



The Role of AI-driven Digital Advertising in Sustainable Real Estate Marketing in Nigeria

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Abstract

The 21st century has witnessed massive digital disruptions in all sectors, in what is now known as the Information Age. The foundation of these disruptions can be traced back to digital technology, which has drastically transformed communication and access to information in societies. It has also enabled organizations improve their business operations and create more value for their customers. Contemporary consumers' behaviors and patterns are constantly changing hence, organizations need to adapt and transform their processes to incorporate use of digital tools in order to remain a going-concern, as well as be creative in offering them products and services that align with these needs. Using the Social Construction of Technology (SCOT) and Media Richness theories, this paper adopts a qualitative research design to explore how Industry 4.0 (4iR) technologies like Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR) and Big Data are changing the way organizations advertise Real Estate to targeted consumers, while considering the ethical and privacy implications of such engagements. Using a purposive sample of ten realtors in the luxury home segment, semi-structured interviews were used to collect data that was analyzed thematically. Findings confirmed that AI-driven tools have enhanced the digital advertising strategies of realtors, stimulated purchase intentions and sustained business growth.

Keywords: Big Data, Digital Technology, Innovation, Machine Learning, Media Richness

1. Introduction

Digital technologies, the Internet and its ensuing innovations have drastically changed marketing enabling wider reach, simultaneous, faster, cheaper and easier access to information. The benefits of these innovative technologies as they particularly affect the marketing communication activities of advertising, personal selling and direct marketing, can only be realized if businesses have an in-depth understanding of how these technologies affect consumers' purchasing experiences, and can leverage on these technologies to enhance customer satisfaction (Adeola et al., 2022). Hence, an organization's 21st century digital marketing strategy entails accomplishing marketing efforts with the aid of digital tools,

keeping in mind the peculiar nature of the present and future digital consumers (Rosário & Dias, 2022).

In the last decade, advancements in technology innovations have revolutionized all sectors of business and society. Organizations have begun to see the value created by adopting cutting-edge digital solutions in their business operations. With changing consumer needs, organizations are constantly faced with the challenge of offering them tools that are fast, user friendly and readily available. Advances in digital technology and Artificial Intelligence (AI) have given rise to Machine Learning (ML) algorithms that can be applied in digital marketing to understand the digital climate, boost higher prediction of digital consumers' behavior, facilitate proper customer targeting, higher customer engagement and ultimately improve consumers' experience by creating value for them and other stakeholders.

The introduction of the innovative 4iR technologies in conjunction with mobile technologies into the marketing discipline, has enabled solutions like robots and chatbots, which are conversation agents powered by AI, to simulate human conversation via human-computer interaction. Chatbots are enabled to respond to customer queries about a product or service, and other helpdesk activities, while robotic digital assistants powered by Generative AI technologies can interact with customers and resolve customer requests in the physical or virtual marketplace. Also, tools like VR and 3D visualization enhance 3D marketing of a product or service to consumers, particularly for luxury goods.

ML algorithms in specialized AI software are able to identify patterns within consumers' Big Data to enable businesses know how consumers view and interact with the brand on social media, in order to predict customized products and service offerings for them (Capatina et al., 2020). Big Data also leverages on Cloud computing to gather and analyze consistent and personalized consumer data from multiple platforms including mobile applications, emails, the web and social media (Rosário & Dias, 2022). These innovative technologies are changing the way organizations and digital marketers maximize efficiencies and reach their consumers to facilitate the purchasing experience, giving customers a real-life experience with the product or service and quickly moving them through the purchase decision process up to fulfillment.

1.1 Background of the study

In the Post-covid -19 era, there has been a shift in consumer behaviors and expectations, which has had a huge impact on the contemporary society. Increasingly, businesses are relying on digital tools and channels to reach their customers. Face-to-face professional and social interactions have slowed down, with consumers opting for virtual communication and interactions in all spheres of society. The proliferation of mobile tools and devices, faster and cheaper internet services and more enhanced digital technologies have made it easier for consumers to work, socialize, shop and communicate in private.

1.2 Statement of the problem

In Nigeria's highly fragmented real estate market, the challenges of incessant traffic, bad roads and insecurity have discouraged intending buyers or renters from viewing prospective properties before closing a deal. This has had adverse effects on realtors who are unable to showcase their lands and houses (properties) to prospective buyers or renters within and outside Nigeria. The emerging consumers of the next ten years are speculated to be the Generation Z demographic (Rahilly, 2020), who are also referred to as digital natives. This newest consumer generation is shaping future online purchasing, communication and interaction habits, causing organizations to reengineer their business models and processes.

