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A subjective measurement of the determinants of quality of life in Kumasi

Michael Ayerter Nanor[#], Kwasi Kwafo Adarkwa[*] and Michael Poku-Boansi[±]

[#*±] Department of Planning, Faculty of Built Environment, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
Email: man.nanor@gmail.com; kwasiadarkwa@yahoo.com; pokuboansi@gmail.com

Abstract

The measurement of quality of life (QoL) can be used as an urban planning tool to address challenges confronting the management of urban centers. The results of such measurements may provide the required basis for formulating future spatial and urban planning policies. Using the city of Kumasi, this paper examines the determinants of QoL of residents. This study surveyed 500 households. A subjective residents' assessment of QoL and a Factor Analysis are performed to explore the determinants of QoL and their relative importance. The results show an acceptable goodness of fit, supporting the view that the main determinants of QoL are health, housing, economic status and neighborhood.

Keywords: Quality of life; Subjective quality of life; Domain satisfaction; Factor analysis; Kumasi.

1. Introduction

Traditionally, cities have contributed immensely towards the socio-economic and environmental changes in the world. For example, as argued by Adarkwa (2011), literature on urban studies has highlighted the fact that urban areas, particularly cities, are frequently described as the engine of growth of nations. In addition, cities have experienced extraordinary growth in population with urban population estimated to be three and half billion (3.5 billion) people (UNDESA, 2014) because of urbanisation. In this manner, by building attractive urban areas, the quality of life (QoL) for several individuals who live in such areas can be enhanced. Urbanistion boosts quick socio-economic growth; however, developmental issues such high population density, traffic, lack of housing and resource, noise, and air and water pollution are created by urbanisation (Li *et al*. 2009). It is gradually being acknowledged that the value of the quality of urban environment affects the QoL of urban dwellers (Shearer *et al*. 2006; Jenny & Ericson 2006; Romano & Ercolano 2012). The nature of the urban setting as a living space for some people is an issue of key importance to academic researchers, policy-makers and citizens (Pacione, 2003). The study of QoL in urban areas has turned on extensive research consideration in recent times. Researchers from different fields, including geography, sociology, economics, psychology, political science and health have all contributed to this area of inquiry (see, for example, Das, 2008; Grasso & Canova, 2008; Dunning *et al*. 2008; Epley & Menon 2008; Rossouw & Naude, 2008; Chen & Davey, 2008; Marans & Stimson, 2011; Rezvani *et al*., 2012).

Quality of Life (QoL) is a multifaceted term which involves the ideas of a good life, a valued life, a satisfying life, and a happy life (McCrea *et al*. 2006). Lotfi *et al*. (2011) describe the idea of QoL as having numerous interesting features. Included in these features is a reference to a single inseparable universal term whose meaning can be clarified but difficult to order into any discrete category of related social sciences.

As far as the issues of Quality of Life is concerned, the current literature on Ghana is limited to various aspects of the socioeconomic life of the household, that is gender, income, housing and marital status. For example Addai *et al*. (2013) analyzed the link between marriage and quality of life in Ghana. Addai *et al*. (2013) found a mixed results in terms of the relationship between marriage and life satisfaction and that of gender and life satisfaction marriage undermines happiness and life satisfaction among Ghanaians. They explained that the effect of marriage is only statistically significant on happiness while

the effect of gender interaction does not have a statistically significant effect on either happiness or life satisfaction. The paper join the debate on quality of life households in Ghana from the urban perspective since there since to be a gap literature from the urban household perspective. The case for an urban QoL has become critical because the extent to which the place where we live affects how we feel and our overall QoL has long been a matter of theoretical and empirical work in the fields of human geography, urban and regional studies, regional science and regional economics (Ballas, 2013). People live their lives in places or series of places with particular environmental characteristics. When referring to a place we usually refer to the geography or environments of individuals and groups of individuals such as households, neighbourhoods and communities (Marans & Stimson, 2011). In this paper, subjective quality of life (S-QoL) is measured in Kumasi, the second major city in Ghana.

The paper is ordered as follows: Section 2 reviews relevant and related literature on QoL and S-QoL; Section 3 describes the case study setting and research methods used for the research; Section 4 presents the results and discussion of the study and Section 5 presents some concluding remarks of the research.

2. Quality of Life and Subjective Quality of Life

QoL plays an increasingly important role in boosting the development of the local economy because better QoL can help attract foreign investments and skilled labor (Chens, 2015). Quality of Life as a concept has defied a single definition. The definition of QoL has basically been subject-oriented. That is, its definition is premised on subject areas such as Health, Planning, Economics, Geography, Psychology and Political Science. QoL as a concept has also been defined from the angle of measurement; that is, the approach of measurement. QoL has also been defined in terms of it being Objective or Subjective. Haas (1999) has argued that QoL is defined by the all-round assessment of current life circumstances of an individual or a neighborhood.

