The Challenges and Opportunities for Proptech Adoption in Nigeria: an exploration of the factors that influence the adoption and diffusion of proptech innovation in the Nigerian Real Estate industry

Olabisi Sunday, Ojekunle[1]

[1]AOC Real Estate Group, Victoria Island, Lagos, Nigeria, (info@akinolawore.net)

Abstract

This research paper examines the challenges and opportunities for proptech adoption in the Nigerian real estate industry. Proptech, a convergence of property and technology, has the potential to revolutionize the way real estate businesses are conducted by enabling more efficient, quick, and cost-effective operations. However, proptech adoption in developing countries like Nigeria faces unique challenges, including inadequate infrastructure, limited access to finance, and lack of awareness and trust in modern technologies.

This study aims to explore the factors that influence the adoption and diffusion of proptech innovation in Nigeria. A descriptive survey will be used to gather data; a structured questionnaire will be distributed to real estate professionals, proptech companies, and potential users of proptech solutions in Nigeria.

The findings of this study will shed light on the current challenges facing proptech adoption in Nigeria and the opportunities it presents for the real estate industry. The results indicate that about 71% of the respondents are currently using proptech solutions; with increased efficiency, cost reduction, and better decision-making identified as the main benefits. Lack of awareness was cited as the primary reason for not adopting proptech solutions while concerns regarding data privacy and security were noted as potential risks. Factors influencing adoption include ease of use and compatibility with existing systems.

The study's significance lies in providing insights into the state of proptech adoption in Nigeria and identifying key challenges and opportunities. This information will be valuable for real estate managers, developers, investors, brokers, and technology providers, helping them make informed decisions regarding the adoption of proptech solutions. By improving operational efficiency, enhancing customer experience, and driving business growth, proptech adoption can contribute to the growth and development of the Nigerian real estate industry.

Keywords: Proptech; real estate industry; adoption; challenges; opportunities; Nigeria

Introduction

Technology has brought about changes in every sphere of human endeavor. This change has been facilitated in no small way by three activities: information provision, transaction, and effective control (Baum, 2017). The emergence of technology has brought about significant changes in many industries, the real estate sector inclusive.

Before now basic real estate transaction processes like searching for properties to buy, rent or sell used to be done in a traditional way e.g., sharing of properties letting bulletins amongst real estate surveyors. Amongst Architects and Builders, before the introduction of BIM and other Technology based software or applications, paper-based drawings were used to supervise construction works, build, or carry out maintenance works in buildings.

"PropTech," the abbreviation of "Property Technology," refers to new companies whose business model connects innovative technological possibilities to the real estate industry (Catella Research, 2016). ("Does PropTech Facilitate Liquidity in the Property Transaction Process?") Proptech as a form of technology disruption has revolutionized how real estate businesses are conducted, enabling real estate investors, managers, and others to perform their tasks more efficiently, quickly, and at a lower cost.

According to Nikolai, Tom, Sergey, and Ninoslav (2020), PropTech is defined as the massive implementation of emerging technology within the real estate sector. A non-exhaustive list of such technologies includes home matching tools, drones, virtual reality, building information modeling (BIM), data analytics tools, artificial intelligence (AI), Internet of Things (IoT) and blockchain, smart contracts, crowdfunding in the real estate sector, financial technologies (fintech) related to real estate, smart cities and regions, smart homes, and shared economy.

Nigeria, the most populous country in Africa with a population of over 200 million people and an economy that is growing rapidly, presents a significant opportunity for proptech adoption. However, despite this potential, proptech adoption in a developing country like Nigeria faces myriads of challenges, including inadequate infrastructure, limited access to finance, and lack of awareness and trust in modern technology as peculiar to developing countries.

This research paper aims to explore the challenges and opportunities for proptech adoption in Nigeria by examining the factors that influence the adoption and diffusion of proptech innovation in the Nigerian Real Estate industry.

Significance of the study

The significance of this study on the challenges and opportunities for proptech adoption in Nigeria lies in its potential to shed light on the factors that influence the adoption and diffusion of proptech innovation in the Nigerian Real Estate industry.

The findings of this study will be important for various stakeholders, including real estate managers, developers, investors, brokers, and technology providers.

The study will give insights into the current state of proptech adoption in Nigeria, identifying the key challenges and opportunities in this area. This will enable real estate developers and investors to make informed decisions regarding the adoption of proptech solutions, which can improve their operational efficiency, improve customer experience, and drive business growth.

Research Questions

What are the current challenges facing the adoption of proptech innovation in the Nigerian real estate industry?