Today's consumers prefer personalized communication across digital platforms such as email, mobile, web and social media (Li, 2021). Also, immersive technologies such as Virtual Reality (VR) can enhance a customer's personalized experience through the purchase journey (Adeola et al., 2022). According to Charm et al. (2020), traditional in-person experiences will be replaced by high-performing ones like VR and Robotics Process Automation (RPA) in the "next-normal" post- Covid-19 society, to provide better value. This poses a challenge for realtors in developing countries to explore how they can use innovative technologies to revamp and re-design their advertising models in order to reach today's digital customers, offer them extra convenience and value (saving time and cost), and at the same time enjoy a sustainable competitive advantage. Although previous research investigated the adoption of AI algorithms in integrated marketing (Adeyinka et al., 2024), Big Data in Lagos property marketing (Oluwunmi et al., 2022) and modern technologies in real estate marketing in Nigeria (Oluwunmi and Agara, 2023) these studies did not specifically explore digital advertising in real estate marketing in Nigeria, which is one, out of all the marketing communication strategies that include sales promotion, direct marketing, public relations, personal selling and advertising. Also, these studies surveyed Estate Surveyors, and not the population of realtors and digital advertisers. To address these gaps, this research uses qualitative methods to explore how AI-driven tools enhance digital advertising in Nigeria's real estate marketing, from the perspective of not just Estate Surveyors, but all stakeholders in property advertising within Lagos and Abuja.

To this end, this study has the following objectives:

- To establish the innovative technologies that have revolutionized digital advertising in the contemporary age
- To ascertain the challenges faced by Nigerian realtors while deploying innovative technologies in their digital advertising strategies
- To determine the prospects for Nigerian realtors to fully deploy creative and innovative technologies in their digital advertising strategies
- To make recommendations to the requisite policy makers, ministries, departments and agencies to proactively ensure that Nigerian realtors adhere to ethical standards and practices in their digital advertising strategies

The following research questions addressed the study:

- What are the innovative tools used by Nigerian realtors to advertise their properties to consumers?
- What are the issues affecting Nigerian realtors in their deployment of innovative digital advertising strategies?
- What are the prospects for Nigerian realtors to fully deploy innovative technologies in their digital advertising strategies?

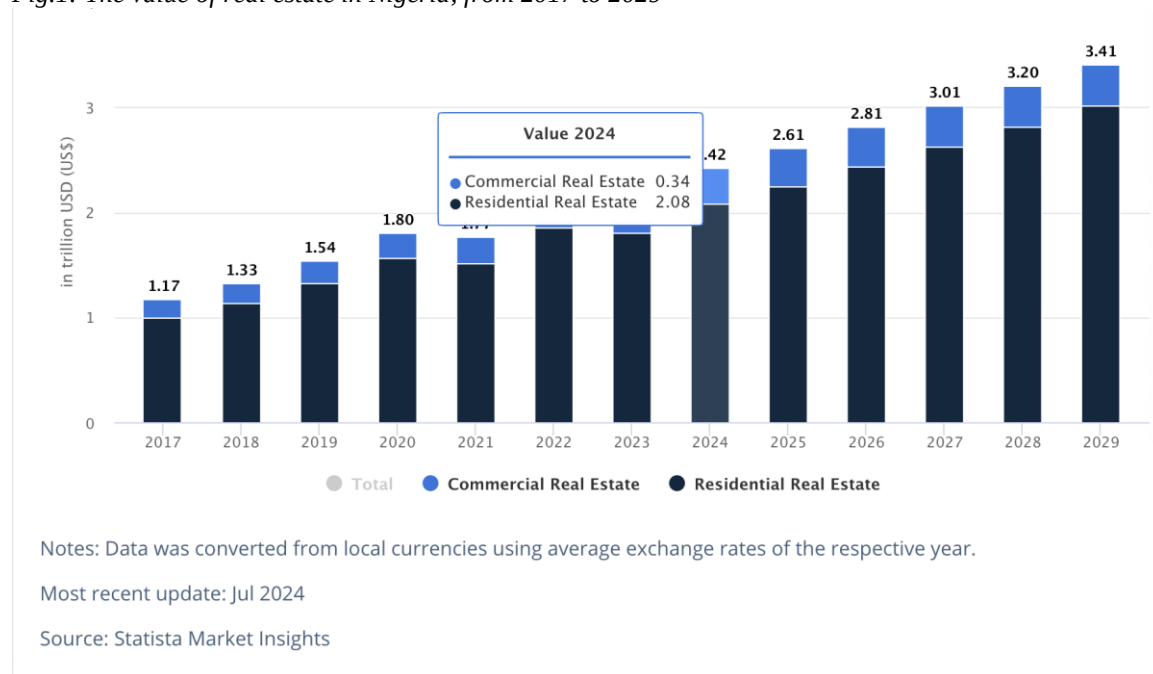
This paper begins by introducing the major innovative technologies that have revolutionized digital advertising, and specifically targeted the contemporary digital consumers. It goes on to review previous literature about innovative technologies in digital advertising. Next, the methodology is discussed, the research findings are presented and discussed, and the paper ends with the conclusions.

