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Livability Impact on Satisfaction: A Case Study of Public Housing in Montserrado County, Liberia

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Abstract
This research study sought to explore the issues of livability faced by residents in four affordable housing estates near Monrovia to see the impact livability conditions have on their lives. The research involved both qualitative and quantitative techniques. The qualitative techniques was used to produce information about the quantitative variables coded in SPSS as numerical values. The researcher used correlation and regression analysis to see whether the relationship between the independent variables and dependent variable was significant. Only coefficient at $p< 0.01$ (two tailed) was considered. The researcher realized that all the livability elements are statistical significant at 5% and proved to be negatively related to satisfactory index. However, the regression showed that environmental and health/safety qualities were not statistically significant. The negative correlation accounted for the fact that a large number of residents were low income earners, subsequently rented the housing units, because they did not have the money to buy the units. These residents could not alter the houses after their choice as they were not the legitimate owners.
Keywords: Satisfaction index, Livability index, Environmental quality, Transportation quality, Health/Safety quality, Housing quality, Livability, Satisfaction

1. Introduction

Housing provision is very significant to the economic development of any nation; however, most governments, especially in African, treat housing like it doesn't matter. McNeils (2014) affirms that most governments in developing nations find it difficult to surmount the continuous problems surrounding housing namely affordability, quality, appropriateness and sustainability. When we think about housing we should not limit our thoughts to just the building. According to King (2016), housing transcends building: it entails sustainability, quality and comfort.

Notwithstanding, it is also important to note that urbanization especially in Sub-Saharan African posts problems that threaten quality and sustainability (WorldBank, 2015) This does not offset the fact that bringing quality and sustainability to the housing sector has barely being the priority of most governments in Africa.

The National Housing Authority of Liberia (NHA) was engaged in the provision and supervision of affordable housing units in Liberia way before the war began in 1989. The first public efforts to meet the housing needs of the urban poor in Liberia emerged in 1970 when government established the NHA to plan and implement a housing development program for the country. This august body was tasked with the responsibility of building low-income housing near the Capital. At that time Liberia's population was a little over 100,000 people in less than ten-year period (Lacey & Owusu, 1987). NHA built 1500 affordable housing units, which was later increased to 1572 units by 2013 (UN-Habitat 2014). There is need to build more housing units as Liberia's current population is around 5 million. Equally, there is also need for upgrading the previous units built in the 70s and 80s that have seen better days, divested by the fifteen-year-old civil war, to put the issue mildly.

Quite recently, the government of Liberia has built "affordable" housing units targeted at middle-income earners. Some of these houses are sold at $15,000 to US $20,000, some are even much higher; for example, in Schiefflin Eco homes are on sale at US $39,000 for a bed-room house and US $ 64,000 for a three-bedroom house. The completed dwellings in the SINLIB Project in Fendell are for sale for US $39,900 to US $42,900 depending on the plot size (UN-Habitat, 2014, p. 5). While these houses are very low-cost for what they are, they are far above what the ordinary Liberians can afford. The primary question is: should the government keep building housing units on one end while at the other end people are inhabiting the miseries of poor housing and environmental conditions to say the least?

In fact, many researchers have shown that housing problems do not just go away by providing affordable housing and moreover housing is more than just dwelling or shelter. On top of it, housing must continually adapt to the demands of a changing environment (McNeils, 2014). Governments should always play a key role in helping people's living conditions fit amicably into the change process, first and foremost through providing quality livable conditions especially in the units they build.

This research paper sought to investigate four affordable housing units built by the Government of Liberia and see whether the conditions they provide for residents are relatively livable with regard to residents' responses of relative satisfaction. These residential communities include: Jonathan Goodridge Estate, Stephen A. Tolbert Estate, New Georgia Estate, and Amilcar Cabral Estate. The researcher decided to use these units

because they are the largest low-to-middle income communities NHS has built since its inception. Moreover, they are the closest to the Capital and hence are assumed to be better infrastructure wise. Table 1 provides summary information about these affordable housing units built by NHA.

