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Blockchain for Real Estate Industry

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Abstract

Blockchain technology is one of the latest technologies on the horizon and has evolved over the last 7-10 years. There is tremendous potential for usage of Blockchain technology in today's Real Estate industry. This paper aims to analyze the disruptive power of Blockchain digital technologies in the real estate industry. This paper will start with an introduction of the blockchain technology and high-level technical overview. It will then go on to discuss the various benefits the Real Estate industry can reap from this technology. It will also put forth various use cases or opportunities in the Real Estate sector for this technology. In the end, the paper will also discuss the present-day limitations and the questions marks over this technology in relation to its usage for the Real Estate industry.
Keywords: Technology; Governance; Globalization; Protocols; Blockchain; Cybersecurity; Online contracts.

1. Introduction

Real estate is a unique and complex asset class. Real estate differs from other asset classes by having high transaction costs, land use regulations and other barriers to entry, longlasting improvements, and a relatively slow reaction of supply to changes in demand. These characteristics have implications for the overall efficiency of the market. In response to greater demand for transparency, technology advancements and the disintermediation by startups are gradually making some of the information public. As a result, property related information is increasingly available in digital and paper form. However, a significant portion of the digitized information is hosted on disparate systems, which results in a lack of transparency and efficiency, and a higher incidence of inaccuracies that creates a greater potential for fraud. Blockchain technology could enable the commercial real estate industry to address these inefficiencies and inaccuracies. Simply said, blockchain is a digital peer to peer platform that allows transactions between two parties without the need for a central institution. The blockchain is a globally distributed ledger, which facilitates the movement of assets across the world in seconds, with only a minimal transaction fee.

.For most people buying a home is one of the most important and critical decisions in their lifetimes, at the same time it is also one of the biggest investments they will ever make. There are multiple agencies and agents, websites, other channels through which people can find a property to buy or put their own property up for sale. Such real Estate transactions have been happening since time immemorial, the advent of technology in the last 25 years has brought the buyer and seller much closer and has provided both with better and more choices. But there have been few technological advancements which have made these transactions more secure, safer, cheaper, and faster for the buyer, lender and other stakeholders.

"According to HomeInsight, the typical homeowner sells his or her home every five-seven years, and the average individual will move 11.7 times during his or her lifetime. While most normal Americans will not note the differences in the changes to the international art trade, the changes within the real estate market directly affect millions of people every year."

In this paper we will look at the ways Blockchain is going to disrupt the Real Estate market: by making transactions much faster, more secure and transparent, making investments safer and reducing the cost of transactions.

2. Methodology

Due to the explorative character of this study, the research strategy is of a qualitative nature. This research will encourage the connection between a literature study, developments of the blockchain and practitioners. It seeks to bring theory and practice together in the pursuit of developing practical solutions for parties involved in the real estate management process concerning blockchain technology. Gathering empirical results are based on two types of research methods, literature study, and interviews. The literature study covers the concept of blockchain technology and real estate management, whereas the interview focusses on the implementation of blockchain in real estate. These methods are captured in the research model as shown below.

Theoretical Framework
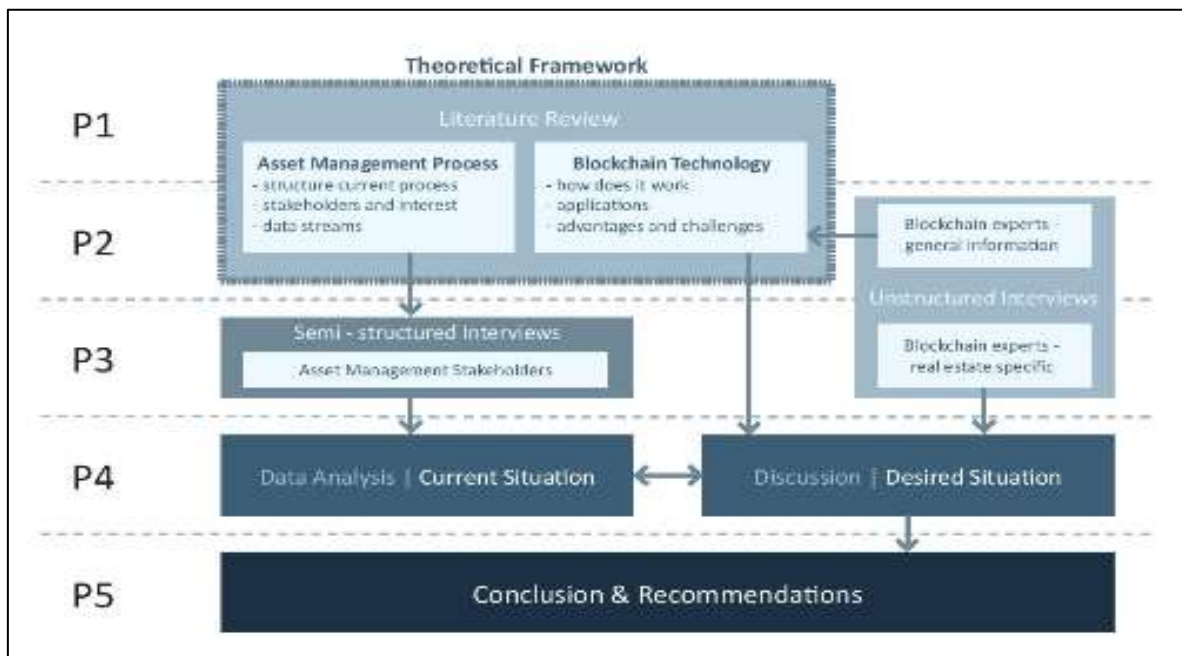
3. What is Blockchain

