

# Assessing Functional Obsolescence Impact on Property Values in Komarock Sector III, Nairobi County

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Received on 27<sup>th</sup> March, 2024; Received in revised form 4<sup>th</sup> July, 2024; Accepted on 17<sup>th</sup> July, 2024.

## Abstract

*This study investigates the impact of functional obsolescence on property values in Komarock Sector III, Nairobi County, illuminating how outdated designs and the lack of modern amenities contribute to declining property values. Utilizing a case study approach, including surveys with property owners and valuation professionals, alongside Spearman's Rank Correlation Coefficient analysis, the study uncovers a negative relationship between the degree of functional obsolescence and property values. Findings reveal that as properties become more functionally obsolete, their market value tends to decrease, highlighting the significant influence of contemporary standards and preferences on real estate valuation. The study underscores the importance of regular property upgrades and renovations to mitigate the effects of obsolescence and recommends policy development aimed at sustainable urban planning to encourage future-proof building designs. Through these strategies, the study suggests that property owners and developers can maintain or increase the market value of their properties, ensuring their competitiveness in the real estate market.*

**Keywords:** Functional obsolescence, property values, Nairobi County

## INTRODUCTION

The paper delves into the intricate dynamics of property valuation within the context of Komarock Sector III, situated in Nairobi County, Kenya. Focusing on the impact of functional obsolescence, the study seeks to unravel the multifaceted interplay between property values and the evolving nature of built environments. With the property being extolled as a unique asset class, distinct from conventional investment avenues, understanding the ramifications of obsolescence becomes paramount (Gao, Xi He, & He, 2018). While properties promise future returns, contingent on factors such as longevity and steady cash flow, they are not impervious to the forces of age, natural elements, and shifting societal needs (Andonov, Eichholtz, & Kok, 2012).

Drawing from insights of renowned economists such as Johann Heinrich Von Thunen and David Ricardo, the study elucidates the underlying principles governing property valuation. Von Thunen's seminal work underscores the pivotal role of land quality and productivity in determining

its value, a concept deeply intertwined with property valuation mechanisms (King'oriah, 2013; Thomsen & Van der Flier, 2011). In light of this historical perspective, the study endeavours to bridge theoretical constructs with contemporary realities, exploring how the quality and productivity of buildings intersect with their financial, cultural, and social significance. Thus, beyond mere depreciation and obsolescence, the study delves into the broader spectrum of property quality and productivity, echoing the wisdom of economic theorists from centuries past.

Moreover, the study confronts the complexities of addressing obsolescence within the built environment. While conventional wisdom might suggest obsolescent structures should be razed and replaced, the practical implications of such actions extend far beyond mere financial considerations. Buildings serve as crucibles for community cohesion, providing spaces for households to establish roots and forge bonds (Thomsen & Van der Flier, 2011). Hence, any intervention aimed

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at mitigating obsolescence demands a nuanced approach that balances financial imperatives with the preservation of cultural and social capital. Through a rigorous examination of these intersecting dimensions, the study aspires to offer insights that transcend the traditional paradigms of property valuation, paving the way for more holistic and sustainable approaches to urban development.

In a capitalistic economy, the burgeoning influence of institutions such as banks and insurance companies exert pressure on land designated for residential housing, often leading to two scenarios: either the conversion of land for commercial purposes or a surge in property exchange values. Consequently, this dynamic gives rise to a heterogeneous housing market, comprising a blend of ageing residential properties alongside newly developed, premium real estate. Within the realm of older housing stock lies the pervasive issue of obsolescence, denoting the state of disuse or antiquation of an asset. Obsolescence typically stems from two primary causes: physical deterioration and the emergence of superior alternatives in the market. However, the characterization of a building as obsolete or undergoing obsolescence is a nuanced process, transcending mere commodity descriptions, and warrants careful consideration of its multifaceted implications (Nutt, Walker, Holliday, & Sears, 1976).

