Blockchain in property valuation: perspectives of property professionals in Nigeria

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# Abstract

Blockchain technology is an emerging digital technology tool touted to bring radical changes within different spheres of life. Within the property industry, the use case is for record, security and transparency, among other features. Accordingly, there have been enquiries on its application within the property and land administration practice area. Through interviews administered to five proptech experts in Nigeria, this paper examines their perspectives on blockchain technology concerning its potential use, barriers and prospects. The paper identifies, firstly, the low adoption of blockchain technology in the property space. Its primary proposed use is as a credible store of record, which can present itself as a potential tool to build a trustworthy database for the Nigerian property market. The major challenges include a lack of awareness and secrecy around property transactions. Consequently, the stakeholders identified regulation, and education as critical mechanisms that can promote blockchain technology adoption within Nigeria's property industry.

**Keywords**: *blockchain, Nigeria, property industry, property professionals, proptech, transparency*

**INTRODUCTION**

There has been an uptake in the application of digital technology, referred to as *property technology or proptech,* in the operation of the property markets (Braesemann & Baum, 2020; Saiz, 2020; Starr et al., 2021), with emphasis on improved efficiency, flexibility, adaptability, and the application of machine learning/artificial intelligence-based models to a large quantity of data (Kok et al., 2017). The innovations driven by technology are not peculiar to the property profession alone, as many professions are coming to terms with the use and demands of digital technologies (Wilkinson et al., 2018).

Some of these digital technologies include e-conveyancing platforms to digitise, simplify, and deliver transparency for property registration and titles (Thomas et al., 2014; Cradduck, 2020; Saull et al., 2020), online listing platforms for property brokerage (Ullah & Al-Turjman, 2021), artificial intelligence models for mass appraisals (Grover, 2016).

One of these emerging digital technologies that has elicited immense attention from property industry stakeholders as a potential tool for improving speed, efficiency, transparency, and trust in transactions is blockchain (Liu et al., 2020). Blockchain is a self-managed distributed ledger technology for recording information or transactions in a decentralised database/server spread across various locations (Liu et al., 2020). It has been proposed and trialled across diverse fields such as supply chain management (Wang et al., 2020), healthcare (Leite et al., 2021), construction (Nanayakkara et al., 2021), facilities management procurement (Gunasekara et al., 2021), land registration and administration (Shang & Price, 2019; Ameyaw & de Vries, 2020; Konashevych, 2021), land acquisition (Mintah et al., 2020; Mintah et al., 2021), among others.

As a decentralised server, it provides opportunities for stakeholders in the property transaction ecosystem to contribute and view information on the blockchain in real-time (Hoxha & Sadiku, 2019). However, with its position as a new technology within the property sphere, blockchain has not been subjected to sufficient empirical study (Hoxha & Sadiku, 2019; Starr et al., 2021). Nevertheless, there has been an increased enquiry into blockchain technology. The argument for applying blockchain in the property industry has been for facilitating property transactions, enforcing smart contracts and data management (Veuger, 2018; Hoxha & Sadiku, 2019; Wouda & Opdenakker, 2019).

Several conceptual papers and pilot projects have emanated in the area of land administration in different nations, namely, the Democratic Republic of Georgia (Shang & Price, 2019), Cyprus (Yapicioglu & Leshinsky, 2020), Afghanistan (Konashevych, 2021), and Ghana (Ameyaw & de Vries, 2020; Mintah et al., 2020; Mintah et al., 2021; Ameyaw & de Vries, 2021). The focus on land administration results from most of the world’s population lacking legal title to their land, with a heightened risk of losing such land to conflict (Shang & Price, 2019).

Despite the extent of enquiry on blockchain application to property activities, most of which appear as exploratory and conceptual papers, this paper finds it puzzling the absence of its use within the property valuation domain and, hence, set out to examine the opinion of proptech experts in Nigeria. Nigeria being a case study for this paper is due to its position as a market with identified issues within its property space such as poor access to data, lack of transparency (Olapade & Olaleye, 2018; JLL, 2020; JLL, 2022), furthermore, its property valuation industry is plagued by issues of access to property data, inaccuracy and client influence (Adegoke, 2016; Abidoye & Chan, 2018; Gbadegesin et al., 2023) which presents the opportunity for the application of blockchain.

