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Analyzing The Interrelationship Between Risk Management Processes and Residential Property Development in Enugu Metropolis

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Abstract
Risk management is a critical aspect of residential property development, as it influences investment security, project sustainability, and overall economic viability. In Enugu Metropolis, the real estate sector has witnessed rapid urbanization, yet it remains fraught with uncertainties such as financial volatility, regulatory bottlenecks, land tenure disputes, and construction risks. This study examines the interrelationship between risk management processes and residential property development in Enugu, focusing on how effective risk assessment, mitigation, and control mechanisms can enhance project success. Adopting a mixed-methods approach, the study integrates empirical data from property developers to evaluate how risk management frameworks impact project timelines, cost efficiency, and market viability. Findings indicate that inadequate risk assessment contributes to project failures, cost overruns, and reduced investor confidence, while structured risk mitigation enhances housing delivery efficiency. The study recommends the adoption of proactive risk management framework, integrating financial hedging strategies, regulatory compliance measures, and adaptive project management techniques to foster sustainable residential property development in Enugu metropolis. These insights contribute to the growing body of literature on urban real estate risk management in developing economies.

Keywords: *Risk management, residential property development, real estate investment, project sustainability*

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I. Introduction

The real estate sector plays a pivotal role in economic development, providing housing and employment opportunities while contributing significantly to national GDP (Gehner, 2008). However, property development is inherently risky, especially in developing economies where uncertainties such as fluctuating material costs, land tenure complications, policy inconsistencies, and financial instability hinder project execution (Mahendra et al., 2013). Enugu Metropolis, a rapidly urbanizing region in southeastern Nigeria, has experienced significant growth in housing demand, yet investors and developers continue to grapple with risks that threaten project sustainability (Romike, 2003). This study critically examines the interrelationship between risk management processes and residential property development, exploring how structured risk identification, assessment, and mitigation strategies can enhance real estate investment outcomes in Enugu metropolis. Notwithstanding increasing investments in residential property development in Enugu metropolis, the housing market remains vulnerable to financial, legal, and operational risks (Nnamani, 2017). Developers often face difficulties securing land due to bureaucratic delays in land registration and disputes over ownership rights, stemming from inefficient land administration systems (Ogbu, 2013). Additionally, high construction costs, fluctuating interest rates, and unpredictable government policies further exacerbate the risks associated with property development (Finnerly, 2013). These challenges underscore the need for a robust risk management framework that not only identifies and evaluates risks but also provides mitigation strategies to enhance investment security and housing delivery.

II. Review of Related Literature

Risk is an unavoidable element in residential property development, influencing financial decisions, regulatory compliance, construction efficiency, and market dynamics. By implementing comprehensive risk management frameworks, developers can minimize uncertainties, improve investment security, and enhance sustainable housing delivery in Enugu Metropolis. However, risk is generally defined as the probability of an adverse event occurring that may affect the achievement of specific objectives (Kleffner, 2003). In financial and

project management contexts, risk refers to uncertainties that can result in negative consequences, including financial losses, project delays, and operational inefficiencies (Avan, 2012). Risk is often categorized into different types, such as financial risk, regulatory risk, operational risk, and market risk, depending on the sector in which it is applied (Rasid & Rahman, 2009). Hoyt et. al. (2011) further conceptualizes risk as a combination of uncertainty and exposure uncertainty regarding an outcome and exposure to its consequences. This perspective highlights that risk is not merely the possibility of loss but also the degree to which an entity is affected by that loss. In real estate development, particularly residential property projects, risk is an inherent factor that affects investment decisions, construction processes, and project completion. The application of risk in this context involves identifying, assessing, and mitigating uncertainties that may hinder the success of property development (Gehner, 2008).

