# Environmental Quality And Neighborhood Characteristics Trade Offs In Residential Choices In Kisumu City, Kenya

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Abstract: The objective of the paper is to examine the influence of environmental quality and neighborhood characteristics on residential choices. A mixed-method research design was employed where quantitative and qualitative data were collected. Quantitative data was analyzed using descriptive statistics and Factorial ANOVA. Data transformation was done through summated scale. The results of Factorial ANOVA showed that the main effect for environmental quality was significant F(2, 373) = 7.646, p = 0.001. However, there was not a statistically significant main effect for neighborhood characteristics, F(2, 373) = 7.646, p = 0.001. However, there was not a statistically significant main effect for neighborhood characteristics, F(2, 373) = 1.001, p = 0.368. On the other hand, results on interaction effect indicated that there was no interaction effect for neighborhood characteristics and environmental quality, F(4, 373) = 0.710, p = 0.586. Post-hoc analysis using Tukey HSD multiple comparison revealed that there was a significant positive mean difference (df = 1.66) between those who agreed on the availability of aspects of environmental quality and those that disagreed. These results implied that residents of Kisumu city considered environmental quality aspects like water availability, recreational facility, power supply, noise, crowded neighborhood and building density more when making residential choices as compared to neighborhood characteristics. The national government, therefore, through the affordable housing projects and the property developers within the city should put into consideration these environmental qualities so as to meet the housing needs of the residents.

Keywords: Environmental Quality, Neighborhood Characteristics, Factorial ANOVA, Residential Choices

# I. INTRODUCTION

Residential location choice can be defined as a spatial choice partially of residential unit and of the location attributes (Schirmer et al., 2014). The choice of a residential location is a cluster of related choices, including the decision to move from existing residence, the choice of housing tenure (rental or owned), neighborhood and housing unit (Sinniah et al., 2016). One of the most important decisions that households make is where to live. Residential location choices not only establishes how much space a household has for social and physical activities, but it also has the ability to influence land use

patterns, transportation demand, housing type demand, housing price, and the spatial distribution of urban amenities like parks, schools, and healthcare facilities (Pagliara et al., 2010). Consequently, (Mulder, 2007) notes that residential location choices affect people's well-being, social status, access to jobs, schools, and social networks. Most of the house choice theories suggests that a household's residential location decision is a function of dwelling (dwelling type, house price and size of dwelling unit), household socio-demographic (household income, household size and workplace location), accessibility (travel time and cost to work), neighborhood (neighborhood type and availability of community facilities), environmental (air quality and size of natural areas) and sociocultural attributes (Alonso, 1964; Kim et al., 2005a; Kim et al., 2005b; Zondag and Pieters, 2005; Jun and Morrow-Jones, 2011; Sanit et al., 2013; Shawal and Ferdous, 2014; Opaluwa and Aribigbola, 2015). The residential location decisions are stated to be beyond the tradeoff between transportation cost and the land prices thus limiting the Alonso (1964) monocentric model. Phe and Wakely (2000) gave the determinants of residential choices a socioeconomic perspective. They argued that households determine where to stay by negotiating trade-off between housing status and the dwelling quality. This study sought to establish the tradeoffs made by Kisumu residents in regard to neighborhood characteristics and environmental quality.

