A NOVEL BLOCKCHAIN TECHNOLOGIES FOR PROPERTY TITLE MANAGEMENT SECTOR

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Abstract

Abstract— This research paper will introduce the novel concept of blockchain technology, starting with a high level technical overview of how the technology works, as well as its benefits and limitations. Blockchain was originally developed as the technology behind cryptocurrencies like Bitcoin. A vast, worldwide distributed ledger running on millions of devices, it is capable of recording anything of value. Money, equities, bonds, titles, deeds, contracts, and virtually all other kinds of assets can be moved and stored securely, privately, and from peer to peer, because trust is recognized not by powerful intermediaries like banks and governments, but by network consensus, cryptography, collaboration, and clever code. This paper examines how those technologies have been applied to land registries and real estate to date and considers how blockchain and registries may evolve going forward. During this paper we tend to discuss the issues of Property title Management in Current Traditional Method and review existing analysis that forms the background for future analysis during this space. Specially, we'll review our work on a Blockchain Technology for Property Title Management. The main aim is to understand current real estate title systems and technologies in order to identify their benefits and limitations.

Keywords: **Blockchain, Blockchain, cryptocurrency, Smart real estate, security.**

I. INTRODUCTION

Today, Blockchain Technology is allowing even greater specialization which results on one hand on the greater sum of knowledge deployed, improved quality and safety and higher productivity. But on the other, it is also causing more fragmentation [1]. Blockchain Technology Introduced in 2009 as the core mechanism for the Bitcoin, it enables the creation of a decentralized environment, where transactions and data are not under the control of any third party organization. Blockchain is poised to redefine how we make transactions in the same way that the internet has redefined how we communicate and share information [2]. Blockchain has lead to the creation (and loss) of millions of fortunes, the launch of hundreds of new companies, billions of dollars in investor funding and, most commonly for the non-technical, a lot of confusion around its true benefits. Blockchain technology, is consider to be necessary for forming the backbone for ensuring enhanced security and privacy for various applications in many other domains including the Internet of Things (IoT) eco-system[4][10]. Many research is currently being conducted in both academia and industry applying Blockchain in varied domains. Blockchain technology enables distributed, encrypted and secure logging of digital transactions. It is the underlying technology of Bitcoin and other cryptocurrencies. Blockchain is expected to revolutionize computing in several areas, particularly where centralization was unnatural and privacy was important. Because Bitcoin and ewallets are related to money, there is obvious additional sensitivity in end-user applications and consumer trust that services need to establish. There are many cryptocurrency security issues to address to engender a crypto-literate public with usable customer wallets, including how to back up your money, what to do if you lose your private key, and what to do if you received a proscribed (i.e., previously stolen) coin in a transaction and now cannot get rid of it. However, these issues are being addressed by the

blockchain industry,and alternative currencies can take advantage of being just another node in the ongoing progression of financial technology (fintech) that includes ATMs, online banking, and now Apple Pay[1].

II. LITERATURE REVIEW

The current trend, researchers claim that the block chain technology is how people in the forthcoming, will be keeping records and histories of communications and events and which would be very beneficial if it was applied to the property sector but acceptance will take time as it's a new technology and can be complicated and as yet, the benefits do not outweigh the costs for implementing such a technology [5]. Among the most prominent industries that have adopted the blockchain technology are real estate, insurance, loans, copyright, and the legal sector. As follows, we provide an industry overview for the real estate industry, including a brief introduction on the employment and potential for blockchain within the sector and a detailed list of those projects that are already being implemented[7]. In the farther future, different classes of blockchains for different kinds of applications could be optimized. Maybe there could be daily purchase blockchains for the grocery store and coffee shop purchases, and others for large-ticket items like real estate and automobiles. More stridently different functionality is needed for noneconomic-market blockchains, for government services, intellectual property registration, notary services, science activities, and health-record keeping. The key question is distinguishing the economic principles needed for the different range of functions with which blockchain technology could be helpful. However, not every operation is one of value registration and exchange [1]. The primitive methods of recording real estate data have had a significant impact in the valuations of property in India. However, India also has the same problem in recording real estate data since its inception and block chain technology has the capability to overcome the problems arising from it like manipulation of data and inordinate delays. Therefore, an incorruptible technology should be implemented. There is a difference in which land registration and the keeping land records has evolved over the years. In India, throughout the colonial period, forests and urban areas were excluded from the recording system and instead, areas with potential for agriculture were documented. This was mostly due to the agricultural potential of those areas for which the farmers had to pay taxes which had become one of the main sources of the government income at the time. After independence, the newly formed government of India decided to keep the same method of record keeping.

