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THE ROLE OF ARTIFICIAL INTELLIGENCE IN OPTIMIZING PROPERTY MANAGEMENT PROCESSES IN THE UAE REAL ESTATE SECTOR

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The Role Of Artificial Intelligence In Optimizing Property Management Processes In The Uae Real Estate Sector

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Abstract

The real estate sector in the United Arab Emirates (UAE) is an important factor in the national development, yet it still suffers underlying inefficiencies in property management, including manual processes, tenant delays, and operational risks. This paper examines the connection between Artificial Intelligence (AI) and its use in the optimization of property management focusing on six main applications: work automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management. Based on the Technology Acceptance Model (TAM) and the Resource-Based View (RBV), the study applied a mixed-methods approach, integrating the results of the survey conducted among 300 industry professionals and a qualitative case study of Better Homes, a powerful UAE-based property management company.

The quantitative findings show that AI is very effective in enhancing all six property management aspects, with data analysis (R^2=0.750) and risk management (R^2=0.703) showing

the greatest effects. The moderation analysis also indicates that technological infrastructure boosts the effects of AI in work automation, interaction with tenants, and risk management. These results are validated by qualitative data, as the participants mention efficiency benefits due to automation, active maintenance planning, and enhanced tenant satisfaction due to AI-based communication devices.

Theoretically, the study adds to TAM and RBV by applying them to the UAE real estate setting, whereas practically it can provide the companies, policy-makers, and investors with the information on how to use AI as a competitive edge. Despite limitations, the findings highlight AI as a revolutionary force, which can be used to optimize the workflow, minimize risks, and enhance the experiences of tenants in a fast-changing environment.

Keywords: Artificial Intelligence, Property Management, UAE Real Estate, Technological Infrastructure, Operational Efficiency

1. Introduction

In the United Arab Emirates (UAE), the real estate business has become one of the most vibrant businesses due to infrastructure developments, policy changes, and the existence of a conducive business environment. The industry has generated almost 9% of the GDP of the country in recent years, and property transactions and foreign direct investment have been increasing steadily (Adel, 2022; Statista, 2023; Gulf-Business, 2023). Despite of this development, property management inefficiency has been a steady problem. Problems like manual operations, inaccurate pricing, and time-consuming tenant-related operations reduce the potential of the sector (Lambourne, 2022; Alzoubi, 2021). These problems are further complicated by overpricing and regulatory complexity, which pose obstacles to operational efficiency and investor trust (Wachsberger, 2021).

The core of real estate business is property management, which is associated with leasing, renting, contact with tenants and maintenance (O'Mara, 1999). In the UAE, these processes will experience delays, human error, and poor consistency in tenant satisfaction because they will be based on traditional methods (Alzoubi, 2021). In order to address these inefficiencies, new practices should be adopted that will aid in the streamlining of operations and meet the needs of a competitive and fast growing market.

Artificial Intelligence (AI) provides a route to change in property management. Now, AI systems are able to carry out some functions previously done by humans, including decision-making, pattern recognition, and problem-solving (Russell and Norvig, 2016). Predictive maintenance, rent collection automation, data-made decision-making, and communicating with tenants are the areas where AI is applied in real estate (Cubric, 2020; Siniak et al., 2020). The tools assist managers in predicting problems, reducing costs, and enhancing tenants experiences using predictive analytics and optimization of resources (Cheng et al., 2020). Alongside AI, the Internet of Things (IoT) supports smart building management by tracking energy use, environmental conditions, and system performance in real time (Atzori et al., 2017; Daissaoui et al., 2020).

The COVID-19 pandemic encouraged the implementation of AI and digital technology, specifically in remote property inspection, virtual interaction, and contactless service (Ullah et al., 2018). These transformations showed that technology was vital in providing continuity, efficiency and resilience in times of turmoil. Simultaneously, national projects such as Dubai Expo 2020 and Abu Dhabi Vision 2030 have strengthened the desire of the UAE to become an innovative and technology-driven development hub (Al-Bawaba, 2023; Faccia et al., 2023).

Although the adoption of AI in real estate is developing rapidly across the world, the majority of research is conducted in the area of pricing models or market forecasting. Fewer

researches explore the value of AI in improving the daily operations of property management, especially in developing economies like the UAE (Seagraves, 2023). This is a big gap considering the size of the industry and the technical difficulties peculiar to the region.

The paper attempts to fill this knowledge gap by exploring how AI can be used to optimize property management in the UAE. In particular, it discusses AI application to work automation, predictive maintenance, and interaction with tenants, and data analysis with the focus on operational efficiency and risk management. The rest of the paper is as follows: Section 2 is the review of the related literature and theoretical frameworks, Section 3 is the description of the methodology, Section 4 is the results and discussion description, and finally, Section 5 is the conclusion with contributions, implications, and directions on future research.