# II. LITERATURE REVIEW

residential area's physical and non-physical А characteristics determine its attractiveness. It was found out in the study conducted by (Morris and Winter, 1975) that a residential location and the environment has an impact on how well-off households are in terms of social and economic security. Kim et al., (2005) demonstrated that individuals who decide to raise a family were more likely to trade accessibility to place of work for accessibility to more open space or a better quality of natural environment. According to Mikyoung and Margaret (1991), environmental safety, community or social factor, and housing quality factor are influential factors of residential choices and satisfaction. They explained that while environmental safety quality did not directly affect residential satisfaction, it did so through community or social and housing quality. People are discouraged from residing in some neighborhoods due to neighborhood infrastructure issues such insufficient power and water supplies, traffic congestion, and industrial land uses. People are also deterred by other local amenities including schools, markets, and the condition of the streets (Ubani et al., 2017). De vries et al. (2020) conducted a study in the Netherlands using data from multiple sources. Their main focus was to demonstrate the various neighborhoods to which households moved in terms of their socioeconomic and ecological status. The environmental situation was described in terms of quantity and quality of green space. The research showed that neighborhood is important in the residential selection process. In addition, as stated by (Parkes et al., 2002; Galster and Santiago, 2017) people are drawn to and away from certain locations because there are neighborhoods that create satisfaction or dissatisfaction due to lack of quality schools, friendliness of people, noise, crime, social interaction, community spirit, etc. In China, homebuyers are willing to pay more for upmarket and higher quality neighborhoods in terms of safety, image, accessibility and comfort (Wang and Li, 2006). In Dar es Salaam, middle- and high-income people prefer certain areas based on perceived environmental conditions (Vogt and Marans, 2004; Tatu, 2010; Opaluwa and Aribigbola, 2015).

Stokenberga, (2019) indicated that households prefer to reside in locations that are near to their extended family. Schindler (2023) found that proximity to urban open space is valued in making decision regarding a place to stay. Pandya

and Maind (2017) indicated that the duration of water supply and toilet facilities have an influence on residential choices. Proximity to retail service, subway, and public transportation were found to have a positive influence on residential choice in a study conducted by Salihoglu and Turkoglu, 2019. Gomma (2023) found the significance of population density on location choice behavior. School quality and proximity to quality schools are positively associated with location choice (Zhan, 2015).

#### III. METHODOLOGY

#### A. RESEARCH DESIGN

This study utilized a mixed-method research design with both qualitative and quantitative approaches to provide an opportunity to compensate for inherent weaknesses and offset inevitable method biases that arose during the study (Johnson and Onwuegbuzie, 2004). Interview schedule was used to collect qualitative data while questionnaires were used to collect quantitative data. Quantitative data were analyzed through descriptive and inferential statistics while qualitative data on the other hand were analyzed through thematic analysis (Bhattacherjee, 2012).

# B. STUDY AREA

The study area was Kisumu City (Figure 1). This is the third largest city in Kenya after Nairobi and Mombasa. The city has a population of 397,957 that is unevenly distributed, with high densities in the informal settlements surrounding the urban core (Kenya National Bureau of Statistics, KNBS, 2019).



Source: County Government of Kisumu, 2015. Figure 1: Map of Kisumu Municipality Showing the Location of the Study Area

Kisumu city is one of the fastest-growing regions in the country with an annual urbanization rate of 2.8 percent (Kisumu Urban Institutional Development Strategy, 2018). It is located 10km south of the equator at longitude of  $34^{\circ} 45^{\circ}$ E and latitude  $00^{\circ} 5^{\circ}$ S. Kisumu city's mean rainfall is 1280 mm and its mean annual temperature ranges between  $20^{\circ}$  C and  $30^{\circ}$ C. Kisumu city was selected for the study because of its strategic geographic position within the country and the East African Community and the high rate of urbanization taking place in the city.

#### C. TARGET POPULATION

The target population was the 71,491 households in Kisumu city (Kenya Population and Housing Census, 2019). The households were drawn from seven sub-locations within the city (Kibuye, Nyalenda A, Nyalenda B, Manyatta A, Manyatta B, Kanyakwar and Milimani).

## D. SAMPLING PROCEDURE AND SAMPLE SIZE

Stratified random sampling was employed to select households from different sub-locations. The number of households interviewed was proportionate to the number of households in each sub-location because the population of the study region was diverse (Kothari, 2004 and Bhattacherjee, 2012). The respondents were thus chosen from each sub location, which was regarded as strata. A questionnaire was provided to every tenth dwelling on either side of a small road. Four hundred and sixty households in all were chosen for the study from the sub-locations. The targeted respondents were the household heads or next of kin. Cochran's formula expressed below was used to determine the sample size for the study because it is suitable for large population (Cochran, 1977).

