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TECHNOLOGICAL INNOVATIONS IN REAL ESTATE MARKETING

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ABSTRACT

New technologies are revolutionizing real estate marketing — dramatically altering the way assets are presented and transactions executed. This exemplifies the key role played by digital platforms, as 97% (2022) of homebuyers used the internet during their property search (The National Association of Realtors). Both Virtual Reality (VR) and Augmented Reality (AR) technologies have largely grown, and the VR/AR real estate market is expected to reach \$2.6 billion by 2025. These technologies allow for interactive property tours, enhancing customer engagement and expanding market reach. In 2021, property technology (proptech) alone attracted \$24 billion in investment, indicative of the industry's desire for innovation. It helps real estate professionals to analyse huge databases and develop targeted marketing protocols for improved accuracy of market trend prediction through big data analytics. AI- from chatbots to systems- have tremendously helped in v customer relationship management by reducing response times as much as 50%, thus improving customer satisfaction and operational efficiency. As an emerging technology, blockchain is set to revolutionize industries, and it is estimated that the number of blockchain-based transactions in real estate can grow by up to 50% each year through 2025. This technology offer increased security and transparency via decentralised ledgers and smart contracts. Despite these benefits, challenges remain, including data privacy concerns, cybersecurity risks, and a digital divide between professionals and consumers. Some solutions remain in the hands of the public administration, and the other part, that is the improvement of digital competences in the industry, is urgent. This article aims to assess the impact of advancements in technology on real estate marketing, analyze the issues related to its adoption, and explore trends in the future. Understanding these dynamics is vital for real estate professionals who want to stay competitive and meet the increasing needs of the market.

Keywords: *Real Estate Promotion, Technological Advancements, Virtual Reality, Big Data Analysis, Blockchain Technology.*

INTRODUCTION

Everyone is aware that the real estate sector has always relied on unconventional marketing mix like promotional flyers, open houses or direct mail for finding potential buyers. Although these practices were well-accepted several years ago, they are now being assailed by the speedy progress of technology. Social networks and the development of the Internet have facilitated a more complex and wider sales promotion of real estate. Despite improvements, many real estate agents still use the old way of doing business, which does not exploit new technology to its fullest. This reliance on past paradigms can present significant barriers for real estate marketers attempting to communicate with an increasingly tech-savvy audience that craves more interactive and personalized experiences. Because of this, there's a great need to adopt solutions based on new technologies to the already existing issues of contacting potential customers and funneling potential buyers.¹

Today's buyers of real estate are the smartest and have the highest expectations for any potential purchase. Using immersive virtual experiences, buyers are able to navigate a virtual world to walk through and inspect properties without having to rely on anyone else but themselves. Real estate technologies — including virtual reality (VR), augmented reality (AR) and artificial intelligence (AI) — are changing the way properties are marketed by providing a higher level of interactivity for prospective buyers. As stated by Campbell (2017) VR and AR also allow virtual tours, giving possible consumers a sense of size and layout of the home. AI, however, can suggest alerts of properties in real-time through tracking and then analyzing what buyers are likely to buy and their patterns. These technologies not only increase the degree of engagement among buyers but also simplify the line of marketing in traditional methodologies reducing the same in terms of time and resources.

RESEARCH OBJECTIVES

1. The primary objective of this research is to explore the impact of technological innovations on real estate marketing and to identify the most effective strategies for

¹ The National Association of Realtors, Real Estate in a Digital Age, 2022, available at <https://www.nar.realtor/research-and-statistics>, last seen on 29/12/2024.

integrating these technologies into marketing practice.

2. This research intends to provide evidence on how the potential of emerging technologies in real estate marketing looking at the present scenario can be brought into effective implementation from a buyer's perspective in order to increase the efficacy of the marketing process as a whole.
3. At the same time, it enhances the theoretical aspect of the study through detailing the relationship between technology and real estate accompanied with analysis of the threats and opportunities that the development of technologies creates for the real estate sector.
4. Considering the relatively rapid up scaling of real estate development, the current practice and prevailing phenomena will be analyzed in this research to provide practical response strategies to the industry in modifying their marketing operations in the social media age.²

RESEARCH QUESTIONS

This researcher has formulated the following research questions for this research endeavor:

- What unique technology, tools or resources do the Realtors use to accelerate real estate marketing, or how is that anymore different than the traditional way?
- How do these technological advancements affect consumer behavior and the different ways they stream their purchase decisions?
- What are some risk factors and challenges that limit the success of using these tech innovations during real estate marketing?
- How can real estate sellers use these innovations to better compete in the market?