What opportunities do proptech innovations present for the Nigerian real estate industry?

What are the potential economic and social impacts of proptech adoption in the Nigerian real estate industry?

Literature Review

PropTech

Defined by Baum (2017), PropTech is a set of verticals, including Real Estate FinTech, Shared Economy, and Smart Real Estate, that support information, transaction or marketplace, or management or control. There are three verticals (sub-sectors) and three industry horizontals (drivers), as shown in Table 1.

	Real Estate FinTech	Shared Economy	Smart Real Estate
Information	Yes	Yes	Yes
Transaction/marketplace	Yes	Yes	
Management/control			Yes

*Table 1. PropTech verticals and horizontals (Baum, 2017)*

The three sub-sectors in which PropTech is active are driven by construction technology, legal technology, FinTech, the shared economy movement, and exogenous technology (Baum, 2017). The Smart Real Estate sector refers to the technology-based platforms that facilitate the operation and management of real estate assets. This sector primarily supports real estate assets, property, and facilities management. The second sector is the Shared Economy, which describes the technology-based platforms that facilitate the use of real estate assets. The information of potential users and space sellers is provided by the platform simply. Besides, rent- or fee-based transactions may be facilitated or affected directly.

The real estate occupier markets are supported by this sector. Lastly, Real Estate Fintech is the sector that consists of technology-based platforms to facilitate the trading of real estate asset ownership and supports the real estate capital markets. Within this sector, platforms may provide information to potential buyers and sellers, or they may more directly facilitate or influence asset ownership or lease transactions with a negative or positive capital value (Baum, 2020).

"Proptech is one small part of the wider digital transformation of the property industry. It describes a movement driving a mentality change within the real estate industry and its consumers regarding

technology-driven innovation in data assembly, transactions, and the design of buildings and cities" (Andrew Baum and James Dearsley, 2019). ("Disrupting SMB Outbound Marketing, with Sean O'Toole - Yahoo Finanzas") These innovative technologies are also known as Real Estate Technology, Retech, Realtech, and CRETech depending on which lens you are looking through. However, at its core, proptech always means robust alignment between real estate and technology.

Proptech is the convergence of Fintech, Contech, Smart Real Estate, and Shared Economy
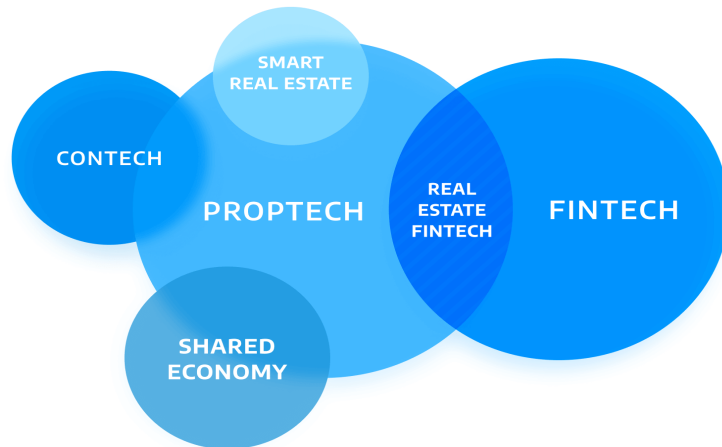
Source: Ascendix Tech

Shared Economy Real Estate – These are proptech platforms that offer shared and/or joint use of a property. AirBnB is the most famous Proptech company driving the shared economy.

Smart Real Estate – This is another prop-tech subsector denoting the use of internet-connected devices and appliances, which are collectively known as the Internet of Things (IoT), to make possible the remote monitoring and management of the house. ("What Is Proptech and How It Changed the Real Estate Industry")

Fintech (financial technology) – This is part of proptech that brings technology into the financial sector to make customers and businesses access financial services with ease.

Contech (construction technology) –This is the use of modern materials and sustainable approaches in the building process.

This is a general way of classifying the proptech terrain that outlines its basic elements and relationships. It is especially helpful for those just trying to understand what proptech is and how it is associated with other industries.

Two Domains of the Proptech Space: Residential and Commercial Property Technology

The proptech space can be split into two domains according to the end-user – individual residents and businesses.

Residential Property Technology

Residential Property Technology is all the digital products developed by real estate technology companies to facilitate the way people own or rent apartments and houses, e.g., short-term rental platforms, like Airbnb.