2. Literature Review

2.1 The real estate sector in Nigeria

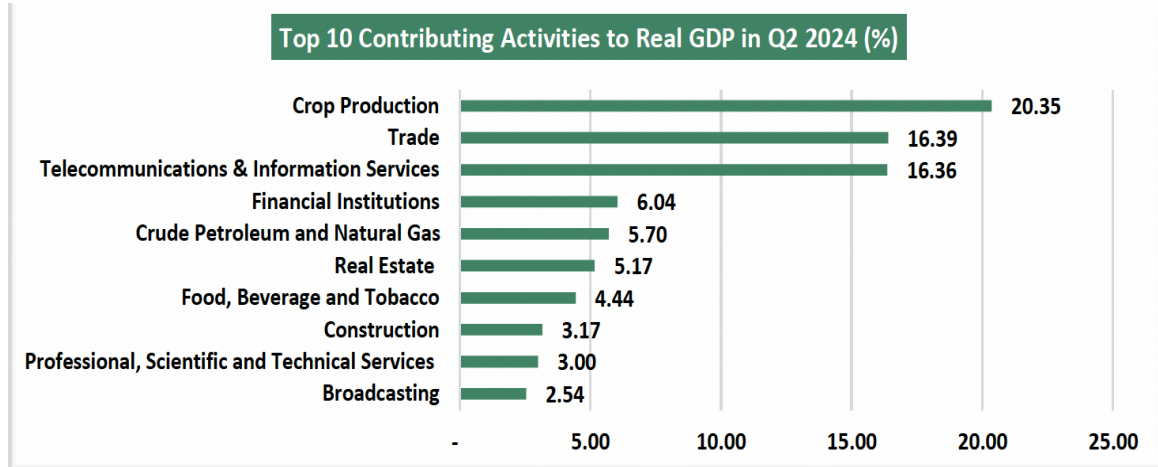
Nigeria is home to about 223 million people with a population density of 636 people per square mile (Worldometer, 2023). She is easily the most populated country in Africa and popularly called the “Giant of Africa”. Nigeria’s real estate market has experienced a significant increase in growth and development, partly due to the rising population, 54% urbanization and shifting consumer preferences. This market is projected to reach \$2.42Trn in 2024 (see figure 1), where 86% is controlled by residential properties (Statista, 2024), with Lagos and Abuja contributing a significant portion to these projections. The middle-income earners which comprise of mainly young professionals, are the major buyers or renters of properties in Nigeria. Additionally, high net worth individuals and Nigerians in the diaspora often buy real estate properties for long-term investments. According to the National Bureau of Statistics (see figure 2), real estate services grew in nominal terms by 47.16% in Q2 2024, with a contribution of 5.52% to nominal GDP and 5.17% to real GDP (NBS, 2024).

Fig.1: The value of real estate in Nigeria, from 2017 to 2029



Source: Statista

Fig. 2: Top 10 Contributing Activities to Real GDP in Q2 2024



Source: National Bureau of Statistics

2.2 The influence of Mobile Technologies on Digital Advertising in Nigeria

In Nigeria, the inadequate provision and poor service coverage of fixed-line telephone operators has promoted the use of mobile devices in the country. For many consumers in Nigeria and globally, mobile phones are their predominant means of communication, social interaction and accessing the Internet. Statista (2022) estimates that there are about 6.4 billion global smartphone users. In Nigeria, over 80% of web traffic is generated from mobile phones (Statista, 2023). The Nigerian Communications Commission reported that at the end of year 2023, there were 224.7 million active mobile lines in Nigeria (figure 3).

Fig. 3: Annual subscriber technology data in Nigeria

Monthly Subscriber Technology Data

Internet Service Operator Data

Quarterly Subscriber Operator Data

Annual Subscriber Technology Data

Months: April 2017 - March 2024

	Operator	Feb'24	Jan'24	Dec'23	Nov'23	Oct'23
Active Lines	Mobile (GSM)	219,683,240	218,113,011	224,412,931	222,803,555	221,748,72
	Mobile (CDMA)	-	-	-	-	-
	Fixed Wired/Wireless	113,754	112,474	111,971	111,433	113,52
	VoIP	173,319	175,480	188,808	305,021	325,94
	Total	219,970,313	218,400,965	224,713,710	223,220,009	222,188,19
Teledensity		101.47%	100.75%	103.66	102.97	102.4

Source: www.ncc.gov.ng

This shows phenomenal end-user adoption, and huge opportunities for personalized digital advertisements, at very minimal costs. Essentially, mobile has become the first screen of choice, causing most advertisers to move their advertisements to the in-app and mobile web platforms that appeal to the digital natives. Latest trends in mobile marketing communication involve the use of Quick Response (QR) codes (Dushinski, 2009; Li, 2021) on both online (websites, social media), and offline (billboards, fliers, banners, branded shirts, business cards) advertising materials as well as Geolocation services offered by Google. Geo-location marketing sends push advertisement notifications of business locations, products or services to consumers' smartphones when they are within a particular geographical location. It does this using accumulated big data of consumers' online behavior.