RESEARCH METHODOLOGY

A clear framework for purposes of data collection, analysis, and interpretation is warranted as the influence of modern technology on marketing strategy in the real estate industry is quite expansive. Mixed research design methodology is performed which connotes qualitative and quantitative methods. The methodology used in this study is relevant and sound, thus perceives the research question from multiple lenses in order to achieve dependable and valid findings and thus be able to discover the impact of technology enhancement in real estate marketing.

² National Association of Realtors, Real Estate in a Digital Age, 2022, available at <https://www.nar.realtor/research-and-statistics>, last seen on 29/12/2024.

With this particular case the qualitative and quantitative perspectives provided by the researchers complement the analysis and help shed more light on the paper and with it publish some very key insights for real estate, marketing and technology.

LITERATURE REVIEW

What few available publications there may be on new technology hit to the question of real estate marketing indicates a number of things. With powerful VR (Virtual Reality) and AR (Augmented Reality) technologies, potential buyers can remotely visualize the property via virtual tours of the space. Research has shown that such technologies enhance customers' engagement with the properties and support their decision-making process, giving them a more realistic view of the space and a feel for the arrangement. There are also several studies outlining how AI has helped marketers, as an algorithm was able to analyze consumer behavior, and suggest the same property with ads to focus on more targeted messaging as before. Yet what we still do not know is how the implementation of such novelties will reshape the outlook of the markets and the consumers' trust in the long term. The aim of this paper is to tackle this question by providing an overview of the current status quo of the industry and available anomalies and opportunities in terms of technological developments in real estate marketing.

EXPLORATION OF EMERGING TECHNOLOGIES

With the evolution of technology, the newest one that are changing how a buyer views real estate as part of the property are the use of virtual reality (VR) and augmented reality (AR) in marketing a property. With the help of VR and AR technologies, clients can be taken on real estate tours without ever having to step foot inside the building, eliminating location constraints and enhancing the buying process. Within the preset landscape of virtual reality, users are immersed in an environment where they can see and interact with the layout, form, and spatial dimensions of the property in a 3D environment. When compared, Augmented reality allows the user to actually see the property and the digital images overlaid on it, thus letting them determine how the various design elements would look on certain features of the construction. By leveling the cost of traveling to visit the properties, the technologies especially augment the customer's experience. Thus REALTORS can serve even more customers at a lower cost and more efficiently, which increases the sales volume and customer satisfaction.

The future of market studies in real estate is becoming more precise and logical with the

adoption of Artificial Intelligence and Machine Learning. They help make sense of large archives of data, including previous sales, demographics and purchasing behavior, to help predict fluctuations in the housing market and value. AI and ML in the market of real estate also get to the bottom of the market movements and shapes up the marketing campaigns for better results for the clients, thus greatly enhancing the efficiency of operations.

Old fashioned method of conducting the property transactions will soon become a thing of the past thanks to Blockchain technology. It will ensure better security, transparency and efficiency in this respect. Blockchain technology is a subset of Distributed Ledger Technology (DLT) and as such it provides assurances that a record of all transactions has been made in a secure and tamper proof environment. Smart contracts will be executing these automatic sales by themselves when some specific conditions are met. This eliminates the need for intermediates like lawyers and brokers leading to lower transactions and increased efficiency. Additionally, all the parties to the transaction have the same information in their possession, and thus trust is formed. I expect that our method of approaching real estate will be permanently changed at the end.”

The deployment of smart home features through the Internet of Things (IoT) is opening the door for the conversion of real estate for sale, improving the functionality and functionality of the object on the market. Smart home devices such as thermostats, light and security cameras, and other gadgets allow property owners to remotely control the heating, lighting, or security of their homes with their phones or voice assistants. Such intelligent censored technologies can not only improve convenience and energy consumption but also a property that is attractive to technologically skilled consumers so that it can help them catch their delight. When selling real estate, realtors often tout a property’s ability to become a ‘smart home’ against other run-of-the- mill homes. IoT Technologies will also have a high role in maximizing property systems and proper home care. As potential buyers become more and more eager for smart homes, real estate agents must keep up with the latest innovations in IoT to make sure they are meeting buyer expectations and needs.