While traditional approaches focus on building depreciation solely as a function of age, as evidenced by the existing literature and discussions with industry professionals, a more nuanced understanding is emerging. Renowned scholars have extensively documented the concept of physical deterioration. However, as the property market evolves, there's a growing recognition of the need to explore a stronger correlation between a building's quality and productivity, and its depreciation rate. This study aims to address this gap in knowledge by investigating this potential relationship.

## THEORY

### The Concept of Functional Property Obsolescence

Property, like all assets, experiences a decline in worth and utility upon occupation and use. This

gradual devaluation process accelerates with age and market competition, leading to diminished usefulness. As a result, property owners must continually invest to maintain competitiveness (Bryson, 1997). This deterioration, viewed temporally, culminates in eventual structural failure.

Several scholars have contributed various definitions of property obsolescence. Iselin and Lemer (1993) characterized it as the gradual decline in a building's delivery performance over time, marking the final phase of its service life and often culminating in demolition. They emphasized the widening disparity between performance and stakeholders' escalating expectations as a defining feature. Similarly, Miles, Berens, and Weiss (2007) described obsolescence as deteriorating performance leading to the end of a building's service life, emphasizing stakeholders' satisfaction with the asset's performance.

Thomsen and Van der Flier (2011) adopted a multidimensional approach, acknowledging diverse perspectives on obsolescence, including behavioural, economic, sociological, and technical viewpoints such as architecture and construction. Meanwhile, Baxter (1971) tied obsolescence directly to value, the focus of this study, defining it as a decline not solely attributable to time or use. This notion was echoed by Raftery (1991), who viewed obsolescence as a product of decision-making and human perception.

Baxter and Raftery's perspectives align with the contemporary breakdown of obsolescence into physical depreciation (attributed to wear and tear and ageing) and obsolescence (stemming from broader, internal or external factors), providing a comprehensive understanding of the phenomenon.

Functional obsolescence occurs when a property's value decreases due to reduced utility, often resulting from design flaws, altered size specifications, or technological advancements, reflecting shifts in market preferences. This type of obsolescence is informed by the perceptions of market participants, rendering properties less desirable due to outdated features that are challenging to alter (Bidwell, 2003). To grasp the implications of functional obsolescence, one must understand the concept of "function" - the

property's ability to justify its existence based on its intended purpose. Valuers must consider the unique characteristics of the property in comparison to the specific market context, viewing it from the perspective of typical market participants (Bidwell, 2003).

Drawing insights from scholars such as Iselin and Lemer (1993) and Baxter (1971), functional property obsolescence is understood as a consequence of human perception rather than time or use. This divergence between performance and stakeholder expectations evolves, with performance reflecting stakeholder requirements aligned with their interests in the asset (Thomsen & Van der Flier, 2011).

### **The Impact of Functional Property Obsolescence on Residential Property Values**

Buildings experiencing functional obsolescence witness a shift in demand from potential renters and buyers due to rigid design assumptions made by developers and property experts, which fail to accommodate evolving property needs across generations (Tu & Loftness, 1998). This behavioural rigidity prompts market participants to explore alternative options, such as custom-built homes on serviced land, aligning with their unique preferences.

While property is typically viewed from the perspectives of owners and tenants, it also serves the interests of non-users and third-party entities, such as service providers and utility companies, each with their notion of utility. Despite varied measures of usefulness, functional obsolescence is often perceived as negligible by these parties (Pinder & Wilkinson, 2001), potentially impacting their business interactions with the property.

In determining real property values, considerations include the building's age, construction materials, maintenance, degree of obsolescence, and compliance with government regulations such as rent controls, zoning, health ordinances, taxation, and building codes (Tough & MacDonald, 1958). Obsolescence in residential buildings within city neighbourhoods can be identified through analysis of characteristics and comparative property values, with neighbourhood conditions directly impacting property stability and potential depreciation rates (Jacobs, 1941).

The realized value of a property, whether residential or commercial, hinges on the future housing services it will provide, represented by the discounted present value of expected service flow (McGuire, 1979). Deterioration and obsolescence diminish service quality, potentially leading to property demolition if maintenance or renovation strategies are not employed, thereby decreasing both service quality and remaining service life and, consequently, property values (McGuire, 1979).