Table 1. Housing Estate Built by the NHA, 1970 to 1980

Estate	Total no. of dwellings	Number of Rooms			Monthly Average rent	Estimated Cost(US $)	Target Monthly Income level
		1	2	3			
Amilcar Cabral	72	20	30	22	38.61	667,200	200-400
Stephen A. Tolbert	414		147	267	60.94	5,558,640	
E.J. Goodrige	576		70	506	56.00	7,741,440	
New Georgia	266		266		43.9	1,802,000	75-150
Matadi	191		120	71	182.48	Not available	500-1,300
total	1,479	20	593	886		15,799,280	

Source (Lacey & Owusu, 1987)

1.1. Significance and Objectives of the Study

The study contributes knowledge to the field of housing and urban studies, with regard to provision and design as it placed emphasis on need assessment. There have been limited studies assessing the level of satisfaction and quality of housing units of residents in Liberia which this research sought to probe further. Although Feng, Tang & Chuai (2017) conducted research about quality of life, it was geared toward elderly people from Nanjing, China. Other research works, for example, those of MØller, Roberts, Tiliouine and Loschky (2017) assessed happiness on a regional level. Since the government of Liberia provided the affordable housing units in the 60s, neither has there been an assessment of quality of housing nor of a livability standard. It is the hope of the researcher that this paper when give due considerations provides policy makers with the awareness of the quality of housing in these Estates so funds are allocated in the national budget on housing for redevelopment of the units. Residents of these communities and subsequent neighboring communities could as well benefit from the provisions of parks, efficient transportation system, green environment, etc. as a result of this study. The externalities of having a green environment in these units provide psychological and physical health benefits both to the residents of these housing units as well as surrounding communities.

The study sought to answer these two key questions:

i. What are the issues of livability that community members experience that affect their lives?

ii. What is the relationship between livability and residents' satisfaction?

1.2 Conceptual and Theoretical Framework

The researcher adopted the conceptual model of Feng, Tang and Cedhuai (2017) as a suitable design for this research paper. The researcher however, injected some key variables unique to his researcher that are not inscribed in the adopted framework. The Livability Theory propounded by Ruut Hoven (1996) also guided the study. The theory explained observed differences in happiness in terms of need-environment fit. In other words, and if applied to human society, people tend to be subjectively happy/satisfied when there is a fit between institutional provisions and people's needs and further more if these provisions enhanced their capacities or sense of a better life. In the case of this research, the build environmental comprised housing, transportation, environmental conditions, transportation, and health/safety as assumed to have effects on people's level of happiness/satisfaction. For Feng; Tang and Chuai (2017), the built environment included buildings, parks, transportation system, and health as well.

1.3 Hypothesis and Data Collection Methods

The research is based on the following hypothesis:

Ho: quality in housing conditions has impact on residents' satisfaction

H1: quality in housing conditions does not have impact on residents' satisfaction

Ho: quality in environmental conditions has impact on residents' satisfaction

H1: quality in environmental conditions does not have impact on residents' satisfaction

Ho: quality in transportation has impact on residents' satisfaction.

H1: quality in transportation conditions does not have impact on residents' satisfaction.

Ho: quality in health/safety conditions has impact on residents' satisfaction.

H1: quality in heal/safety conditions does not have impact on residents' satisfaction.