The blockchain is a digital, distributed, decentralized ledger which immutably records all transactions. It is a tool to manage the information, the records of all transactions. Data/transactions on the Blockchain cannot be manipulated or tampered with as it is a distributed database with separate computers spread across the network of users who store and verify each block of information. Each node on the network contains a copy of the Blockchain and all historical transactions. All these transactions on the Blockchain are timestamped. Hence no single user can fraudulently manipulate the data.

The blockchain is an economic layer for the internet, providing a protocol for tokens of value to be transferred on a peer-to-peer (P2P) basis without the need for central agents. Not only can these tokens be used as a form of currency and a payment system but tokens can represent other forms of value such as stocks, bonds, votes, and in the case of this paper, real estate transaction information.

"This is why the blockchain is often referred to as the "financial internet." As Patrick Byrne, CEO of Overstock.com, notes: "If the advent of the Internet allowed for the transfer of information, blockchain allows for the transfer of value."

"According to a 2015 World Economic Forum survey of 800 executives and information and communications technology sector experts, 57.9 percent of the respondents believe that 10 percent of the global GDP information will be stored on blockchain technology by 2025."

Data is created by each and every transaction whether it's buying a house, a car, a toy or some artwork. Multiple new and unique data elements are created for each transaction such as a purchaser, seller, purchase date and time, purchase amount, etc. This data bundle as a block and the blocks are chained sequentially using algorithms generated at each transaction (hashes). No block can be added to the chain if the hashes are not replicated by all key users (called nodes) in the network. Thus, the integrity of the transactions is maintained.

4. Blockchain and Real Estate

Let us have a look at some of the use cases for Blockchain adoption in real estate transactions.
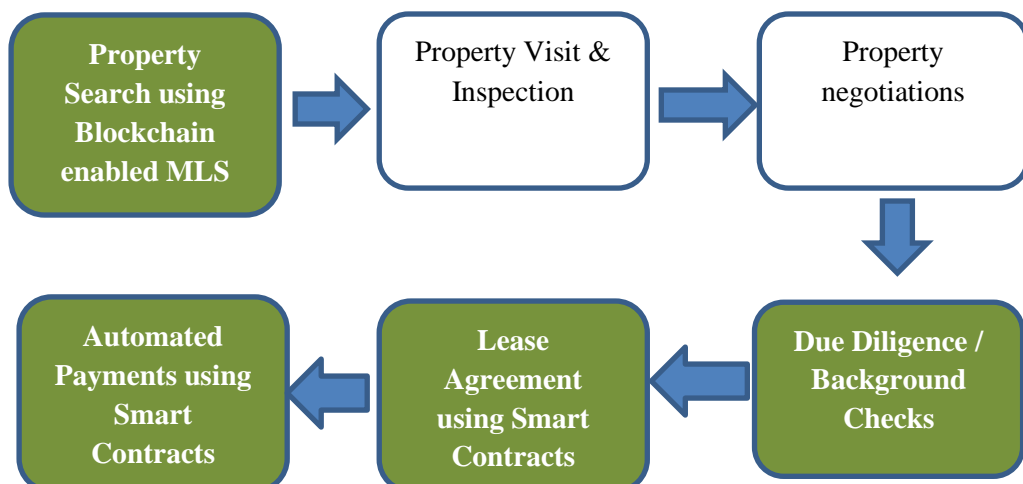
5. Property Search Using Blockchain Enabled MLS

For any Real Estate transaction, all the actors in the transaction currently depend on Multiple Listing Services (MLS) for accessing the details about a property. The property listing on MLS provides relevant information such as location, availability, features, and rent of the property.

However, there are a few problems with the way the MLS platforms currently function. Firstly, these MLS platforms typically work on the subscription-based model, causing the users to shell out a lot of money to have continued access to the listings. Secondly, the information about properties available in these listings may not always be accurate or up-to-date, leading to low levels of trust in the quality of listing information provided by the platform. Lastly, due to the disjointed nature of data on MLS platforms, the search process on these platforms is not very efficient, causing delays in important decisions during the transaction.

A blockchain based MLS would enable the listing data to be distributed across a peer-to-peer network, making the data more trustworthy and accurate in nature. A public blockchain based MLS can provide the users access to listing information for free or at a much lower cost that now. The accuracy of listing information would generate more confidence in the users, and they would not mind having access to much more reliable data at a much lower cost. This architecture would also make the search process more efficient for users.