Properties falling short of market expectations face increased building obsolescence rates, and diminishing desirability compared to newer investments in the neighbourhood. This decline in value affects property owners and potential investors alike, as buildings designed for past conditions become threatened by emerging ones, leading to decreased productivity and value erosion (Pinder & Wilkinson, 2001).

Functional property obsolescence impacts property values in both positive and negative ways. Some landowners experience companionship and financial security due to functional obsolescence (Mireku, Abubakari, & Martinez, 2021; Rubin & Klumpp, 2011), while others encounter social inequality, property underutilization, and decreased property values due to reduced demand for functionally obsolete property (Balchin, Isaac, & Chen, 2000; Mireku, Abubakari, & Martinez, 2021; Tu & Loftness, 1998; Pinder & Wilkinson, 2001). Given the heterogeneous nature of real estate, these empirical findings underscore the necessity for targeted study to elucidate the impact of functional property obsolescence on property values.

In Kenya, the National Building Maintenance Policy of 2015 is relevant and has several implications for functional property obsolescence. The policy emphasizes the importance of regular maintenance to prolong the lifespan of buildings, enhance safety, and improve the overall quality of the built environment. By adhering to this policy, property owners in Komarock Sector III can mitigate the effects of functional obsolescence, which refers to the loss of property value due to outdated design, poor layout, or inadequate infrastructure. Proper maintenance can help sustain property values, attract potential buyers or tenants, and ensure that buildings

remain competitive in the real estate market. Consequently, the policy plays a significant role in preserving property values and promoting sustainable urban development in Nairobi County (Republic of Kenya, 2015).

## RESEARCH METHODS

The study employed a case study design, which involves an in-depth empirical exploration of a phenomenon, particularly suitable when the boundaries between context and phenomenon are ambiguous (Yin, 2009). To ascertain the population size, the authors utilized the Nairobi Block III (Komarock) Registration Section Registry Index Map (R.I.M.) along with satellite image analysis from Google Maps, estimating a population of 500 landowners (Yin, 2009). Following the sampling guidelines proposed by Arleck and Settle (1995), 10% of homes in the estate, equivalent to 50 respondents, were selected for questionnaire distribution and property owner interviews.

Property valuers/appraisers emerged as key respondents due to their expertise in assessing property values for various purposes. Utilizing resources like the Nairobi Directory and Yellow Pages, the study identified approximately 135 valuation firms. Adopting a similar 10% sampling approach, a subset of these firms was chosen as sample respondents (14 firms). Therefore, the total sample size was 64 but 55 questionnaires were duly filled and returned, giving a response rate of 85 percent. Valuers and property owners were queried about the impact of functional obsolescence on property values in the Komarock Sector III area (Kothari, 1990; Yin, 2009), using a simple random sampling strategy.

The collected data underwent analysis using descriptive statistics, including frequencies, percentages, mean scores, and correlation analysis. Spearman's Rho, or the Rank Correlation Coefficient method, was employed to assess the strength and direction of monotonic relationships between variables. As the data collected by the authors was ordinal, it could be categorized and ranked, offering a certain order to the variables. While superior to nominal data, ordinal data remains qualitative and does not reach the level of interval or ratio scale data (Al-Hameed, 2022). The results of the data analysis were presented in tables.

## RESULTS

The study found that functional obsolescence significantly impacted property demand in the area, with 26% of the effect attributed to the declining usefulness of developments, leading to original owners moving out in search of modern housing options either in the region or in Nairobi City. This observation aligns with literature suggesting that higher obsolescence levels in a neighbourhood decrease property demand.

The study identified underutilization of property due to functional obsolescence as the second major effect, accounting for 24%. This was evident from a comparison of the current neighbourhood's development with newer projects, such as the modern Komarock Heights development by Housing Finance Group, offering a mix of two and three-bedroom apartments. Despite similar sizes, the value of these apartments—Kshs. 6 million for two bedrooms and Kshs. 7.2 million for three bedrooms—competes with that of bungalows in the study area, highlighting underutilization.