2.3 AI-driven Technologies in Real Estate Advertising

According to Li (2019), the incorporation of AI in advertising has been termed “Intelligent Advertising” which is a consumer-centered activity that employs big data with the help of algorithms to showcase the products and services of a brand. This means that AI can create an advertisement, show it to specific consumers, monitor, and evaluate its impact on those consumers. A similar perspective to this argument claims that AI and ML can facilitate precision targeting with the aid of predictive learning algorithms that analyze consumers’ preferences and online behavior, offering consumers more personalized advertisements through access to consumers’ data (Witkowski, 2017; Deng et al., 2019; Kumar et al., 2019; Rosário & Dias, 2022). Hence, AI helps realtors to effectively reach their target audience and increase conversions.

Also, ML analyzes big data of customer opinions and recommendations posted on social media platforms, and displays them on the profile pages of their friends, leveraging on the ideology of “group think” (Capatina et al., 2020; Komakech et al., 2021). This prediction of online interactions by ML algorithms has caused a shift in online consumer behavior from individual to social (Kotler et al., 2017). A contradictory argument to this perspective concerns the ethical issues involving consumers’ privacy in the collection and use of their data for such advertising purposes. However, since the algorithms offer value to consumers, this concern is still being debated. TikTok leveraged on the very short attention span of digital consumers to develop a unique social media platform where consumers and businesses can create short, attractive, engaging videos that advertise themselves, their brand, products or services. This move prompted other social media platforms like Instagram, Facebook and YouTube to begin producing stories, reels and short videos as well. These shortform reels and videos are used by realtors to showcase a 360-degree view of their properties in a fun and professional manner.

To bridge the time and distance gap for prospective buyers or renters of properties in Nigeria, VR tools can be used to give consumers a satisfactory tour of the property that closely resembles what they would have experienced from a physical inspection of the property. A VR headset immerses users in a completely virtual environment where the user feels a sense of presence and can engage the human sense of vision, hearing, is able to have a 360-degree examination of objects and can experience sensations of moving or falling (Van et al., 2017). AR on the other hand, provides an overlay of virtual content on life objects to enhance them, without allowing users interact with the 3D environment. Though VR provides a better customer experience, it requires VR headsets which are not readily available in third-world countries like Nigeria. AR is preferred for enriching classified advertisements in real estate advertising and can easily be used with a smartphone (Naeem et al., 2023).

3D visualization (also called 3D rendering) provides an interactive, virtual, graphical representation of a physical object using 3D software. These virtual 3D images can be uploaded to a website and viewed via smartphone devices. 3D visualization is increasingly being used in digital advertising to give customers a real-life glimpse of a product before purchase or rent. In real estate, it enhances the marketing and advertising process for builders and realtors by giving prospective buyers a 3D look-and-feel of the upcoming or completed properties for sale. Customers can personalize the properties by adding or removing certain elements according to their style and see the relative price quotes for each choice, while the platform owner collects usage data for analysis and future targeting (Zhang et al., 2019). Additionally, customers can simulate virtual inspections of the 3D images of the houses they intend to purchase or rent. Alcañiz et al. (2019) argued that these innovative technologies are particularly useful in digital advertising targeted at the digital natives. Van et al. (2017)

supports this view by claiming that these strategies have been found to positively impact purchase intentions and brand perceptions.

Despite the immense opportunities provided by “intelligent advertising”, developing countries are yet to fully harness the gains of incorporating these innovative technologies in their digital strategies. According to Arbaiza and Robledo-Dioses (2024), socio-cultural and economic issues influence the perception and adoption of AI-driven advertising, especially in developing markets. They further argued that though AI-driven advertising in Peru offers gains such as personalization, ethical issues of privacy and information mis-management are local cultural nuances that necessitate adopting AI according to the socio-economic characteristics of Peruvians. In Nigeria, issues of poor digital infrastructure, mistrust about data privacy, insufficient disposable income and a limited digital media skills of the masses, constitute hindrances to the adoption of AI-driven technologies in integrated marketing (Adeyinka et al., 2024). Similarly, a study on AI-driven marketing in Lesotho uncovered that though resource allocation and customer service has been enhanced by big data and other AI-driven marketing strategies, some of the hindrances to AI-adoption in this region include poor awareness of these innovative technologies, consumer resistance and financial constraints of the South African masses (Batani et al., 2024).

2.4 Ethics in digital advertising

Internet innovations have brought consumers closer to themselves and businesses (Halm, 2022), and digital advertisers have leveraged on these innovations to reach consumers with their products and services. Therefore, it has become needful to ensure that businesses adhere to proper ethical conducts when using innovative digital advertising strategies to offer goods and services to consumers. According to Halm (2022), these set of rules for proper online behavior is known as *netiquette*, while Chiles (2014) defines *netiquette* as “the social code of the Internet”.