The landscape of Residential Property Technology is defined by:

Property Search Platforms (E.g., Nigeria Property Center, PropertyPro etc.)
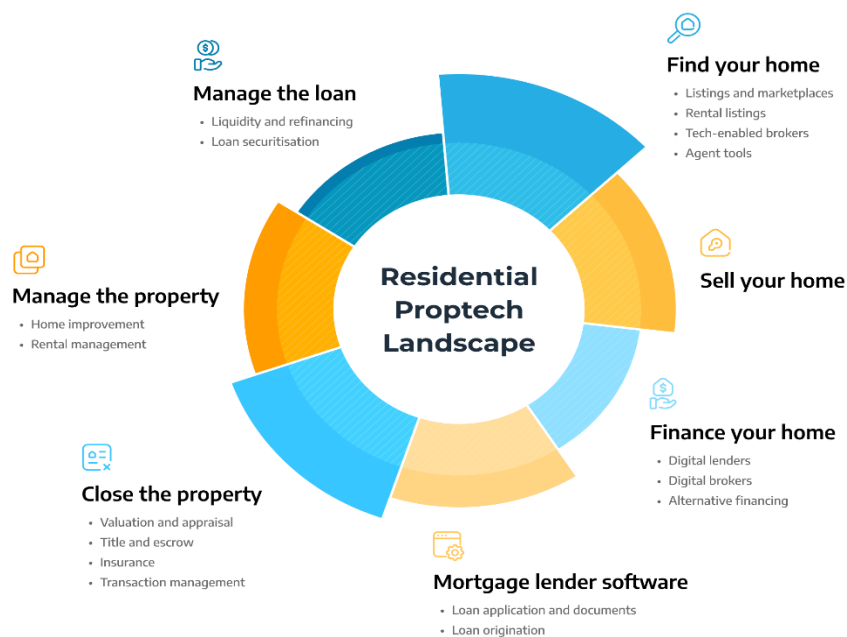
Financing Tools

Mortgage Lender Software

Real Estate Closing Tools (insurance, transaction management tools)

Property Management Tools (IoT-powered tools)

Loan Management Systems (loan securitization, refinancing, etc.).

Source: Thomvest Ventures Real Estate Tech Review, Fall 2019

CRETech (Commercial Real Estate technology)

CRE-Proptech stands for Commercial Real Estate technology and means the use of all the innovative tools companies and individual CRE professionals use to efficiently manage, search, rent, and sell office, industrial, and retail property assets.

The CRETech space is shaped by:

Property Search Platforms (listing and marketplaces e.g., Nigeria Property Center, PropertyPro etc.)

Constructions Planning and Management Tools (e.g., BIM)

Evaluation and Financing Tools

Property Management Tools (IoT-powered tools)

Asset Utilization (co-working & co-living spaces management, retail, and industrial buildings management, etc.)

Source: Thomvest Ventures Real Estate Tech Review, Fall 2019

Commercial Proptech Real Estate Landscape

So, while Residential Proptech is solely focused on smart property solutions for families and individuals, CRETech is all about driving efficiency in commercial property management.

Proptech innovations have been adopted globally and have transformed the real estate industry all over the world in many ways. These innovations have brought about changes in the way properties are developed, managed, leased, and sold. In Nigeria, the real estate industry is gradually adopting proptech innovations, but there are still challenges that are hampering its full adoption. This literature review examines existing literature on the challenges and opportunities for proptech adoption in Nigeria and explores the factors that influence the adoption and diffusion of proptech innovation in the Nigerian real estate industry.

Proptech Adoption in Nigeria: The real estate industry in Nigeria has been characterized by inadequate data, and inefficient processes, which have hindered its growth. Proptech innovations

such as online property portals, virtual property tours, and digital property management platforms have the potential to transform the industry by providing transparency, improving data management, and simplifying processes. However, the adoption of these innovations has been slow due to various challenges.

One of the challenges of proptech adoption in Nigeria is the lack of awareness and knowledge of the advantages of proptech. According to Olanipekun and Akinmoladun (2020), many real estate professionals in Nigeria are not aware of proptech innovations, and those who are aware do not fully understand their benefits. This lack of awareness and knowledge has led to a reluctance to adopt proptech innovations.

Another challenge is the lack of infrastructure to support proptech innovation. For example, the poor state of the Nigerian power supply has made it difficult for real estate professionals to fully adopt digital property management platforms. According to Akinyemi and Ogunsemi (2019), the lack of a stable power supply in Nigeria has hindered the use of technology in the real estate industry.

Furthermore, the regulatory environment in Nigeria is not conducive to proptech innovation. According to Adigun and Oluwatobi (2020), the absence of clear regulations for proptech innovations has created uncertainty and hindered their adoption. In addition, the excessive cost of compliance with regulations has made it difficult for proptech startups to enter the market.

