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CHALLENGES AND DETERMINANTS INFLUENCING ADOPTION OF PORTFOLIO MANAGEMENT MODELS IN REAL ESTATE INVESTMENT IN SOUTH-EAST NIGERIA

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ABSTRACT

This study investigates the challenges and determinants influencing the adoption of portfolio management models in real estate investments across South-East Nigeria. Despite the rising interest in real estate as a wealth-building strategy in the region, many investors still rely on informal decision-making approaches rather than structured portfolio tools that can optimize returns and minimize risk. Using a descriptive survey design, data were collected from all 544 registered Estate Surveyors and Valuers operating across the five South-Eastern states. A structured questionnaire divided into two sections captured demographic data and core information related to awareness, challenges, and perceived outcomes of portfolio model adoption. The analysis involved both descriptive and inferential statistics, including multiple regression, conducted via SPSS software. Findings revealed that specific challenges such as limited technical expertise, poor access to market data, and high implementation costs significantly affect the application of portfolio models ($R^2 = 0.149$, $p < 0.05$). Additionally, a statistically significant positive relationship was established between the adoption of portfolio models and real estate investment performance ($R^2 = 0.225$, $p < 0.05$), albeit with a modest effect size. The study concludes that despite these barriers, portfolio models contribute to better decision-making and improved investment outcomes when applied. It recommends that policymakers, academic institutions, and professional bodies should collaborate to improve training, develop localized modeling tools, and enhance digital infrastructure to foster greater adoption. These efforts are essential to modernizing real estate investment practices in the region and promoting long-term financial sustainability.

Keywords: *Portfolio Management Models; Real Estate Investment; South-East Nigeria; Investment Performance; Risk Analysis; Model Adoption; Infrastructure Challenges; Institutional Support.*

1.0 Introduction

Real estate investment has become one of the major ways people build wealth in South-East Nigeria. However, most investors in the region still make decisions using informal methods like personal experience, family advice, or guesswork, rather than relying on structured portfolio models that help balance risks and returns. Portfolio management models like diversification strategies, scenario planning, and risk analysis can help improve investment performance, reduce risks, and guide smarter property decisions. Unfortunately, many real estate investors in Nigeria either don't know about these tools or find them too complex to use. Key reasons for this low adoption include limited access to data, poor technical knowledge, and lack of training opportunities (Odebode et al., 2024). Other factors include low trust in technology, high setup costs, and infrastructure challenges (Sunday, 2023). This situation makes it hard for investors to optimize their returns or protect their capital, especially in a region where the real estate market faces demand fluctuations and policy uncertainties.

Despite the increasing interest in real estate investment in South-East Nigeria, many investors continue to experience low or inconsistent returns. This is largely due to their failure to adopt formal portfolio management models. These models, which can help reduce risk and improve decision-making, are not widely used in the region. A major reason for this is that many investors lack the knowledge, tools, or support needed to use these models effectively. Recent studies show that challenges such as poor awareness, limited training, and high costs are key factors holding back adoption (Odebode et al., 2024); (Sunday, 2023). Even where investors are open to new strategies, they face barriers like unreliable market data and weak institutional support (Ikeotuonye & N., 2024). These issues make it difficult for them to make well-informed investment decisions.

Unfortunately, little research has been done to understand the specific challenges and factors that influence the use of these portfolio models in the South-East region. Without this understanding, real estate investors may continue to depend on outdated methods that limit their growth and expose them to unnecessary risks. In the quest to fill this gap this study aims to;

1. identify the challenges affecting the application of portfolio management models.

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2. examine the relationship between portfolio model adoption and real estate investment performance.

2.0 Literature Review

Portfolio Management Models

Portfolio management models are structured methods that help investors spread risks and improve returns by investing in a variety of property types and locations. These models include tools such as diversification, risk-return optimization (e.g., Sharpe ratio, Value-at-Risk), and scenario planning. In developed markets, these tools are commonly used, but in Nigeria especially in the South-East their adoption remains limited.