Ho: residents' overall community Livability has impact on satisfaction

H1: residents' overall community livability does not have impact on residents' satisfaction

This study was conducted using the survey research design, which according to Groves, Flower, Couper et.al (2009) is a systematic method of gathering information from entities for constructing quantitative descriptors of the attributes of the larger population of which the entities are members. Data collection was from primary sources, although some table and graph were collected form secondary sources. The primary data was collected with questionnaires. The questionnaire was designed to collect data on four affordable housing Estates in Monrovia geared towards answering research questions regarding issues of livability faced by these community members and the impact on their satisfaction. The questionnaires comprised three sections; the first section sought to obtain residents' demographic information. The second section solicited participants' personal rating of their community livability, using a five point-Likert scale response: 1 for no problem; 2 unaware; 3 for neutral; 4 minor problem; and 5 for major problem. In addition, the third section elicited information about residents' perceived satisfaction with the quality of following basic elements: Housing; Environment; Transportation; and Health/Security. This was also based on a five-likert scale response, 5 for extremely satisfactory; 4 for very satisfactory; 3 for satisfactory; 2 for unsatisfactory; and 1 for very unsatisfactory.

The researcher used the survey research design because it is the most commonly used methods in the social sciences best suited for providing in-depth understanding of society (Groves, Fowler, Couper et. al 2009, p.2). The design was used within Monrovia, the most populous city in Liberia, considering four of its earliest affordable housing units provided to solve the problem of urban explosion. The four housing units considered in this research included the E Jonathan Goodridge Estate which has 604 affordable housing units, Stephen A. Tolber Estate, 442 units; New Georgia Estate, 263 units; and Amilcar Cabral Estate has 72 housing units. The researcher randomly issued 400 questionnaires (100 questionnaires randomly allotted to each Estate unit), which is about 42.59% of the targeted population concerning all the units combined. This sample size, according Colton and Covet (2007), is considerably representative in Social Science research.

The questionnaires were given to the available adult member of the home, 18 years and above. It is enshrine in the Liberian constitution that at such an age could own a land/house, participate in the decision making process of the country through the exercise of his/her franchise; marry a mate of his/her choice; earn a legitimate income through employment; and even provide adult judgment or opinion about subject both domestically and nationally.

2 Literature Review

Quality of life (QQL) has been an interesting subject in housing development amongst most researchers in housing .For example Shafer et al, 2000, as cited by Tang and Chuai (2017), explored the effects of greenway facilities on quality of life in Texas, indicated that the urban greenway trails primarily contributed to community quality of life through the health and pride of residents, the natural areas and the use of land. Zebardast (2009), on the other hand, conducted a survey on the spontaneous settlements on the TMF and determined the different housing sub-domains of quality of life, surveyed the overall satisfaction and determined the extent to which overall life satisfaction explained by the components of the housing domain of QQL in these spontaneous settlements. The factor analysis used by the researcher identified seven housing sub-domain of QQL: housing consolidation, housing amenities, housing space, housing quality, housing basic services, housing durability and security of tenure. The result indicated that there was a direct relationship between the main reasons for migration to these settlements and the housing sub-domain of QQL. For the researchers' works, it is clearly indicated that other variables in housing studies can affect quality of life of residents, apart from the environmental conditions.

Cheng, King; Smyth, and Wang (2016) explored the relationship between subjective wellbeing in urban China. The researchers found out that not only home ownership but also the type of property rights one acquires mattered for subjective wellbeing. They also found out that the type of loan one obtains had affected subjective wellbeing. Molla, Kotze & Block (2011) carried out a survey in South Africa, specifically Braamfischerville, Soweto- and assessed housing satisfaction and quality of life in Reconstruction and Development Program (RPD). The research finding was that although the RPD provides shelter for people that previously probably lived in shacks or backyard squatters, the overall quality of life of residents was extremely poor: poor design of housing units, faulted roofs, doors, and windows, high unemployment, meagre income, and limited services and amenities, led to the overall dissatisfaction rate of 43.5% as opposed to the satisfaction rate of 29.6%.

On the other hand, Meth & Buthelezi (2017) assessed the relocation of residents from the informal to formal housing at Hammond's Farm, eThekwini (South Africa) through the New State-subsidized RPD housing. The aim of the program was to provide former informally-housed residents with a better quality of life, stronger community and decreased levels of crime. The investigation revealed that quality of the people changed dramatically: as the physical quality of dwellings had improved crime rate had subsequently decreased, change from reliance on paraffin to electricity for cooking reduced the presence of smoke; cleanliness of water alongside its presence within the home was the key gain shaping residents' well-being and safety, etc.