QoL depends on individual objective conditions and capabilities. Steps should be taken to improve measures of health, education, personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social relations, political interest, and insecurity that can be shown to predict life satisfaction (Pantisano *et al*., 2014:8)

These circumstances of the life of individuals and their evaluative essence are best situated or contextualized within the framework of the society in which they

live and the standards they hold. The evaluative essence is central to whatever framework and standards the society generally ascribes. Quality of Life, in this regard, is basically seen as a subjective sense of wellbeing which deals with the physical, psychological, social and economic dimensions in the life of an individual or a neighborhood. Notwithstanding the subjective constellation surrounding QoL; the concept, as an indicator of how successful human beings have become in achieving their desired ends, has been subjected to objective analysis using objective measures that have been developed over time to study QoL of an individual or a neighborhood (Haas, 1999).

Objective indicators, in greater detail, can refer to environmental or external conditions typically measured at some aggregate spatial scale (Berhe *et al*. 2013). Objective indicators for QoL may also include variables such as population or housing density, crime rates, education quality and availability, mobility potential, healthcare options, recreational opportunities, green space, pollution, amongst many other factors (Haslaue et al. 2014). On the other hand, Subjective indicators are typically assessed on a Likert-scale and cover similar topics as the aforementioned objective indicators (Haslaue *et al*. 2014. Subjective analysis highlights the satisfaction of the people for whom the amenities are provided. Satisfaction of the people is about the availability of amenities as well as the affordability on the part of the people. This assertion is also supported by Schenck, and Blaauw (2015). They concluded that wellbeing enables people to foster and enlarge human capabilities, life choices and opportunities (Schenck, and Blaauw, 2015). This gives the actual view of the satisfaction quotient, or in other words happiness quotient, of the people (Adhikary *et al*., 2014). Subjective indicators are often derived from surveys and represent residential perceptions; whereas objective indicators are mostly derived from evident facts or secondary data, e.g. demographic or economic data (Tesfazghi *et al*. 2010). As compared to objective variables, subjective indicators are often critiqued as being incomparable, unstable, unintelligible, and are often not related to objective perceptions or given facts (Santos *et al*. 2007). Table 1 shows the differentiation between objective and subjective indicators of QoL.

Table 1: Objective and Subjective Indicators

Objective Indicators	Subjective Indicators	Behavioral Indicators
Employment status and occupation	Housing and neighborhood satisfaction	Public transport use
Educational attainment	Desire to move	Visits to health clinics/ doctors
Household income	Perception of school quality	
Dwelling type, material for house wall and roof	Perceptions of crime	
Presence of water, toilet, electricity in house	Perceptions of health care services	
Presence of police station, hospital, primary school	Feelings about neighbors	
Neighborhood rating	Feelings about rubbish collection	
Flood prone	Feelings about congestion and crowding	
Residential density / household size	Feelings about government	
Room available	Satisfaction with health	
Ownership of transportation means	Satisfaction with family, friends, job, etc.	
Distance to work place, hospital and police station	Life satisfaction, overall happiness	
	Satisfaction with transport facilities	

Source: Adapted from Marans & Stimson (2011:3) and Chin and Chau (2003)

QoL is a broad term which incorporates ideas of a good life, a valued life, a satisfying life, and a happy life (McCrea *et al*. 2006). For instance, Addai *et al*. (2015) found that marriage has a negative relationship with subjective QoL among Ghanaians. They further state that marriage and gender do not have a statistically significant effect on either happiness or life satisfaction (Addai *et al.*, 2015). In their comprehensive assessment of the studies on QoL, Mulligan *et al*. (2004) largely construe QoL as the satisfaction that a person receives from his/her environment and physical conditions, conditions that are scale-dependent and can influence the actions of individuals, family units and economic units such as firms or production units (Marans & Stimson, 2011). QoL has been the concentration of various reviews; however, an all-around satisfactory definition has not been arrived at as yet (Das, 2008). This is on

the grounds that numerous researchers agree that QoL is a multidimensional and relative perception, dependent on time, place, individual and social values. To Cummins (1997), quality of life as a construct has a complex composition; so, it is perhaps not unexpected that there is neither an agreed definition nor a standard form of measurement.

At the heart of the definition issues of QoL is a methodological debate within the research community which is based on the differentiation between objective and subjective dimensions (Dunning *et al*. 2008). Rezvani *et al.* (2012) have contended that the objective measurement of QoL is ordinarily based on the analysis and reporting of secondary data, typically comprehensive data at various geographic or spatial scales that are accessible basically from official data collections agencies, including the census.

