Journal of African Real Estate Research
Volume 8, Issue 1
www.journals.uct.ac.za/index.php/JARER/

Benefits and Challenges to the Adoption of Modern Technologies for Real Estate Marketing in Lagos, Nigeria

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To cite this article: Oluwunmi, A.O, & Agara, E.U. (2023) Benefits and Challenges to the Adoption of Modern Technologies for Real Estate Marketing in Lagos, Nigeria. *Journal of African Real Estate Research,* 8(1), pp. 1–17. DOI: https://doi.org/10.15641/jarer.v8i1.1207

Abstract

Historically, some industries have lagged behind others in adopting technological improvements. Real estate is one of such industries. Even as technology affects the world around them, many real estate professionals continue to market or manage properties the same way they did in the past. Hence, there is a need to examine how informed they are about modern technological options that can boost their productivity and why they have not leveraged these options. This research uses selected modern technology to examine the benefits and challenges of real estate marketing in Lagos State, Nigeria. Eighty-two questionnaires were administered to the Estate Surveyors and Valuers (ESVs) in the study area, and 76 (93%) were returned and found beneficial. The data was analysed with the use of descriptive and inferential statistical tools. The findings show that a majority of the ESVs are aware of digital marketing, big data, virtual reality, artificial intelligence, drone technology and blockchain technology as a medium for marketing real estate. The study also revealed that digital marketing is the most commonly used technology for marketing real estate (e.g., email, WhatsApp and Telegram, among others).

The findings further show their perception of the benefits of adopting these technologies, such as a reduction in manual labour and efficient communication between clients and real estate agents, among others. Finally, the ESVs have not adopted most of these technologies because of resistance to adoption of modern technologies and lack of up-to-date and relevant property information. The study

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concluded that there is a need for the Nigerian Institution of Estate Surveyors and Valuers (NIESV) and the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON) to provide opportunities for ESVs to be enlightened, educated and trained on the use of various modern technologies for real estate marketing.

Keywords**:** *technology, benefits, challenges, property marketing, Nigeria*

1. Introduction

In today's society, technology is becoming increasingly important in all industries, including real estate. Technology has profoundly impacted almost every aspect of the industry, transforming the traditional business model. This is because technology acts as a catalyst for innovation, and it can be said that business needs it for sustenance (Diah, 2019). Technology has emerged as a game-changer in the real estate sector, separating players. It is anticipated to upend the real estate industry's traditional business model, including transaction processes and the development of long-term partnerships (Dominguez, 2021).

Technology is quickly evolving and shaping the future of real estate marketing, and the significance of real estate marketing cannot be overemphasised (Forbes Real Estate Council, 2020). This is because it serves as a tool for advertising and promoting real estate services, as well as generating potential leads that could lead to even more growth. In terms of the adoption of technology, the real estate industry has a long history of being considered a laggard (Nail et al., 2019). Regardless of being one of the world's oldest industries, it is typically five years behind the technology curve, according to some researchers (Smith, 2015; Trembecka & Kwartnik-Pruc, 2018). The real estate market comprises of a network of material producers and service providers who collaborate to create a finished product, such as buildings. The process of organising and implementing strategies to produce the final product becomes much more challenging when a large number of participants are involved.

Precisely because of this large number of players, the real estate sector has always had an impact on a country's economic growth. Diah (2019) states that it accounts for two-thirds of a state's net earnings. Also, real estate is a necessary component of the production process. This is because it has the same effect on production as capital and labour; the efficient use of real estate can significantly impact a business's productivity (Glickman, 2013). Finally, one of the most significant employers of labour is the real estate industry (Chastney, 2020; Iyiola, 2020). This is because it comprises at least five sub-sectors – housing, retail, hospitality, commercial or industrial and warehousing (Saxena, 2018). It is worthy of note that despite its size, the real estate industry is remarkably adaptable.