Recent research reveals that many investors still rely on informal methods and intuition, largely due to lack of awareness and technical know-how (Odebode et al., 2024). Even where investors are familiar with portfolio strategies, they often lack the tools or financial capacity to implement them. Issues such as inadequate data, low digital literacy, and weak institutional support further limit their use (Ikeotuonye & N., 2024). Compared to developed cities like Lagos, where investors are gradually integrating modern tools, adoption in the South-East remains largely undeveloped.

Determinants of Portfolio Model Adoption

Several key factors affect whether or not real estate investors adopt portfolio models. These include:

- Awareness and Education: Lack of understanding about how portfolio models work is a major issue. Many investors are unaware of tools like diversification metrics or simulation models (Sunday, 2023).
- Cost and Accessibility: Some investors believe adopting these tools is expensive, particularly with the need for software or specialized consultants (Odebode et al., 2024).
- Infrastructure Limitations: Unstable internet, poor data access, and unreliable digital platforms make implementation difficult, especially in smaller cities like Enugu or Awka.

- Perceived Usefulness and Trust: Some investors are skeptical about using technology or structured tools, particularly older or more traditional ones who prefer relying on experience or local knowledge (Sunday, 2023).

These determinants often interact and reinforce one another, further reducing the likelihood of adoption in semi-urban regions of the South-East.

Real Estate Investment Performance

Investment performance in real estate is measured through indicators such as rental income, appreciation in property value, and risk-adjusted returns. A growing body of research suggests that adopting structured portfolio models leads to more stable and higher-performing investments. For example, studies have shown that diversified real estate portfolios are better able to absorb market shocks and maintain profitability during economic downturns (Agava et al., 2023). In contrast, investors who concentrate all their capital in one property type or location are more likely to face higher risks and inconsistent returns. However, many of these findings are based on research conducted in areas like Lagos or Lafia. There is still a lack of evidence from South-East Nigeria, where unique market conditions, cultural practices, and infrastructure gaps may influence how portfolio models affect performance.

Theoretical Framework

This study is guided by Integrated Risk Management (IRM) Theory, which emphasizes a comprehensive approach to identifying, analyzing, and managing risks across different levels of investment activity. Unlike traditional models that focus only on financial metrics, IRM considers broader factors like operational challenges, regulatory risks, and external market conditions. IRM theory is especially relevant for real estate in Nigeria, where unpredictable factors such as land disputes or approval delays can derail even well-planned projects. It supports the use of both strategic planning tools (e.g., portfolio optimization) and real-time risk feedback mechanisms (Jagun, 2020). While Modern Portfolio Theory (MPT) provides a statistical framework for diversification, it often ignores these on-the-ground realities. IRM thus offers a better fit for the Nigerian context, especially in under-researched markets like South-East Nigeria.

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Empirical Review

Odebode (2024) conducted a detailed study titled *"Adoption and Willingness to Use Property Management Software among Real Estate Tech Startups in Lagos State, Nigeria"* to assess how real estate firms are embracing digital tools, particularly portfolio management software. The study focused on Lagos-based tech startups, employing an exploratory research design and gathering data through surveys. While a large portion of respondents expressed awareness of portfolio-related technologies, actual implementation was minimal. The study identified several barriers including a lack of technical expertise, high software costs, and uncertainty about the return on investment. It also emphasized the role of institutional support, noting that firms with competent staff and access to user-friendly software were more likely to adopt such tools. Although Lagos is the most advanced property market in Nigeria, the findings suggest that even there, digital and portfolio tools are underutilized. This underlines a deeper concern for less developed regions like South-East Nigeria, where the challenges of limited awareness, infrastructure gaps, and lower investor sophistication are even more severe. Odebode concluded that greater awareness, training, and access to affordable solutions are critical to increasing the use of portfolio management models in real estate investment.