Smart contracts are although programmed much like the normal programming languages used today but differ in the way that they are user defined programs that stipulate regulations in transactions of the underlying asset. Also, compared to outmoded financial or real estate contracts, they would have lower legal and transactional fee and might be able to lower the barriers for entry of new users[9]. Rural areas were handled in the same way with the Revenue Department maintaining all the records of the land as well as keeping a record of the tax collection from these areas and in urban areas, people relied on deeds which were verified through the Stamps and Registration Department of the locality. As time passed, little or no attention was paid in making this system up to date or amending it to provide transparency. This has caused enormous gaps between the legislation and the policy which can be blamed on the political influences of the country not taking it seriously or for their own benefits and unfair gains [7] [8].

III. METHODOLOGY

The methodology which will be applied for this research paper is by making a questionnaire which would be a universal one and would be filled out by real estate agents, developers, investors, people who are currently working on the block chain technology in india as well as people in the fintech space working in india[3].

The purpose of a blockchain is straightforward. As it is a peer-to-peer network, a user needs to start a transaction. Once done, a block is billed to the said transaction. The transaction block is also broadcasted to the network, and all the nodes in the network get the

said information. The block is then mined and validated. It is also added to the chain, followed by a successful transaction [7]. A Blockchain is a chain of blocks which contain information. The data which is stored inside a block depends on the type of blockchain. The Figure 1. Shows the Blockchain architecture by understanding its various components. A Blockchain is a chain of blocks which comprise information. The data which is stored inside a block depends on the type of blockchain.
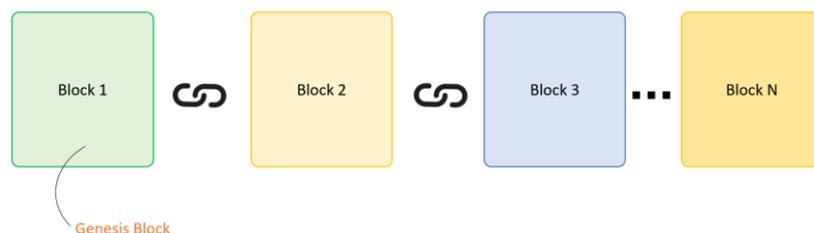