The need to invest more in technology is essential for the real estate industry's growth and to increase customer participation in real estate transactions. The global COVID-19 pandemic is also an indicator that conventional real estate marketing strategies may no longer be effective because of several restrictions placed on people's mobility (Agara, 2021). Moreover, adopting these technologies for marketing real estate in Nigeria may also be a way for ESVs to have an edge over the charlatans (quacks) that are intruding into the practice, real estate agency in particular. Therefore, this study focuses on

bringing to light the benefits and barriers to applying modern technologies for real estate marketing in Lagos State, Nigeria.

Several research efforts exist on the impact of technology on real estate practice. For example, South Africa (Warburton, 2016), Malaysia (Mohd, 2019; Diah, 2019; Ullah et al., 2020; Ullah and Al-Turjman, 2021), the US (Saiz, 2020), the UK (Braesemann and Baum, 2020), Sweden (Kayihura, 2021) as well as in Nigeria (Mohammed and Bello, 2021; Akinwamide, 2021; Akinwamide and Hahn, 2021; Agara (2021); Akeju et al., 2021) among others.

However, as far as the authors are aware, the majority of research efforts in the Nigerian context focused on real estate digital marketing, while those on property technology (PropTech) were theoretical. No published empirical study has looked holistically at the benefits of the adoption of artificial intelligence, digital marketing, drones, blockchain, big data, virtual reality, marketing automation, and chatbots in real estate marketing, as well as the challenges associated with their adoption in Nigeria, particularly among ESVs. The study of Agara (2021), in particular, specifically suggested that further research be done to ascertain the challenges associated with the adoption of modern technologies from the perspectives of ESVs. Therefore, this research is expected to advance further the existing discourse on adopting modern technology for real estate marketing among ESVs. The focus on ESVs is because they are the only duly registered professionals in Nigeria who are certified competent and have legal approval to offer services such as agency, property management, and marketing, among others (Olapade et al., 2018; Demola-Alade, 2021). The outcome of this study is expected to fill a gap in the literature by extending the corpus of knowledge in the field of real estate marketing in Nigeria.

The paper is organised into five sections, including this introduction. The second section delves into the concept of modern marketing technologies and reviews previous research. The study's research approach is discussed in the third section, and the findings are discussed in the fourth section. The final section sums up the findings, and appropriate recommendations are made.

2. Literature Review

The real estate sector has been slow to embrace state-of-the-art technological transformation. However, the COVID-19 pandemic has been a catalyst in accelerating technology adoption (Impermanenceatwork.admin, 2021). According to Anand (2021), the increasing use of technology in real estate has influenced the operation of the sector and has transformed the face of the industry. This is because industry players are starting to understand the benefits of investing in and using modern technologies (Horiachko, 2021).

2.1 Modern Technologies for Real Estate Marketing

According to Boitnott (2020), adopting modern technology allows companies to free up valuable time and resources for future development. In the words of Kharchenko (2019), Barber (2020), Marr (2020), Chhina (2020), Laloux (2021), Olick (2021), Horiachko (2021), Saini (2022), Chaffey (2022) and Samuel (2022), some modern technologies that can be used to market real estate are identified in Table 1.

Table 1: Modern Technologies for Real Estate Marketing

Modern Marketing Technologies	Usage Details
Virtual reality	It is used to showcase properties, conduct virtual tours and virtual staging (Chhina, 2020)
Chatbot	It is a piece of software that simulates a conversation and enables an estate agent to be available 24 hours a day (Laloux, 2021)
Marketing automation	It uses software to handle repetitive marketing and social activities, e.g. email marketing and social media posting, among others (Samuel, 2022)
Digital Marketing	It involves using Instagram, Facebook and Google search - among others - as marketing channels (Chaffey, 2022)
Drones	They can create emotional storytelling around a particular property and are also useful for displaying bigger homes and properties, giving a real feel of the size of a place (Marr, 2020)
Artificial intelligence	It enables real estate agents and prospective buyers to narrow a home search (Olick, 2021)
Blockchain	It enables access to broader investor pools due to ownership fractionalisation (Horiachko, 2021; Saini, 2022)
Big data	Estate agents can use big data to predict consumer behaviour, refine their audience and target relevant buyers, analyse buyer preferences and their level of commitment to potentially close a deal (Kharchenko, 2019; Barber, 2020)