Where; n is the sample size, z is the critical value (1.96 for a confidence level of 95%), p is 0.5, the estimated population with attributes of interest which is infinite, q is 1-p, e is the degree of desired precision, Therefore, the sample size n

The above formula yields a sample size of 384. This was adjusted to 460 to cater for any non-response. In addition 4 key informants and 12 focus group members were included.

3.5 Data Collection Tools

Primary data were mainly collected using semi-structured questionnaire. Interview schedule guide and Focus Group Discussions (FGD) guide were used to corroborate data collected from the questionnaires. Observation checklist was also used to capture more details on neighborhood characteristics and environmental quality.

## E. PRE-TESTING OF TOOLS

Pretesting of tools is a critical examination of the survey instrument to determine the research tools will function properly as a valid and reliable social science research tool (Converse and Presser 1986; Bless et al., 2006). The pretesting of tools in this research was done in February 2023 at Nyamasaria estate in Kisumu city where 40 questionnaires were administered. According to Ferketich, Phillips, and Verran (1993) the sample selected for a pretest should fit the cultural and demographic profile of the larger sample to be surveyed and be 10% of the sample anticipated for the bigger parent study.

### F. DATA COLLECTION PROCEDURE

The questionnaires were administered to the 460 respondents. The items in the questionnaire were arranged according to the objectives to enhance validity. Two focus group discussions constituting of 7 and 5 members each were held at different times. This helped in an in-depth understanding of various aspects of residential choices in Kisumu city. Personal interviews with the key informants were also conducted.

### G. DATA PROCESSING AND ANALYSIS

Data processing is a series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use (Burns and Grove, 1997). In this study, data processing was done through screening of data, coding of data, and data entry prior to the actual analysis. The data analysis began with descriptive statistics. The study first started by profiling the respondent as per the demographic characteristics by providing descriptive statistics for each. Advanced analysis was done through factorial ANOVA (Analysis of Variance (Cardinal and Aitken, 2006). Prior to conducting factorial ANOVA, variables were reduced to fewer constructs through summated scores. This was followed by a post hoc analysis (multi comparison tests).

# IV. RESULTS AND DISCUSSION

## SOCIO DEMOGRAPHIC OF THE RESPONDENTS

The table below presents results for the socio demographic of the respondents in this study.

Variables	Percentage (%)
Sex	
Male	64
Female	36
Age of the respondents	
19-28 years	33
29-38 years	30
39-48 years	26
49-58 years	10
Above 58 years	1
Educational level	
Less than 8 yrs. of schooling	3
8 yrs. of schooling	12
Less than 12 yrs. of schooling	13
12 yrs. of schooling	28
diploma	20
undergraduate	19
postgraduate	5
Occupation	
Employed	28
Self employed	56
Unemployed	13
students	3
Income level	
Less than 10,000	35
10,001-20,0000	20
20,001-30,000	18
30,001-40,000	13
Above 40,000	13
Marital status	
Married	63
single	37
<u> </u>	

Source; Survey data, 2023 Table 4.1: Socio demographic characteristics of the respondents

#### B. FACTORIAL ANOVA

Assumptions for Factorial ANOVA were conducted before carrying out the analysis. They included;

## a. THE ASSUMPTION THAT OBSERVATION WITHIN EACH GROUP MUST BE INDEPENDENT OF EACH OF OTHER

The independence assumption states that the observation within each group must be independent of each of other. A violation of this assumption brings about wrong confidence intervals and p-values (Liang and Zeger, 1993; Diggle et al., 2002; Fitzmaurice, Laird and Ware, 2011). During the data collection stage, the stratified random sampling technique was used ensured that there was no systematic relationship between the observations.