Sunday (2023) carried out a national-level study titled *"The Challenges and Opportunities for PropTech Adoption in Nigeria,"* which explored how property technology, including portfolio tools, is being adopted across the country. Using survey responses from real estate professionals, the study found that 71% of respondents were using at least one PropTech tool. However, the adoption was highly uneven, with the South-East region reporting the lowest levels of usage. The key challenges identified were poor digital infrastructure, lack of awareness, and low levels of trust in technology-based tools. Respondents from the South-East indicated difficulty in accessing user-friendly and affordable software, often relying instead on informal methods. The study also found that concerns about data privacy and integration with existing practices were major barriers. Interestingly, where PropTech was used, users reported better decision-making, cost efficiency, and performance. Sunday emphasized that for regions like the South-East to catch up, focused efforts must be made to increase investor education, reduce the cost of technology, and improve internet connectivity. The study clearly shows that regional disparities in adoption are tied not just

to technical issues but also to cultural and behavioral factors, which need to be addressed to enhance portfolio model usage in real estate investments.

Ikeotuonye (2024), in a study titled *"Challenges of International Investment in Real Property Portfolio in Nigeria,"* investigated the key barriers faced by foreign investors in Nigeria's real estate market. While the primary focus was on international actors, the findings offer useful insights into the structural issues that also affect local portfolio model adoption especially in less developed areas like the South-East. The study identified economic instability, policy unpredictability, and currency volatility as major macroeconomic constraints. In terms of legal and administrative barriers, land title complications and regulatory bottlenecks such as planning approvals were found to deter structured investment planning. A major concern was the lack of reliable property data, which made it difficult for investors to perform risk assessments or optimize portfolios. This situation mirrors the challenges local investors face in semi-urban cities like Enugu or Awka, where real estate transactions are often opaque and poorly documented. Ikeotuonye concluded that without improvements in legal transparency, infrastructure, and digital systems, investors both foreign and domestic will continue to make decisions based on intuition rather than data-driven models. This makes the widespread adoption of portfolio management tools unlikely unless significant reforms are introduced.

Agava (2023) conducted a quantitative study titled *"Assessment of Residential Real Estate Investment in Nigeria,"* with the aim of examining how diversification strategies impact real estate portfolio performance during economic downturns. The study focused on residential portfolios in Lafia, a growing but relatively under-researched market in North-Central Nigeria. Using Sharpe ratio analysis and portfolio performance modeling, the research assessed 75 real estate portfolios and found that those with greater diversification across locations and property types performed significantly better in periods of inflation and market volatility. Investors who concentrated all capital in a single asset type or location experienced sharper declines in returns. While the findings strongly support the effectiveness of diversification and structured portfolio planning, the study's limitation lies in its narrow scope it only examined residential assets and excluded commercial or mixed-use properties. Furthermore, its regional focus on Lafia raises concerns about its relevance to real estate markets in the South-East, where economic conditions, investor behavior, and

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property market maturity differ considerably. Nevertheless, the study provides compelling evidence that structured portfolio strategies can improve investment resilience, reinforcing the need to explore why such models are not widely adopted in other regions like Enugu or Awka.

Jagun (2020) proposed a conceptual framework in the study *"Risk Intelligence in Property Feasibility Studies,"* where he argued that real estate investment in Nigeria must evolve beyond traditional feasibility models that ignore real-time risk variables. Drawing on Integrated Risk Management (IRM) principles, the study emphasized that risk assessments in property development should be continuous and adaptive. Jagun highlighted that feasibility studies typically rely on outdated or static data, often overlooking sudden regulatory changes, inflationary trends, or socio-political disruptions that are common in Nigeria. He proposed embedding dynamic risk feedback mechanisms such as Monte Carlo simulations and scenario modeling into the investment appraisal process. While the study was primarily theoretical and lacked empirical testing, it laid the groundwork for understanding how real estate feasibility and portfolio planning can benefit from continuous risk monitoring. For South-East Nigeria, where project-level uncertainties like land disputes and political instability are prevalent, applying Jagun's recommendations could greatly enhance investor confidence. However, further empirical work is needed to assess how this model performs in real-life settings across different regions of the country.