2.2 Review of Past Studies

The adoption of modern technologies in real estate has been the topic of extensive academic research (Warburton, 2016; Ullah and Sepasgozar, 2019; Akinwamide and Bello, 2019; Diah, 2019; Saiz, 2020; Low et al. (2020); Akinwamide, 2021; Ullah and Al-Turjman, 2021; Kayihura, 2021; Akinwamide and Hahn, 2021; Akeju et al., 2021). To have a strong footing for this current study, it is pertinent to look into the findings of some of the earlier studies as they relate to this current one**.** In the US, Saiz (2020) focused on three key media for spreading the use of IT in commercial real estate, i.e. the commoditisation of space, online brokerage and sales and Fintech in mortgage and equity funding, to ascertain the most important new markets and products created by the IT revolution, as well as their likely influence on critical participants in the commercial real estate arena.

Braesemann and Baum (2020) looked into whether PropTech is transforming the real estate market into a data-driven economy in the UK. The study concluded that in order for firms to reap the benefits of market digitalisation, they must first recognise the economic value of the data they generate while purchasing or managing real estate. The article by Siniak et al. (2020) examined the impact of PropTech on the real estate industry's growth. The study was divided into four sections, namely: uses of PropTech in the real estate sector, effects of PropTech on real estate market transparency, how PropTech could give an area or a company a competitive advantage, and concerns about the broader consequences of these changes on the labour market and education. It was

concluded that PropTech is advantageous for territorial competitiveness and territorial growth strategies. Moreover, real estate technology can change system dynamics and improve market transparency. Finally, PropTech can have an impact on the changing structure of the real estate market (the demand for hi-tech, new skills, and growing policy difficulties for the real estate industry) depending on the institutional structures.

In Nigeria, numerous studies have also been carried out on adopting technologies in real estate practice. Aihie (2019), for instance, examined what prompted Nigerian real estate practitioners to accept PropTech as a medium for bridging the technological divide that could hinder the industry. The author also focused on the factors militating against the growth and development of technological advancement and the reason why most firms could not afford to invest in technological development. In another study, Mohammed and Bello (2021) researched the impact of information and communication technology on real estate management and valuation to develop a more sustainable real estate practice. The authors concluded that adopting technologies has beneficial and adverse effects on real estate management and valuation firms and their personnel. Akeju et al. (2021) investigated real estate firms' awareness and use of mobile technology to provide information that will raise awareness of mobile technology and encourage its use in real estate practice.

These studies notwithstanding, there appears to be a scarcity of research into the benefits and challenges of using modern technologies in real estate marketing. The few previous studies in this area include the efforts of Akinwamide and Bello (2019), Low et al. (2020), Agara (2021), and Akinwamide (2021). For instance, Akinwamide and Bello (2019) looked into the link between digital real estate marketing performance and digital emotional intelligence in Nigeria. The outcome demonstrated a statistically significant, positive relationship between digital real estate marketing performance and digital emotional intelligence among agents. According to their findings, the most efficient digital marketing platforms in real estate marketing are social media, websites and search engines. The study concluded that real estate agents' adoption of digital emotional intelligence would boost the performance of digital real estate marketing in Nigeria.

Also, Low et al. (2020) researched the concepts and practices of sustainable digital marketing in the Malaysian property development industry. The findings revealed that property development companies were motivated by the ability to access real-time consumer information to better create and communicate value to customers through the corporate brand. Moreover, Agara (2021) looked at the prospects of marketing real estate using contemporary technology in Lagos State. The outcome revealed that the effects of technology adoption on real estate marketing were enhancement of real estate networking and easy contact with potential clients. Akinwamide (2021) conducted a follow-up study in Nigeria, focusing on the importance of digital intelligence for long-term real estate digital marketing. According to the findings, social media and email are the most popular digital marketing platforms. The majority of the firms sampled in the study also stated that digital intelligence is vital for the effective and efficient use of the best digital marketing platforms for real estate transactions. Furthermore, digital competencies such as digital security, identity, rights and safety were the well-known components of digital intelligence in digital real estate marketing.