2. Literature Review

The impact of Artificial Intelligence (AI) on industrial transformation is a topic of considerable scholarly and practical interest, and real estate management is gradually becoming a participant in this worldwide discourse. Traditionally, property management including tenant services, maintenance, rent collection, and asset administration, had been conducted through manual processes (O'Mara, 1999). Nevertheless, it has been criticised as time-consuming, expensive, and susceptible to human error (Alzoubi, 2021). These issues are even more pressing in the rapidly developing economies like the UAE because of the large number of transactions, the rapid turnover of tenants, and the rise in the cost of houses and apartments (Adel, 2022). With the market constantly growing, it has become increasingly understood that AI can make the market more efficient, improve the satisfaction of tenants, and minimize the operational risks (Siniak et al., 2020; Cubric, 2020).

This study is theoretically based on two main frameworks. The first one is the Technology Acceptance Model (TAM) that has been extensively used in the explanation as to

why organizations and individuals embrace new systems. TAM also focuses on two critical elements that may influence adoption, including usefulness and ease of use (Davis, 1989; Na et al., 2023). This indicates that in property management, managers will be more inclined to adopt AI application when they perceive it as useful and easy to use. The second one is the Resource-Based View (RBV), according to which AI may be viewed as a strategic resource that may create competitive advantage when it is valuable, rare, inimitable, and non-substitutable (Barney, 1991; Antwi-Afari et al., 2018). The ability to manage tenant data, automate processes and anticipate maintenance needs, is also a resource that can differentiate real estate companies within the UAE market in this perspective. TAM and RBV are two models that are complementary to each other: the first is based on the behavioral dimension of adoption, and the second explains the strategic value of AI as a benefit in the long run.

There are six major applications of AI in property management. The first one is work automation, as routine tasks, including tenant communication, lease management, and rent collection can be automated. This minimizes the use of manual work, reduces costs, and the possibility of errors (Seetharaman et al., 2017). The automation of transactions in the UAE, where property portfolios are large and transactions often occur, will assist companies in dealing with volumes effectively and will enable managers to work on strategic processes (Lambourne, 2022).

The second is data analysis. Real estate creates huge volumes of data regarding tenant preference, market demand, prices and property performance. The conventional approaches find it hard to consume such data, whereas AI analytics are able to discern patterns in real-time and deliver actionable information (Bibri and Krogstie, 2017). This matter is especially significant in the UAE, where price differences and transparency is still a problem

(Wachsberger, 2021). Through measuring market indicators and tenant patterns, managers are able to charge correct rents, predict demand and enhance decision making.

The third is predictive maintenance, one of the most powerful applications. Unlike traditional reactive or scheduled maintenance, AI predicts when equipment may fail using IoT sensors and machine learning (Cheng et al., 2020). In the UAE, where repair delays are costly, predictive maintenance boosts efficiency and reduces disruptions (Rane, 2023). Studies also show that this proactive approach improves tenant satisfaction by addressing issues before they affect daily living or operations (Naz et al., 2022). However, issues with data integration and privacy still exist, which means that the effective implementation of predictive maintenance presupposes investment and other supportive infrastructures (Sapkota, 2019).

The fourth is tenant interaction. More and more AI-powered chatbots, virtual assistants, and automated platforms are being used by property managers to address tenant questions, complaints, and feedback (Hosani et al., 2017). These systems are more responsive, and the answers given are more predictable than the conventional approach (Starr et al., 2021). In some markets, like the UAE, where various groups of tenants can be found, AI-powered platforms will enhance accessibility and provide multilingual assistance. Nevertheless, other scholars emphasize the threat of depersonalization because overuse of automated solutions may decrease trust and make tenants less interested in personal relations with property managers (Al-Mansoori et al., 2018; Al-Douri et al., 2018). This conflict between efficiency and human interaction is one of the constant issues of using AI in tenant interaction.

In addition to certain roles, AI helps to enhance overall operational efficiency. This is the fifth application found in the literature which involves the capacity of the organizations to streamline processes, minimize waste as well as maximizing productivity (Porter, 1996). Operational effectiveness, in real estate, encompasses coordinated workflows in leasing,

maintenance, and financial systems (Alzoubi, 2021). The AI will enable managers to combine these processes and allocate resources more efficiently and in a shorter time (Nam et al., 2020). Operational effectiveness aided by AI gives the firm a strategic advantage in competitive markets such as Dubai and Abu Dhabi where companies compete to distinguish themselves.

The sixth application is risk management, which is also improved by AI. The property markets face risks such as unstable prices, investment fluctuations, maintenance breakdowns, and breach of data (Hillson and Murray-Webster, 2017). Anomalies can be identified with the help of AI-based tools, enabling the management to predict financial trends and simulate various scenarios, reducing risks more efficiently (Starr et al., 2021). In the UAE, where real estate is regarded as overvalued and investors are still worried about the transparency, AI-based risk management systems can enhance the confidence by offering correct rates of valuation and revealing vulnerabilities before they develop. Simultaneously, increased digitization also introduces new cybersecurity threats that need to be addressed closely (Tchuente & Nyawa, 2022).