In their view, such methodology is often associated with Social Indicators' Research. The second measurement approach, the subjective approach, according to Marans and Stimson (2011), is specially designed to collect primary data at the disaggregate or individual level using cross-sectional survey methods where the focus is on the peoples' behaviors and assessments or evaluations of aspects of QoL in general. This approach is what is adopted in this current research given the lack of data used in assessing QoL. The subjective QoL of an individual or a society can be measured in various ways.

On one hand, the least complex strategy is a weighted total of satisfaction with various areas of QoL. In this strategy, QoL is separated into various areas and the combination of satisfaction in each of these domains forms the overall QoL. Then again, on the other hand, the subjective QoL can be measured as far as individual's general life fulfilment with respect to their life. In utilizing this approach, general life fulfillment is normally measured utilizing either the instinctive or the rational responses. In the intuitive method, individuals are asked about their life; but in the rational method, individuals are first requested to respond to questions about their assessment with domains of life such as housing, natural setting, security, employment and income and then their feelings about life as a whole are also questioned. Therefore, they can offer rational answers to diverse domains of life. In the opinion of Ibrahim and Chung (2003), the rational response would symbolize a more objective response from individuals as it would be influenced by the preceding questions that were asked regarding the satisfaction levels to the various aspects of life. Measuring both the intuitive and the rational responses affirms whether there was an adjustment in what people see and their sentiments about life after they have understood how fulfilled they are with several domains

of life (Das, 2008). This paper uses an amalgamation of both methods to derive the subjective QoL of residents of Kumasi.

In this paper, the rational approach to the determination of QoL is adopted. A section of city residents of Kumasi is asked about their assessment of domains of life along with their feelings about life as a whole. Consequently, the objective of this paper is to assess the determinants of the quality of life in Kumasi, Ghana, based on purely subjective considerations.

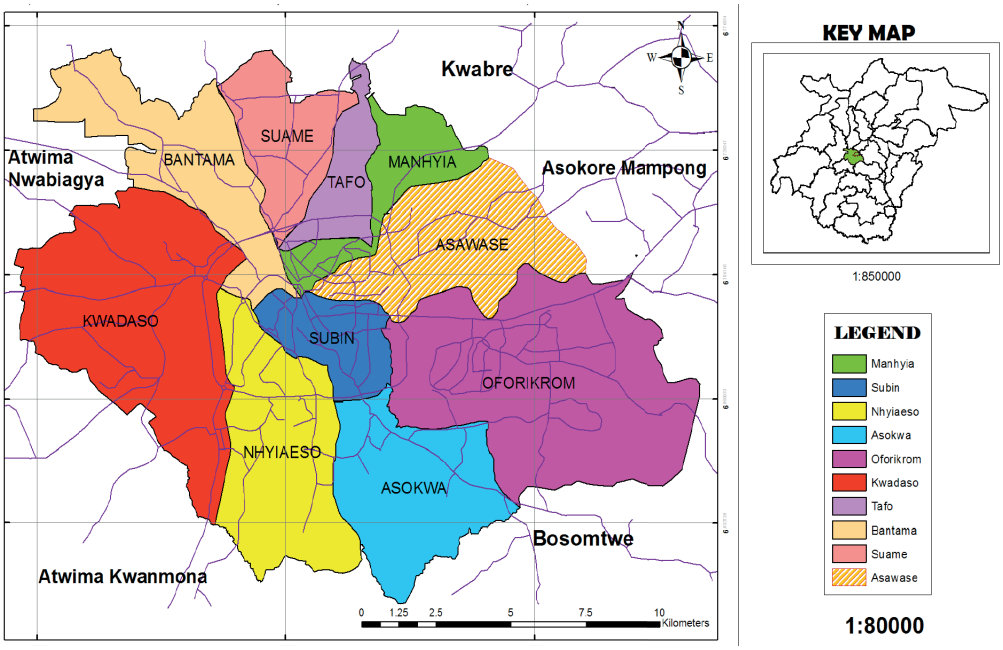
3. Study setting and methods

3.1. Study area

In this study, the limits of Kumasi are defined as the Kumasi Metropolitan Assembly (KMA) and the previous Asawase Sub-metro (see Figure 1). Kumasi is situated in the transitional forest zone and is about 270km north of the national capital, Accra. Kumasi is found between latitude 6.35°N–6.40°N and longitudes 1.30°W– 1.35°W. Kumasi is about 250 to 300 meters above sea level. The land area of Kumasi is approximately 254km^2 and Kumasi's population of 1,730,249 is the highest in the Ashanti Region. Kumasi's population was expected to be around 2,599,000 in 2015 based on a growth rate of 4.8%. There are more females (52.22%) in the Metropolis than males (47.8%). Majority of the population (58.7%) are below 15 years while the remaining 47.3% are above 15 years. It had a population density of 8,012 persons/km^2 in 2014. Kumasi is 48% urban, 46% peri-urban and 6% rural.