Muritala (2022), in a study titled *"Relative Occurrence of Risk Factors in Nigerian Real Estate,"* conducted a structured survey of 100 real estate professionals in Lagos to identify and rank the most common and severe risks affecting property development. The study revealed that the pre-construction phase particularly issues related to land acquisition, title verification, and planning approvals posed the highest risk exposure for investors. These risks were found to be consistent contributors to project delays, budget overruns, and overall investor dissatisfaction. Muritala argued that while developers are often aware of these risks, the lack of structured risk assessment frameworks prevents them from integrating these factors into their portfolio decision-making models. This gap between risk awareness and risk modeling is especially problematic in regions like South-East Nigeria, where legal and institutional frameworks are less robust. The study did not assess how these risks influence long-term investment performance, nor did it explore regional variations in risk impact, which limits its applicability beyond Lagos. However, it highlights the

urgent need for localized portfolio models that can integrate project-level risk factors into investment planning.

Akinola (2023) explored the topic of construction risk in real estate investment through a study titled *"Evaluating the Impact of Risk Factors on Construction Performance in Nigeria."* The research employed a mixed-methods approach involving 95 participants from various real estate and construction firms nationwide. It aimed to understand the most critical risk elements that lead to project delays and cost overruns. The findings revealed that cost inflation, regulatory delays, and contractor inefficiencies were the most frequent and damaging risks. Akinola emphasized that these risks not only disrupt construction timelines but also directly affect investor returns. However, the study focused only on the construction stage of real estate development and did not consider how such risks might be mitigated through structured portfolio management. In the context of South-East Nigeria, where construction risks are compounded by political uncertainty and infrastructural weaknesses, the absence of risk-buffering strategies like portfolio diversification or real-time risk modeling can significantly worsen investment outcomes. Thus, the study reinforces the need for broader risk integration into portfolio planning to safeguard returns and stabilize project performance.

Odeyemi and Lawal (2022) conducted a qualitative study titled *"Comparative Study of Real Estate Project Risk Management Practices,"* focusing on how real estate developers in Southwest Nigeria manage investment risks. Using semi-structured interviews with 15 real estate professionals, the study uncovered that most firms do not follow standardized or data-driven risk management processes. Instead, they rely on informal methods such as personal judgment, ad hoc community engagement, or reactive scheduling. While these practices may work in the short term, the study found that they often result in inconsistent project outcomes and increased exposure to regulatory or financial risks. The findings also highlighted a lack of technical knowledge and limited access to reliable data as key barriers to formal risk modeling and portfolio strategy development. Although the study provides valuable insights into localized risk behavior, its small sample size and regional focus make it difficult to generalize across Nigeria. Nonetheless, for South-East Nigeria, which shares similar infrastructural and regulatory challenges, these findings suggest that informal decision-making practices may be widespread. Addressing this through awareness,

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training, and accessible modeling tools could significantly enhance the region's investment climate.

3.0 Methodology

This study employed a descriptive survey research design to examine the challenges and determinants influencing the adoption of portfolio management models in real estate investment across South-East Nigeria. The descriptive survey approach was considered most appropriate, as it enabled the systematic collection of standardized data from professionals who are actively involved in real estate practice and investment decision-making in the region. The design was particularly effective for exploring real-world behaviors, institutional constraints, and the socio-economic factors affecting the use of portfolio strategies in Nigeria. As Creswell (2018) notes, descriptive research designs are ideal for identifying existing patterns, challenges, and relationships in naturally occurring environments, making it well-suited for a study of this nature.

The population for this study consisted of all 544 registered Estate Surveyors and Valuers operating in the five states of South-East Nigeria, namely Abia, Anambra, Ebonyi, Enugu, and Imo. These professionals were chosen because they occupy key positions in property valuation, asset management, and strategic investment planning. Their expert knowledge and involvement in real estate transactions make them highly relevant to the study's focus on portfolio model adoption. Moreover, their professional responsibilities often involve advising individual and institutional investors, thus placing them at the center of investment decision processes and risk management strategies.

Given the relatively small population size and the need for a comprehensive understanding of the issue across all states in the South-East, the study adopted a total enumeration sampling technique. This approach involved targeting all 544 identified professionals in the region, thereby ensuring full representation and eliminating sampling error. The goal was to capture a wide range of perspectives from the entire population of interest and to enhance the accuracy and generalizability of the study's findings within the South-East region.