Although these studies achieved their objectives and served as the basis of this research, most focused on digital marketing to the exclusion of other modern marketing technologies such as virtual reality, drones and artificial intelligence, among others, despite the apparent benefits of adopting new technologies for real estate marketing, there appears to be a paucity of literature on the subject. In addition, the few studies that looked at these modern technologies focused on their impact on real estate marketing without considering the challenges that may be associated with their adoption in Nigeria, particularly among ESVs. The ones that looked at the challenges were not empirical. As a result, more empirical research is needed to explore this new normal, which could improve real estate operations in the country. This is the rationale for the current study.

2.3 Adoption of Modern Technologies for Real Estate Marketing: Benefits and Challenges

Based on the outcomes of several research efforts globally, some of the benefits and challenges of marketing real estate using modern technologies are summarised in Table 2. This study is restricted to these benefits and challenges.

Table 2: Benefits and Challenges to the Adoption of Modern Technologies for Real Estate Marketing

Benefits		
S/N	**Author/Year**	**Benefits**
1	Barillas (2020); Agara (2021); Fizal (2022)	Reduction of manual labour in sales
2	Anand (2021); Agara (2021); Fizal (2022)	Enhanced communication with clients
3	Barillas (2020); Anand (2021); Agara (2021); Fizal (2022)	Seamless rendition of services
4	Anand (2021); Agara (2021); Fizal (2022)	Provides immersive virtual tours to prospects
5	Barillas (2020); Anand (2021); Agara (2021); Fizal (2022)	Enhances networking among agents
6	Kharchenko (2019); Barillas (2020); Anand (2021); Horiachko (2021); Agara (2021); Fizal (2022)	Speeds up transactions
7	Kharchenko (2019); Siniak et al. (2020); Barillas (2020); Anand (2021); Agara (2021); Fizal (2022)	Provides detailed data to prospects
8	Baker (2021); Agara (2021); Fizal (2022)	Easy and constant contact with potential clients

9	Barillas (2020); Anand (2021); Agara (2021); Horiachko (2021); Fizal (2022)	Technology can generate automated advertisements
10	Barillas (2020); Agara (2021)	Technology increases client-base
11	Barillas (2020); Agara (2021); Fizal (2022)	Generation of more leads and sales
Challenges		
S/N	**Author/Year**	**Challenges**
1	Oni (2013); Aihie (2019); Barillas (2020); Forbes Business Council (2022)	Resistance to the adoption of modern technologies
2	Olapade and Olaleye (2019); Onwuanyi (2020)	Lack of up-to-date and relevant property information
3	Babajide et al (2018); Oyetunji et al (2018); Aihie (2019); Olapede and Olaleye (2019)	Limited skilled human resources to operate modern technologies
4	Oni (2013); Babajide et al (2018); Oyetunji et al (2018); Aihie (2019); Olapede and Olaleye (2019)	Lack of financial resources
5	Olapade and Ekemode (2018); Aihie (2019); Akeju et al. (2021)	Low level of awareness of modern technologies

3. Data and Methodology

This study's target population are Estate Surveyors and Valuers (ESVs) firms within Ikeja, Lagos State. The restriction to Ikeja was to curb unnecessary generalisation of results. Moreover, Ikeja was chosen because it is one of the three primary stratifications of the Lagos property market (Akeju et al., 2021). Furthermore, this research is limited to ESVs because they are the only duly registered professionals in Nigeria who are certified competent and have legal approval to offer services such as valuation, agency, property management, and marketing, among others (Olapade et al., 2018; Demola-Alade, 2021). From the 2020 online NIESV directory of registered firms, there are 82 firms located in the study area. This study, therefore, administered questionnaires on the ESVs in these firms, i.e. one questionnaire per firm. The focus of the study is limited to the following modern technologies: virtual reality, chatbot, drones, marketing automation, digital technology, artificial intelligence, blockchain and big data. This is because they are the major modern technologies adopted for marketing real estate in most developing and developed nations of the world (Alton, 2019; Marr, 2020; Vilmate, 2020).