Methodology

Research Design:

The research design for this study is a descriptive survey design and interviews with decision-makers in top positions at Proptech companies, these will explore the factors that influence the adoption and diffusion of proptech innovation in the Nigerian Real Estate industry. The questionnaire design will allow for the collection of data that can be used to identify patterns and trends in the adoption and diffusion of proptech innovation in the industry.

Sampling Technique and Sample Size:

The target population for this study are real estate professionals, proptech companies, and potential users of proptech solutions in Nigeria. A non-probability purposive sampling technique will be used to select the sample for the study. The sample size for the study will be 75 respondents.

Data Collection Method:

The data for this study is collected using a structured questionnaire. The questionnaire will consist of closed-ended questions that will be used to collect quantitative data from the participants. The questionnaire will be distributed using social media platforms, professional networking sites, and email lists of real estate associations.

Data Analysis Technique:

The data collected for this study will be analyzed using quantitative methods. Descriptive statistics such as mean, standard deviation, frequency, and percentage will be used to analyze the data. Inferential statistics such as regression analysis will be used to examine the relationship between the independent variables (factors that influence the adoption and diffusion of proptech innovation) and the dependent variable (proptech adoption in the Nigerian real estate industry).

In conclusion, this methodology outlines the research design, sampling technique, and sample size, data collection method, and data analysis technique that will be used in the study on the challenges and opportunities for proptech adoption in Nigeria. The use of a descriptive survey research design, non-probability purposive sampling technique, structured questionnaire, and quantitative data analysis technique will enable the researcher to explore the factors that influence the adoption and diffusion of proptech innovation in the Nigerian real estate industry.

Results and Discussion

This section presents the results and discussions of the study on the challenges and opportunities for proptech adoption in Nigeria. The questionnaire was electronically shared with 75 respondents, and 48 respondents filled out the questionnaire. The findings shed light on the factors influencing the adoption and diffusion of proptech innovation in the Nigerian real estate industry.

Proptech Adoption: The survey revealed that 70.6% of the respondents are currently using proptech solutions in their real estate transactions, while 29.4% are not utilizing any proptech solutions.

Benefits of Proptech Solutions: Among the respondents who use proptech solutions, 29.4% reported increased efficiency as a benefit, 11.8% mentioned cost reduction, and 20.6% highlighted better decision-making. It is worth noting that a sizable portion of respondents did not select any specific benefit.

Reasons for Not Using Proptech Solutions: Among the respondents who are not using proptech solutions, the majority (70.6%) cited a lack of awareness as the primary reason. Trust issues were mentioned by 2.9% of the respondents.

Factors Influencing Adoption: When asked about the factors influencing their decision to adopt proptech solutions, 52.9% of the respondents highlighted the ease of use, while 17.6% mentioned compatibility with existing systems.

Potential Risks of Proptech Solutions: In terms of potential risks associated with using proptech solutions in real estate transactions, 44.1% of the respondents' expressed concerns about data privacy, and 23.5% had security concerns.

Experience in the Real Estate Industry: The survey found that 55.9% of the respondents have been in the real estate industry for 6-10 years, 32.4% for 0-5 years, and the remaining respondents have over 16-20 years of experience or more.

Respondent Profile: Among the respondents, 82.4% identified as real estate professionals, 5.9% as builders, and 2.9% worked in a proptech company.

Preferred Proptech Solutions: When asked about the types of proptech solutions they would like to see more of in Nigeria, 32.4% of the respondents chose virtual reality, 29.4% preferred property management solutions, 20.6% expressed interest in smart home technologies, and 17.6% selected property listing platforms.

Proptech Solutions Used in Nigeria: The survey revealed that among the respondents who used proptech solutions in Nigeria, 34.5% utilized property listing platforms, 20.7% employed valuation and appraisal tools, 17.2% made use of online property management tools, 10.3% utilized construction-related solutions, and the rest mentioned digital lending and blockchain-based property transaction tools.

Perceived Benefits of Proptech Solutions: Respondents believed proptech solutions offer the top three benefits in the Nigerian real estate industry ease and increased speed of transactions, easy management of properties, and property accessibility. Other recurring responses included the generation of higher value on properties, ease of marketing, easy access to prospective customers, transparency in transactions, and leverage over the traditional model.

Challenges for Proptech Solutions: The most recurring challenges mentioned by respondents regarding proptech solutions in Nigeria were lack of technical knowledge, poor user experience, slow pace of adoption, limited funds, regulatory hurdles, limited property information, dubious estate agents, limited availability of proptech solutions, poor internet connection, lack of trust, and a lack of awareness.