It is imperative that engagements between advertisers and consumers in the digital age should be non-intrusive and respectful. While businesses in brick-and-mortar retail can leverage on innovative technologies like proximity systems (using Bluetooth Beacons and Geofencing), they should be ethical in their advertising practices by ensuring that consumers willingly opt-in to receive advertisements and other marketing communication messages from them, and not flood consumers’ smartphones with promotional materials because the latter’s device Bluetooth or location services happened to be turned on within the vicinity where the business operates. Additionally, it is also unethical to sell or buy consumers’ email addresses or phone numbers, in order to send them promotional content. Often times, this information would be irrelevant to them and would be received as “Spam” mails, which is a breach of *netiquette* (Halm, 2022).

In Nigeria, the global involvement of governments in the direct regulation of advertising was pioneered with the formulation of the National Mass Communication Policy in 1986, which gave rise to the Advertising Practitioners Council of Nigeria (APCON) in 1989. It was recently renamed to the Advertising Regulatory Council of Nigeria (ARCON), the agency responsible for regulating advertising in Nigeria (Bel-Molokwu, 2017). In the last two decades, advertisements in Nigeria had to pass through the Advertising Standards Panel (inaugurated in 1992) before being vetted by the regulatory body ARCON, for onward exposure to the public. However, the advent of digital technology and the liberties posed by the Internet have made it challenging to regulate advertisements that are shown to consumers on social media and other public websites.

Social spamming (Chakraborty et al., 2016) has become a trend on social media sites, where platform owners like Facebook and Instagram monitor consumers' digital footprints on their site and display sponsored posts to users in order to manipulate the views or popularity of a product or service (Halm, 2022). This prompted ARCON to expand its jurisdiction to cover both offline and online advertisements in Nigeria's media space. Consequently, ARCON sued META N30 Billion for exposing Nigerians to advertisements on Facebook and Instagram without prior approval from the regulators, thereby violating the country's advertisement laws (Mboho, 2022).

While reviewing the above literature, certain gaps were identified. Firstly, there is a paucity of research on implementation of innovative digital advertising strategies in Nigeria, particularly regarding the 4iR tools and technologies. Although the study by Komakech et al. (2021) investigated the impacts of Industry 4.0 on marketing activities and strategies of iron and steel companies in Uganda, which is also a developing country, it looked at the overall marketing activities in relation to the cost of doing business in the steel and iron sector, without specifically investigating the impact of innovative 4iR technologies on digital advertising, which is the promotional aspect of marketing, also known as marketing communications. Additionally, other scholars explored the use of emerging and innovative technologies in real estate marketing (Adeyinka et al., 2024; Oluwunmi et al., 2022; Oluwunmi and Agara, 2023) without specifically focusing on the advertising aspect or exploring how AI-driven technologies enhance the advertisement of properties in Nigeria. These gaps are what this research aims to address.

2.5 Theoretical Approach

The theoretical approach provides a structure that aids our understanding of the theories that underpin the study, and also provides a foundation for investigating the research questions. The theoretical approaches underpinning this research are the Social Construction of Technology and Media Richness theories.

2.5.1 The Social Construction of Technology (SCOT)

The SCOT proposed by Pinch and Bijker (1984) argues for the influence of social structures on technology development, also known as the social shaping of technology. This theory aims to understand the use of technology within certain societal and cultural contexts. The SCOT conceptual framework consists of four components. However, this study is hinged on the interpretive flexibility component which posits that technology design is an open process, producing different outcomes according to the particular social contexts of development (Klein & Kleinman, 2002). Thus, technology is a neutral tool that has distinct good or bad effects on the society, dependent on how individuals use it (Finley, 2022).

2.5.2 Media Richness Theory (MRT)

Daft and Lendel (1984, 1986) developed the information Richness Theory (IRT) in 1984, now known as the Media Richness Theory (MRT). They argued that since information processing reduces uncertainty, shared interpretation between parties can be enhanced through the use of rich media. Media richness theory demonstrates the ability of a medium to convey rich information and enhance communication irrespective of the user. Differences in richness are determined by the medium's capacity for immediate feedback; cues (audio and visual) and channels utilized; personalization; as well as variety in the language of communication (Daft & Wiginton, 1979), which enables individuals process complex messages. With technology advancements, this theory is aligned with the digital world where innovative technologies have enhanced personalized communication between individuals and

businesses in the society (Odeba et al., 2021). Essentially, the richness of the communication media promotes consumer engagement and interactions, particularly with the generation Y (Lipowski & Bondos, 2018; Alamäki et al., 2019) and generation Z who enjoy the cyber and digital environments (Li, 2021).

3. Methods

A qualitative research design was adopted for this study because qualitative methods are useful for understanding and exploring an issue within a particular sociocultural context where the research is carried out (Creswell, 2016). They are also useful for asking probing questions, to balance the entire approach (Bryman & Bell, 2011). The sample was drawn from realtors in Lagos state and Abuja because they have the most thriving real estate market and are the most urbanized cities in Nigeria. The sampling technique was purposive, because the selected interviewees can purposefully inform an understanding of the research objectives (Creswell, 2016). The participants were selected from LinkedIn, Castles Lifestyle, Real Life (ThinkMint) property magazines and personal contacts of the researcher.