Kumasi, as at the time of data collection, had a total of 580,381 households. This pushes the household size to an average of 3.8 persons per household. The average number of persons per house is around 17.3 with a room occupancy rate of 2.7. Housing in Kumasi is categorized as follows: Single Storey Traditional Compound Houses, Multi-Storey Compound Houses, Government-Built Detached or Semi-Detached for Low-Income Households, Large Single Household houses built on comparatively large plots and blocks of Flats (Afrane & Asamoah, 2011). The housing situation in parts of Kumasi; especially Oforikrom, Moshie Zongo, Sawaba, Ayigya Zongo and Aboabo are characterized by poor drains and bad sanitation. Only about half (51%) of the residents have access to in-house toilet facilities in their houses while 38% use pay-public toilets. The remaining 11% use other places as toilets (Ghana Statistical Service, 2014).

FIGURE 1: MAP OF KUMASI SHOWING SUB METROS



*Source:*GIS Department, KNUST 2017

The economically active population in Kumasi is about 86%. They are found to be actively engaged in the Services, Industry and Agriculture sectors. The service sector is the economic spine of Kumasi. Majority (72%) of the economically active individuals are engaged in this sector. Conversely, there are small-scale mechanical garages, wood processing centers and food processing companies as well as construction firms. These small-scale businesses employ about 23% of the active population. In terms of transportation, Kumasi has a total of 1,921 km length of road network connecting residents to practically all parts of the city. The road network in Kumasi has been classified into arterials, collectors and local roads. Furthermore, it has eight major roads which transport incoming and outgoing traffic to and from Kumasi. Also, Kumasi has many collector roads which collect traffic from local roads to primary roads as well as distribute traffic from the arterial roads to the access roads (Kumasi Metropolitan Assembly [KMA], 2013).

3.2. Study method

Using a cross-sectional design framework, sampled households for this study were collected from households in all nine (9) sub-metropolitan areas of the

Kumasi Metropolitan Assembly (KMA) and Asawase in the Asokore Mampong Municipal Assembly (AMMA). Probability sampling was adopted in selecting the households to be studied because it is the only approach in sampling methodology that makes it possible for the generalization of results to a city-wide perspective. Bryman (2004) has argued that probability sample is one in which every element in the population has a known non-zero probability of selection. The use of the probability sampling method guarantees the fact that the sample used for the study is not significantly different from the population of KMA and Asawase in the Asokore Mampong Municipal Assembly (AMMA).

The actual selection of sampled households for the survey involved the following stratification procedure:

a. Division of each of the nine (9) sub-metropolitan areas and Asawase into three (3) sub-groups based on residential class – 1st, 2nd, and 3rd class residential areas – using property rates levied by KMA, AMMA and independent socio-economic data from the Statistical Service of Ghana in Kumasi;
b. Random selection of one community from each sub-group in each sub-metropolitan area;
c. Determination of sample sizes for the study area, sub-metropolitan area and the communities; and
d. Selection of households for the socio-economic surveys in each sub-group within each stratum and sub-metropolitan area.

Israel (2003) offers a simplified method for calculating sample sizes. The formula is stated as

$$\boldsymbol{n} = \frac{\boldsymbol{N}}{\mathbf{1}+\boldsymbol{N}(\boldsymbol{e})^{\mathbf{2}}} \tag{1}$$

where $\boldsymbol{n}$ is the sample size, $\boldsymbol{N}$ is the population size and $\boldsymbol{e}$ is the level of precision (sampling error).

The total number of estimated households in Kumasi was 580,381 as at 2015; so based on the stated formula, the sample size for a margin of error of 5.0% was calculated. The calculation showed that 400 households were to be selected for the study. However, Singh & Masuku (2014) have argued that an adjustment in the sample size may be needed to accommodate a comparative analysis of sub-groups. Similarly, for a comparative analysis of sub-groups, Oxman and Guyatt (1992) suggest that a minimum of 100 elements are needed for each major group or subgroup in the sample and for each minor sub-group, a sample of 20 to 50 elements is necessary. In this case, an adjustment of 100 households was added to make up to 500 households.

3.3. Household selection procedure

The procedure started with the selection of Enumeration Areas (EAs) in the selected communities. Enumeration Areas are defined as sampling blocks of equal geographical dimensions with identifiable boundaries encompassing a substantial number of people. The EAs were divided into high, medium and low-density areas. Each of the EA was thereafter randomly selected from each area using the available street maps already divided into different density areas.