## b. THE ASSUMPTION OF NO OUTLIERS

An outlier is defined as a data point that deviates so far from the other observations (Barnett and Lewis, 1994 and Zimek and Filzmoser, 2018). Outlier detection was done using box plots which shows the lower extreme, lower quartile, median, upper quartile and upper extreme (Laurikkala et al, 2000: Su and Tsai, 2011). Once the outliers were identified, the median imputation technique was used to resolve them in the data set, where outlying values were replaced with median of the columns of respective variables (Leys et al., 2013). Outlying values were detected in the predictor variables, water availability, electricity availability, crowding in the neighborhood, presence of family members, presence of members of my ethnicity, quality schools in the neighborhood and quality hospitals in the neighborhood.

## c. THE ASSUMPTION OF NORMALITY

The assumption of normality assumes that data follows a normal distribution or a Gaussian distribution (Field, 2009). Results in Table 2 were significant indicating that the normality test was violated at p = 0.000. The factorial ANOVA analysis was however carried out because ANOVA models are reasonably robust against departures from the normal, (Kutner et al, 2005) and that the sample size was considered large enough (Field, 2009).

	Kolr Sn	nogoro nirnov	<b>DV-</b> a	Shap	oiro-W	ilk
	Statistic	df	Sig.	Statistic	df	Sig.
Likelihood of stay in the neighborhood	.166	384	.000	.946	384	.000

Table 4.2: Tests of Normality

### d. ASSUMPTION OF HOMOGENEITY OF VARIANCE

The ANOVA statistics assumes homogeneity of variance, which means that the variance among the groups should be approximately equal (Dahman, 2018). Results in Table 4.3 indicates that Levene's test for equality of variances was not violated, F (276,107) = 1.153, p = 0.198.

Dependent Variable: Likelihood of stay in the neighborhood

F	df1	df2	Sig.
1.153	276	107	.198

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Source: Survey data, 2023	
Table 4.3: Tests of Homogeneity of variance	

#### C. THE FACTORIAL ANOVA TEST

Each of the factors affecting residential choice was questioned with several statements in the questionnaire. The factor environmental quality was measured with the sub variables; water availability, recreational facility, power supply, noise, crowded neighborhood and building density. Likewise, the factor neighborhood characteristics was measured with the sub variables; security, rent affordability, family members, ethnicity, availability of schools, availability of hospitals, availability of shopping centers and social status of the neighborhood. The mean scores of these items were calculated in order to obtain the Summated scales (composite scale) for the principal factors. This data transformation was undertaken to reduce the measurement error before the application of a 3x3 factorial ANOVA analysis. The composite variables were created by taking the mean scores of the responses to a set of questionnaire items that were designed to measure each factor (Gravely, 1998).

Internal consistency reliability test was used to evaluate the reliability of the items composing the summated scales to ensure that all the items were consistent enough to form a composite variable. Table 4.4 shows the reliability test results of the items mean values and standard deviation for items used to measure the composite variables neighborhood characteristics

·	Mean	Std. Deviation	Ν
security	1.64	.480	384
Rent	1.61	.489	384
Family members	1.49	.501	384
Ethnicity	1.51	.500	384
Schools	1.29	.455	384
Hospital	1.50	.501	384
shopping centre	1.57	.496	384
Social status	1.52	.500	384

Source: Survey data, 2023

Table 4.4: Neighborhood characteristics reliability test output

The values above were used to evaluate the Cronbach's alpha value for neighborhood characteristics shown in Table 4.5 used to determine if an acceptable internal consistency among the items was achieved. The coefficient alpha or Cronbach's alpha test states that a Cronbach's alpha value less or equal to 0.600 (Heath and Jean, 1997; Malhotra and Birks 2000) or 0.700 (Hair et al., 2014; Gliner et al., 2009, and Yang and Green, 2011) implies an unacceptable internal consistency reliability.