A total of ten semi-structured, one-on-one interviews were conducted with realtors in Lagos and Abuja that deal with luxury homes in Ikoyi, Victoria Island, Lekki, Asokoro and Maitama. See table 1 for a profile of the interviewees. Saturation was reached after the 10th interview was conducted because further interviews provided similar responses to what had already been received from previous interviews. Verbal informed consent to conduct, record the interviews and publish the results was obtained from all participants before the start of the interviews. Each interview session lasted about 30 minutes and was tape-recorded. They were fully informed about the purposes of this research and how their responses would be used and stored. The questions were open-ended, allowing the interviewees to express their views, thoughts and concerns regarding their use of innovative digital advertising tools in their marketing efforts, the challenges encountered and support needed. See the Appendix for the interview protocol. Four of the interviews were conducted face-to-face while the other six were done via Zoom video call to recreate a face-to-face meeting, which according to Cassell and Symon (2004) is the fullest condition of participating in the mind of individuals when seeking information from them.

4. Results and Discussion

The interview data was transcribed and analyzed using the Braun and Clarke (2006) Thematic Analysis procedure as shown in table 2 below. Pseudonyms were given to the participants and their organizations to conceal their true identities.

Tab. 1: Profile of Interview Participants

S/N	Pseudonym	Age	Level of Education	years of Operation	Company size
1	Omowunmi	49	MSc.	12	7
2	Ikenna	64	MSc.	25	15
3	Boma	55	LLM.	23	11
4	Bassey	40	BSc.	7	10
5	Nkechi	38	BEd.	12	9
6	Adekunle	50	BArc.	27	18
7	Yusuf	44	BSc.	8.5	10
8	Chinedu	42	MSc.	5	7
9	Ayodele	43	BA.	13	35
10	Obafemi	58	LLB.	10	13

Source: Author's compilation

Tab. 2: Data Analysis Procedure

S/N	Thematic Analysis
1	Familiarizing with data
2	Generating initial codes
3	Searching for themes
4	Reviewing themes
5	Defining and naming themes
6	Producing the report

Source: Braun and Clarke (2006)

This study adopted the Braun and Clarke (2006) thematic analysis procedure, which they defined as a method for systematically identifying, analyzing and reporting patterns of meaning (also known as themes) across a data set. This means that the researcher is able to make sense of shared meanings from multiple data sets, and not just a single data set. Thematic analysis is widely used in qualitative research because it is flexible, allows for social interpretation of data and is useful for policy development (Braun & Clarke, 2006; Creswell, 2013). Initial coding generated 23 codes from the transcribed data, which were further re-coded to arrive at 9 codes. This second level of coding was carried out on the initial codes to identify any overlaps or shared meanings within the 23 codes. The 9 codes were finally grouped into 3 overarching themes that answered the research questions.

According to Guba and Lincoln (1981), the concepts of validity and reliability are not applicable to qualitative research due to lack of an absolute reality in the social world. However, they proposed that four aspects of “trustworthiness” which include credibility, transferability, dependability and confirmability, are sufficient strategies for evaluating rigor in qualitative studies. Hence, credibility in the coding process was achieved by prolonged engagement in the data analysis and adhering to proper research ethics. Also, since the researcher had no competing interests in this sector, it eliminated bias in the coding process. Transferability was achieved by presenting rich descriptions of the significant statements for the resultant codes. Dependability and confirmability was achieved with two peer debriefing sessions with colleagues and member checks with the participants as a confirmation of the findings.

4.1 Redefining advertising with digital tools

In this theme, the participants recounted the digital advertising strategies they currently deployed to remain competitive in their industry. They shared that these tools and technologies have helped them gain more visibility within and outside Nigeria while saving time and cost in their marketing efforts.

We have an app and we periodically send push notifications to our top customers when a new property is listed. We also use pictures and life videos on social media. We used to do billboards in Ikeja, Ikoyi and the Lekki toll plaza but those were really expensive. Now, we can put all those on social media and do sponsored ads. We tried pay-per-click one on Google but that didn't give us much traction so we stopped. Oh... yes...we have a website and our chatbot helps with answering customers when it is night in Nigeria. You know that many of our customers live abroad. (Yusuf)

In this business, we deal with a lot of high-profile clients. Some do not have the time for several viewings. Some live abroad. Will they come here to inspect properties? They have to be shown the house to know if they like it. VR tech is working well for us

here. Even for my business cards and brochures, we capture our website and personal contacts with QR codes. It is sleek, classy and makes your card look tidy, you know what I mean? "Packaging" is key in this business and you have to let those big Abuja boys know that you are current with tech.
(Adekunle)

The participants also talked about current innovations in digital advertising and gave insights on the new media technologies they had tried using to advertise their properties.