Challenges Faced by Proptech Solutions: The challenges found by respondents regarding proptech solutions in Nigeria included limited access to the internet and technology, high implementation costs, resistance to change in the industry, awareness, and education gaps, integration with existing real estate systems, lack of government support, government policies and regulations, and trust-related issues.

These findings supply valuable insights into the current state of proptech adoption in Nigeria and the factors influencing its diffusion in the real estate industry. They highlight stakeholders' benefits, challenges, and preferences, which can inform policymakers, industry professionals, and proptech companies in shaping strategies and initiatives to promote proptech adoption and address existing barriers in the Nigerian context.

Conclusion and Recommendations

Summary of Findings

The study investigated the challenges and opportunities for proptech adoption in the Nigerian real estate industry. A questionnaire was distributed to 75 respondents, with 48 respondents providing filled-out responses. The findings highlight the current state of proptech adoption and its influencing factors in Nigeria.

Proptech Adoption: The survey revealed that 70.6% of respondents currently use proptech solutions in their real estate transactions, while 29.4% do not utilize any proptech solutions.

Benefits of Proptech Solutions: Among the proptech users, respondents reported increased efficiency (29.4%), cost reduction (11.8%), and better decision-making (20.6%) as benefits. However, a sizable part did not specify any specific benefit.

Reasons for Not Using Proptech Solutions: The primary reason cited by respondents for not using proptech solutions was a lack of awareness (70.6%), followed by limited technical expertise (14.7%).

Factors Influencing Adoption: Respondents showed that ease of use (52.9%) and compatibility with existing systems (17.6%) were influential factors in their decision to adopt proptech solutions.

Potential Risks of Proptech Solutions: Concerns about data privacy (44.1%) and security (23.5%) were expressed as potential risks associated with using proptech solutions in real estate transactions.

Implications of the Study

The findings suggest that proptech adoption in Nigeria is gaining traction, with a considerable number of respondents already using such solutions. Increased efficiency, cost reduction, and better decision-making are reported benefits. However, a lack of awareness among non-users hinders broader adoption. Data privacy and security concerns need to be addressed to build trust in proptech solutions.

Limitations and Suggestions for Future Research

The study had a small sample size and focused on a specific region. Future research could involve a larger and more diverse sample to obtain a broader perspective. Additionally, qualitative research methods such as interviews or focus groups could supply deeper insights into the challenges and opportunities of proptech adoption in Nigeria.

Recommendations for the Nigerian Real Estate Industry and Proptech Stakeholders:

Increase Awareness: Efforts should be made to educate real estate professionals and stakeholders about the benefits and potential of proptech solutions. Training programs, workshops, and industry events can play a crucial role in enhancing awareness.

Address Trust and Security Concerns: Proptech stakeholders should prioritize data privacy and security measures to alleviate concerns. Building trust through transparency and reliable security protocols can encourage wider adoption.

Enhance Ease of Use: Proptech solutions should be user-friendly and intuitive to ensure easy adoption. Stakeholders should focus on simplifying interfaces and supplying comprehensive user support.

Collaboration and Integration: Proptech companies should collaborate with existing real estate systems to ensure compatibility and integration. This can streamline adoption and maximize the benefits for all stakeholders.

Government Support: Engage policymakers and regulatory bodies to create an enabling environment for proptech innovation. Policies that facilitate data protection, encourage investment, and promote technology adoption can boost the industry.

Focus on Preferred Proptech Solutions: Respondents expressed interest in virtual reality, property management solutions, smart home technologies, and property listing platforms. Proptech stakeholders should prioritize developing and implementing these solutions to meet market demand.

Overall, by addressing awareness gaps, building trust, and focusing on user-friendly solutions, the Nigerian real estate industry and proptech stakeholders can capitalize on the opportunities presented by proptech adoption and drive innovation in the sector.

Disclosure Statement

This research project was conducted for professional purposes only. The findings are based on collected data and are not intended as professional advice. Participants' anonymity and confidentiality were ensured. The study has limitations due to resource constraints and the researcher's ability. The data reflects information available until April 2023. No conflicts of

interest or external funding influenced the research. The information provided is without warranties or guarantees of accuracy or completeness. Readers should seek professional advice for specific circumstances. By accessing this research, readers acknowledge and accept its limitations.

Notes on Contributor

Olabisi Ojekunle holds a bachelor's degree in estate management from Obafemi Awolowo University, Ile-Ife, Nigeria, He works with the firm of AOC Real Estate Group. His research interests include housing markets and the application of technology to Real Estate.

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