6. Due Diligence/Background Checks

Once the desired property has been found and inspected, the next step in a Real Estate transaction is the due diligence and background check regarding the property. This includes a review of financial and legal documents such as ownership proof, title documents, historical data on tenants and repair activities carried out on the property. Currently, these documents are mostly stored as physical documents, and the verification process is done manually. This makes it an inefficient process prone to human errors and the involvement of various third-party service providers makes it a typically lengthy process.

Involving blockchain technology in the due diligence process will enable the real estate industry to simplify this tedious process. The data regarding any property can be stored as a digital record in a blockchain based platform. This digital record of a property can consolidate all the necessary information about a property such as ownership records, title data, tenant profile, financial and ledger data, thereby eliminating the necessity of third party service providers. These digital identities of properties can greatly reduce the inefficiencies and inaccuracies currently embroiling the background check process.

7. Purchase/Lease agreements using Smart Contracts

Due to the sheer number of people involved in a single Real Estate transaction such as landlords, tenants, brokers, property managers, and various vendors, managing the complexity of lease agreements, property operations, and cash flows is a very challenging task. A number of payments and service transactions have to be documented on a regular basis from the commencement of the lease agreement.

To manage this complex system, a real estate lease can be executed using "Smart Contracts" based on blockchain technology. According to Nick Szabo, a prominent thought leader of blockchain and smart contracts, "a smart contract is a set of promises, specified in the digital form, including protocols within which the parties perform on these promises." For the real estate industry, it would mean that the traditional lease contract with all its intricacies can be replaced by a transparent and automated smart tenancy contract. Once the lease terms are fed into the smart contract, it will automatically record the payments and service transactions on a regular basis without any need for human intervention.

8. Automated Payments and Cash Flow Management

Just like the execution of a real estate lease, managing the payments and cash flow in a Real Estate transaction is a complicated subject. Not only the tenant is required to make payments to the landlord as specified in the lease contract, but this cash flow is also subjected to rigorous investigation by auditors, banking, and other financial institutions. As a result, real estate companies invest heavily in accounting, compliance and cash flow management activities.

Similar to a real estate lease mentioned above, payments and cash flow can also be automated using blockchain based Smart Contracts. The parties involved in a Real Estate transaction can digitally sign the Smart Tenancy Contract, which includes details of payment terms and frequency, among other information. Based on the information fed to the system, the Smart Tenancy Contract can initiate lease payment to the landlord or other vendors, as outlined in the contract. At the end of the term of the lease, the Smart Tenancy Contract can trigger the payment of security deposit back to the tenant after adjusting charges. This way, the teams investigating the payment and cash flow activities such as auditors, banks, and financial institutions can get all the appropriate information from a single incorruptible source of information by means of the Smart Contract.

9. Benefits and Limitations of Blockchain

The Real Estate industry has gradually awakened to the benefits of Blockchain technology and has recognized its importance in addressing the inadequacies and imprecisions currently prevalent in the industry. This realization has resulted in the formation of "International Blockchain Real Estate Association" (IBREA), non-profit, member-

focused advocacy, educational, and trade organization dedicated to implementing Bitcoin and other blockchain technologies in real estate. IBREA was founded in 2013 in Orange County California and has quickly grown to nearly 3,000 members in 17 countries today.

Just like any new technology that surfaces in the market, Blockchain technology comes with the promise of revolutionizing the business processes and the expectation of completely transforming the current industry landscape. Since Blockchain technology is currently in a bourgeoning stage in the real estate industry, many of its apparently obvious use cases will likely be determined through continuous experimentation. Although it seems to be a good idea, in theory, to automate all the processes in a Real Estate transaction using this technology, in reality, the participation of few reliable mediators by way of human touch will always be required in real estate.

9. Standards, Security, Privacy, Performance, Scalability

Are some of the major challenges that will need to be solved for the Blockchain technology to gain wider and faster acceptance. **Custom blockchains** will be needed for a wide variety of applications, at the same time uniform technical standards will have to be developed and agreed upon in order to ensure compatibility across industries. Large energy consumption, initial costs, and cultural adoption are other possible limiting factors.

10. Conclusion

Blockchain technology has the potential to drive accountability, competency, and profitability within the real estate industry by removing the prevailing inadequacies in the system. As blockchain technology continues to evolve, it is imperative for the Real Estate industry to take notice of its usefulness and revisit their current business models, processes, and strategies, thereby building a feasible adoption plan for this technology that best serves their business.

The key to using blockchain technology in real estate management is creating a digital representation of a property in the blockchain as revealed by this study. The property can be represented by a smart token which consists of or is linked to four different fields of information which are general information, commercial information, technical information, and financial information. The biggest added value of the use of blockchain is that all stakeholders can rely on the same data, and they do not have to check the data repeatedly. Another great added value of using this token system is that this will streamline real estate transactions and due diligence becomes more efficient, since in the current situation often important documents of property are lacking or missing. The blockchain-based transaction may potentially save time and therefore money.

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