We use 3D rendering to sell off-plan. It's like VR but cheaper to deploy, less bandwidth...and good for selling off-plan faster because people can modify the original design to their taste. You can literally move walls and windows and see the new house design, Many big time Lagos realtors are using it. There is a lot of magic that we could do now that we could not do many years ago. (Ayodele)

The overall findings of this theme suggest that realtors appreciate the benefits of adopting new media technologies for advertising their properties. They are aware of these technologies and have implemented a few of them in order to establish a sustainable competitive advantage in the industry. Following from the rich media and SCOT theories, the realtors understand the shift in consumer consumption patterns for faster and convenient accessibility to properties especially in traffic-prone Lagos, as well as the technologies that align with Nigerian consumers' socio-cultural context and peculiarities. Thus, they leveraged on rich media technologies like live videos and 3D rendering which can easily be deployed on smartphones (considering the proliferation and dependence on mobile phones as shown in figure 3 above), are able to convey rich, enhanced information on that channel, and give buyers real-time engagement with the properties. These findings are also consistent with the argument by Adeola et al. (2022) that African businesses can only benefit from innovative, technology-driven advertising if they understand the influence of these technologies on consumers' purchasing experiences and further harness them to meet customers' needs. Similarly, notable authors (Komakech et al., 2021; Rosário and Dias, 2022) claimed that organisations need to improve their digital marketing communication channels to incorporate innovative digital tools that align with the peculiar needs of today's consumers. This theme answers the first research question.

4.2 Cost of Investing in the Technology

This theme describes the participants' concerns about the infrastructure costs, technical knowledge and skills required to use these technologies, viz a viz the gains to be derived from the investment, as can be seen in the following extracts:

Some of my Nigerian customers complained that the VR technology consumes too much data and our Internet in Nigeria is not strong. It was okay during the lockdown. nobody wanted to catch corona. Now people will tell you that they will come for physical inspection. It is only those abroad that don't mind using it.
(Chinedu)

Everything good costs money. My problem is that who will be maintaining this system? What if the day it has a problem? I will have to hire someone specially for that, ...erm...and that is another cost! The truth is, ...I do not trust all these tech stuff, especially in Nigeria. Look at the AI chatbot on my website. People are complaining, hhhhhmmmm... one thing today, another thing tomorrow. I'm just tired! They said the

AI doesn't know anything,...and we have spent big money! Now they are not even using it. We will continue to use social media. We get some top clients from there. (Boma)

The findings of this theme suggest lack of trust in the technology infrastructure in Nigeria, which is still a developing third-world nation in Africa, and align with the claim by Bel-Molokwu (2017) that incessant electricity supply, poor digital infrastructure, low literacy levels, high cost of data, increasing poverty levels, a skills gap and low end-user acceptance hinders ownership of smart AI-driven technologies. Similarly, Schwab (2016) claimed that a lot of people who live in developing countries lack Internet access, or cannot afford it. These findings are also consistent with the argument by Abdulquari et al. (2021) that chatbots have not received full acceptance by Nigerian consumers due to poor responses to customers' queries. Convenience, privacy and insecurity issues could cause some individuals to opt for virtual technologies, which according to the media richness theory, enhances consumer engagement by leveraging on the richness of AI-driven advertising media, especially those that can easily be deployed and viewed on mobile phones. However, Nigerian consumers would opt for physical interactions if they perceive that they are not getting the value expected. This finding aligns with the SCOT theory where according to Finley (2022), technology is a neutral tool dependent on how people use it. During the pandemic, AI-driven rich media technologies were desired and heavily relied on for inspections. Subsequently, consumers began to opt for cheaper technologies with the claim that the richer media were costly. This theme answers the second research question.

4.3 Staying competitive with technology

Here, the participants recounted how they had to keep up with latest trends, technologies and innovations in digital advertising of properties, in order to stay relevant and competitive. They acknowledged the contributions of AI and shared their optimism about its impact in real estate advertising.

I will tell you categorically that digital advertising has kept me going in this industry,.. probably... because ...in fact, the obvious is that technology is what's empowered all our properties to be able to 'travel' (Ikenna)

Chat GPT is a huge research resource.. It's not just about using it to create AI-generated ads which people are doing now, but ... to look for information. We used to pay very experienced people to do this, but essentially, artificial intelligence can do it. AI can tell you if an ad actually has a similar kind in another material, we call it referencing. So it references and brings out all the parameters that've kind of looked like the one that you're trying to create, so it doesn't look like you're copying your competitor. In fact,, AI is ...is...makes life easy for us. All man dey use am! (Adekunle)

We used to have someone called a copywriter, also a designer in those days. Now all that is an app. I am yet to understand everything as regards AI but everybody should learn it. Any realtor that is unsuccessful in advertising properties in the next decade, must examine their relationship with technology. (Yusuf)