**LITERATURE REVIEW**

**Nigerian property market as an opportunity for blockchain application**

The Nigerian property market is ranked at a low transparency level with a composite score of 3.60, ranking 60th out of 94 countries in the real estate transparency index of JLL (2022). Remarkably, the current rank of Nigeria, irrespective of its low transparency level, represents an improvement from the JLL (2020) real estate transparency index, where the Nigerian property market, with a composite score of 3.74, ranked 68th out of 99 countries indexed. JLL (2020) also disclosed that the Nigerian property market is seeing gradual improvements, with simplified construction approval procedures and the adoption of Geographic Information Systems (GIS) in the land administration system. The reports noted an uptake of technology in the operations in the Nigerian property market, which declines as the operation becomes complex. The report provided an example of the widespread use of online listing websites but low adoption of big data, automated valuation tools and online transaction tools. JLL (2020) highlighted Nigeria's status as an emerging property market with nascent real estate regulations and market tracking activities. At the same time, JLL (2022) recorded some new developments in the Nigerian property market with the creation of a real estate regulation authority in Lagos State and the development of an online portal for planning applications in the state.

The operation of a property market relies on available property data and quality information (Olapade & Olaleye, 2018; Onwuanyi & Oyetunji, 2021). However, access to property data is a source of concern in the Nigerian property market (Olapade & Olaleye, 2018; Olapade & Olaleye, 2019). A survey of property valuers practising in Lagos, Nigeria, by Olapade and Olaleye (2019) revealed 19 factors that affect the accessibility of property data within the property market. The factors include confidentiality of the property data, an absence of cooperation among property valuers despite belonging to one association, the conservative practice of the profession, accuracy of data, duty of care to the client, rivalry among property professionals, absence of standardisation for data recording, copyright and data protection law, commercial interest of the data providers, commercial interest of the client, among other factors. These factors were classified into six categories by Olapade and Olaleye (2019): economic factors, attitudinal factors, ethical factors, legal factors, administrative factors, and technical factors. The difficulty in accessing quality data negatively influences the practice of property valuation in Nigeria (Ashaolu & Olaniran, 2016). Furthermore, the inaccessibility to quality data discourages foreign investors from investing in the Nigerian property market because, without quality accessible data, international participation in a property market becomes challenging (Cheng et al., 2006; Olapade et al., 2018).

Following from the issues plaguing the Nigerian property market, studies such as Babawale (2012) and Adegoke et al. (2013) have revealed the dissatisfaction and weariness of clients with valuations prepared by valuers in Nigeria. This dissatisfaction stems from concerns about the accuracy of the valuation, data sources for the valuation, among others. Furthermore, there is also an issue with clients circumventing the valuation process for certain types of valuation by imposing their will through misinformation or coercion or reward (Nwuba et al. 2015; Gbadegesin et al., 2023), of which valuers have shown a willingness to succumb to these tactics (Oladokun & Mooya, 2020).

Considering the challenges identified in the Nigerian property market and particularly in the valuation industry which points to data, transparency and trust, there presents a potential for the use of blockchain technology in a bid to leverage its features for storage and transparency.

**Barriers and Prospects for the application of blockchain technology**

With an increased focus on the potential application of blockchain in different spheres, some barriers have emerged in literature. Ryan and Smith (2021) argue that there are still some potential obstacles that blockchain technology faces, irrespective of the type of blockchain. First is the issue of interoperability*.* Blockchain has not reached the stage where it communicates seamlessly with other technology systems. The second issue is cybersecurity; some blockchain networks have suffered cyber-attacks and collusion by miners (ASTRI, 2016; Ryan & Smith, 2021). The third is an issue of human sluggishness in moving on from current centralised operations to decentralisation through blockchain (Deloitte, 2017). There is also the issue of cost. According to Hewavitharana et al. (2019), some blockchain technology uses too much energy for mining and creating new data blocks in the ledger. Mehdi (2020) highlights that a significant barrier to blockchain adoption in the property industry is the physical features of property assets which make physical identification and inspection by individuals paramount. Mehdi (2020) posited that the physical features of property assets would limit blockchain's impact on the property industry. Nevertheless, as the limitations to blockchain are discovered and attributed to its nascent state, improvements are also rapidly developed to counter them (Deloitte, 2017). This optimism in blockchain technology is evidenced by the amount of money committed to its development by investors, put at US$ 2.1billion as of 2018 (Wu & Yu, 2023).