Social inequality was identified as the third major effect of functional property obsolescence, accounting for 22%. Research by the African Centre of Excellence for Inequality Research and the Kenya National Bureau of Statistics (KNBS), with insights from Oxfam International, highlighted the stark disparities in wealth and labour market earnings within Kenya, especially in Nairobi. The findings revealed that less than 0.1% of the population holds more wealth than the bottom 99.9% (over 44 million people), and the top 10% earn, on average, 23 times more than the poorest 10%. This wealth gap is reflected in the emergence of affluent neighbourhoods, underscoring the increasing social divide.

Security, impacted by functional obsolescence, was the fourth significant concern, accounting for 16%. The study area benefits from relatively good security, with minimal crime incidents, partly due to its original design featuring centralized, controlled access with a single entry and exit point, requiring visitors to declare their destinations for tenant screening. Additionally, the establishment and operation of the Komarock Resident Association, with its chairpersons, committees, and sub-committees, play a crucial role in overseeing service provision, including

security measures and waste disposal. However, the effectiveness of the Resident Association varies depending on its specific function.

Regarding the impact of functional property obsolescence on property values, 82% of property valuers acknowledged its effect in the study area, 9% perceived no impact, and the remainder were undecided. To further analyze functional property obsolescence's influence on property values and address the research study's aim, the authors employed the Spearman correlation coefficient on ranked data. Valuers provided estimates of obsolescence levels for properties they had appraised in the area, utilizing the Elemental Baseline Method, with obsolescence levels ranging from 0 (negligible) to 5 (significant), indicating the degree of functional obsolescence as shown in **Tables 1, 2 and 3.**

Next, the data set was ranked as shown in **Table 2.**

Next, the authors sought to calculate the difference in paired values, find the square of the difference and its summation.

Applying the Spearman's Rho, or the Rank Correlation Coefficient formula:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

$$\begin{aligned} \rho &= 1 - \{(6 * 243.5 / 11(112-1))\} \\ &= 1 - \{1,461 / 1,320\} \\ &= \mathbf{-0.1068} \end{aligned}$$

The  $\rho$  figure of -0.1068 implies a negative relationship between the two variables i.e. level of functional obsolescence and property values in the study area. A decrease in functional obsolescence results in an increase in property values and vice versa.

**DISCUSSION**

The study on assessing the impact of functional obsolescence on property values in Komarock Sector III, Nairobi County, has unveiled a nuanced relationship between the level of functional obsolescence and the value of properties within the study area. The Spearman's rho ( $\rho$ ) correlation coefficient of -0.1068 delineates a negative

**TABLE 1**  
 Raw data collected from the respondents

Level of functional obsolescence	Property value (in '000,000) Kenya Shillings
2.75	5
4.25	5.55
2.5	5.6
3.75	5.2
3.75	4
3.5	4
3	4.8
3	4.75
2.75	4.5
2.5	4.8
3.5	4.7

**Source:** Field survey, 2022/2023



**TABLE 2**  
Ranked data set

Level of functional obsolescence	Rank (yi)	Property value (in '000,000) Kenya Shillings	Rank (xi)
2.75	9.5	5	4
4.25	1	5.55	2
2.5	10.5	5.6	1
3.75	2.5	5.2	3
3.75	2.5	4	10.5
3.5	4.5	4	10.5
3	5.5	4.8	5.5
3	5.5	4.75	7
2.75	9.5	4.5	9
2.5	10.5	4.8	5.5
3.5	4.5	4.7	8

Source: Field survey, 2022/2023

**TABLE 3**  
Difference and Difference squared of the ranked data

Rank (yi)	Rank (xi)	d	d <sup>2</sup>
9.5	4	5.5	30.25
1	2	-1	1
10.5	1	8.5	72.25
2.5	3	-0.5	0.25
2.5	10.5	-8	64
4.5	10.5	-6	36
5.5	5.5	0	0
5.5	7	-1.5	2.25
9.5	9	0.5	0.25
10.5	5.5	5	25
4.5	8	-3.5	12.25
			<b>Sum = 243.5</b>

Source: Field survey, 2022/2023

correlation between these two variables. This statistical outcome suggests that as functional obsolescence in properties increases, their market values tend to decrease, and conversely, a reduction in obsolescence levels is associated with an upsurge in property values. This finding aligns with conventional real estate and economic theories that postulate the depreciation in the value of assets experiencing reduced utility or desirability

due to outdated features or designs.