Irrespective of these developments, researchers identify hurdles to adoption of AI in property management. The cost of implementation is high, the infrastructure is insufficient, and it fails to integrate with the current systems, which discourages investment (Fields and Rogers, 2021). Data quality concerns and cybersecurity are even more problematic, whereas ethical concerns regarding bias and less human interaction have not been addressed yet (Al-Mansoori et al., 2018). Yet, the UAE's policy environment, with its strong emphasis on innovation through initiatives like Dubai Expo 2020 and Abu Dhabi Vision 2030, provides fertile ground for overcoming these challenges (Al-Bawaba, 2023).

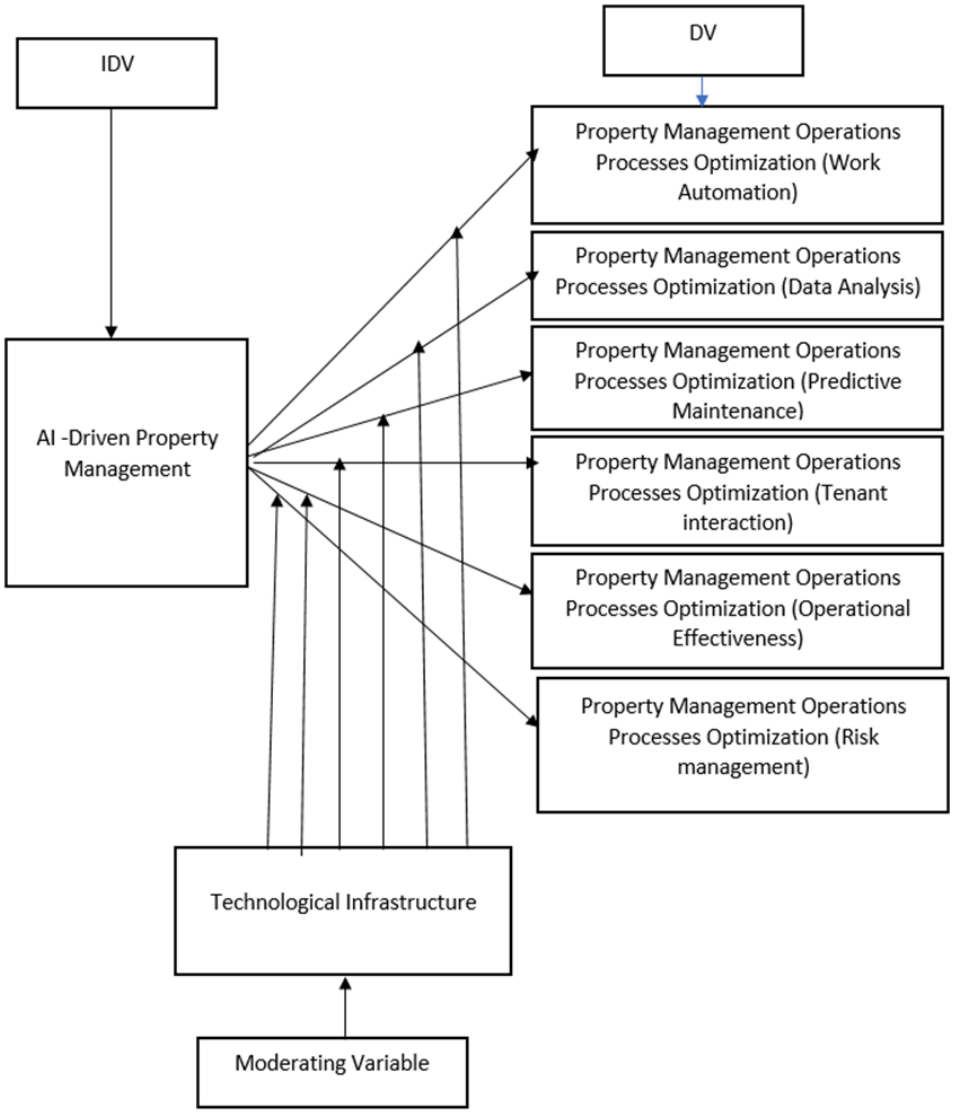
A critical observation from the literature is that most global research on AI in real estate emphasizes valuation, pricing, or forecasting. Less attention is given to operational aspects of

property management, particularly in emerging markets such as the UAE (Seagraves, 2023). The moderating role of technological infrastructure also receives little focus, even though evidence suggests that IT maturity and data integration strongly shape adoption outcomes. This represents a clear gap that justifies further investigation in the UAE context, where rapid urbanization and growing tenant demands make AI integration both necessary and timely.

To address this gap, the conceptual framework for this study positions AI-driven property management as the independent variable influencing six dimensions of property management process optimization: work automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management. Technological infrastructure is included as a moderating variable, recognizing its potential to strengthen or weaken the relationship between AI adoption and operational outcomes. The framework integrates insights from TAM and RBV, capturing both the behavioral acceptance and the strategic potential of AI.