Immediately after the selection of the EA, the EA is surveyed to determine the entering points of the EA. These are the points where the team started conducting each day's interview. These can be prominent structures such as churches, mosques, schools, hospitals, lorry stations etc. In each of the randomly selected EA, the Day's Code was used to determine each interviewer's starting point, i.e. [The first house/dwelling structure to enter/approach]. A dwelling structure is defined as a floor of a distinct residential building within an EA of a town/ village where only one household occupied a multi-storey building, or the entire building [and not the floor]. Where it is a multi-storey building with multiple occupants, counting of floors was carried out consistently from the upper floor to the ground floor in an unbroken chain from floor to floor. A fixed sampling gap of one in three (1:3) and one in five (1:5) respectively was observed after each successful call in low, medium and high-density areas.

On entering a selected dwelling structure, each interviewer determined the number of households within the structure. Having done that, the interviewer then used the household selection grid to determine the household where the interview would take place. A household is defined as the collective group of individuals living under the same roof and having a common feeding arrangement and also with a recognized person in the household as the head of household.

Only household heads or their representatives (wives) who had stayed in the selected household for at least six [6] months were interviewed. Visitors who had stayed for less than six months were not regarded as household members. In the case where the selected room was unoccupied, interviewers were instructed to replace it with the next household. Only one substitution was allowed per dwelling structure.

The sample size for each sub-metropolitan area was pro-rated using the following formula:

$$n_s = \frac{number\ of\ household\ in\ sub\ metro}{Total\ number\ of\ household\ in\ Kumasi} \times 500 \ldots\ldots\ldots\ldots\ldots \quad (2)$$

where n_s = sample size for sub-metros.

To estimate the sample size for each of the communities selected, another formula was used. This formula is stated as:

$$a_c = \frac{number\ of\ household\ in\ the\ selected\ community}{total\ number\ of\ households\ in\ sub\ metro} \times\ estimated\ sample\ for\ sub\ metro\ \ldots\ldots\ldots \quad (3)$$

where a_c = sample size for community.

Table 2: Number of Households selected in each Sub-metro for the Study

Sub-Metro	Total Number of households	Number of households surveyed in each sub-metro
Asokwa	40,967	35
Asawase	84,275	72
Bantama	74,911	64
Kwadaso	69,059	59
Manhyia	47,990	41
Nhyiaeso	39,767	34
Oforikrom	84,124	72
Old Tafo	42,138	36
Suame	42,137	40
Subin	55,013	47
Total	**580,381**	**500**

Source: Authors' construct, 2017

Table 2 shows the sample size for each sub-metropolitan area used for the data collected. The households were selected from the various communities based on a list developed by the Ghana Statistical Service in Kumasi. The first household head met in each house was selected for the survey. Not more than one household was selected from a house. This was done to get a proper spatially distributed sample. The next section looks at the variables used in the study.

3.4. Measurement of variables

3.4.1. Dependent variable

The dependent variable developed for the study is the subjective dependent variable.

This variable was developed based on the **overall *perceived QoL*** of the respondents. The survey provides information regarding perceived satisfaction in the following variables: income levels, housing, healthcare services, education services, neighborhood safety, employment, transportation system

and neighborhood safety. The perceived satisfaction with the various domains was measured. The questions which were used read as follows: "*On a scale from 0 to 10, where 0 means totally unsatisfied and 10 means totally satisfied, how satisfied are you with the following domains of QoL*?"

In addition, the survey also included a question on the relative importance of the selected domains to the households. The question was: "*How important are the following domains to the measurement of your QoL?*" The respondents were asked to select one of the stated options: "***Very important, important, fairly important and absolutely unimportant***" for each of the dimensions mentioned in the previous paragraph. The relative importance of a domain is the extent of a relative weight attached to a domain by all the respondents taken together. In order to collect the data from the household, 10 data collection assistants from the Ghana Statistical Service were trained to administer the questionnaires. The questionnaires were administered on a face-to-face basis. This was done over a period of about one and a half weeks.

The Relative Importance index of a domain is expressed as the aggregate of all the actual scores on the five-point scale given by all the different respondents as a proportion of the whole of the maximum possible scores on the five points that every one of the respondents could provide for that domain.

This is represented in equation 4 as follows:

$$R_i = \frac{\sum_{i=1}^{N} m_{ij}}{\sum_{i=1}^{N} M_{ij}} \tag{4}$$

where:
R_i = Relative Importance index of domain *i*
N = Number of respondents
m_{ij} = original score on the five-point scale for relative importance by i^{th} Respondent on the j^{th} domain.
M_{ij} = Maximum score respondent *i* could give to domain *j* on the relative Importance scale.

4. Results and discussion

4.1. Domain satisfaction

Table 3 shows the summary of the domain satisfaction for the various domains measured in the study. It shows the various satisfaction levels in the domains of QoL as the various satisfaction levels feed into the overall satisfaction of each of the respondents.