According to Wuiegelmann (2012) to mitigate these risks, developers, investors, and policymakers must adopt structured risk management strategies, including:

1. Risk Identification – Systematic assessment of potential threats at each stage of property development.
2. Risk Analysis and Assessment – Quantitative and qualitative evaluation of risk severity and probability.
3. Risk Mitigation and Control – Implementation of strategies such as financial hedging, insurance policies, and regulatory compliance to reduce uncertainties.
4. Monitoring and Review – Continuous assessment of risk exposure throughout the development lifecycle.

2.1 Residential Property Development Process and Related Risks

The process of transforming an idea into a tangible residential property can span several years, requiring careful management and oversight. The development journey is typically divided into various phases, with each stage being evaluated to determine if further investment is justified (Gehner, 2008). However, each phase carries its own set of risks, which can impact the overall success of the project. Gehner (2006) emphasizes that real estate development is a particularly complex and challenging process, as it serves as a mechanism for change that influences both local communities and broader societal structures. The inherent uncertainty and risks at each stage make it crucial for developers to continuously assess and mitigate potential issues that could derail the project's objectives. The study believes that investing money involves making uncertain extrapolations about the future, hoping that something outside of your control will occur to make your investment worthwhile. Therefore, before investing or while hold an investment there is need to look into the key elements of that investment and the possible effect of change, uncertainty and risk.

For purposes of this study, the stages identified by the researcher are consolidated into six main phases:

Conceptualization Stage: According to Fisher et al (1999) as cited in Gehner (2006) every property improvement begins with an idea. This idea may be introduced by the developer's intention for profit through making property which meets the current or future needs in the property market (Gehner, 2006). Long (2011) emphasized that significant uncertainty typically arises in the early stages of a project, which coincides with the critical business decisions that determine a project's success. According to Long, it is essential to identify, assess, and address potential risks at the outset to ensure the project's viability. The initial phase of the development process is marked by high uncertainty, with complex and creative searching and analysis to answer key questions such as: "What should be invested in? What are the constraints?" "Where should investments be made, and how does the neighborhood's character affect the project?" "How will the investment's size and scope be determined?" These decisions carry financial and time implications, shaping the project's foundation and ultimately guiding the developer's objectives. All potential risks should be clearly defined at this stage to ensure a comprehensive understanding of the project's challenges from the start. Therefore, risk management should be a continuing activity throughout the duration of a project.

Predevelopment planning stage (appraisal): After the development has been conceptualized the next stage in the development process is to carry out feasibility and viability appraisal of the project which is based on detailed market and location analyses, building code reviews, design studies, use analyses, and risk assessments as well as profitability calculations, after which decisions are implemented. According to Gehner (2008) this stage can be qualified as one of the most important ones in the development process given its influence to the decision-making of the developer. This concept focuses on determining whether the envisioned decision or plan is achievable and realistic in the context of its specific objectives and constraints. Ogbuefi (2008) opined that feasibility study could be regarded as a study to determine if a proposed or given project or investment is achievable under a specified situation and time within a given location, which must the primary aim of a feasibility study is to evaluate the economic viability and sustainability of a proposed project. According to

Ogbuefi (2008), a real estate project is deemed feasible when the analyst determines that there is a reasonable likelihood of achieving the project's objectives within the context of specific constraints and available resources.

Viability appraisal plays a critical role in determining whether a project is worth pursuing after confirming its feasibility. As Ogbuefi (2002) suggests, it answers the fundamental question: should it be done? This process evaluates whether the projected benefits of the project justify the associated costs, taking into account the decision-maker's objectives and available alternatives. Additionally, it involves assessing the relationships between costs and benefits, considering the time factor and the likelihood of achieving the anticipated outcomes. Viability appraisal considers a range of factors, including the financial aspects of the project and potential alternative approaches. It serves as a critical decision-making tool to ensure that the project aligns with the strategic goals of stakeholders while ensuring that the proposed benefits outweigh any risks or costs. Ogbuefi (2002) identifies two types of viability appraisal that must be established before proceeding with any real estate development or investment. The first, conclusive viability is determined by professionals who thoroughly assess all the benefits both tangible and intangible of the project and compare them to the total costs. This forms an irrefutable case for executing the proposal, providing a clear argument for the decision to move forward. The second type, compelling viability, is focused on prompting action for project execution. This decision is typically made by key stakeholders such as the landowner, developer, investor, or board of directors. It involves ensuring that the project has a compelling rationale to be acted upon, even if the case for execution is not as conclusive. This decision-making power often lies with senior management or those with ultimate authority in the organization (Ogbuefi, 2002). The study agrees with the views of the above scholar and opined that the impact of change on development project and time value of money should be one of the major elements to put into consideration when carrying out feasibility and viability appraisal. According to the study risks are present at all stages of property development, the feasibility and viability appraisal offers the opportunity to assess and analyse risk at a preliminary stage and review their impact before commitment of capital, as well as documenting and trying to mitigate such identified risks during later implementation.