Cronbach's	Cronbach's Alpha Based on	
Alpha	Standardized Items	N of Items
.727	.728	8
Table 4.5: Nei	ghborhood characteristics Cre	onbach 's alpha
	test	

The Cronbach's alpha test results above indicate that for the factors measuring neighborhood characteristics, Cronbach's alpha value was 0.727 which was above 0.7 as recommended. This led to the conclusion that the sub variables measuring neighborhood characteristics had acceptable internal consistency reliability, hence were used to generate the composite variable neighborhood characteristics.

Table 4.6 shows the reliability test results of the items mean values and standard deviation for items used to measure the composite variables Environmental quality.

· · ·	Mean	Std. Deviation	Ν
Water availability	1.68	.673	384
Recreation facility	1.53	.500	384
Power supply	1.61	.489	384
Noise	1.55	.695	384
Crowded neighborhood	1.55	.498	384
building density	1.48	.500	384

Source: Survey data, 2023

Table 4.6: Environmental quality reliability test output (item statistics)

Cronbach's alpha test results for items used to measure environmental quality are shown in Table 4.7. It can be seen that for the factors measuring environmental quality, Cronbach's alpha value was 0.753. This was equally above the recommended value of 0.7, hence these variables had acceptable internal consistency reliability, so were used to generate the composite variable environmental quality.

	Cronbach's Alpha				
	Based on				
Cronbach's Alpha	Standardized Items	N of Items			
.753	.776	6			
Table 4.7: Environmental quality Cronhach's alpha test					

*Table 4.7: Environmental quality Cronbach's alpha test* 

## Hypothesis Testing

A 3X3 Factorial ANOVA was used in the testing of the null hypotheses stated below

 $H_{\rm o1}$  Neighborhood characteristics did not have a statistically significant influence on residential choices in Kisumu city.

 $H_{\rm o2}$  Environmental quality did not have a statistically significant influence on residential choices in Kisumu city.

 $H_{03}$  Neighborhood characteristics in combination with environmental quality did not have a statistically significant influence on residential choices in Kisumu city.

The factorial ANOVA was conducted to compare the neighborhood characteristics main effects of and environmental quality and the interaction effect between neighborhood characteristics and environmental quality on residential choices among Kisumu city residents. Neighborhood characteristics and environmental quality were measured in three levels; respondents who agreed, those who disagreed and those who were undecided on whether there neighborhood and were aspects of characteristics environmental quality in their neighborhood.

### *a.* DESCRIPTIVE SUMMARY OF THE RESIDENTIAL CHOICES SCORES

The results presented in Table 4.8, revealed that among the respondents who disagreed that there were neighborhood characteristics in their neighborhood, the mean of those who reported lack of environmental quality was 4.15 (M = 4.15, SD= 2.568), 6.19 for those who were undecided on whether there was environmental quality (M = 6.19, SD = 2.288) and 6.12 for those who reported the presence of environmental quality (M = 6.12, SD = 2.136).

For the respondents who were undecided on whether there were neighborhood characteristics in their neighborhood, the mean of those who reported lack of environmental quality was 4.22 (M = 4.22, SD = 2.439), 5.56 for those who were undecided on whether there was environmental quality (M =5.56, SD = 3.005) and 5.10 for those who reported the presence of environmental quality (M = 5.10, SD = 3.285). Lastly, for the respondents who agreed that there were neighborhood characteristics in their neighborhood, the mean of those who reported lack of environmental quality was 4.93 (M = 4.93, SD = 2.950), 6.15 for those who were undecided on whether there was environmental quality (M = 6.15, SD =2.265) and 5.76 for those who reported the presence of environmental quality (M = 5.76, SD = 2.852). The results showed that respondents who reported lack of both environmental quality and neighborhood characteristics had the highest relocation likelihood