Ugochukwu and Chioma (2015) argued that quality is not exotic, and that building affordable/low-income

houses with locally made material is acceptable and comfortable. The researchers further maintained that although local materials used in most low-income livable dwellings in Africa have been branded 'primitive', they are quite sustainable and of quality because they post no health hazard as compared to abacus roofs over most so-called modern houses. In fact, many scholars argued that quality synchronized sustainability: sustainable electricity (Ahlborg, Borånge, Jagers, and Söderholm 2015), sustainable water supply (Cardoso; Nolasco; Ribeiro et. Al. 2017); sustainable transportation (Dumbaugh and Li 2010); etc. Silverstein, Johnson, and Griffin (2008) added that positive features and mobility options included low-cost services, door-to-door pickup and delivery; and transportation to health-care appointments, shopping, and religious services.

Similarly, the study conducted by Aigbavboa and Thwala (2014) showed that statistical results supported the research hypothesized positive relationship that building feature has a direct influence on residents' satisfaction was statistically significant.

Citing Stiglitz et al 2009, Knies, Nandi and Platt (2016) emphasized the significance of life satisfaction and further stressed that it was increasingly recognized as an important dimension of wellbeing, because it not only captured very immediate aspects of positive and negative life experiences, but it is also linked subsequent outcomes, included differences in morbidity and mortality risk (Kahneman and Krueger 2006 as cittey by Knies et al 2016). The researchers therefore emphasized that the measurement of life satisfaction is now regarded as a legitimate policy aim as well as a source of inequalities across ethnic groups (citing Layard 2005).

In housing literature the concept of housing more than shelter (King, 2016). It includes access to social infrastructure that enhances social livability amongst dwellers such as quality home comprising of quality materials and comfortable space, quality road networks, safe and accessible drinking water, efficient electricity, security, waste disposal system, health care facilities amongst other things. (Sylvester, Agbor, and Ukene 2014). The current literature assessing residents satisfaction with regard to housing provision, focused on single individual model of housing. In other to satisfy the overall quality of life assessment and satisfaction of residents in different communities, all the models of housing should be considered in order to see their balancing effect on satisfaction.

Thus, this paper intends to explore four livability models to see their collective as well as individual impact on residents' satisfaction - in low-and-middle-income housing units located at the periphery of Monrovia.

3. Data Analysis Method

The research involved both qualitative and quantitative techniques. The qualitative techniques used produced data or information which was later transformed into numerical values. It helped the researcher analyze the data numerically in order to test the hypothesis of the research. That is to examine the impact of livability condition to resident satisfaction in low-income communities in Liberia. The numerical analysis was done using Pearson product-moment correlation, linear and multiple regression models after calculating the livability index and relative satisfactory index (the same was done by Inah, Yaro, Agbor, and Ukene 2014).

The qualitative technique depended on gathering verbal data. The Researcher used it to analyses the responses gathered from the interviews conducted.

The livability measurement was divided into four attributes, namely livability of housing elements, environmental element, transportation elements and health/safety elements. Mathematically, we calculated livability index for attribute using the degree satisfactory index as in Inah, Yaro; Agbor & Ukene, 2014. This is the ratio between the sum of all respondents and the maximum scores possible on all attribute expressed as a percentage.

$$LSI(A) = \frac{\sum_{V=1}^{N} AS}{\sum_{V=1}^{N} MS} \times 100 \quad (1)$$

Where

LSI is the livability satisfactory index of respondents.

A is the measurements instruments (housing, environment, transport and health)

AS is the actual scores by respondents on the V variable

MS is maximum score that the variable V could have on the scale used

N is the total number of variables.