Following the identification of systematic issues with the blockchain technology which may be barriers to its application within the property space, the significant prospects for its adoption has also been highlighted in relevant literature. Li et al. (2019) identified prospects for the immutability of records, real-time provenance, transparency, increased collaboration, digital twins, elimination of intermediaries, efficiency and reduction of transaction costs. In agreement with Li et al. (2019), studies such as Ameyaw and de Vries (2020), Hamledari and Fischer (2021) have all identified the potential for these benefits within the property and construction industry in the areas of traceability and audit, self-executing smart contracts that can resolve issues of delayed payments for execution of tasks.

Accordingly, this paper finds it important to examine from proptech experts in Nigeria, barriers and prospects which may be unique to the Nigerian property market and property valuation space.

**RESEARCH METHODOLOGY**

This research considers the novel nature of blockchain and the almost non-existent practical use within the property industry in Nigeria. Accordingly, this paper, in order to achieve its aim of identifying the barriers and drivers to the use of blockchain in property valuation adopted a qualitative research approach by conducting in-depth interviews with five proptech experts. The interview questions, format and process received research ethics approval from UNSW Sydney.

These experts considered for this study cut across different service areas of the property industry, and their profiles are presented in Table 1. It was observed that proptech as a practice and service area of the Nigerian property market was relatively new, with an average working experience of 4.6 years.

Table 1: Proptech expert’s profile

|  |  |  |  |
| --- | --- | --- | --- |
| **Participant** | **Proptech area** | **Designation** | **Working experience** |
| P1 | Investment analytics and brokerage | Property acquisitions analyst | 5 |
| P2 | Property data and investment analytics | Property research analyst | 4 |
| P3 | Property finance and software solutions development | Property business/partnerships lead | 6 |
| P4 | Fractional property ownership | Co-founder and CEO | 4 |
| P5 | Property data analytics and software solutions development | Product and Engineering team lead | 4 |

Source: Researcher’s fieldwork (2023)

The proptechs were identified from the Unissu (2022) database of proptech companies in Nigeria. Emails were sent to their contact to recruit experts operating within the Nigerian property market. Through a snowball approach, five experts from five proptech companies were invited and interviewed online via Zoom. Firstly, questions were posed to them about the proptech space they operate within, their position in their organisation and the number of years they have operated as proptech players. Subsequently, they all shared their perspective on the use case for blockchain within the Nigerian property industry, the potential barriers, prospects and what needs to be put in place to drive/promote the adoption of blockchain within the property industry.

The audio recording of the interviews was transcribed, and a thematic analysis was conducted using the NVivo v. 12 software to establish common themes and unique insights from the qualitative data provided by the proptech experts.

**FINDINGS AND DISCUSSION**

The findings from the interviews focused on the use case for blockchain in the Nigerian property market and property valuation space, barriers to the adoption or use of blockchain technology for property activities in Nigeria, prospects for blockchain adoption and factors that could be put in place to promote the use of blockchain for property activities.

**A case for blockchain in the Nigerian property market**

We find firstly that whilst there is practically little use within the space currently, the case for blockchain within the Nigerian property market revolves around six uses; as credible property databases, for data storage and sharing, for the automated execution of contracts through smart contracts feature, to promote fractional ownership of property, for property regulation and administration, for digitisation of securities and tokenisation. The proptech experts all highlighted the primary issue of a lack of credible property database within the Nigerian property industry, for instance, P5 stated “*From what I have seen about blockchain I think record taking might be useful. Like government databases. For instance, it is difficult to know the exact details and reach in the Lagos property registry with respect to details like property transaction prices, ownership history, year of exchanges etc.*” Hence, blockchain could drive a system for recording property transactions. Following this is the need for automation which can be driven by smart contracts; P4 noted that “*Currently, how we do it is to use technology at the forefront but because it is real estate certain things are still manual. But if we use blockchain, we can create a system that will enable people get their assets faster and in real time and also give them smart contracts.*” In terms of fractional ownership, P4 noted that “*I think blockchain as an emerging technology is a different kind of technology than what we are seeing in the property space and a lot of people are trying to see how they can use blockchain to process payments, transactions and for the real estate industry, based on my experience, we can see the use of blockchain in what we do which is fractional ownership.*” Following fractional ownership is digitisation and tokenisation of property securities which can drive property investments. The proposed use within the Nigerian property market aligns with the findings in Liu et al. (2020) that blockchain in property has use cases for e-conveyancing, smart contracts, tokenisation, property registry and for property valuation.