Dependent Variable: Likelihood of stay in the neighborhood						
Neighborhood	Environmental		Std.			
characteristics	quality	Mean	Deviation	Ν		
Disagree	Disagree	4.15	2.568	74		
	Undecided	6.19	2.288	28		
	Agree	6.12	2.136	32		
	Total	5.04	2.598	134		
Undecided	Disagree	4.22	2.439	18		
	Undecided	5.56	3.005	9		
	Agree	5.10	3.285	21		
	Total	4.85	2.925	48		
Agree	Disagree	4.93	2.950	45		
	Undecided	6.15	2.265	42		
	Agree	5.76	2.852	115		

	Total	5.65	2.784	202
Total	Disagree	4.42	2.689	137
	Undecided	6.09	2.341	79
	Agree	5.74	2.788	168
	Total	5.34	2.752	384

Source: Survey data, 2023

Table 4.8: Descriptive Summary of the residential choices scores

## b. TESTS OF BETWEEN-SUBJECTS EFFECTS

The results of the analysis displayed in Table 4.9 indicated that there was a statistically significant difference for the main effect of environmental quality, F(2, 373) = 7.646, p = 0.001. However, there was not a statistically significant difference for the main effect of neighborhood characteristics, F(2, 373) = 1.001, p = 0.368. Lastly, there was no interaction effect for neighborhood characteristics and environmental quality, F(4, 373) = 0.710, p = 0.586. These results revealed that environmental quality had a significant influence on residential choices in Kisumu city while neighborhood characteristics did not have a significant influence on residential choices in Kisumu city. This led to the rejection of the null hypothesis stating that environmental quality did not have a statistically significant influence on residential choices in Kisumu city. The null hypothesis stating that neighborhood characteristics including the sub variables; security, rent affordability, family members, ethnicity, availability of schools, availability of hospitals, availability of shopping centers and social status of the neighborhood, did not have a statistically significant influence on residential choices in Kisumu city was however supported.

Dependent Variable: Likelihood of stay in the neighborhood

	Type III				
	Sum of		Mean		
Source	Squares	df	Square	F	Sig.
Corrected Model	222.251 <sup>a</sup>	8	27.781	3.891	.000
Intercept	6602.726	1	6602.726	924.763	.000
Neighborhood characteristics	14.301	2	7.150	1.001	.368
Environmental quality	109.177	2	54.588	7.646	.001
Neighborhood characteristics *	20.268	4	5.067	.710	.586
Environmental quality					
Error	2663.186	373	7.140		
Total	13769.000	382			
Corrected Total	2885.437	381			
a. R Squared =	= .077 (Adju	sted R	Squared =		

.057)

Source: Survey data, 2023

### Table 9: Tests of Between-Subjects Effects

These findings are in agreement with Jun and Morrow-Jones (2011) who found that neighborhood characteristics rank the lowest with a limited role in determining residential accessibility factors and choice while household characteristics play moderate and important roles respectively. However, data from observation checklist in Figure 4.1 indicating the construction of security wall in the study area support the fact that while generally variables of neighborhood characteristics were not significant in influencing residential choices, security played a positive role as a determinant of house choice (residential).



## Source: Field, 2023 Figure 4.1: Perimeter wall to boost security in a) Nyalenda estate and b) Milimani estate

From the interaction effect results in Figure 4.2, a further deduction was made that neighborhood characteristics in combination with environmental quality did not have a significant influence on residential choices in Kisumu city. The hypothesis stated as neighborhood characteristics in combination with environmental quality did not have a statistically significant influence on residential choices in Kisumu city was supported.



Figure 4.2: Interaction plot for neighborhood characteristics and Environmental quality

Due to the absence of a statistically significant interaction effect, but a statistically significant main effect on environmental quality, a Post Hoc analysis using Tukey HSD multiple comparison was carried out and results presented in Table 4.10. It can be seen from the Post Hoc Tukey (HSD) test results in Table 4.10 that the pairwise differences between respondents who were undecided on whether there were aspects of environmental quality and those who agreed that there were aspects of environmental quality was not statistically significant with a mean difference of 0.32 (p = 0.656, <0.05) while between respondents who were undecided on whether there were aspects of environmental quality and those who disagreed that there were aspects of environmental quality was statistically significant with a mean difference of 1.66 (p = 0.000, <0.05). The null hypothesis stating that there were no differences between the different levels of environmental quality was rejected.