Table 3: Summary of Satisfaction in Domains of Subjective QOL in Kumasi

Level of Satisfaction	% Satisfaction with overall household economic status	% Satisfaction with housing	% Satisfaction with household health status	% Satisfaction with neighborhood	% Satisfaction with transportation
0	0	0	0	0	2.2
1	4	3.2	1.6	8.6	1.4
2	5.2	2.6	1.8	4	3.2
3	9.6	7.6	2.4	6	4.4
4	8.6	7.2	5.8	7.4	7.6
5	25.4	20.4	15	17.4	15.2
6	14.2	18.8	16	17	17.8
7	14.4	18	32.4	17	18.6
8	7.4	13.2	16	16	20.4
9	1.2	2	3	3.2	3
10	10	7	6	3.4	6.2
Average Satisfaction	**5.59**	**5.94**	**6.48**	**5.59**	**6.17**

Source: Estimates from field data, 2017

The results in Table 3 show that respondents are highly satisfied with the health domain. The reason for this level of satisfaction can be attributed to the presence of the National Health Insurance Scheme and the fairly well-dispersed public and private health facilities within the city. The health domain is followed closely by the transportation domain with an average satisfaction of 6.17. Households showed the least level of satisfaction towards the Economic and Neighborhood Domains. This reflects the current economic challenges in Ghana and the seemingly poor sanitation and unsafe neighborhoods.

4.1.1. Descriptive Statistics on Overall Subjective Quality of Life in Kumasi

Table 4 shows the Subjective QoL (S-QoL) of the respondents in the study. The S-QoL of the respondents was extracted using an 11-point Likert scale (that is, 0-10 with 0 denoting very poor or complete dissatisfaction with QoL and 10 denoting excellent or complete satisfaction with QoL). The mean rating of S-QoL was found to be 6.17. This is in line with what Alcázar and Raul (2010) observed for subjective QoL in Villa El Salvador (6.27), La Victoria (6.17) and Los Olivos (5.73) which are all neighborhoods or suburbs of Lima, Peru.

Using the mean value as the benchmark, respondents were grouped into those who were satisfied and those who were not satisfied with their QoL. The results showed that over 64% of the respondents reported higher QoL. Out of the 323 respondents who stated that they were contented with QoL, 31% stated that they were just satisfied with their QoL while about 9.8% of respondents reported that they were completely satisfied. The high level of satisfaction with QoL can be linked to the high level of satisfaction reported in the various domains of QoL (See Table 4).

Table 4: Overall QOL in Subjective Terms

Satisfaction rating	Number of respondents	Percentage	Cumulative Percent
1	2	0.4	0.4
2	11	2.2	2.6
3	20	4.0	6.6
4	63	12.6	19.2
5	81	16.2	35.4
6	100	20.0	55.4
7	101	20.2	75.6
8	73	14.6	90.2
9	36	7.2	97.4
10	13	2.6	100.0
Total	**500**	**100.0**	

Likert Scale Mean = 6.17≅ Satisfied

Source: Estimates from field data, 2017

The use of the 11-point Scale to measure the subjective QoL of households based on their satisfaction thereof was appropriate because the Likert Scale is able to give a good subjective picture of a situation on a range of possible levels or degrees that may be applied to the respondent. The use of the 11-point scale in this study is supported by Eschleman *et al*. (2014) who used a nine-point multiple Likert Scale to measure abusive supervision and Counterproductive Work Behavior (CWB) and a 10-point scale to measure an Organization's directed form of CWB. A value between zero (0) and four (4) on the Likert scale used represented dissatisfaction with QoL.

Therefore, any value above four on the Likert scale used represented satisfaction with Subjective QoL. The average level of satisfaction with Subjective QoL was around the value of six (6) on the Likert scale and hence

any household head who returned a value greater that Six (6) on the scale used is categorized as highly satisfied. Ranging from 0 (very poor satisfaction) to 10 (excellent satisfaction), the majority (80.8%) of respondents indicated that they were highly satisfied while the minority (19.2%) opined that they were not satisfied with their subjective QoL situation. This means that less than a quarter of the respondents were not satisfied with their QoL. It also implies that most of the households in Kumasi are, as long as it is within reach, satisfied with their QoL. It is also worth noting that only 12% reported that they were completely satisfied with their QoL situation.

One can cautiously conclude that Kumasi could really be a place that provides opportunities which harness the subjective QoL. This result reflects the view of Duranton and Puga (2004) that the numerous opportunities in urban areas, as well as the availability of public services in urban areas, are able to enhance the QoL of city inhabitants. Urban areas made some urban dwellers satisfied with their lives as long as they were able to grab any of the opportunities that would translate into freedom to choose how to live, when, where and what to do and use. This view may not be totally supported by the findings of this study because there were several respondents who were found in low income, poor neighborhoods and poor housing for example, but they still reported that their QoL was good enough for them. This is in spite of the fact that scholars such as Becker and Henderson (2000) adduce how many limitations or challenges in aspects such as transportation costs, crime and traffic congestion go a long way to decreasing the returns associated with living in urban areas. The basic dimensions of subjective quality of life in Kumasi were: Satisfaction with the selected domain of QoL, Dependency, Household Financial Status, Time (length of stay in community and house), Healthcare utilization, Individual and Neighborhood characteristics, and Housing Characteristics. These dimensions accounted for about 71% of the variation in the Subjective QoL in Kumasi.