Development Decision Stage: Once the relevant data has been gathered and analyzed based on sound assumptions, the results must be presented in a way that enables the developer to make an informed decision on whether or not to proceed with the project. The study suggests that every investment decision inherently involves risks, and it is crucial for the developer to thoroughly assess these risks before moving forward. According to Norman et al. (1993) as cited in Wiegelmann (2012), decision-making in real estate development occurs within an environment characterized by three components: certainty, partial uncertainty, and risk. Wiegelmann (2012) further notes that the decision-making process can sometimes lead to an unfavorable outcome when a decision does not produce the anticipated results. The decision itself hinges on the availability and quality of information about future situations and the risk tolerance of the decision-maker. By understanding the risks and gathering accurate data, developers can approach investment decisions with greater confidence, balancing potential returns against the risks involved. These decisions play a crucial role in determining the future direction of an organization, especially in the context of mid- to long-term investments. The study highlights that when making investment decisions, it is essential to consider the uncertainty surrounding potential events and their possible effects on the project's outcome. This element of uncertainty can ultimately influence whether an investment leads to success or failure, making it a critical factor in the decision-making process.

Development Planning and Forecasting: According to Ogbuefi (2008) market research and analysis are essentially pre-requisite in forecasting for the execution of any sound investment appraisal. Ogbuefi defined forecasting as a future projection of event based on the analysis of collected and collated information. It involves delving into the past, examining the present and projecting the future. This has been the greatest problem facing viability appraisal analysis. There are problems as to the types, forms or elements of cost and benefits which will likely flow from the proposed project. Umeh (1977) opined that the most difficult aspect of forecasting concerns the magnitude and distribution of costs and benefits over time or during the life of a proposed project. It has been argued by many scholars that in real estate investment analysis, the use of forecasted values and costs would not affect the residual answer as the rises in costs would be roughly balanced by the rising rent. Ogbuefi (2008) disagreed with the assertion and opined that there is no relationship between inflation in the cost of material and labour and the change in value of building. The study believed that the use of forecasted values and costs would affect the residual answer of the investment, therefore, there is need to adopt approach and consider the situation with assumptions that can be readily defended either subjectively or empirically. The study agrees with the views of the above scholars but believes that at the development planning and forecasting stage there is need for the objectives to be clearly stated before delving into the past, examining the existing situation and projecting into the future. According to the researcher means of executing the project are looked into; plans are formulated; Land assembly; survey of site; design and drawing; estimate of cost and

returns; look into by- laws; obtaining planning permission; licensing quantity; making former application for permission; source of development finance that is the procurement of development finance, which can be either internal or external.