The researchers designed a structured questionnaire to gather data for the study. The questionnaire has four sections, i.e. sections A, B, C and D. Section A's questions focused on the level of awareness of the selected modern technologies, while section B

was on the level of adoption of the technologies among the ESVs in the study area. Section C's questions centred on the benefits of adopting the technologies, and the last section was on the challenges of adopting modern technologies for real estate marketing. The measurement scale used to draw the questionnaire is a five-point Likert-type scale. Out of the 82 questionnaires administered, 76 (93%) were returned and found useful. The data obtained from sections A and B was analysed using percentages, mean, standard deviation and Pearson Correlation. In contrast, for sections C and D, mean and Relative Importance Index (RII) were used to arrive at the results. The RII result was interpreted following the suggestion of Fernando (2014) as follows: low level (RII < 50%), medium level (50% ≤ RII < 70%) and high level (RII ≥ 70%). The results for all the sections are displayed in tables and a chart.

4. Results and Discussion

This section contains a thorough examination of the data gathered as well as a discussion of the findings. The discussion is divided into five subheadings. The first, second and third sections are about the level of awareness and adoption of modern technologies, respectively. In contrast, the focus of the fourth and fifth sections is the benefits and challenges of adopting the technologies for real estate marketing.

4.1 Level of Awareness of Modern Technologies for Marketing Real Estate

The respondents were asked to state their level of awareness of the modern technologies used in marketing real estate identified earlier from the literature. This was done to ensure that the ESVs are abreast of the selected technologies for marketing real estate that are trending around the globe, particularly in developed countries. Additionally, it will ascertain if they are in a position to proffer accurate answers with respect to the aim of the study. Figure 1 shows their responses.