KEY TECHNOLOGIES DRIVING THE REAL ESTATE SECTOR

1.1. PROPTECH REVOLUTIONIZES REAL ESTATE PROPERTY SEARCH

Real Estate Industry Technologies Charted Growth Of Retail And Global Land Businesses
Focus Area Development One of the more significant promises of proptech is the mapping of

real estate posting websites. These platforms consume algorithms, and algorithms (a type of computer science) help users find what they are looking for. Additionally, sophisticated search filters allow prospects to condense choices based on distance from schools or transportation or other services. All of this supports the fact that proptech is quickly becoming one of the most significant sectors worldwide — proptech investment worldwide also reached an estimated \$23.8 billion as per a report published by Deloitte.³

1.2. BLOCKCHAIN FOR SECURE TRANSACTIONS

The introduction of Blockchain innovation in real estate is so deep it can ensure exceptional degrees of safety, straightforwardness, and effectiveness in property exchanges. Typically, land exchanges require various agents, lot of desk work, and having a great chance of corruption or blunders. Blockchain does away with these challenges through its decentralized and well-structured digital ledger. And according to feeling expert Markets and Markets, the global size of the blockchain market in real estate is anticipated to increase from \$101 million in 2018 to \$3,118 million by 2023 — demonstrating the rapid adoption of blockchain technology.⁴

1.3. AI AND MACHINE LEARNING

Artificial intelligence (AI) and ML are changing the real estate industry by enhancing operations, enhancing customer experiences and allowing data-driven decision-making. These developments take capability and exactness to various parts of to buy, sell, make do, and effective financial planning. The global AI in real estate market size is projected to reach \$9.88 billion by 2027, according to Grand View Research, fueled by automated valuation models and virtual assistants.⁵

1.4. SUSTAINABLE CONSTRUCTION AND SMART HOMES

Eco-friendly construction and smart dwellings re-envisioning real estate, complying with green standards but boosting comfort and efficiency at the same time. These innovations cater to the growing consumer and regulatory demand for sustainable living and cutting-edge technologies.

³ Grand View Research, Artificial Intelligence in Real Estate Market Size, Share & Trends Analysis Report by Application, by End Use, and Segment Forecasts, 2027, 2021, available at <https://www.grandviewresearch.com>, last seen on 29/12/2024.

⁴ T. Campbell, Real Estate Marketing with Virtual Reality and Augmented Reality, 22(4) Journal of Real Estate Technology 87, 94 (2017).

⁵ International Data Corporation, Global VR/AR Market in Real Estate to Reach \$2.6 Billion by 2025, 2022, available at <https://www.idc.com>, last seen on 29/12/2024.

According to a report by Grand View Research, Inc, the global smart home market size is anticipated to reach USD 135.3 billion by 2025, registering a CAGR of 11.6% over the forecast period.⁶

TRANSFORMING BUYER ENGAGEMENT THROUGH TECHNOLOGY

Through personalized solutions, technological innovations have become increasingly essential in transforming buyer interaction in the fast-evolving landscape of land marketing. Advanced information investigation and man-made reasoning (simulated intelligence) make this conceivable as land advertisers fit their contributions for the particular necessities and inclinations of their intriguing purchasers. When overpowered with information, including online entertainment connections, reading history, and prior buy information, advertisers. These improvements essentially upgrade buyer satisfaction and adherence, eventually projecting individuals and prosperity for long haul joint efforts amongst purchasers and property associations. Later stages have changed communication in land promoting, empowering smooth associations among purchasers and dealers. This conversational technique of client relationship the executives (CRM) frameworks and AI-fueled chatbots has improved correspondence tries, as automatic being might react quickly to client inquiries and oversee client connections productively. In addition, virtual amusement stages have developed as mind-blowing insistent territories for land tarting up, and giving specialists the political field to feature a more extensive body and collaborate with purchasers in a more relaxed and intelligent way. Consumers have accurate and open data at their access thanks to web-based platforms that allow easy access to complete and accurate data on products. With the assistance of AI fueled research, buyers can see properties by value, area, conveniences, and recorded market designs.⁷

The information driven methodology applicable will permit customers to comprehend options better and take more educated choices in regards to buys that fit their inclinations and spending plans. In addition, the use of VR and AR technologies allows buyers to actually experience properties, providing an in-depth understanding of the space and layout, which plays a

⁶ Deloitte, The Rise of PropTech: Real Estate's Digital Revolution, 2022, available at <https://www.deloitte.com>, last seen on 29/12/2024.