Development Proper: Wiegelmann (2012) stated that the construction phase of a project begins once the necessary building permits have been granted, and the primary objective is to complete the project according to the established schedules, costs, and quality standards. At this stage, once the permits are in place, the developer issues instructions to commence the work. The study emphasized that the actual construction activities are then initiated, and management functions, such as organizing and coordinating resources, become crucial. Professionals and experts are assigned to execute the tasks as planned. The process is typically characterized by careful oversight to ensure the project remains on track with respect to its goals and deadlines. The development team: Estate Surveyors; Architectures; Quantity Surveyors; Land Surveyors; Legal Practitioner; Builder; Structural Engineers amongst others. It should be recalled here that every investment is based on forecasts of quantifiable variables such as demand, cost and benefit. Hence, the value of these variables is influenced by a great number of factors such as inflation; cultural change; political change amongst others, for these reasons the actual values of construction may differ considerably from forecasted values depending on future development. It is therefore, useful to consider the effects of likely changes on the key variables of the investment. The key factor elements in residential property development are cost of acquiring land; cost of labour; cost of building materials; cost of acquiring finance etc., the fact that the cost of these might differ from estimated are risk. As the work goes on there is need for proper monitor of the work i.e., controlling factors which is associated with its own risk.

Marketing or Letting & Management stage: The study observed that at the completion of the constructing work arrangements are made on leasing, letting or selling of the property for investment properties or arrangement for maintenances, repairs and management assuming the investment is for other purposes, such as owner occupier. According to Wiegelmann (2012) marketing or letting stage of property development is a prerequisite for matching of property to be developed or developed property with market needs. According to Olajide (2013) the success of a property development is dependent on whether, or the degree to which, the completed building will be accepted for use by tenants in the property market. Marketing or letting of properties have essentially the most relevant risk associated with private real estate developers. The advantages of liquid investments, like public equities, are that there is a price at which one can trade with certainty; diverse range of buyers and sellers through a central market place (Derek, 2014). In contrast, real estate is very illiquid with the price subject to a wider variation depending on the market, but also the specific requirements of the buyer and seller, their respective negotiation positions, the speed at which a buyer can execute (a fast sale may necessitate a lower price) and the marketing associated with the asset. Hence, generally speaking all markets have ups and downs tied to it; the economy, interest rates, inflation or other market trends. The Investors can hedge their bets against risk, the Financial Industry Regulatory Authority (FINRA). This involves ensuring that work progresses as scheduled to achieve the timely and cost-effective delivery of the building. The objective is to balance efficiency with quality, keeping all activities aligned with the project's timeline and financial plan.

III. Methodology

3.1 Research Design: survey research design was adopted for the study

3.2 Study Area

Enugu Metropolis, the capital of Enugu State in southeastern Nigeria, is a rapidly urbanizing city with a growing real estate market. Historically known as the administrative and economic hub of the former Eastern Region, Enugu has evolved into a key urban center characterized by expanding infrastructure, increasing population density, and significant real estate developments However, this rapid urbanization comes with both opportunities and challenges, particularly in the areas of land administration, housing supply, and risk management. The real estate sector in Enugu Metropolis is experiencing steady growth, influenced by factors such as government policies, private sector investments, and socio-economic dynamics. Regardless of its growing potential, the real estate market in Enugu Metropolis faces several risks that impact investment and development. These risks can be categorized as follows:

i. Financial Risks: High Cost of Construction Materials: The depreciation of the Nigerian Naira and inflation have led to skyrocketing costs of cement, iron rods, and other building materials, increasing the overall cost of housing (Olajide, 2013). Limited Access to Housing Finance: Mortgage penetration remains low due to high interest rates, stringent loan requirements, and limited availability of long-term financing (Nnamani, 2017).

ii. Land Tenure and Legal Risks: Complex Land Registration Process: The cumbersome land documentation process under the Land Use Act of 1978 often leads to delays and disputes in land ownership (Nnamani, 2017). Encroachment and Land Disputes: Traditional land ownership structures sometimes conflict with statutory land regulations, resulting in legal battles that hinder development (Nnamani, 2017).

iii. Environmental and Infrastructural Risks: Flooding and Poor Drainage: Parts of Enugu experience seasonal flooding due to inadequate drainage systems. Inconsistent Power Supply: Frequent power outages increase the operational costs of residential and commercial properties, affecting rental and investment yields (Ogbuefi, 2008). Water Scarcity: Enugu faces periodic water shortages, making some locations less desirable for real estate investments.

iv. Market Risks: Fluctuating Property Demand: Economic downturns, inflation, and changing consumer preferences can affect property values and rental yields. Speculative Investments: The real estate market in Enugu, like other Nigerian cities, sometimes experiences price inflation driven by speculation rather than genuine demand.

v. Political and Regulatory Risks: Policy Inconsistencies: Unpredictable government policies on land acquisition, taxation, and building regulations can create uncertainty for developers and investors. Insecurity Concerns: While Enugu is relatively peaceful, occasional security challenges such as land grabbing and tenant-landlord disputes pose risks to real estate transactions.