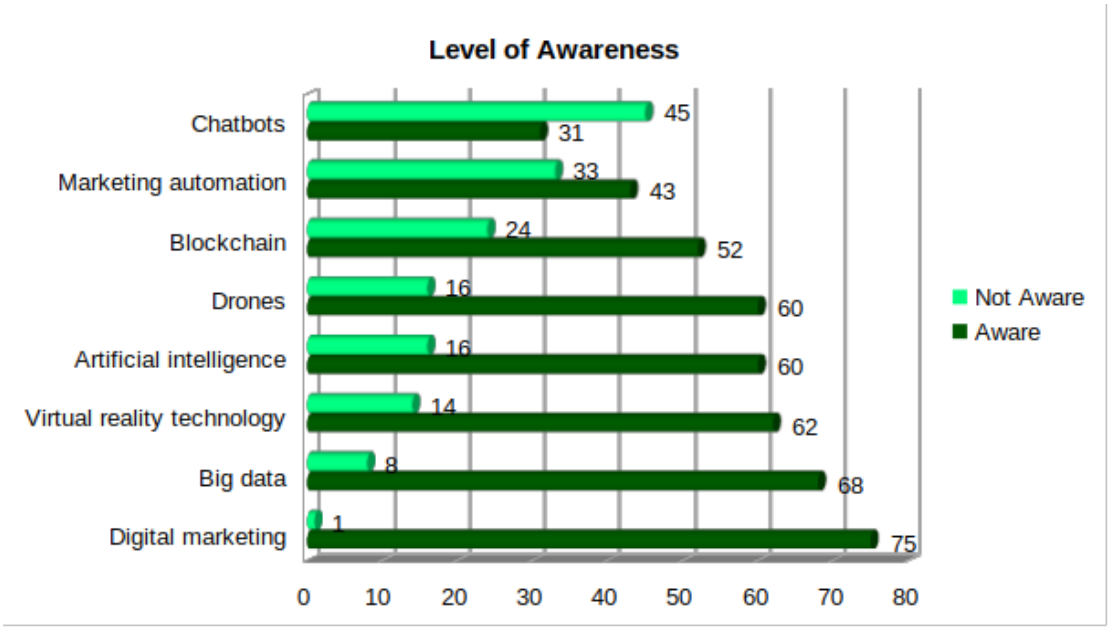

Figure 1: Level of Awareness

Figure 1 depicts the level of awareness of modern technologies in marketing real estate among the respondents. Based on their responses, 75 of them (99%) are aware of digital marketing, 68 of them (89%) are aware of big data, 62 of them (82%) are aware of virtual reality, 60 of them (79%) are aware of artificial intelligence, 60 of the respondents (79%) are aware of drone technology, 52 of the respondents (68%) are aware of blockchain, 43 (57%) are aware of marketing automation and 31 of the respondents (41%) are aware of chatbots as a real estate marketing tool. The outcome of these findings vividly shows that the majority of ESVs in the study area are conversant with modern technologies adopted for real estate marketing. The highest percentage (99%) of them are particularly familiar with digital marketing. This outcome supports the views of Akinwamide and Bello (2019), Low et al. (2020) and Akinwamide (2021).

4.2 Level of Adoption of Modern Technologies for Marketing Real Estate

The respondents were asked to state the extent of adoption of the selected modern technologies. This was intended to determine whether they were actually adopting them in marketing real estate in their firms. To achieve this, the researchers assigned 5 to "Every Time", 4 to "Almost Every Time", 3 to "Occasionally", 2 to "Almost Never" and 1 to "Never". Table 3 shows their responses.

Table 3: Level of Adoption of Modern Technologies for Marketing Real Estate

Level of Adoption	5	4	3	2	1	Mean	SD	Remark
Digital Marketing	55	21	0	0	0	4.72	4.22	Every Time
Big data	0	36	30	10	0	3.34	2.88	Occasionally
Virtual reality	0	33	33	6	4	3.25	2.82	Occasionally
Blockchain	0	30	31	6	9	3.08	2.71	Occasionally
Marketing automation	3	4	26	29	14	2.38	2.06	Almost Never
Artificial intelligence	0	0	20	45	11	2.12	1.66	Almost Never
Chatbots	0	3	14	41	18	2.03	1.63	Almost Never
Drones	0	0	7	13	56	1.36	0.94	Never
Average Mean: 22.31/8 = 2.788								

Note: SD = Standard Deviation

In order of adoption, Table 3 indicates that digital marketing is the most commonly used technology for real estate marketing in their firms (mean=4.72). They, however, confirmed that they "occasionally" use Big Data (mean=3.34), virtual reality (mean=3.25) and blockchain (mean=3.08). The table further reveals that they "almost never" adopt marketing automation (mean=2.38), artificial intelligence (mean=2.12) and chatbots (mean=2.03), while they "never" use drones (mean=1.36). This outcome implies that the majority of modern technologies are not frequently adopted in the study area for real estate marketing (with an average mean of 2.80). Evidently, only digital marketing is gaining ground among ESVs in the study area. This outcome further buttresses the works of Akinwamide and Bello (2019), Low et al. (2020) and Akinwamide (2021).

4.3 Level of Awareness and Adoption of Modern Technologies (Pearson Correlation)

The researchers used the Pearson Correlation to determine the nature of the relationship between ESVs' level of awareness and the adoption of modern technologies for real estate marketing. Table 4 illustrates the results.

Table 4: Awareness and Adoption of Modern Technologies

Awareness of Modern Technologies (X Values)	Adoption of Modern Technologies (Y Values)	X and Y Combined
Mx: 56.375 $\sum = 451$ $\sum(x - M_x)2 = SS_x = 1381.875$	My: 2.752 $\sum = 22.02$ $\sum(y - M_y)2 = SS_y = 7.007$	N = 8 $\sum(x - M_x)(y - M_y) = 59.022$

Key

x = x values y = y values;
M_x = Mean of x values M_y = Mean of y values;
SS_x = sum of $(x - M_x)^2$ SS_y = sum of $(y - M_y)^2$

R Calculation

$r = \sum((x - M_y)(Y - M_x)) / \sqrt{((SS_x)(SS_y))}$
$r = 59.022 / \sqrt{((1381.875)(7.007))} = 0.5998$
$r = 0.5998$