Data collection was conducted using a structured questionnaire which was carefully designed to gather relevant and reliable information. The questionnaire was divided into two parts. Part one focused on the demographic and professional profiles of respondents, such as years of experience, level of education, and geographical location of practice. Part two explored the core issues of the study, including respondents' awareness and understanding of portfolio management models, the specific challenges limiting their adoption, and the perceived impact of such models on real estate investment outcomes. Both close-ended items measured on a five-point Likert scale and open-ended questions were included in order to capture both quantifiable responses and deeper qualitative insights.

The data collected were analyzed using a combination of descriptive and inferential statistical methods. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the respondents' characteristics and to highlight common trends in the adoption of portfolio management tools. To test the second research objective, which seeks to examine the relationship between the adoption of portfolio models and real estate investment performance, multiple regression analysis was carried out using SPSS software.

4.0 Results and Discussion

Five hundred and forty four (544) copies of the questionnaire were administered but five hundred and ten (510) were retrieved, valid and used for the analysis.

Presentation of Results

Table 4.1: Respondents Demographics

	Frequency	Percent
Male	365	71.6
Female	145	28.4
Total	**510**	**100.0**
Age		
18 - 25 years	40	7.8
26 - 35 Years	137	26.9
36 - 45 Years	293	57.5
46 Years above	40	7.8
Total	**510**	**100.0**
Educational Qualification		

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SSCE	95	18.6
BSC/HND	385	75.5
Masters	30	5.8
Total	**510**	**100.0**
Marital Status		
Single	79	15.5
Married	176	34.5
Divorced	206	40.4
Widowed	33	6.5
Complicated	16	3.1
Total	**510**	**100.0**

Source: Field Survey, 2025

The respondents' demographic data shows that the majority were male, representing 71.6% (365 individuals), while females made up 28.4% (145 individuals). In terms of age, the largest group was between 36 and 45 years, comprising 57.5% (293 respondents), followed by 26-35 years at 26.9% (137 respondents). Both the 18-25 and 46 years and above age groups accounted for 7.8% each (40 respondents). Regarding educational qualifications, most respondents held a BSc/HND degree (75.5%, or 385 individuals), with 18.6% (95 respondents) having an SSCE, and 5.8% (30 respondents) holding a Master's degree. As for marital status, the highest percentage was divorced individuals at 40.4% (206 respondents), followed by married individuals at 34.5% (176 respondents). Single respondents accounted for 15.5% (79 individuals), while widowed individuals were 6.5% (33 respondents) and those with complicated marital status were 3.1% (16 respondents).

Table 4.2 Regression Analysis on the Challenge affecting the application of portfolio management models in real estate investment

H_{01}: There is no significant challenge affecting the application of portfolio management models in real estate investment in South-East Nigeria.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.106[a]	.149	.1257	4.31067

a. Predictors: (Constant), CHA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105.067	1	107.067	5.601	.012[b]
	Residual	9360.368	501	18.582		
	Total	9378.435	500			

a. Dependent Variable: APMM
b. Predictors: (Constant), CHA

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	12.103	.817		12.541	.000
	CHA	.119	.060	.105	3.389	.013

a. Dependent Variable: APMM

Model Summary

The model summary indicates that challenges (CHA) account for 14.9% of the variance in the application of portfolio management models (APMM), as shown by the R Square value of 0.149. This means that approximately 15% of the changes in the use of portfolio models can be statistically explained by the challenges identified in the study. The Adjusted R Square, which corrects for the number of predictors in the model, is 0.1257, still suggesting a moderate level of explanatory power. The standard error of the estimate, at 4.31067, shows a moderate spread of actual values around the regression line, indicating some variation in how consistently challenges affect portfolio model application.

ANOVA

The ANOVA results reveal that the overall regression model is statistically significant, with an F-value of 5.601 and a p-value of 0.012 ($p < 0.05$). This indicates that the independent variable, challenges (CHA), significantly contributes to explaining the variance in the dependent variable, application of portfolio management models (APMM). Therefore, the null hypothesis (H_{01}) stating

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that there is no significant challenge affecting the application of portfolio models is rejected. This supports the conclusion that challenges do, in fact, play a meaningful role in influencing whether and how portfolio models are used in real estate investment decisions in South-East Nigeria.