Fig. 1 The Blockchain Architecture

The blockchain architecture consists of a few fundamental concepts like decentralization, digital signature, mining and data integrity.
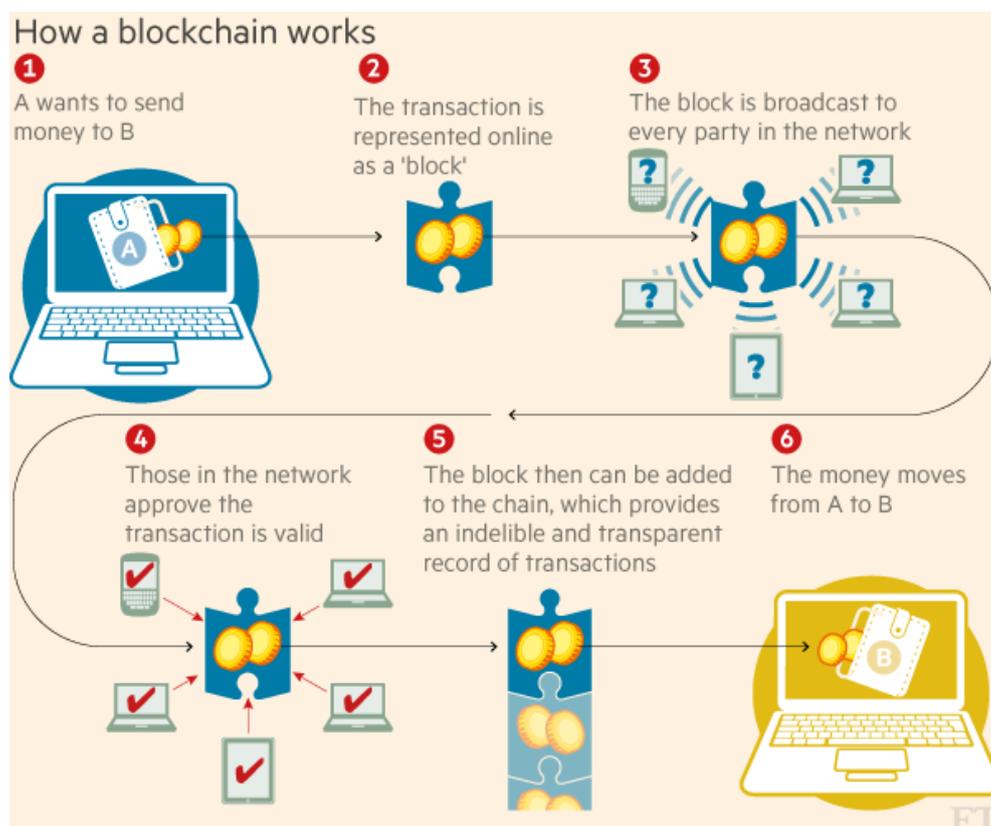

Fig. Blockchain Work Flow

(i) **Decentralization:** Rather than one central authority overpowering others in the ecosystem, blockchain explicitly distributes control amongst all peers in the transaction chain.

(ii) **Digital signature:** Blockchain enables an exchange of transactional value using public keys by the mechanism of a unique digital sign i.e. code for decryption known to everyone on the network and private keys known only to the owner to create ownership.

(iii)   Mining: In a distributed system every user mines and digs deep into the data which is then evaluated according to the cryptographic rules and it also acknowledges miners for confirmation and verification of the transactions.

(iv)   Data integrity: Complex algorithms and agreement among users ensures that transaction data, once agreed upon, cannot be tampered with and thus remains unaffected. Data stored on blockchain acts as a single version of truth for all parties involved hence reducing the risk of fraud.

Real estate purchasing can be a very emotional decision for people. I believe that middlemen such as brokers and attorneys earn their commissions for people making potentially the largest financial decision of their lives [4]. While smart contracts are currently being built to replace middlemen, I believe this technology will ultimately be utilized to make advisers in this space more efficient. Technically, blockchain – as the name suggests – is a chain of blocks of information Figure. 3 shown the idea of blockchain.
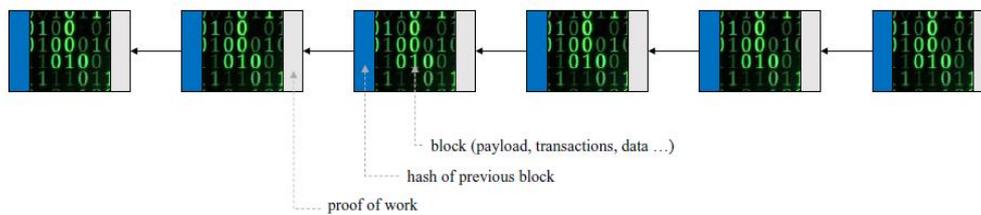

block (payload, transactions, data …)

hash of previous block

proof of work

Fig 3. The Blockchain Technology.

IV. PROBLEM DEFINITION

Real estate remains the largest asset class in the world. As per Fortune, London-based real estate advisor Savills tallied up the value of all global property, including commercial and residential property and forestry and agricultural land. By their calculations, the total global real estate valuation comes a whopping $217 trillion total, and residential property makes up about 75% of the total value. analysis problems. It generates fuzzy partitions and prototypes for any set of numerical data. These partitions are useful substructures or suggesting substructure in unexplored data. The clustering is used to aggregate subsets in a generalized least-squares objective function. The results of this paper is to teachers for refining or reorganizing the learning path.