As displayed in the calculation, the values for r and r^2 are 0.5998 and 0.3598, respectively. The coefficient of determination (r^2) shows how much of the variance in the dependent variable (degree of adoption) can be accounted for by the independent variable (level of awareness). 36% of the variance in this case can be explained. Additionally, when r moves away from zero, the strength of the linear relationship between the two variables gets stronger. As a result, Pearson's correlation coefficient (r=0.5998) confirms that there is a moderately positive correlation between the level of awareness and the adoption of modern technologies. This suggests that as awareness levels rise, adoption rates also tend to increase. This result implies that ESVs must make an effort to keep up with the latest technologies if they want to use them to market real estate.

4.4 Benefits of Adopting Modern Technologies for Marketing Real Estate

In an attempt to ascertain the benefits of adopting modern technologies in the study area, the researchers assigned 1 to "Strongly Disagree (SD)" and 5 to "Strongly Agree (SA)". The outcome of the analysis using RII is shown in Table 5.

Table 5: Benefits of Adopting Modern Technologies for Real Estate Marketing

Benefits	SA	A	U	D	SD	RII	Rank
It reduces manual labour	39	37	0	0	0	0.903	1st
It aids and enhances efficient communication between clients and real estate agents	39	37	0	0	0	0.903	1st
Seamless rendition of services	46	24	4	2	0	0.900	3rd
Provides immersive virtual tours to prospects	45	25	5	1	0	0.900	3rd
It enhances real estate networking	47	23	3	2	1	0.897	5th
Speeds up transactions	45	20	11	0	0	0.889	6th
Technology has helped clients access detailed data, which makes them more knowledgeable on issues relating to real estate	36	35	5	0	0	0.882	7th
Easy and constant contact with potential clients	29	40	6	1	0	0.855	8th
Technology can generate automated advertisements	28	37	10	1	0	0.842	9th
Technology increases client-base	19	35	11	10	1	0.761	10th
Generation of more leads and sales	3	25	28	14	6	0.613	11th

Note: low level (RII < 50%); medium level (50% ≤ RII < 70%) and high level (RII ≥ 70%)

Based on the results from RII, it is clear that all the benefits listed are important. However, ten are the most important. They include reduction in manual labour (RII=0.903); efficient communication between clients and real estate agents (RII=0.903); real estate services are rendered seamlessly and efficiently (RII=0.900); technology enables virtual tours (RII=0.900); technology enhances real estate networking (RII=0.897); technology saves time spent on transactions (RII=0.889); access to detailed data (RII=0.882); easy and constant contact with potential clients (RII=0.855), technology can generate automated advertisements (RII=0.842) and technology increases client-base (RII=0.761). However, according to respondents, the lowest ranked benefit is the generation of more leads and sales (RII=0.613), which ranked 11th respectively. From the foregoing, it is clear that these benefits are statistically significant, considering that the RII of the lowest-ranked benefit is greater than 0.5 (50%). The implication of this result is that ESVs have a lot to gain when they adopt these modern technologies for marketing real estate. These outcomes give credence to the findings of the studies of Anand (2021), Agara (2021), and Fizal (2022).

4.5 Challenges of Adopting Modern Technologies for Real Estate Marketing

Considering the responses of the ESVs in Figure 1 and Table 5, it is evident that they are aware of modern technologies and their benefits. So, why are they not making good use of these incredible benefits? This question was posed to the ESVs, and a list of probable challenges drawn from the literature was presented to them to choose from. Their responses were analysed using a five-point Likert scale where five is "Strongly Agree (SA)", four is "Agree (A)", three is "Uncertain (U)", two is "Disagree (D)", and one is "Strongly Disagree (SD)". The result of the analysis is shown in Table 6.