The findings of this theme emphasize the need for businesses to adapt their processes to align with the changing societal structures in Nigeria. Drawing on the SCOT and rich media theories, as the Nigerian society becomes more technologically savvy and accustomed to rich

media tools that enhance communication, consumers have come to appreciate the benefits of emerging technologies, especially the digital natives who are more accustomed to digital tools and devices. There has been a shift in consumer expectations and participation in today's digital society, particularly with the emergence of AI. Essentially, since consumers have come to appreciate the good effects of technology on the society, Nigerian realtors have begun using AI-driven tools to enhance their advertising strategies, which answers the third research question. According to Bransford & Cocking (2000), digital advertisers need to use appropriate digital tools and services to deliver content in a creative and innovative manner in order to meet the changing needs of societies. Additionally, the findings of this theme also align with the claim by Charm et al. (2020) for advertisers to revamp their advertising models to align with the evolving consumer landscape in order to remain competitive. Furthermore, the findings support the claim by Van et al. (2017) that innovative digital advertising strategies positively impact consumers' purchase intentions.

5. Conclusion

The purpose of this study was to identify the innovative digital technologies that are implemented in digital advertising of real estate properties in Nigeria. Innovation is a complex process that causes disruptions in the social and business world; thus, realtors need to leverage on these trends to implement strategies that match current needs and demands of the present and future generation of digital natives so that they can achieve a sustainable competitive advantage in their industry.

The interview findings were able to address the research questions, and uncovered that the innovative digital advertising strategies deployed by Nigerian realtors include QR codes, social media, AR, 3D rendering, VR and Generative AI. The first three can be accessed via mobile smartphones, making it more convenient to connect with buyers on-the-go. Also, the richness of 3D and AI-driven tools enhances communication and consumers' engagements with properties. Generative-AI programmes have disrupted digital advertising in recent times by writing ad copy and creating designs to near perfection, thus saving costs for realtors. These findings correspond to the theory of media richness where the richness of communication media promote consumer engagement and interactions, thereby providing an understanding of consumption within the Nigerian context.

This research uncovered some considerable challenges with implementing digital advertising in a developing country like Nigeria. They include high cost of Internet access and investment costs of the technologies, insufficient technical knowledge and skills, poor Internet connectivity and insufficient trust in innovative AI technologies. However, findings showed that innovative technologies have enhanced the digital advertising strategies of Nigerian realtors and stimulated purchase intentions. These results therefore emphasize the importance of realtors being intentional about deploying innovative digital advertising strategies now and in the future, to effectively reach consumers in the contemporary digital age.

This study is limited by the focus of the collected data on the convenience and awareness that AI-driven advertising tools bring to real estate marketing in Nigeria. Future studies should examine the perceived influences of AI-driven advertising tools on the profitability of the real estate sector, with a focus on the bottom line. Also, a consumer research on offtakers, using survey methods, will be beneficial for a more balanced analysis.

In conclusion, the findings of this research make a theoretical contribution to the body of knowledge in the marketing discipline on the influence of innovative technologies in the

promotion of goods and services, with a focus on Africa. It also makes a practical contribution by recommending the digital advertising strategies that Nigerian realtors should adopt, which align with the peculiar customer characteristics and socio-cultural contexts of their consumers, in order to give them a sustainable competitive advantage and boost consumers' purchase of properties. These strategies include QR codes, AR, 3D visualization and Generative AI models for creating and personalising advertisements on social media. Digitally savvy youth can also commence a career in digital advertising of real estate using the above-mentioned tools, which will help to reduce the unemployment rate in Nigeria. The paper also makes a call for the review of regulatory mechanisms. It recommends that Nigeria's advertising regulating body (ARCON) should aggressively implement policies regulating digital advertising activities to prevent privacy issues, misuse of consumers' data and misleading advertisements. Additionally, it calls on relevant government ministries to provide the enabling backbone digital infrastructure such as affordable and reliable Internet connectivity, to support 21st century realtors in their digital advertising efforts. Furthermore, public-private research collaborations between academia and realtors on latest trends and innovations in real estate advertising, as well as public sensitisation campaigns, are recommended for the advancement of knowledge, sustainable competitive advantage and economic development of Nigeria.

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Appendix

Interview Protocol for Realtors

Opening Questions

1. Please introduce yourself and your business
2. Please tell me how long you have been in this business and your areas of operation
3. What segment of the real estate market do you cater to? Why?

To determine the creative and innovative technologies that Nigerian realtors use to reach digital consumers

4. How do you advertise your properties and source for clients?
5. What do you know about innovative trends in advertising?
6. Which of these innovations have you tried in your business?

To ascertain the challenges faced by Nigerian realtors while deploying innovative technologies in their digital advertising strategies

7. What has been your experience using these innovations? Any challenges for you or your customers?

To determine the prospects for Nigerian realtors to fully deploy creative and innovative technologies in their digital advertising strategies

8. Where do you see real estate marketing and advertising in the coming years? Prospects?
9. How do you feel about deploying any emerging digital advertising technologies in your company's future marketing strategies?

Closing question

10. Is there any other thing you want to add which you think I may have missed?