In terms of its use in property valuation, the proptech experts were less certain as they all held positions that showed that blockchain could not do property valuation tasks. This position aligns with the position of Liu et al. (2020) on the application of blockchain for property valuation. However, the proptech experts in Nigeria highlighted that blockchain could provide support in terms of data storage, tracking timelines and be an ecosystem for valuers and clients to interact.

**Barriers to the adoption of blockchain**

There were a retinue of factors identified as barriers to the adoption of blockchain by the proptech experts. They include corruption and culture, education system, poor knowledge and lack of training, fear of job loss and obsolescence for traditional property players, very low digitisation of property data, nature of transactions and concerns on privacy of data, and recent failures of blockchain companies in Africa such as Paxful and Lazerpay (Binance News, 2023). This reference to the failures of blockchain companies points to a problem of reliability of using the technology to do certain operations and it aligns with the findings of Rathore et al. (2022) on a lack of reliability as one fundamental barrier to blockchain adoption. Interestingly, most of the barriers highlighted had explanations by the experts that were more specific to Nigeria than global property trends. An example is with the barrier of low data digitisation, where P3 revealed that “*in the current Nigerian property space, when it comes to transactions, it is still manual. If you allow me to say, it is in chunks where you find it in different silos in different firms*”. Hence, getting property data in the right format would be key. Another barrier was that of corruption; P3 revealed as follows, “*since blockchain will bring transparency, I do not think government will want to be exposed especially in the real estate space that is a conduit for money laundering. So, something that will expose such ills will not be encouraged or supported. They might take bits and pieces, but they may not take the whole. So, we will still face rigidity from policies that will hinder blockchain adoption.*” Whilst P1, also harping on corruption and crime revealed, “*because real estate is prestigious in nature and looking at the criminal side where people use it to launder money, it will be very difficult to share information and even if they are sharing it.*” P1 also noted that in sections of the market such as in property valuation, there are confidentiality clauses. Furthermore, the Nigerian property market produces lots of off-market transactions; “*We also have lots of off-market transactions which happen daily especially in the residential market. Owners do not want people to know their property is on the market so if you are conducting a transaction, it has to be discreet. If it is discreet, there is no way the information will be made public or want to go on the blockchain.”* Hence, in itself, there may be a paucity of credible property data to build any storage that will be valid due to concerns of incorrect data entry. This aligns with the position of Rathore et al. (2022) that an issue with data format can be a major barrier in the adoption of a disruptive technology such as blockchain. Furthermore, the barriers identified from the experts aligns with the findings of Saberi et al. (2019) on blockchain adoption barriers which include market uncertainty about the use, lack of industry involvement and lack of implementation tools, among others.

**Prospects for the adoption of blockchain**

From discussions, the prospects for the adoption aligned with the proposed uses. These include to build a database, to digitise property data and transaction records, to serve as an investment vehicle, to promote transparency, to serve as a verification and fraud detection tool. One participant, P3 noted that “*if we have aspects of real estate such as agency, brokerage, sales and documentation having an online database or ledger system to it will lead to a reduction of issues of fraud, non-accountability of ownership, even government losing people’s title information if the government also decides to be transparent enough. If this can also be used in other real estate firms or everybody that conducts a transaction by having all information stored where it is accessible to all and sundry, I think it will help better. Because right now, the issues that we are currently facing in the company is verification of properties.*” This position was also re-echoed by P2 in revealing the prospects for the use of blockchain to promote transparency; “*I think transparency is actually one of the major things that I think, is going to help, because one thing about the real estate transaction in Nigeria is the lack of transparency. You can’t really know what is going on. Especially for us analysts, you can not even say this is the number of transaction deals taking place in the property market.*” Accordingly, these prospects were also proposed for property valuation as one if not the only advantage, which is, transparency for the benefit of clients. The issue of leveraging transparency is a popular prospect in blockchain application studies (Saberi et al., 2019). Furthermore, verification and fraud detection as a prospect for the application of blockchain technology aligns with the findings in Saberi et al. (2019) and Liu et al. (2020).