Figure 1:

Conceptual Framework



Note. Developed by the Author, 2024.

The following hypotheses are derived from the literature review:

H1: AI- driven property management processes significantly impact Property Management Operations Processes Optimization (Work Automation) in UAE real estate market sector.

H2: AI- driven property management processes significantly impact Property Management Operations Processes Optimization (Data Analysis) in the UAE real estate market sector.

H3: AI- driven property management processes significantly impact Property Management Operations Processes Optimization (Predictive Maintenance) in UAE real estate market sector.

H4: AI- driven property management processes significantly impact Property Management Operations Processes Optimization (Tenant Interaction) in UAE real estate market sector.

H5: AI- driven property management processes significantly impact Property Management Operations Processes Optimization (Operational Effectiveness) in UAE real estate market sector.

H6: AI- driven property management processes significantly impact Property Management Operations Processes Optimization (Risk management) in UAE real estate market sector.

H7: Technological Infrastructure moderates the relationship between AI- driven property management processes and Property Management Operations Processes Optimization in UAE real estate market sector.

3. Methodology

The study design of the current research is a mixed-method to explore the application of Artificial Intelligence (AI) to automate the management of properties in the UAE real estate market. The mixed method is suitable because it allows the research to obtain the richness of quantitative and depth of the qualitative data (Idowu, 2016).

The quantitative part of the study was carried out by means of a structured questionnaire that was distributed among all the property managers and industrial professionals in UAE. The aim of the survey was to learn about the AI perceptions and applications in real estate. All in all, there were 300 respondents and this provides a sufficient sample size to perform statistical analysis. Convenience sampling was employed to select the respondents because the respondents were required to be directly involved in the process of property management and be familiar with the technology practices. The questions of the survey were designed using a seven-point Likert scale to measure the level of agreement and perceptions regarding the role of AI in the property management processes.

In order to complement the survey, a case study was conducted qualitatively using a property management company located in the UAE that had already implemented AI solutions in their business. The case study provided some valuable insights into how AI can be applied in real-life situations, and it has shown both successes and challenges. This combination of the survey data and the case study data makes the results more valid since the statistical results are associated with the lived industry experiences.

The conceptual framework of the literature review was used to design the variables of the study. The independent variable was the property management which was AI-driven. The dependent variables were six dimensions of property management optimization (work automation, data analysis, predictive maintenance, interaction with the tenants, operational effectiveness, and risk management). Additionally, a moderating variable was added in the shape of technological infrastructure that gives a hint on the extent to which well-developed IT infrastructure and digital capabilities predetermine the success of AI implementation.

There was the use of descriptive or inferential data analysis. The demographic data of the respondents were also outlined. The inferential analysis involved the use of correlation and

regression analysis to determine the relationship between AI-enabled property management and the six dependent variables. Correlation analysis identified the strength and direction of the associations, and regression analysis identified the significance and predictive value of the AI applications on the results of the property management. The moderation analysis was performed to find out how these relationships are being strengthened or undermined by the technological infrastructure.

4. Results

This section presents the outcomes of both the quantitative survey (N=300) and the qualitative case study (25 participants from Better Homes). The dual approach allows for triangulation of findings, ensuring that statistical evidence is contextualized with practitioner insights. The analysis provides both quantitative and qualitative analysis results.

4.1 Quantitative Results

The descriptive statistics, demographics, and reliability analysis provide a solid foundation for the study's quantitative findings. Mean values across constructs were above 5 on a seven-point Likert scale, reflecting strong agreement on AI's positive role in property management. Predictive maintenance (M=5.37) and risk management (M=5.44) ranked highest, while work automation (M=5.09) scored lowest, though still favorable. Standard deviations (0.77–0.93) indicated consistent responses. The 300 respondents were predominantly young to mid-career professionals, with 49% aged 31–40 and 27% aged 21–30. Education levels were high, with 63% holding bachelor's and 18% postgraduate degrees, while 35% reported 11–15 years of work experience. Real estate agencies (55%) and business dealers (45%) ensured balanced insights. Reliability was confirmed with Cronbach's alpha values

ranging from 0.705 to 0.824, alongside strong sampling adequacy (KMO=0.890; Bartlett's χ^2=13,865.642, p<0.001), validating the dataset for advanced statistical testing.

4.1.1 Correlation Analysis

The correlation analysis examined the relationship between AI-driven property management processes and six dependent variables: work automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management.

Table 1

Correlation Analysis Results

Variable	Work Automation	Data Analysis	Predictive Maintenance	Tenant Interaction	Operational Effectiveness	Risk Management
AI-Driven Property Mgmt	0.782**	0.866**	0.837**	0.752**	0.815**	0.838**

*Note: *$p < 0.01$

The correlations were consistently strong and significant ($p < 0.001$). The highest correlations were observed with Data Analysis (r=0.866) and Risk Management (r=0.838), indicating that these two areas benefit most strongly from AI integration. Predictive Maintenance (r=0.837) also displayed a robust correlation, confirming its importance in operational cost reduction. Tenant Interaction (r=0.752), while positive and significant, emerged as relatively weaker.