The measurement of satisfaction is done using relative satisfaction index Inah, S.A; Yaro, M.A.; Agbor, E.A. & Ukene, D (2014).. It is the ratio of the sum of all dwellers total actual scores expressed as a percentage of the sum total maximum scores for all attributes. Mathematically it is expressed as

$$RSI(S) = \frac{\sum_{i=1}^{N_1} h_i + \sum_{i=1}^{N_2} e_i + \sum_{i=1}^{N_3} t_i + \sum_{i=1}^{N_4} s_i}{\sum_{i=1}^{N_1} H_i + \sum_{i=1}^{N_2} E_i + \sum_{i=1}^{N_3} T_i + \sum_{i=1}^{N_4} S_i} \times 100 \quad (2)$$

Where $RSI(S)$ is the relative index of satisfaction of dwellers in the estate with the total system. N_1, N_2, N_3 and N_4 are the number of variables selected for scaling under the housing, environment, transport and health/safety respectively. h_i, e_i, t_i and s_i are the actual scores on the $i-th$ variable in housing, environment,

transport and health/safety respectively. H_i, E_i, T_i and S_i are the maximum score of the $i-th$ variable in housing, environment, transportation and health/safety respectively. The analysis of the data collected was done using correlation for hypotheses, one to four $(H_1 to\ H_4)$ and multiple linear regressions for hypothesis five(H_5).

The correlation analysis was used to investigate the level of relationship between satisfactory index and livability elements in this work. The method demonstrated the strength between the variables, which may be strong, moderate or weak and in some case, no correlation existed among the variables. When the correlation provided a positive values that was statistical significant at a given significance level, we concluded that there is a positive correlation among the variable, that an increase of one lead to an increase of the other but when it was negative we concluded that there was negative correlation among the variables, that an increase in one results to a decrease in the other vice-versa. If the value was not significant, no correlation existed and so we could not say anything further about those variables.

Two types of regression was considered in this work. The multiple linear regression to investigate the overall impact of livability elements with respect to relative satisfactory index. The four livability elements were used as independent variables to explain the impact of resident satisfaction and a simple linear regression model to explain the impact of satisfaction with respect to individual livability element. That is, we considered the relative satisfactory index and one livability element and got a total for a single regression model. The strength of positivity or negativity correlation between the dependent and independent variables was determined by estimating coefficient from the two types of regression mode

4. Data Interpretation and discussion

In table 2; out of 394 respondents, 56.1% were male and 43,9% are female of which 19.8 were unemployed. Out of those that were employed those with technical work who earn very low income has the highest percentage of 31.0% followed by 19.5% for designer. Adding the unemployed to this percentage gave us a total of 69.5%, telling us that a large number of the residents in these estates are those that feed from hand-t-mouth. Also youth age 18-35 made up the highest number of the respondents in these areas with 42.0% with vocational training certificate as educational qualification. Eighty 0ne per cent of those residents from these estates are renters who pay some amount of money to the government. Those that reported to have earned less than $2000 annually were also very large (60.5%) as compared to $2500-$3000 (30.3%) and above $3000 to $4000 (6.8%). The residents from the four estates were from the northern, central, southern, eastern and western region of the country, which makes the communities divers or mixed.

Table 2. Demography Information of Respondents of the Study Area

Variables	frequency	Percentage
Gender:		
Male	221	56.1
Female	173	43.9
Estates		
E.J. Goodrige	100	25.0
S.A Tolbert	97	24.3
New Georgia	100	25.0
Amilcar Cabral	100	25.0
Work Status		
Unemployed	79	19.8
Employed	313	
Job:		
None	76	19.0
Technical work	124	31.0
Medical practitioner	28	7.0
Designer	78	19.5
Educator	49	12.3
Security Personnel	34	8.5
Region :		
Northern	54	13.5
Central	140	35.0
Southern	55	13.8
Eastern	101	25.3
Western	42	
Age Group:		
18-25	75	18.8
26-35	189	47.3
36-45	96	24.0
46-55	27	6.8
above 55	7	1.8
Level of Education:		
High school diploma	85	21.3
Vocational training certificate	168	42.0
Bachelor's degree	122	30.5
Post grad degree	17	4.3
Housing Status		
Not yet owned	32	8.0
Rented	322	80.5
Owned	38	9.5
Estimated Household Income (USD)		
$ 1500-2000	242	60.5
$ 2500-3000	121	30.3
$ 3500-4000	27	6.8
Above $ 4000	-	-