**Promoting the use of blockchain**

To promote the use of blockchain in the property industry in Nigeria, the proptech experts proposed and reflected on solutions and mechanisms of policy and regulation, education, early adoption by big property players and government, collaboration between property players and government agencies, and data sharing. Policy and regulation seemed most important to participants followed closely by education. Both factors have been identified in Sahebi et al. (2020) as the most important barriers to blockchain adoption, hence, addressing them leads to the adoption of blockchain.

The participants highlighted that given the ban placed by the Nigerian government on cryptocurrency, which is the driver for blockchain, other uses of blockchain might not be explored. Hence, implementing regulatory framework would allow the adoption of blockchain as a technology that has government backing. This also extends to government adoption where P4 pointed out that “*the first thing that comes to mind is government regulation but also government regulation is hard, but I think that is the first thing because when the government adopts something into their system, the people under that jurisdiction will come to follow it.*” The importance of regulation to blockchain adoption in property valuation is revealed in Liu et al. (2020) where over 60% of the respondents cited a lack of regulation as the primary issue with applying blockchain in property valuation. Hence, Liu et al. (2020) recommends among other things that government need to be at the forefront in drafting regulations to guide public interest after evaluating the impact of blockchain. In terms of education, focus is on school curricula and property professionals on the uses and benefits of blockchain adoption. However, the experts agreed that the education need not focus on the technicalities behind the operation of blockchain given that a technology of that nature would require different inputs beyond the training of property professionals; for instance, P1 holds that “*I think the very first thing has to do with maybe a blockchain literacy awareness for industry players, that’s like the very first thing. I think it should be broken down in terms of the basics so people can grasp it because once you say tech, people think I have to code, or I have to program so they do not want to get involved. But at the same time, I think a literacy class should be established first.*” The need for education and increased awareness aligns with Liu et al. (2020) recommendations for deliberate industry, academic and regulatory collaboration and learning from different jurisdictions on the way blockchain innovation is nurtured.

**CONCLUSIONS**

The paper, considering the potentials for blockchain within the property space, set out to identify the use case, barriers and prospects for blockchain in the Nigerian property market and the Nigerian property valuation practice. From interviews with property stakeholders in different spheres of the Nigerian property market, the strong use cases that emerge are those that seek to address primarily the data and data storage challenge in the Nigerian property market. However, the barriers revealed by the stakeholders show peculiarity of the Nigerian property market that proptech solutions in themselves cannot address. These issues, such as lack of property databases, secrecy around property transactions, confidentiality clauses, and education. Particularly for property valuation, the confidentiality clause is a huge concern. On the other hand, the prospects, like the use case revolve around property data and assemblage, transparency, verification of transactions, which all point to the opportunity for tools that will increase transparency and trust within the property market in Nigeria.

Consequently, this paper concludes that whilst there are strong opportunities for blockchain within the property space in Nigeria, the current set up and identified barriers indicate that there needs first to be legal systems and reduction in the knowledge gap for property professionals around blockchain before it can be adopted.

The research bears some implications. Firstly, blockchain is seen to have practical use cases within the Nigerian property market. However, this has not been clearly exhibited for property valuation. Nevertheless, there is an opportunity to leverage blockchain technology to address problems within the Nigerian property valuation industry, such as improving data storage, sharing and transparency. The regulatory association and industry need to be proactive in setting up regulations and educating professionals about the application of the technology. Finally, for the global property valuation industry, the findings from this research may suggest that the technology may not be required for property valuation industries in transparent property markets, whereas there are huge opportunities for less transparent property markets.

A limitation that emerged was a very low use of blockchain in the business systems of the interviewed proptech experts, apart from one participant, P4, none of the other participants had used blockchain for their business operations. Another limitation was that of all the proptech experts, only P3 has operated within the property valuation space of the Nigerian property market as property valuers; hence, their perspective was mostly from the area of the property industry they operate within.

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