4.1.2 Regression Analysis

Regression analysis was conducted to assess the predictive power of AI-driven property management processes on the six dependent variables.

Table 2

Regression Analysis Results

Hypothesis	Dependent Variable	R	R^2	β	Sig.	Result
H1	Work Automation	0.782	0.611	0.782	0.000	Supported
H2	Data Analysis	0.866	0.750	0.866	0.000	Supported
H3	Predictive Maintenance	0.837	0.700	0.837	0.000	Supported
H4	Tenant Interaction	0.752	0.566	0.752	0.000	Supported
H5	Operational Effectiveness	0.815	0.664	0.815	0.000	Supported
H6	Risk Management	0.838	0.703	0.838	0.000	Supported

The hypothesis testing results strongly support the positive role of AI-driven property management processes in enhancing operational outcomes. All six hypotheses were supported with highly significant results ($p = 0.000$). The strongest effect was observed for data analysis (H2), with a very high correlation ($R = 0.866$) and variance explained of 75%, confirming AI's critical role in improving decision-making. Risk management (H6, $R^2 = 0.703$) and predictive maintenance (H3, $R^2 = 0.700$) also showed substantial impacts, highlighting AI's preventive and protective capabilities. Even the lowest, tenant interaction (H4, $R^2 = 0.566$), reflected strong explanatory power, confirming AI's broad, consistent effectiveness across all operational dimensions.

4.1.3 Moderation Analysis

The final hypothesis examined whether technological infrastructure moderates the relationship between AI-driven property management processes and the optimization of

property management operations in the UAE real estate sector. Specifically, moderation was tested across six operational domains: work automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management.

Table 3

Moderation Analysis Results

Dependent Variable	R^2 (Model 1)	R^2 (Model 2)	ΔR^2	Interaction β	Sig.	Moderation Effect
Work Automation	0.708	0.725	0.017	0.151	0.000	Significant
Data Analysis	0.766	0.775	0.009	0.098	0.001	Significant
Predictive Maintenance	0.729	0.731	0.002	0.051	0.128	Not Significant
Tenant Interaction	0.633	0.647	0.014	0.135	0.001	Significant
Operational Effectiveness	0.667	0.670	0.003	-0.064	0.086	Not Significant
Risk Management	0.735	0.741	0.006	-0.077	0.009	Significant

Note: Model 1 = AI-driven property management processes + Technological Infrastructure; Model 2 = Model 1 + Interaction Term. Dependent variables: operational domains. ΔR^2 = change in explained variance when the interaction term was added.

The moderation analysis indicates that technological infrastructure significantly strengthens the impact of AI-driven processes on four domains: work automation (ΔR^2=0.017, β=0.151, p<0.001), data analysis (ΔR^2=0.009, β=0.098, p=0.001), tenant interaction (ΔR^2=0.014, β=0.135, p=0.001), and risk management (ΔR^2=0.006, β=-0.077, p=0.009). These results show that when strong infrastructure is in place, AI is far more effective in streamlining tasks, generating insights, improving communication, and anticipating risks. By contrast,

predictive maintenance (ΔR^2=0.002, β=0.051, p=0.128) and operational effectiveness (ΔR^2=0.003, β=-0.064, p=0.086) did not exhibit significant moderation effects, suggesting AI directly drives improvements in these areas regardless of infrastructure. Overall, the findings highlight the key enabling role of infrastructure in maximizing AI's transformative potential.

4.2 Qualitative Results

The qualitative case study findings from Better Homes demonstrate how AI-driven processes have significantly reshaped property management operations across multiple dimensions. Participants highlighted how automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management have been strengthened, with technological infrastructure acting as a vital enabler.

Regarding the automation of work, workers always highlighted the increased efficiency that AI provided. For instance, one participant noted, "*AI has helped us automate tenant screening, speeding up the process and reducing manual errors*" (P1), while another added, "*Routine data entry tasks have been automated, reducing errors and saving us hours of work each week*" (P9). These are the lessons that automation will lead to less administration, higher precision, and more flexibility in the workforce as it allows them to spend more time on valuable tasks.

One of the areas of strongest impact was the data analysis. Respondents shared the market and tenant insights that were fast-tracked by AI. As one interviewee stated, "*AI helps us analyze rental trends faster, enabling us to make quicker pricing decisions.*" (P1), while another noted, "*AI-driven tools have improved our ability to predict tenant behavior, which helps us reduce vacancies*" (P3). These findings demonstrate that AI enhances forecasting, risk

assessment, and financial planning, strengthening decision-making and aligning with the quantitative evidence where data analysis showed the strongest statistical effect.