This negative correlation underscores the sensitivity of property values to changes in functional adequacy and modernity. Properties exhibiting signs of obsolescence, be it through design, technology, or utility, are perceived as less desirable in the market, leading to lower valuation. This phenomenon is particularly evident in areas

like Komarock Sector III, where the housing stock might not align with contemporary living standards or expectations. The inclination to-wards modern housing, influenced by evolving lifestyle preferences and technological ad-vancements, further exacerbates the impact of obsolescence on property valuation. Consequent-ly, property owners and stakeholders in such markets face the challenge of mitigating obsoles-cence to maintain or enhance property values.

The implications of these findings are significant for property owners, investors, urban planners, and policymakers. They highlight the importance of ongoing investment in property mainte-nance and upgrades to counteract functional obsolescence. For property owners, regular updates and renovations become crucial in preserving property value. Investors, on the other hand, are reminded of the importance of due diligence in assessing the obsolescence risk of potential in-vestments. Urban planners and policymakers could use these insights to encourage or enforce building standards that prolong the functional lifespan of properties. In essence, this study calls for a proactive approach to real estate management and development, aiming to align property features with current and future market demands, thereby securing or enhancing prop-erty values in the face of functional obsolescence.

The concepts of salvaging property at the stage of obsolescence—renewals, adaptive reuse, ret-rofitting, restoration, redevelopment, and revitalization—are highly relevant in assessing the impact of functional obsolescence on property values in Komarock Sector III, Nairobi County. The study has revealed that increased functional obsolescence decreases market values, these interventions can mitigate the decline and even boost property values. Renewals, for instance, through regular updating and upgrading of property features can prevent obsolescence and maintain or increase property values. Similarly, adaptive Reuse by converting obsolete proper-ties for new uses can make them attractive to new markets, thus enhancing their value. Addi-tionally, retrofitting through adding modern systems and technologies to old structures can im-prove functionality and appeal, leading to higher property values.

Restoration, redevelopment, and revitalization can

also help reduce functional obsolescence, thereby increasing property values in Komarock Sector III through bringing properties back to their original condition, rebuilding or significantly altering existing structures, and improving the overall area, including infrastructure and amenities, respectively.

## CONCLUSION AND RECOMMENDATIONS

The study conducted on the impact of functional obsolescence on property values in Komarock Sector III, Nairobi County, conclusively demonstrates a negative correlation between the level of functional obsolescence and property values. The findings indicate that as properties become more functionally obsolete, characterized by outdated designs or lack of modern amenities, their value diminishes. This underscores the critical impact of keeping properties updated and aligned with contemporary standards and preferences to maintain or enhance their market value. The insights gleaned from this study illuminate the broader implications of functional obsolescence on the real estate market, emphasizing the need for property owners, developers, and urban planners to adopt strategies that mitigate the effects of obsolescence. Based on these findings, two primary recommendations emerge:

Implementation of regular upgrades and renovations: Property owners and developers in Komarock Sector III, and similar urban settings, should prioritize regular updates and renovations to counteract functional obsolescence. This could involve modernizing facilities, incorporating sustainable and energy-efficient technologies, and redesigning spaces to meet current living standards and expectations. Such proactive measures would not only enhance the property's appeal to potential buyers or tenants but also contribute to preserving or increasing its market value over time.

Policy development for sustainable urban planning: Policymakers and urban planners should consider establishing guidelines or policies that encourage or mandate the integration of flexible, future-proof designs in new developments. By promoting building practices that anticipate and adapt to changing technologies and lifestyle trends, the negative impact of functional obsolescence on property values can be minimized. Additionally,

policies aimed at facilitating the renovation of existing properties to meet current standards could help revitalize older neighbourhoods, making them more competitive in the real estate market.