A.   Not open to everyone

Real estate has long been the investment choice of the rich. Very few assets manage to provide the same degree of passive income and capital appreciation. The problem is that the barrier of entering the real estate market has always been extremely high. These barriers could be citizenship, international bank accounts, Credit Score, financing, cash requirements, accreditation, and having accessibility to the right sponsors and fund managers.

B.   Severe lack of transparency

The Panama Papers controversy showed us the depth of corruption and dishonesty in the real estate business. A higher degree of transparency can combat corruption, tax evasion, and money laundering. According to the United Nations, $800 billion – $2 trillion USD is laundered globally every single year. A significant amount of it is laundered through real estate. The UN Office on Drugs and Crime estimated this figure to be in the region of $1.6 trillion in a single year. To understand why this is a big problem, think about this – According to Global Financial Integrity, almost 80% of the estimated $1 trillion which leaves developing countries in these illicit financial flows, could be taxed to provide revenues for public spending on global challenges such as infrastructure and climate change.

C.   High fees

If you are investing in international real estate then here are some of the fees that you will have to pay – exchange fees, transfer fees, broker fees, attorney fees, taxes, investment fees, etc. Because of the sheer number of middlemen involved, foreign real estate investment can be an expensive process. Also, you need to keep in mind that you will need to consult lawyers and accountants as well to make sure that your tax returns are in order.

D.   Lack of Liquidity

Now we come to one of the most significant problems with real estate. They are notoriously difficult to liquidate. Liquidity is defined as how quickly an asset or investment can be converted into cash. The reasons why real estate isn't as liquid as crypto is because: Cryptocurrencies can be listed on a public exchange and sold quickly in open hours. The number of buyers for crypto is a lot more than for real estate

E.   Pricing Commitments

Real estate investment requires a lot of capital up front. *More* often than not, investors have to look at expensive alternative methods of financing. Also, when it comes to international real estates, having an excellent credit score in your native country, won't carry over to the country that you want to invest in.

F.   Transaction Speed

Like we have mentioned multiple times, real estate transactions can be extremely slow. According to Juwai Chinese Consumer International Travel Survey, 56% of Chinese investors spend over one year finding their ideal US investment property. In general, it can take you six months to find a property and another six months to fulfill all the formality needed to acquire it.

V. PROPOSED FRAMEWORK

In this section we present four different architectures to managing building information with blockchain. The key difference between traditional blockchain applications such as Bitcoin and blockchain for BIM is the different ratio between the number of transactions, number of participants and size of the data to be managed. Bitcoin is about billions of transactions between millions of users, about a kilobyte each. Building information blockchain is about hundreds of transactions between dozens of users up to a couple of gigabytes each[4].

The previous scenarios can be used to manage any building information that is stored in files, including BIM files. A proper way to implement blockchain in a BIM setting, however, is to integrate it with a BIM server. The architecture is presented in Figure. 4.
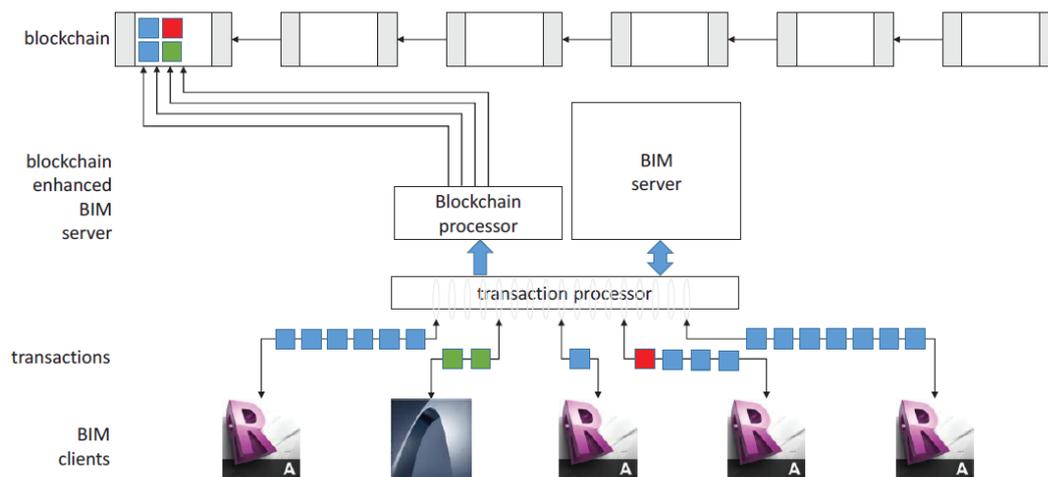
Fig 4. The architecture of a system using blockchain for BIM transactions.