The role of AI in predictive maintenance was equally emphasized. Participants highlighted a proactive shift in maintenance management. "*There has been a good improvement in maintenance planning since AI enables us to predict problems much earlier*" (P2), explained one manager. Another reflected, "*AI helped us to notice a high level of energy consumption, thus notifying us of an issue with our heating*" (P5). These examples confirm that AI reduces costly emergency repairs and ensures reliable service delivery.

With respect to tenant interaction, AI-driven systems improved communication and responsiveness. "*Today, most of the basic questions are answered through AI chatbots, which makes our work more focused on direct communication*" (P1), shared one participant, while another observed, "*Yes, tenants are more content with the quicker response time, and problem-solving of the issues at the earliest*" (P1). This illustrates how AI improves tenant satisfaction by offering round-the-clock, personalized services.

Finally, participants stressed the importance of technological infrastructure in enabling AI success. One respondent explained, "*When it comes to technology, we have very solid technological support, which allows AI instruments to work effectively, including in risk management and operational performance*" (P 24). Without this foundation, employees agreed that AI would not be as effective across property management processes.

Overall, these qualitative findings confirm that AI is not only transforming operational efficiency but also redefining tenant engagement, risk prevention, and strategic decision-making, with infrastructure serving as the backbone of effective implementation.

4.3 Discussion

Quantitative and qualitative findings are integrated to present a comprehensive picture of the changes in the field of property management in the UAE due to the implementation of AI. Statistically significant relationships were found among the six AI applications., work automation ($R^2 = 0.611$), data analysis ($R^2 = 0.750$), predictive maintenance ($R^2 = 0.700$), tenant interaction ($R^2 = 0.566$), operational effectiveness ($R^2 = 0.664$), and risk management ($R^2 = 0.703$), confirming that AI contributes positively to operational optimization. These findings were strongly echoed in the qualitative results, where participants' highlighted practical benefits, such as AI-driven chatbots handle routine tenant inquiries and AI has greatly minimized reactive maintenance.

The convergence between quantitative strength in data analysis and qualitative evidence of enhanced forecasting and financial planning aligns with prior studies (e.g., Siniak et al., 2020), underscoring AI's role in improving decision-making. Equally, the predictive maintenance that was highly statistically supported was qualitatively confirmed using the examples of HVAC and plumbing fault detection, which supports the literature on the importance of AI in proactive assets management. Tenant interaction, though statistically weaker ($R^2 = 0.566$), emerged qualitatively as a strong theme, with employees stressing higher tenant satisfaction and reduced complaints. This suggests that while quantitative measures captured operational efficiency, qualitative insights revealed deeper relational and experiential impacts.

The findings also support the Technology Acceptance Model (TAM), as employees demonstrated positive attitudes and perceived usefulness of AI in reducing errors and saving time, which in turn enhanced acceptance. At the same time, the Resource-Based View (RBV) is evident, as Better Homes' robust technological infrastructure provided a unique competitive

capability that allowed AI tools to deliver maximum value, particularly in data analysis and tenant interaction where moderation effects were significant.

Overall, the integration of results reinforces that AI adoption in property management is both a technological and organizational transformation, consistent with existing literature, while extending theoretical application to the UAE context.

5. Conclusion

This study explored the role of Artificial Intelligence in optimizing property management within the UAE real estate sector, focusing on six core applications: work automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management. The quantitative and qualitative results revealed that AI has a positive impact on the operations of property management, and data analysis ($R^2 = 0.750$) and risk management ($R^2 = 0.703$) appeared to positively affect the results the most. These findings were also supported by qualitative data as respondents outlined real-life improvements including proactive maintenance scheduling, improved tenant satisfaction, and less manual work.

Theoretically, the paper adds to the literature by applying the Technology Acceptance Model (TAM) and the Resource-Based View (RBV) on the UAE property management environment. TAM is confirmed by the perceived usefulness of the AI tools by the employees that increase their acceptance and integration. RBV is facilitated by the fact that, strong technological infrastructure serves as strategic resource, balancing the relationship between AI applications and operational performance.

In practical terms, the study outlines the ways AI can be used to optimize operations, achieve cost savings and enhance interactions with tenants, which can guide the actions of real estate companies, policymakers, and investors. By embracing AI-driven processes,

organizations can enhance efficiency, deliver better tenant experiences, and build resilience against risks. However, the findings also reveal that benefits such as predictive maintenance and operational effectiveness may not always be contingent on infrastructure, suggesting areas where AI delivers standalone value.

The study is not without limitations, particularly its focus on a single case study (Better Homes) and reliance on self-reported data, which may limit generalizability. Future research should adopt a cross-country comparative approach, explore ethical dimensions of AI adoption, and examine governance frameworks to ensure responsible implementation.

In conclusion, AI is not simply a technological addition but a transformative force in UAE property management, offering both theoretical and practical pathways to long-term competitive advantage.

6. References

Adel, I. (2022). *The Impact of the Real Estate Market in the Urban Development of Cities and Driving Economic Growth in Dubai / Cairo*. [Master thesis, Metropolia University of Applied Sciences]. Theseus. https://www.theseus.fi/handle/10024/780518.