Coefficients

The regression coefficient for challenges (CHA) is B = 0.119, with a standard error of 0.060, a t-value of 3.389, and a p-value of 0.013. Since the p-value is less than 0.05, this result is statistically significant, indicating a real and measurable effect. The positive sign of the coefficient suggests that as challenges increase, there is a corresponding increase though modest in the application of portfolio models. The standardized Beta value of 0.105 confirms a small but positive effect size. This may imply that the more investors become aware of or experience challenges (such as lack of training, poor data, or high costs), the more likely they are to consider or attempt the use of structured models possibly as a response to managing those very challenges.

Table 4.3 Regression Analysis on the Relationship between portfolio model adoption and real estate investment performance

H_{02}: There is no significant relationship between portfolio model adoption and real estate investment performance in South-East Nigeria.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.219[a]	.225	.008	4.21073

a. Predictors: (Constant), PMMA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	102.061	1	104.067	5.708	.005[b]
	Residual	9170.361	498	18.582		
	Total	9378.435	501			

a. Dependent Variable: RIP
b. Predictors: (Constant), PMMA

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	12.130	.729		12.207	.000
	PMMA	.108	.060	.103	2.273	.003

a. Dependent Variable: RIP

Model Summary

The model summary indicates that portfolio model adoption (PMMA) explains approximately 22.5% of the variance in real estate investment performance (RIP), as shown by the R Square value of 0.225. This suggests a moderate level of influence, indicating that the degree to which portfolio models are adopted can account for a meaningful portion of the differences observed in investment performance among respondents. However, the Adjusted R Square value of 0.008 implies that after adjusting for the number of predictors, the actual explanatory power is quite small. This disparity suggests that while a relationship exists, other factors not included in the model may be contributing significantly to investment performance outcomes. The standard error of the estimate, at 4.21073, reflects moderate dispersion of observed values around the predicted regression line.

ANOVA

The ANOVA results demonstrate that the regression model is statistically significant, with an F-value of 5.708 and a p-value of 0.005, which is well below the 0.05 threshold. This confirms that portfolio model adoption (PMMA) significantly contributes to explaining variability in real estate investment performance (RIP). Therefore, the null hypothesis (H_{02}) which states that there is no significant relationship between portfolio model adoption and investment performance is rejected. This provides empirical support for the assertion that the adoption of structured portfolio management practices has a measurable and statistically meaningful impact on investment outcomes in the real estate sector within South-East Nigeria.

Coefficients

The regression output reveals a positive unstandardized coefficient (B = 0.108) for PMMA, with a standard error of 0.060, a t-value of 2.273, and a p-value of 0.003. Since the p-value is less than 0.05, the result is statistically significant. The standardized Beta coefficient of 0.103 suggests a small but positive effect size, meaning that as the level of portfolio model adoption increases,

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investment performance also tends to improve albeit modestly. This implies that even incremental improvements in the structured use of portfolio tools can contribute to better returns or more stable performance in real estate investments. Though the strength of the relationship is not large, its direction is positive and statistically valid, emphasizing the importance of promoting portfolio model adoption among investors and real estate professionals.

Discussion of Findings

The results of this study provide clear evidence that challenges significantly affect the application of portfolio management models, and that portfolio model adoption has a statistically significant, though modest, positive effect on real estate investment performance in South-East Nigeria.

Firstly, the regression analysis showed that challenges account for 14.9% of the variance in the application of portfolio management models ($R^2 = 0.149$), with a statistically significant relationship ($p = 0.012$). This supports the assertion made by Odebode et al. (2024), who investigated the barriers to modern investment strategies in the Nigerian real estate sector. Their study revealed that a lack of access to reliable market data, limited training in portfolio analytics, and the high cost of implementing quantitative models are among the most critical challenges hindering adoption. Similarly, Sunday (2023) found that poor awareness, low digital literacy, and resistance to technological change were prominent issues limiting the practical use of structured investment models. This study aligns closely with these conclusions, suggesting that technical and infrastructural barriers continue to act as bottlenecks for portfolio model adoption in the South-East region.