The overall higher satisfaction of respondents with all the four dimensions or variable components of satisfaction does have some impact on the S-QoL of most households in Kumasi. But health, economic status, housing and Neighborhood can only be most impactful on subjective QoL if all of them are acting interdependently. Thus, it is important that the satisfaction variables are best fashioned to produce the best outcomes of S-QoL.

4.1 2. Dimensions of Subjective Quality of Life in Kumasi

One of the fundamental objectives of this study was to find the various dimensions which affected subjective QoL in Kumasi. The first step to identifying these

underlying dimensions was to conduct Factor Analysis. This method was used by Tesfazghi (2009) to identify the various factors underlying Subjective QoL in Addis Ababa in Ethiopia. The Factor Analysis helped in identifying whether or not the classification of the various variables which loaded on the domains of S-QoL had any relationship with the underlying factors. The Factor Analysis was done using 72 attributes of QoL extracted from the survey questionnaires. The value for the (Kaiser Meyer Olkin) in this study is 0.755 and that of the Bartlett's test is also significant.

The test statistics showed that the data were appropriate for Factor Analysis. In identifying the various dimensions of S-QoL, only variables which had loadings of 0.5 and above were considered. According to Li and Weng (2007), loading greater than 0.7 shows "excellent strength" between components and variables, 0.6 shows "very good relation", 0.5 indicates "good relation", and 0.4 shows "fairly good relationship". It is based on this that only variables with loadings of 0.5 and above were selected for the analysis. The results of the factors in Table 5 show that the number of factors extracted using the eigenvalue of 1 and above was ten (10). Although 10 factors were extracted, the scree plot showed that eight factors were extracted. These eight (8) factors explain about 71% of the total variation in the S-QoL in Kumasi. The seven factors which showed high loadings on the S-QoL are identified and explained subsequently.

4.1.3. Factors underlying Subjective Quality of Life in Kumasi

i. **First Factor:** The factor showed high loading of the satisfaction with various domains of QoL. This factor can be named as **Domain Satisfaction**. All the indicator variables for this factor were satisfaction variables and accounted for about 16.5% of the total variance. This factor (satisfaction from public services and amenities in locality) was also identified by Das (2008) - [efficiency of transport system , Satisfaction from health facility in locality , Satisfaction from local administration, Satisfaction from availability parks and green areas] in his study of Guwahati which is the largest city of Assam in Northeastern India.

ii. **The Second Factor** showed high loading on the attributes of **dependency in a household** in Kumasi. The implication is that in order to understand issues of S-QoL in Kumasi, variables pertaining to household size and dependency must be critically examined. This factor explained 14.7% of the total variance. It is not surprising that these variables have high loadings and formed the second factor in determining S-QoL. These variables were significant determinants in the Economic, Housing and Health domains.

iii. **Third Factor:** The factor loading on the third factor is high on **household income**. The variables were related to the economic domain of QoL. All the attributes to this factor were positively related to the factor. This factor explained about 10% of the total variance in Subjective QoL.

iv. **The Fourth Factor** can be interpreted as the **time dimension** of Subjective QoL since it revealed high loading on the number of years a respondent had resided in a community and the present house they lived in. The two characteristics were positively connected with the factor. This indicates that the greater the score of these features on the time attributes, the higher the score of the time dimension of Subjective QoL. The factor accounted for 8% of the variation in subjective QoL.

v. **Fifth Factor:** The fifth factor can be called the **healthcare utilization** factor. The two variables which load onto the factors have to do with how respondents can access healthcare in their residential community. This factor also explained about 6.52% of the total variance. The high loading variables on the factor are consistent with what Das (2008) found for Guwahati in India as well as what Tesfazghi (2009) found for Addis Ababa in Ethiopia.

vi. **The sixth factor** can be described as **individual and neighborhood attributes** for Subjective QoL. The Individual attributes in the sixth factor showed high loading and are positively linked with the factor. This factor also explains about 5.87% of the total variance.

vii. **The seventh and the eighth factors** can be categorized as '***housing factor***'. The attributes loading onto these two factors together explain about 9% of the total variation of the Subjective QoL in Kumasi indicating their importance in determining S-QoL.