Al Hosani, Y., & Jabeen, F. (2019). Barriers in Post-Merger Integration in the Real Estate Development Companies in the United Arab Emirates: An AHP Approach. *Polish Journal of Management Studies, 19*(2), 33–47.

Antwi-Afari, M. F., Li, H., Pärn, E. A., & Edwards, D. J. (2018). Critical success factors for implementing building information modelling (BIM): A longitudinal review. *Automation in Construction, 91*, 100–110.

Bibri, S. E., & Krogstie, J. (2017). The core enabling technologies of big data analytics and context-aware computing for smart sustainable cities: a review and synthesis. *Journal of Big Data, 4*(1).

Chen, J., Hui, E. C. M., & Wang, Z. (2011). Perceived Risk, Anticipated Regret and Post-Purchase Experience in the Real Estate Market: The Case of China. *Housing Studies, 26*(3), 385–402.

Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world: Does not start with moon shots. *Harvard Business Review, 96*(1), 108–116.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35*(8), 982–1003.

Faccia, A., Le Roux, C. L., & Pandey, V. (2023). Innovation and E-Commerce Models, the Technology Catalysts for Sustainable Development: The Emirate of Dubai Case Study. *Sustainability, 15*(4).

Jaiswal, A., Arun, C. J., & Varma, A. (2023). Rebooting employees: Upskilling for artificial intelligence in multinational corporations. In *Artificial Intelligence and the Future of Work* (pp. 60–78). Routledge.

Jia, M., Komeily, A., Wang, Y., & Srinivasan, R. S. (2019). Adopting Internet of Things for the development of smart buildings: A review of enabling technologies and applications. *Automation in Construction, 101*, 111–126.

Kaganova, O., & Nayyar-Stone, R. (2000). Municipal Real Property Asset Management: An Overview of World Experience, Trends and Financial Implications. *Journal of Real Estate Portfolio Management, 6*(4), 307–326.

Koelemaij, J., and Janković, S. (2019). Behind the frontline of the Belgrade waterfront: a reconstruction of the early implementation phase of a transnational real estate development project. *In Experiencing post socialist capitalism: urban changes and challenges in Serbia* (pp. 45-65). University of Belgrade. Faculty of Philosophy. Institute for Sociological Research.

Kowalski, S. (2018). Establishing Appropriate Best Practices in Intellectual Property Management and Technology Transfer in the United Arab Emirates: Building Human Capital, Global Networks and Institutional Infrastructure to Drive Sustainable Knowledge-Based, Innovation-Driven Development. *Indian Journal of Law and Technology, 14*, 77–103.

Na, S., Heo, S., Choi, W., Kim, C., & Whang, S. W. (2023). Artificial Intelligence (AI)-Based Technology Adoption in the Construction Industry: A Cross-National Perspective Using the Technology Acceptance Model. *Buildings, 13*(10), 2518.

Nam, K., Dutt, C. S., Chathoth, P., Daghfous, A., & Khan, M. S. (2020). The adoption of artificial intelligence and robotics in the hotel industry: Prospects and challenges. *Electronic Markets, 31*(3), 583–599.

Naz, F., Kumar, A., Upadhyay, A., Chokshi, H., Trinkūnas, V., & Magda, R. (2022). Property Management Enabled by Artificial Intelligence Post Covid-19: An Exploratory Review and Future Propositions. *International Journal of Strategic Property Management, 26(*2), 156–171.

Rafiei, M. H., and Adeli, H. (2016). A novel machine-learning model for estimation of sale prices of real estate units. *Journal of Construction Engineering and Management, 142(*2).

Rane, N., L. (2023). Integrating Leading Edge Artificial Intelligence (AI), Internet of Things (IoT), and Big Data Technologies for Smart and Sustainable Architecture, Engineering and Construction (AEC) Industry: Challenges and Future Directions. International *Journal of Data Science and Big Data Analytics, 3*(2), 73–95.

Sapkota, K. (2019). *Artificial intelligence in property management automation: Technologies, current applications, and challenges* [Bachelor's thesis, Turku University of Applied Sciences]. Theseus.

Seagraves, P. (2023). Real Estate Insights: Is the AI revolution a real estate boon or bane? *Journal of Property Investment & Finance, 42*(2), 190–208.

Seetharaman, A., Saravanan, A. S., Patwa, N., & Bey, J. M. (2017). The Impact of Property Management Services on Tenants' Satisfaction with Industrial Buildings. *The Journal of Asian Finance, Economics and Business, 4*(3), 57–73.

Shaw, J. (2018). Platform Real Estate: theory and practice of new urban real estate markets. *Urban Geography, 41*(8), 1–28.

Siniak, N., Kauko, T., Shavrov, S., & Marina, N. (2020). The impact of proptech on real estate industry growth. *IOP Conference Series: Materials Science and Engineering, 869(*6).

Statista. (2023). *Real estate in the UAE.* Statista.