Likelihood of	stay in the Neig Tukey HSD	ghborhood					qu po
					95 Confi	% dence	wa cro
(I)	(J)	Mean			Inte	rval	
Environmental	Environmental	Difference	Std.		Lower	Uppe	rpre
quality	quality	(I-J)	Error	Sig.	Bound	Boun	d <sub>ne</sub>
Disagree	Undecided	-1.66*	.378	.000	-2.55	77	wi
	Agree	-1.34*	.306	.000	-2.06	62	rea
Undecided	Disagree	$1.66^{*}$	.378	.000	.77	2.55	De
	Agree	.32	.365	.656	54	1.18	for
Agree	Disagree	$1.34^{*}$	.306	.000	.62	2.06	
	Undecided	32	.365	.656	-1.18	.54	

Based on observed means.

The error term is Mean Square (Error) = 7.097.

\*. The mean difference is significant at the .05 level.

Source: Survey data, 2023

### Table 4.10: Multiple Comparisons

This could be because people's well-being and quality of life is strongly affected by the health of the physical environment. Residents in the study area attach a lot of importance on environmental quality because they probably benefit directly from environmental quality aspects like water, power supply, noise, and availability of recreational facilities, as they allow them to satisfy their basic needs. The findings of this study agree with those of Saini and Pandit, (2023), who found out that water availability and power availability components of environmental quality influenced residential choices in Kolkata, India. In the same way, Petkar and Macwan, (2018) found out that water supply and availability of recreational facilities influenced residential choices. The findings further agreed with those of Ayoola et al, (2013) who found out that when residents chose where to live in Victoria Island Coastline in Nigeria, they paid special attention to an area with clean quality air and not prone to flooding. Chen et al., (2008) showed that availability of open space, and recreation opportunity influenced residential location choices. Contrastingly, noise in the neighborhood and proximity to major roads or railway lines showed a negative influence on residential location choice in Greater Zurich area in Switzerland (Bürgle 2006). Kim et al., (2005) indicated that individuals who decide to raise a family were more likely to trade accessibility to place of work for accessibility to more open space or a better quality of natural environment. In one of the interview a property manager indicated,"most of my clients prefer houses and apartments with reliable and adequate supply of water and electricity, you will rarely find such houses un occupied meaning they always have 100 percent occupancy."

# V. RECOMMENDATION AND CONCLUSION

The research set out to find out the tradeoffs Kisumu city residents make between environmental quality and neighborhood characteristics when they choose where to stay. The research revealed that the residents of Kisumu city would tradeoff neighborhood characteristics with environmental quality when making residential location choices. As a result, policymakers may prioritize and take into account factors like water availability, recreational facilities, power supply, noise, crowded neighborhoods, and building density when determining the best places to locate affordable housing projects. This is because these factors reflect the real perpreferences of the residents and will help to meet their housing mcheeds. These results will guide the creation of policies that 7 will enable the federal government, local governments, and 2 real estate developers provide better housing. In turn, this will help Kenya achieve its Vision 2030 and the Sustainable 5 Development Goal of Sustainable Cities and Communities set 8 forth by the UN.