By addressing functional obsolescence proactively, stakeholders in the real estate sector can safeguard and potentially enhance the value of their investments, contributing to the overall vibrancy and sustainability of urban housing markets.

#### CITED REFERENCES

- Al-Hameed, K. A. (2022).** Spearman's correlation coefficient in statistical analysis. *Babil, Iraq: International Journal of Non-linear Analysis and Appraisal*, 13(1), 3249-3255
- Alreck, P. L., & Settle, R. B. (1995).** *The Survey Research Handbook: Guidelines and Strategies for Conducting a Survey*. New York: Irwin Professional Publishing.
- Andonov, A., Eichholtz, P., & Kok, N. (2012).** *Value added from money managers in private market: An examination of pension fund investments in real estate*. Maastrich: Maastricht University.
- Balchin, P. N., Isaac, D., & Chen, J. (2000).** *Urban Economics: A Global Perspective*. London: Macmillan Education.
- Baxter, W. T. (1971).** *Depreciation*. London: Sweet and Maxwell.
- Bidwell, P. K. (2003).** *Obsolescence: Form or Function*. Reston, Virginia: American Society of Appraisers.
- Bryson, J. R. (1997).** Obsolescence and the Process of Creative Reconstruction. *Urban Studies*, 34(9), 1439-1458
- Gao, F., Xi He, A., & He, P. (2018).** A Theory of intermediated investment with hyperbolic discounting investors. *Journal of Economic Theory*, 177(1), 70-100.
- Iselin, D. G., & Lemer, A. C. (1993).** *The fourth dimension in building strategies for minimizing obsolescence*. Washington: National Academy Press.
- Jacobs, J. L. (1941).** Neighborhood and Property Obsolescence in the Assessment Process. *The Journal of Land & Public Utility Economics*, 17(3), 344-353.
- King'oriah, G. K. (2013).** *Introduction to Land Economics*. Nairobi: Ediface Entreprises Ltd.
- Kothari, C. R. (1990).** *Research Methodology: Methods & Techniques*. New Delhi, India: New Age International Publishers.
- McGuire, C. C. (1979).** Housing Depreciation and Optimal Tax Policy. *National Tax Journal*, 72(3), 471-479.
- Miles, M. E., Berens, G. L., & Weiss, M. A. (2007).** *Real Estate Development: Principles and Process*. Washington D.C.: Wiley Publishers.
- Mireku, S. A., Abubakari, Z., & Martinez, J. (2021).** *Dimensions of urban blight in emerging Southern Cities: A Case Study of Accra-Ghana*. Accra: MDPI.
- Nutt, B., Walker, B., Holliday, S., & Sears, D. (1976).** *Obsolescence in housing*. London: Saxon House Publishers.
- Pinder, J., & Wilkinson, S. J. (2001).** *The obsolescence of office property: A new research agenda*. Sheffield: Sheffield Hallam University, School of Environment and Development.
- Raftery, J. (1991).** *Principles of building economics*. Oxford: BSP Professional Book.
- Republic of Kenya. (2015).** *Sessional paper no. 2 of 2015: National building maintenance policy*. National policies. Nairobi: Government Printer.
- Rubin, P. H., & Klumpp, T. (2011).** *Property rights and capitalism*. In M. Machaj, *Capitalism, Socialism and Property Rights* (pp. 1-19). Wroclaw: Agenda Publishing.
- Thomsen, A., & Van der Flier, K. (2011).** *Understanding obsolescence: A conceptual model for buildings*. London: Routledge.
- Tough, R., & MacDonald, G. D. (1958).**



Manhattan's real property values and the migrant Puerto Ricans. *Land Economics*, 34(1), 1-18.

**Tu, K., & Loftness, V. (1998).** The effects of organisational workplace dynamics and building infrastructure flexibility on environmental and technical quality in offices. *Journal of Corporate Real Estate*, 1(1), 46-63.

**Yin, R. K. (2009).** *Case study research: Design and methods*. Thousand Oaks: Sage Publishers.