we need to stay unbiased as we would like to think of the reception of Blockchain. This examination exhibits that the utilization of Blockchain has the two limitations and advantages.

REFERENCES

- [1]. Bostan Consulting Group. (2020, April 6). COVID-19 consumer sentiment snapshot: Fighting in the dark. [Ebook].
- [2]. "Innovations Using Blockchain-Part 1," in ITProfessional, vol. 21, no. 4, pp. 14-15, 1 July-Aug.2019.
- [3]. M. Laarabi, A. Maach and A. S. Hafid, "Smartcontracts and over-enforcement: Analytical considerations on Smart Contracts as Legal Contracts," 2020 1st International Conference on Innovative Research in Applied Science, Engineering and Technology (IRASET), Meknes, Morocco, 2020, pp. 1-6
- [4]. M. Nandi, R. K. Bhattacharjee, A. Jha and F. A. Barbhuiya, "A secured land registration framework on Blockchain," 2020 Third ISEA Conference on Security and Privacy (ISEA-ISAP), Guwahati, India, 2020, pp. 130-138.
- [5]. B. H. Lange, "Message from The Executive Director: Is Blockchain in Our Future?" in SMPTE Motion Imaging Journal, vol. 127, no. 9, pp. 6-6, Oct. 2018
- [6]. D. Bhanushali, A. Koul, S. Sharma and B. Shaikh, "Blockchain to Prevent Fraudulent Activities: Buying and Selling Property Using Blockchain," 2020 International Conference on Inventive

- Computation Technologies(ICICT), Coimbatore, India, 2020, pp. 705-709
- [7]. Alharby, M and Moorsel, V, A (2017). Blockchain Based Smart Contracts :ASystematic Mapping Study [online].
- [8]. Baum, A (2020). Tokenisation – The Future of Real Estate Investment?[Online].
- [9]. Rrigoriev V.V., Protopopova N.I., Carriers S.Yu. Prospects for the of Use outlook newinformation technologies in the modern economy. ISC, Springer – 2018. – p. 125 – 129.
- [10]. Swan Meloni. Blockchain: a blueprint for the new economy. M.,Olymp-Business, 2017. -240 p.[3] Parkin V. To Be or not to be: blockchain in the Russian real estate market [Elektronikresourse] URL: <https://www.urbanus.ru/ng-aktualno/2017-12-28/byt-ili-ne-byt-blokchejnnarossijjskom-rynke-nedvizhimosti> (data of issue 28.12. 2017).
- [11]. Shustov D. Blockchain in real estate. [Elektronikresourse] URL:<https://blockchain3.ru/blokchejn/blokchejnvnedvizhimosti>
- [12]. Tapscott D., Tapscott A. Blockchain technology: what drives the financial revolution today.M., Eksmo. 2019, 448 p.
- [13]. Demina M. I., Zbikowski K. V. Application of blockchain technology in the field of real estate.Proceedings of the conference of the Ural Federal University. Initial President of Russia BorisYeltsin. 2018. p. 128-123.
- [14]. Vigna P., Casey M. The age of cryptocurrencies. M., Mann, Ivanov, Ferber,2017. - 432 p.
- [15]. Fedotova V. V., Emelyanov B. G., Tipner L. M. The concept of blockchain and its possible
- [16]. Tarasenko E. Examples of blockchain technology in real estate and its implementation.[Elektronikresourse] URL: <https://merehead.com/ru/blog/top-benefits-blockchain-real-estate>(data of issue 4.12.2019).
- [17]. Arefev A. P. Gogokhia G. G. The prospects for implementation of blockchain technology.Moscow, Young scientist, 2017, No 5.- p. 326 – 330.
- [18]. Dorokhov V. V. Blockchain technologies – the future of the financial system, Moscow, Moderninnovations, No 6 / 8 /, 2016, p. 44-46.[12] Gref G. O. Russia needs a new management system. BBC [Electronic resource] URL: http://www.bbc.com/russtan/bysiness/2016/05/160522_gref_skolkovo_lecture
- [19]. Strembitskaya P. B., Babayan P. G. Cryptocurrency in the financial services sector: newopportunities on the example of blockchain //The collection of articles of the Internationalscientific and practical conference. Under the General ed. G. Yu. Gulyaev – 2017 – p. 146 -148.
- [20]. Konorev N., Mazurov P. Prospects for using blockchain technology in the Republic of Belarus.Banking Bulletin, No 2. – 2017. – p. 66 -71.
- [21]. Kalukhov V. "The main thing in blockchain is not to outlive the expectations of the public"[Electronic resource] URL:<http://bankir.ru/publikacii/20160429/vadim-kalukhov-v-blokcheine-glavnoe-ne-perezhech-ozhidaniya-publiki-10007496/> (date of issue 25.03.2017).
- [22]. All about the blockchain. 10 most frequently asked questions of Runet users. The informationresource "ROCIT". 2017.
- [23]. Grigoriev V.V., Protopopova N.I., Carriers S.Yu. Prospects for the of Use outlook new information technologies in the modern economy. ISC, Springer – 2018. – p. 125 – 129.
- [24]. Swan Meloni. Blockchain: a blueprint for the new economy. M.,Olymp-Business, 2017. -240 p.
- [25]. Parkin V. To Be or not to be: blockchain in the Russian real estate market [Elektronik resourse] URL: <https://www.urbanus.ru/ng-aktualno/2017-12-28/byt-ili-ne-byt-blokchejnnarossijjskom-rynke-nedvizhimosti> (data of issue 28.12. 2017).
- [26]. Shustov D. Blockchain in real estate. [Elektronikresourse] URL: <https://blockchain3.ru/blokchejn/blokchejnvnedvizhimosti> (data of issue 17.09.2018).
- [27]. Tapscott D., Tapscott A. Blockchain technology: what drives the financial revolution today. M., Eksmo. 2019, 448 p