Source: Researcher's Questionnaires, SPSS analysis

To measure the livability satisfactory index of the respondent the researcher classified the selected questions of livability into four subgroups and for each attributes we calculated the index. The same procedure was carried out for the relative satisfactory index calculation. The four attributes for livability and satisfaction are summarized in table 3

Table 3: Livability and Satisfaction Qualities with Corresponding Percentages

No.	Quality	Total	Percentage (%)
1	livability house elements	15,724	24.74
2	livability environment elements	13,988	22.01
3	livability transport elements	12,431	91.56
4	livability health/safety elements	21,404	33.68
5	Satisfaction with housing	5,857	26.84
6	Satisfaction with environments	5,559	25.47
7	Satisfaction with transport	5,021	23.01
8	Satisfaction with health	5,383	24.67

Source: Researcher's Questionnaires, SPSS analysis

The first hypothesis (H_1) can be attributed to the fact that individuals who rented the houses will logically report poorer quality of livability elements and lower level of satisfaction compared to those that owned or are in the process of buying the house. Those who could not afford to employ workers to take care of the environment or who saw activities within the environments not favorable to them reported poorer environmental qualities than those who were of the contrary- the environment conditions were favorable for them (H_2). Those who were unable to provide transport fare for their families, or did not own cars or bicycles, or even if bicycles were available, but still find it difficult to use because of heavy traffic or unsuitable sideway to ride or walk reported poorer transport facilities and low satisfactory than those the owned cars or could provide transport fare for their families. Similarly, those who could not afford good medical facilities due to their low income reported poorer health condition and low satisfaction. In other words, people with low income will always report poorer livability elements condition than those with higher income. When the reseacher neglected satisfaction from the correlation analysis, he saw the livability's effect to be positive correlated to each other. The reason been that the estate is for low-income people who at certain point in time are unable to pay house rent. Therefore, removing satisfaction from the picture the respondents' responses were positive because the good conditions of the estates: housing, environment, transportation or health facilities were not issues they could expect from such low-income communities.

4.1 Correlation Coefficients

The correlation matrix is given in table 4, comprises the relative satisfactory index and the four livability elements. The Pearson correlation was used to investigate hypothesis, H_1, H_2, H_3 *and* H_4. Only coefficient at $p < 0.01$ (two-tailed) was considered. Since relative satisfactory index was our dependent variable, we considered the last row to interpret the correlation results. All the livability elements are statistically significant with respect to the relative satisfactory index. From the Pearson product moment correlation, there was a significance, evidence to reject the null hypothesis that all the livability elements will not lead to respondents satisfaction and concluded that there was a strong, negative association between the livability elements and respondents satisfaction.

Table 4: A Matrix of Pearson Product-moment Correlation Coefficient

	HQI	EQI	TQI	HSQI	RIS
HQI	1	0.825^{**}	0.635^{**}	0.667^{**}	-0.696^{**}
EQI	0.825^{**}	1	0.621^{**}	0.652^{**}	-0.655^{**}
TQI	0.635^{**}	0.621^{**}	1	0.830^{**}	-0.751^{**}
HSQI	0.667^{**}	0.652^{**}	0.830^{**}	1	-0.700^{**}
RIS	-0.696^{**}	-0.655^{**}	-0.751^{**}	-0.700^{**}	1