Table 6: Challenges of Adopting Modern Technologies for Real Estate Marketing

Challenges	SA	A	U	D	SD	Mean	RII	Rank
Resistance to the adoption of modern technologies	52	24	0	0	0	4.68	0.936	1st
Lack of up-to-date and relevant property information	45	25	6	0	0	4.51	0.902	2nd
Limited skilled human resources to operate modern technologies	20	28	15	13	0	3.72	0.744	3rd
Lack of financial resources	0	15	30	24	7	2.70	0.540	4th
Low level of awareness of modern technologies	0	10	16	22	28	2.11	0.422	5th

Note: low level (RII < 50%); medium level (50% ≤ RII < 70%) and high level (RII ≥ 70%)

The analysis in Table 6 of the challenges to adopting modern technologies for real estate marketing shows that the major challenge is ESVs' resistance to adopting modern technologies (RII=0.936). This is closely followed by a lack of up-to-date and relevant property information (RII=0.902) and limited skilled human resources to operate modern technologies (RII=0.744). However, they are not entirely convinced by the notion that lack of financial resources (RII=0.540) and low level of awareness of the modern technologies among ESVs in the study area (RII=0.422) are significant challenges. These findings imply that ESVs' resistance to adopting modern technologies, lack of up-to-date and relevant data, and limited skilled human resources are the major impediments to using modern technologies in the study area. This outcome is not surprising, considering previous research findings (Onwuanyi, 2020; Barillas, 2020; Ashton, 2021; Forbes Business Council, 2022). Without a willingness to accept change, a constant supply of relevant data or skilled human resources, embracing modern technology in real estate practice will be a difficult task.

5. Conclusion and Recommendations

This research examined the benefits and challenges of adopting modern technologies for real estate marketing in Ikeja, Lagos State, Nigeria. From this research, four findings stand out. The first is that ESVs are aware of the selected technologies for marketing real estate, and it is noteworthy that they are very much aware of digital marketing in particular. Secondly, despite the majority of them being aware of the technologies, they hardly use them, except for digital marketing. Thirdly, there is a moderately positive correlation between the level of awareness and the adoption of modern technologies. Fourthly, the benefits of the adoption of modern technologies reveal that they will be an excellent addition to the toolkit of Nigerian real estate professionals for real estate marketing. Finally, resistance to the adoption of modern technologies and the absence of up-to-date and relevant data are significant barriers to their adoption. Based on the findings of the study, the researchers make the following recommendations:

1. NIESV and ESVARBON should provide forums where ESVs can be enlightened, educated and trained on how to use the various technologies for real estate marketing. This will help curb the issue of low levels of adoption of modern technologies.
2. Also, considering the numerous benefits of modern technology in real estate marketing, it is suggested that ESVs embrace its adoption, as this would improve the real estate industry in Nigeria, specifically real estate marketing.
3. Moreover, practical seminars and workshops can be organised at professional branch levels for Heads of Practice (ESVs) to get them abreast of the benefits of modern technologies. This is to address the issue of resistance to the adoption of modern technologies.
4. Furthermore, it is suggested that NIESV and ESVARBON should see to the establishment of a central data bank where relevant data can be drawn when needed. This is with a view to finding a lasting solution to the issue of lack of up-to-date and relevant data.
5. Finally, rather than looking to hire in-house Information Technology professionals - which may be expensive - firms may consider outsourcing by engaging consultants. This will alleviate the third barrier (lack of skilled human resources).

6. Limitations and Suggestions for Further Studies

This research was carried out by administering questionnaires, and only eight modern technologies for real estate marketing were the focus. Thus, there might be a possibility that the study's results may be different if other relevant, emerging modern technologies are included and examined in a new study. Moreover, there may be peculiar limitations associated with the questionnaire survey approach. Based on this, it is suggested that more studies be conducted by applying mixed data collection methods such as interviews and questionnaire surveys. Furthermore, this research considered just five barriers to adopting modern technologies; hence, further studies can be regarded as including more barriers. Also, this study only covered ESVs in Ikeja, Lagos State; a further study could be extended to ESVs in other geographical locations. Finally, a follow-up study may measure the influence of modern technologies on real estate marketing.

Acknowledgement

The authors are grateful to the reviewers and the Editor for their valuable comments, recommendations and contributions to the manuscript.

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