3.3 Population and Sampling: Target respondents' includes fifty (50) property developers/ investors and policymakers selected randomly in the study area.

3.4 Data Collection Methods: data were collected from both primary and secondary data. Primary data collected from surveys and interviews while secondary data were collected from journals and government reports.

3.5 Analytical Techniques: Correlation Coefficient was employed to ascertain the relationship between the variables

IV. The Test

To determine the relationship between different aspects of risk management process and residential property development in Enugu Metropolis, Pearson Product Moment Correlation Coefficient was employed.

Table 4.1 Descriptive Statistics

	Mean	Std. Deviation	N
Aspect of risk management process	1.7677	.73019	488
Residential property development	1.6850	1.12263	488

Table 4.1 depicts the descriptive statistic of the variables, the mean value of Aspect of risk management techniques 1.7677 and Residential property development was 1.6850 with a standard deviation of 0.73019 and 1.12263 respectively.

Table 4.2 Correlations

		Aspect of risk management process	Residential property development
Pearson Correlation	Aspect of risk management process	1.000	.729
	Residential property development	..729	1.000
Sig. (1-tailed)		.	.000
	Aspect of risk management process	.000	.
N	Residential property development	488	488

As depicted in table 4.2, there is a positive correlation between aspect of risk management process and residential property development, a positive correlation of 0.729 was observed from the correlation results.

Implications of the Variations in Pearson Product Moment Correlation Coefficient Computed
There is a notable connection or correlation between risk management process and the success and progression of residential property development. Establishing a significant relationship implies that effective application of risk management can impact the overall development positively which can guide future strategies and practices.

V. Discussion of Result

i. Significance of Correlation ($r = 0.729$, $p = 0.000$), the Pearson correlation coefficient of 0.729 indicates a strong positive relationship between the risk management process and residential property development in Enugu Metropolis**.**
ii. A p-value of 0.000 (1-tailed test) confirms the relationship is statistically significant, the probability that this result occurred by chance is effectively zero.

Implication:
This suggests that improvements in risk management strategies are strongly associated with better outcomes in residential property development. However, results clearly demonstrate that the risk management process plays a vital role in ensuring the successful growth of residential property development in Enugu Metropolis. The strength of the correlation (.729) provides evidence that managing risks, particularly financial, legal, and infrastructural is not just advisable but essential to real estate progress in rapidly urbanizing areas like Enugu.

VI. Conclusion:

The study therefore, concluded that risk management is not merely a supplementary aspect of property development but a fundamental determinant of project success, sustainability, and profitability. Effective risk management frameworks significantly influence land acquisition, construction processes, project financing, market stability, and regulatory compliance, ultimately shaping the trajectory of residential property growth in the city. Furthermore, the study establishes that an integrated risk management approach one that combines quantitative risk assessment, regulatory compliance strategies, stakeholder collaboration, and technological interventions is essential for optimizing residential property development. Public-private partnerships (PPPs), streamlined land governance, and innovative construction financing models can serve as catalysts for sustainable real estate development. Addressing risk factors through policy reforms, infrastructural upgrades, and digitalized property records would enhance investor confidence and create a more resilient housing sector. However, fostering a risk-conscious real estate environment in Enugu Metropolis requires a multi-faceted approach. Developers, policymakers, financial institutions, and urban planners must engage in risk-informed decision-making to mitigate uncertainties and enhance the overall efficiency of residential property development.

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