** significant at 0.05

4.2 Linear and Multiple Regression

The purpose of this analysis was to investigate empirically the relationship between livability index and relative satisfactory index, that is hypothesis (H_5). As there were four livability elements, we therefore used multiple regression to investigate the overall relationship between these variable and relative satisfactory index. In table 5, R-square is 0.739, which means that 73.9% of the variance can be explained by these variables. Housing quality index and transportation quality index are statistically significant. These two variables show significant effect on respondent relative satisfactory index. Transportation quality index was the strongest with negative impact. The explanation for this finding is that there were more respondents with very low income that could not afford to own a car or any form of transportation. Furthermore, there were no good transportation systems in all the four low-income communities in Liberia; because of this, the mode of transportation did not always meet respondent satisfaction in those communities. This was the core reason that satisfaction of transportation got negative

responses of 60.0%. In the case of housing quality, responses depended on what the respondents needed or desired in the house. Those who could afford to own an estate unit were mostly high income earners and could afford to model the houses after their desired choices. On the contrary, the majority of those who rented could not afford changing any form of the housing units because they were not the legitimate owners. The same was for those in the process of buying. We therefore assume that this was why the regression model showed 26.5% negative response for any question about satisfaction relating to housing. This finding is in agreement with Molla, Katze & Block (2011) who expressed similar view.

Income, according to Tang (2007) plays a positive role in people subjective well-being. This means that when people's incomes are low, they would have problem assessing transportation means and good healthcare services amongst other things and could likely be unhappy or not satisfied.

Table 5: Dependent Variable Relative Satisfactory Index

Variables		Coefficient	t-value	Pr(>|t
Intercept		107.201	44.000	0.000**
Housing quality		-0.265	-7.010	0.000**
Environmental quality		-0.007	-0.174	0.862
Transportation quality		-0.600	-12.749	0.000 **
Health/safety quality		-0.008	0.185	0.853
Std Error	8.75133			
R-square	0.739			
Adjusted R-square	0.736			
Durbin Watson	1.435			

** significant at 5%,

To further investigate the percentage rate at which satisfaction and these livability elements were statistically related we repeated the analysis with a simple linear regression model in which we regressed one livability element with respect to relative satisfactory index. In table 6 all the livability elements are statistical significant at 5% and proved to be negatively related to satisfaction index. For any one question related to satisfaction, there is 0.9% negative response for housing and environmental qualities whereas 1.2% and 0.1% negative responses for transportation and health/safety qualities respectively. However, 48.5%, 42.9%, 56.3% and 48.9% of relative satisfactory index explained the variance by the livability elements for model 1, model 2, model 3 and model 4 respectively.

Table 6: Linear Regression Analysis

	Model 1	Model 2	Model 3	Model 4
	Housing qualities	Environmental qualities	Transportation qualities	Health/safety qualities
Constant	1.331	1.335	1.631	1.449
Significant level	0.000	0.000	0.000	0.000
Relative Satisfactory index	-0.009	-0.009	-0.012	1.449
R-square	0.485	0.429	0.563	0.489
Adjusted R-square	0.483	0.427	0.562	0.488

**significant at 0.05

5. CONCLUSION

The influx of people to the capital city [Monrovia] is putting lot of stress housing units and causing the development of slum communities. Liberia's overall economic is not doing so well, however, the government has endeavoured to provide housing units and solve some of the problems associated therewith. The problems of quality in the housing sector are quite numerous; but like any other problems, given the limited financial resource available, priorities should be set to ameliorate most of the severities existing in the housing sector of the country, by and large. The government's first priorities should be to exert effort in improving the residential environment of low-income homes with particular focus on the estates in Monrovia, the capital city.

This study explored issues faced by families in living in four of the low-income housing units built by the government of Liberia between 60s and 70s. The study explored the impact residents living conditions have on their level of perceived satisfaction. Housing, environmental, transportation and health/safety qualities were used to assess the overall livable conditions of residents.

The findings indicated that there was a negative correlation between the livability conditions and the perceive satisfaction index, except for health/safety and environmental conditions which were not statically significant. However, when the regression was run separately with each livable conditions and the satisfaction index, the result showed that they were statistically negatively correlated and significant.

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