Statista. (2023). *Real estate worldwide.* Statista.

Starr, C. W., Saginor, J., and Worzala, E. (2021). The rise of PropTech: Emerging industrial technologies and their impact on real estate. *Journal of Property Investment and Finance, 39*(2), 157-169.

Tchuente, D., and Nyawa, S. (2022). Real estate price estimation in French cities using geocoding and machine learning. *Annals of Operations Research, 308,* 571–608.

Ullah, F., Sepasgozar, S., & Wang, C. (2018). A Systematic Review of Smart Real Estate Technology: Drivers of, and Barriers to, the Use of Digital Disruptive Technologies and Online Platforms. *Sustainability, 10*(9), 3142.

Wachsberger, K. (2021). Opportunities and Challenges for Israel-UAE Economic Cooperation. *Mitvim Institute*.

7. Appendices

Appendix A: Questionnaire Survey Questions

Section 1: AI-Driven Property Management Processes

1. AI-driven property management processes are easy to use.
2. AI-driven property management processes give me greater control over work.
3. AI-driven property management processes improve my job performance.
4. AI-driven property management processes enable me to accomplish tasks more quickly.
5. Using AI-driven property management processes is often frustrating for me.
6. Overall, I am satisfied with AI-driven property management processes.
7. I prioritize the use of AI-driven property management processes for property management operations optimization.

Section 2: Property Management Operations Processes Optimization (Work Automation)

8. AI-driven property management processes have automated routine tasks.
9. Adoption of AI-driven property management processes has reduced workload associated with routine tasks.

10. AI-driven property management processes have saved time by automating tasks.
11. AI-driven property management processes have reduced errors and mistakes in routine tasks.

Section 3: Property Management Operations Processes Optimization (Data Analysis)

12. AI-driven property management processes have enhanced data analysis capabilities.
13. AI-driven property management processes have improved decision-making by providing insights.
14. Adoption of AI-driven property management processes improved efficiency in data analysis tasks.
15. AI-driven property management processes have seamlessly integrated data analysis capabilities.

Section 4: Property Management Operations Processes Optimization (Predictive Maintenance)

16. AI-driven property management processes accurately predict maintenance needs.
17. AI-driven property management processes respond promptly to maintenance alerts.
18. AI-driven property management processes reduce the occurrence of unplanned maintenance activities.
19. AI-driven property management processes facilitate proactive planning of maintenance activities.

Section 5: Property Management Operations Processes Optimization (Tenant Interaction)

20. AI-driven property management processes have increased the level of tenant interaction.
21. AI-driven property management processes facilitate communication between tenants and managers.
22. Tenants engage with AI-driven property management systems for inquiries and issue resolution.
23. AI-driven property management systems are efficient in handling tenant inquiries and issues.

Section 6: Property Management Operations Processes Optimization (Operational Effectiveness)

24. AI-driven property management processes have improved operational efficiency.
25. AI-driven property management processes are more effective than traditional human-led systems.
26. AI-driven property management processes improve overall property management efficiency.
27. AI-driven property management processes optimize resource utilization (manpower, equipment).

Section 7: Property Management Operations Processes Optimization (Risk Management)

28. AI-driven property management processes identify potential risks and vulnerabilities.
29. AI-driven property management processes proactively mitigate identified risks.
30. AI-driven property management processes respond to risks in a timely manner.
31. AI-driven property management processes reduce the impact of identified risks

Section 8: Technological Infrastructure

32. Technological infrastructure is advanced and supportive of AI-driven processes.
33. Technological infrastructure influences the effectiveness of AI-driven processes.
34. Technological infrastructure limitations hinder optimization despite AI implementation.
35. The technological infrastructure is flexible and adaptable to changes and enhancements in AI-driven processes.

Appendix B: Case Study Interview Questions

Work Automation

1. How have AI-driven property management processes automated routine tasks within your operations? Can you provide specific examples?

Data Analysis

2. In what ways have AI-driven processes enhanced your data analysis capabilities?
3. How has this impacted decision-making in your organization?

Predictive Maintenance

4. How effective have AI-driven processes been in predicting and addressing maintenance needs? What changes have you observed in maintenance planning and execution?
5. Can you share any instances where AI helped in predicting and preventing maintenance issues?

Tenant Interaction

6. How have AI-driven property management processes influenced your interactions with tenants?
7. Have you noticed any improvements in tenant satisfaction since the introduction of AI, such as improved communication or issue resolution?

Operational Effectiveness

8. Can you describe the impact of AI-driven processes on the overall operational effectiveness of property management?
9. How do these processes compare to traditional methods?

Risk Management

10. How have AI-driven processes contributed to identifying and mitigating risks in property management?
11. Are there specific examples where AI has helped in proactive risk management?

Technological Infrastructure

12. How do you perceive the role of technological infrastructure in enhancing the effectiveness of AI-driven property management processes (e.g., work automation, data analysis, predictive maintenance, tenant interaction, operational effectiveness, and risk management)?