A. Potential Benefits of Implementation

Cost-effectiveness: Although initial implementation costs would be high, the lockchain provides a way of combining many processes and systems. This would increase efficiency through distributed processing and thus reduce long-term costs, such as a eduction in manpower of the concerned department[8].

Efficiency: The use of smartphones as one-stop-shop for all property related transactions will significantly reduce the inefficiency of the current system [8] [9]. Most significantly, it will drastically cut down the number of intermediaries that deluge the current title regime. The tamper-proof nature of the blockchain also helps curb corruption as patwaris will not be able to go back and change land records in exchange for a bribe.

Transparency: Registration on the blockchain would mean that the information in the registry is completely available to the public. The CAG can be brought onto the platform as a stakeholder so that its office can view transactions and information uploads as they happen.

Easing administrative burden: Land/property-related disputes currently make up 70 percent of the total case backlog in India. A robust land title system will lead to a decrease in the number of land-related disputes in the country and, in turn, lessen the backlog in the country's courts

VI. FUTURE OF BLOCKCHAIN

Blockchain-based identity decentralizes the data collection, cross-verifies the collected data via a consensus mechanism, and stores this information on a decentralized immutable ledger. It enables reduced risk of security breaches, significantly higher efficiencies, higher reliability, and most importantly self-sovereignty. According to various data sources, 1.5 billion people in the developing world lack proof of identity, including more than 65 million refugees[9][10]. Blockchain-based self-sovereign identity platforms will provide the disenfranchised population with tools to obtain and maintain legal documentation. The new identity platform will be more secure and reliable since it will be stored on a distributed ledger rather than being in the possession of a central authority. Blockchain-based identity platforms will also enable self-sovereignty, which ultimately means individual privacy [4] [6]. The decision to disclose identity information will be within each individual's control. With recent Facebook data-breach scandals dominating the news, blockchain-based identity creates a viable and important solution to many data privacy issues.

VII. CONCLUSION

The aim of this study was to determine the impact of applying the block chain technology to the real estate sector. The Blockchain technology has been especially recognized to be suitable in developing nations where ensuring trust is of a major concern. In this article, a comprehensive overview on blockchain technologies including blockchain architecture and components of blockchain have been discussed. The conclusion that was derived was that although most of the respondents wanted technology to be implemented in this profitable sector of business, the people earning the most from the trading of these assets, the real estate brokers would rather not have this technology implemented. This study recommends that the government of Pakistan should take serious note and should apply the block chain technology to the real estate sector so that it is transparent in nature for the general population of the country as well as departments who are stakeholders in the real estate sector for the government so that these transactions can be taxed accurately. This research work can help the government overcome infrastructural, institutional and regulatory hurdles, the blockchain land registry, coupled with robust titling legislation, may yet prove to be the best way to deliver a secure, transparent and efficient land records system in India. It will help expunge many of the deficiencies inundating the current system. As stated earlier, the technology offers an innovative solution to a variety of issues plaguing the country. And while it is by no means a panacea, it carries advantages that far outweigh any negatives that may ensue from its implementation.

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