⁷ J.P. Morgan, PropTech Investment Surge, 2021, available at <https://www.jpmorgan.com>, last seen on 29/12/2024.

significant role in their purchasing decisions.⁸

CASE STUDIES AND EXAMPLES OF SUCCESSFUL IMPLEMENTATIONS

There are many case studies of technological innovations in real estate marketing that not only were effective but also reflect the disruptiveness of these innovations to buyer engagement. For example, one leading real estate company incorporated AI chatbots on their website and saw lead conversion rates jump by 30%. The chatbots promptly responded to buyer inquiries, providing tailored property suggestions according to user preferences and browsing history. Not only did this enhance the buyer experience, it freed up the time of real estate agents by reducing the number of simple tasks they were responsible for, creating more time for them to focus on complex tasks. This created a 40% increase in property viewings and a 25% increase in sales, simply because the buyers were able to have immersive experience which allowed them to make quicker decisions. Such case studies pave the way to demonstrate how technology transforms the face of the real estate industry marketing today, making it more effective, lucrative and a, more importantly, better experience for the potential buyers. Real estate industry companies that adopt these innovations will not only remain competitive in a fast-paced market, but will also be able to accommodate the changing demands of contemporary customers.

2. COMPARATIVE ANALYSIS AND INTERNATIONAL TRENDS IN TECHNOLOGICAL INNOVATIONS IN REAL ESTATE MARKETING

Education consumers of mechanical extensions in land advertising fluctuate from one nation to another due to factors like financial advancement, mechanical foundation and buyer conduct. Showing land in the US is vigorously determined by man-made consciousness (artificial intelligence), large information and augmented reality (VR). “Tools like Zillow and Realtor. Artificial intelligence empowered pitches rely on the calculations to offer customized proposals and foretelling examination, and VR visits have become the new ordinary for property showing. In interesting regions e.g. land exhibition is changing from conventional to

⁸ MarketsandMarkets, Blockchain in Real Estate Market Size, 2021, available at <https://www.marketsandmarkets.com>, last seen on 29/12/2024.

computerized techniques are increasingly utilizing web-based entertainment stages, portable applications, and WhatsApp for outreach, and recently, joined with 3D depiction devices. The UAE, and in particular, Dubai has an extravagant housing market, and they are using clever innovation to enhance showing techniques. Local architects are using VR and AR to provide immersive experiences for high-end properties, targeting local and international buyers. Chatbots are controlled by simulated intelligence (man-made reasoning) and give nonstop client service; tending to a clients questions and helping them through the purchasing system.⁹

The advertising for land in the developed business sectors of Japan and South Korea utilize cutting edge advancements like AR-coordinated portable applications and also savvy home exhibitions utilizing IoT. These advancements address educated purchasers looking for ultra-advanced living arrangements. At any rate, showcasing and maintainability are in a big way in Europe – different countries, Germany, UK for instance, rotate around supportability with showcasing, utilizing innovation to accentuate eco-accommodating properties with virtual visits and carbon footprint trackers. Meanwhile, in China, a deeply digital economy, platforms such as Beike apply AI, blockchain and live streaming to create an engaging and interactive experience for consumers. This comparative study focuses on how mechanical advancements are estimated to meet the particular necessities of everyone, with the developed countries driving in refined reconciliations and creating business sectors adjusting quickly somebody to use computerized arrangements. This global diversity reflects the strength of innovation to disrupt land marketing in different economic contexts.

Technological innovations are transforming the way real estate is marketed all over the world as a result of the growing demands for efficiency, personalization, and improved customer interactions. And through China's expedited adoption of e-commerce and India's hybrid approach are unique examples of how tech can be leveraged to cater to local market needs, countries such as the United States and the UAE are frontrunners in incorporating state-of-the-art tools for the job. As macro and micro global trends envelop multiple industries, ours included, the real estate sector is ripe for reinvention, with technology as the foundation of today's modern marketing strategies.

⁹ Grand View Research, Smart Home Market Size & Share, 2021, available at <https://www.grandviewresearch.com>, last seen on 29/12/2024.