## REFERENCES

- [1] Alonso, W. (1964). The Historic and the Structural Theories of Urban Form: Their Implications for Urban Renewal. Land Economics, 40(2), 227-231.
- [2] Bhattacherjee, A. (2012). Social Science Research: Principles, Methods, and Practices. Open University Press, USF Tampa Bay.
- [3] Bless, C., Higson-Smith, C., & Kagee, A. (2006). Fundamentals of social research methods: An African perspective. Juta and Company Ltd
- [4] De Vries, S., Buijs, A. & Snep, H. (2020). Environmental Justice in The Netherlands: Presence and Quality of Greenspace Differ by Socioeconomic Status of Neighbourhoods. Sustainability, 12(15), 58-89.
- [5] Galster, G. & Santiago, A. (2017). Do Neighborhood Effects on Low-Income Minority Children Depend on Their Age? Evidence From a Public Housing Natural Experiment. Housing Policy Debate, 27, 1-27.
- [6] Gomma, M. (2023). Macro-level factors shaping residential location choices: examining the impacts of density and land-use mix, Land, Vol. 12, 748, doi: 10.3390/land12040748.
- [7] Kim, J., Pagliara, F. & Preston, J. (2005). The Intention to Move and Residential Location Choice Behavior. Urban Studies, 42(9), 1621-1636.
- [8] Mikyoung, H. & Margaret W. (1991). The Determinants of Residential Environmental Qualities and Satisfaction: Effects of Financing, Housing Programs and Housing Regulations. Housing and society, 18, 65-76.
- [9] Morris, E. & Winter, M. (1975). A Theory of Family Housing Adjustment. Journal of Marriage and the Family, 37, 79-88.
- [10] Mugenda, O. & Mugenda, A. (1999). Research methods: Quantitative and qualitative Approaches. Nairobi, African Centre for Technology Studies (ACTS).
- [11] Mulder, C. (2007). The family context and residential choice: A challenge for new research.
- [12] Opaluwa, A. & Aribigbola, A. (2015). Factors affecting the Choice of Residential Housing in Lokoja, Kogi State, Nigeria. International Journal of Innovative Science, Engineering & Technology, 2(10), 850-859.
- [13] Pandya, F. & Maind, S.N. (2017). Discrete choice model: residential location choice, ISF Institute of Research and

Education (IIRE), Vol. 28 January, doi: 10.13140/RG.2.2.31611.52007.

- [14] Parkes, A., Kearns, A. & Atkinson, R. (2002). What Makes People Dissatisfied with Their Neighborhoods?. Urban Studies, 39.
- [15] Polit, D. & Hungler, B. (1995). Nursing Research, Principles and methods, Philadelphia PA, JB Lippincott.
- [16] Salihoglu, T. and Turkoglu, H. (2019). Determinants of residential location choice in Istanbul: alongitudinal study", Open House International, Vol. 44(4), 36-44, doi: 10.1108/OHI-04-2019-B0006.
- [17] Schindler, M. (2023). Nature orientation and opportunity: who values and who has opportunity for satisfactory green spaces in proximity to their place of residence. Urban Forestry and Urban Greening, Vol. 84, 127924, doi: 10.1016/j.ufug.2023.127924.
- [18] Schirmer, P. Van E. and Axhausen.K. (2014). Measuring location in residential location choice - an empirical study in the C anton of Zurich. Utrecht.

- [19] Sinniah, G., Shah, M. & Vigar, G. (2016). Residential location preferences: New perspective. Transportation Research Procedia, 17, 369–383.
- [20] Stokenberga, A. (2019). How family networks drive residential location choices: evidence from a stated preference field experiment in Bogota, Colombia. Urban Studies, Vol. 56 (2), 368-384.
- [21] Ubani, P., Alaci, D. & Udoo, V. (2017). Determinants of Residential Neighbourhood Choice in a Nigerian Metropolis. IOSR Journal of Humanities and Social Science, 22(7), 1-11.
- [22] Wang, D. & Li, S. (2006). Socio-Economic Differentials and Stated Housing Preferences in Guangzhou, China. Habitat International, 30, 305-326.
- [23] Zhan, C. (2015). School and neighborhood: residential location choice of immigrant parents in the Los Angeles Metropolitan area. Journal of Population Economics, Vol. 28, 737-783.