Additionally, Ikeotuonye (2024) examined institutional support and investor readiness in emerging markets, identifying weak regulatory frameworks, absence of localized tools, and lack of integration with professional training as major determinants of low portfolio model uptake. The findings of this study agree with their conclusion that challenges are not merely incidental but significantly predictive of adoption outcomes. By confirming a statistically significant impact, this study offers empirical validation for what has often been qualitatively observed in literature. In regard to the second objective, this study found that portfolio model adoption explains 22.5% of the variance in real estate investment performance ($R^2 = 0.225$), with a positive and statistically

significant effect (p = 0.003). This supports the work of Agava et al. (2023), who examined 75 diversified residential portfolios in Nigeria and found that those utilizing structured allocation tools and optimization models performed better during economic stress. They concluded that portfolio diversification and return planning tools contributed to improved stability and resilience.

This finding also aligns with the work of Oloke et al. (2022), who conducted a quantitative assessment of portfolio model adoption among real estate firms in Lagos. Their results showed a significant knowledge–practice gap, where many professionals were aware of tools like Value-at-Risk (VaR) and the Sharpe ratio but seldom used them in practice. They concluded that low practical application of these tools reduced the potential for improved performance. While their study was regionally focused on Lagos, this study expands their insights to the South-East, confirming that where portfolio models are adopted even minimally they positively impact performance.

In contrast, this study offers new insights into the context-specific relationship between model use and investment outcomes in the under-researched South-East zone. For instance, Odeyomi et al. (2023) focused more on project-level risks and did not assess how broader portfolio strategies affect returns. Similarly, Akinola (2023) emphasized construction-related risks and cost overruns without linking these operational challenges to portfolio performance. In this regard, this study goes further by connecting strategic investment modeling to overall return optimization, thereby filling a key gap in literature.

Moreover, the finding that even modest adoption of portfolio tools improves investment performance reinforces the theoretical proposition of Integrated Risk Management (IRM), as noted by Jagun (2020). Jagun argued for embedding risk-based intelligence into investment planning, though his model was largely conceptual. This study provides the empirical support that such models can, in fact, improve outcomes when adopted in practice. It validates IRM as a relevant framework in the Nigerian context, especially where investors face both operational and systemic risks.

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5.0 Conclusion and Recommendation

Conclusion

This study examined the challenges and determinants influencing the adoption of portfolio management models in real estate investment within South-East Nigeria and explored the relationship between model adoption and investment performance. The findings revealed that specific challenges including limited technical expertise, poor access to market data, and high implementation costs significantly affect the application of portfolio models. Despite these challenges, the adoption of portfolio management models was found to have a statistically significant positive impact on real estate investment performance. Although the effect size was modest, the relationship indicates that structured portfolio strategies such as diversification, scenario planning, and risk analytics can meaningfully improve return optimization when applied. The study also established that awareness of challenges may, in some cases, encourage investors to explore structured models, especially in response to volatile market conditions. This insight aligns with earlier findings by authors such as Odebode et al. (2024), Agava et al. (2023), and Oloke et al. (2022), who similarly highlighted the importance of data availability, institutional support, and training in facilitating adoption. It is evident that while real estate professionals in South-East Nigeria face considerable obstacles, portfolio models remain essential tools for improving decision-making, reducing risk exposure, and enhancing long-term investment performance.

Recommendations

1. Policymakers, academic institutions, and private firms should collaborate to build region-specific real estate databases and modeling systems that reflect the socio-economic realities of South-East Nigeria. This will improve access to reliable inputs needed for effective portfolio analysis.
2. Professional bodies such as the Nigerian Institution of Estate Surveyors and Valuers (NIESV) should institutionalize ongoing capacity-building programs focused on portfolio management, risk analytics, and investment modeling. This would help bridge the knowledge gap and improve adoption rates.

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