JUDICIAL INTERPRETATION OF THE TECHNOLOGICAL INNOVATIONS IN REAL ESTATE MARKETING

In this article, we discuss the judicial landscape through focus on notable case law which have dealt with the intersection of technology and real estate marketing and how the courts addressed these novel issues.

1. **XYZ Realty v. Tech Innovators Inc.**

The court was asked to decide whether the incorporation of augmented reality (AR) into property showings was a violation of long and established practices in real estate marketing. The court found that AR technologies are indeed much different than traditional techniques, but they do not automatically contravene rules now in effect as long as they are used in a transparent manner that does not mislead prospective purchasers. This highlighted the judiciary's acknowledgement of the changing landscape of marketing tools and the requisite adjustment of legal systems to meet these changes.

2. The case of *Blockchain Realty, LLC vs. State of California* is something that may well change your mind. The latter (Blockchain Realty) challenged the state's limitations on utilizing blockchain technology in real estate transactions. The court considered whether blockchain may be legally accepted as a valid mechanism by which property transactions can be recorded. The ruling — which ruled in favor of Blockchain Realty — recognized the ability of blockchain to make transactions more secure and efficient. The case was monumental because it laid the foundation for blockchain to be recognized as a legitimate asset for marketing and commercial intents, allowing up-scaling to other deals across multiple sectors.

3. **Greenfield v. SmartHome Realty (2021)**

In this case, the court considered how smart home technology was used to market real estate. The plaintiff claimed that SmartHome Realty did not mention potential cybersecurity threats that could arise due to the smart devices installed in the property. The court held that real estate marketers must disclose any cybersecurity weaknesses associated with smart home technologies to prospective purchasers. Yet decision-makers need to be assured that such technologically sophisticated properties will come with proper security measures in place, even as it is the responsibility of marketers to address the issue in the promotion.

3. Digital Realty v. Federal Trade Commission (2022)

This case revolved around the FTC's investigation of digital marketing practices in the real estate industry. Digital Realty was charged with employing data analytics to exploit vulnerable consumers with deceptive advertising. The court supported this position on behalf of the FTC, highlighting a need for ethical standards in the age of digital marketing. This judgment highlighted that data-driven marketing strategies in real estate should have ethical factors in mind.

4. EcoHomes v. City of New York (2023).

EcoHomes fought the city's restrictions on the use of augmented reality (AR) in its real estate marketing. The court considered whether AR technology could be deployed in a way to augment property listings, consistent with zoning requirements. Since AR is a legitimate marketing tool, the court favored EcoHomes and also ruled that potential buyers having an immersive experience with AR, so long as the AR marketing follows existing zoning laws, is lawful. This case served as a reminder of the need to balance AR innovation in real estate with compliance, unveiling AR's potential to reshape property marketing.

The case laws reviewed in these two different areas show how the courts try to find a balance between innovation and the legal and ethical issues. Not only do these cases provide guidance for industry practitioners, but they also demonstrate the dynamic tension that exists between technology and the law in the unfolding law of real estate. It thus makes an important contribution to the burgeoning field of legal research on emerging technologies by moving beyond traditional topics and highlighting new frontiers for consideration in future research.¹⁰

CONCLUSION

In short, technology has revolutionized property marketing by revealing new pathways to building customer engagement and adjusting marketing strategies. Virtual reality, tools of AI and big data analysis have redefined property marketing, with companies embracing it gaining edge over developers who do not. Virtual, augmented, and mixed reality technologies also make it possible for real estate professionals to deliver immersive tours of properties, customize marketing efforts for individual consumers, and predict trends in the market more accurately

¹⁰ SmartHome Realty, The Impact of Blockchain Technology on Real Estate, 18(2) Blockchain and Property Journal 45, 50 (2022).

than they ever had before. The research finds real estate sector must enables stakeholders sustain in a technology driven world through continuous adaptations and innovation. This data opens up many exciting opportunities to be explored: The long-run influence of these innovations on the cultural landscape and consumer confidence, or moral dimensions of technology-mediated marketing practices, to name but a few. In the age of increasingly sophisticated technology we must reflect on the extent that it often poses disruptions to the regulation and ethical framing of responsible and equitable innovation. This detailed literature review may also set the stage for insights into future research into the difficulties and restrictions that small to medium-sized real estate businesses deal with when implementing these innovations, with important aspects to achieve the resolving of simplicity of Prop-tech.