Table 5: Factor Loading Matrix for Subjective QOL

Subjective Attribute	Components							
	1	2	3	4	5	6	7	8
Satisfaction with household income	0.7082							
Satisfaction with Overall Household Economic Status	0.7565							
Satisfaction with housing	0.6505							
Satisfaction with overall health status of household	0.7154							
Satisfaction with Educational Status of household	0.6839							
Overall satisfaction with environment	0.7040							
Overall satisfaction with transportation system	0.5106							
Household size		0.8105						
Number of children between 0 and 18 in the household		0.8755						
Number of dependents in household		0.8042						
Number of children in household in public basic schools in the community in respondent's community		0.7036						
Income of household head per month			0.7566					
Household income per month			0.8441					
Total household expenditure per month			0.7148					
Length of stay in Community				0.8729				
Length of stay in current house				0.8758				
Presence of health facility in community					0.9323			
Utilization of health facility by Household head					0.9225			
Marital Status						0.8763		
Age of Respondent						0.8072		
Dwelling Type							0.7191	
Satisfaction with Neighborhood							0.6721	
Number of rooms available to household								0.8062
Eigen Values	**3.969**	**3.532**	**2.393**	**1.992**	**1.566**	**1.410**	**1.139**	**1.023**
Total Variance	**16.54**	**14.715**	**9.97**	**8.30**	**6.52**	**5.87**	**4.75**	**4.26**

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization

Source: Estimates from field data, 2017

The results presented in Table 6 show that Subjective QoL in Kumasi is multidimensional. It is, therefore, important to categorize the eight (8) extracted factors into various dimensions of Subjective QoL in Kumasi. The eight (8) factors can be categorized into four basic dimensions. The dimensions are: Housing, Health, Economic and Neighborhood. Factor four basically explains the Health dimension of Subjective QoL. Factors two and three mostly explain the Economic dimension of Subjective QoL. The first, fifth and seventh factors also explain the neighborhood dimension of S-QoL. These dimensions of Subjective QoL are presented in Table 6.

Table 6: Dimensions of Subjective QOL in Kumasi

Dimension	**Factor**
Housing	Years of stay in present house (F4) Dwelling type (F7) Satisfaction with housing (F1)
Health	Presence of health facility in community (F4) Utilization of health facility in community(F4) Satisfaction with health status(F1)
Economic	Household size(F2) Number of children between 0 and 18 in the household(F2) Number of dependents in household(F2) Number of children in your household are in public basic schools in the community (F2) Respondent income level per month(F3) Total household income per month(F3) Total household expenditure per month(F4) Satisfaction with educational status of household
Neighborhood	Satisfaction with environment (F1) Satisfaction with transportation system (F1) Year of residence in community(F4)

Source: Generated from estimation from field data, 2017

To check if the attributes which loaded onto the Subjective QoL were consistent and correct, a bivariate correlation was applied to find out whether there was any association between S-QoL and the domains of QoL. The result of the correlation is presented in Table 7. The results showed that the association between housing satisfaction and S-QoL was not statistically significant.

TABLE 7: ASSOCIATION BETWEEN SUBJECTIVE QOL AND SATISFACTION IN DOMAINS OF QOL IN KUMASI

Variables	Subjective QoL	Satisfaction with employment	Satisfaction with household income	Satisfaction with Overall Household Economic well-being	Satisfaction with housing	Satisfaction with health status	Satisfaction with Educational Status of household	Satisfaction with Neighborhood
Subjective QoL	1							
Satisfaction with employment	0.187*	1						
Satisfaction with household income	0.164*	0.762*	1					
Satisfaction with Overall Household Economic well-being	0.170*	0.711*	0.772*	1				
Satisfaction with housing	0.058	0.405*	0.374*	0.429*	1			
Satisfaction with health Status	0.182*	0.393*	0.378*	0.388*	0.382*	1		
Satisfaction with Educational Status of household	0.203*	0.438*	0.395*	0.449*	0.400*	0.438*	1	
Satisfaction with Neighborhood	0.106*	0.121*	0.089*	0.015	0.124*	0.188*	0.053	1

* Correlation significant at the 0.05 level

From Table 7, the association between S-QoL and the other domain satisfaction variables was significant but not strong except for the correlation between S-QoL and satisfaction with housing. However, the association between the domain satisfaction variables was somewhat stronger than their association with S-QoL. There is a semi-strong relationship between satisfaction with households' economic well-being and satisfaction with housing and satisfaction with household health status.

All the variables involved are positively related to Subjective QoL in Kumasi. Notwithstanding the positive correlation, the relationship between Satisfaction with Housing and Subjective QoL in Kumasi was not statistically significant. Satisfaction with the Educational Status of household showed the largest coefficient of variation, that is about 20% of the variation. Satisfaction with Neighborhood though statistically significant posted the smallest coefficient. This can be related to the fact that majority of the households were dissatisfied with their neighborhoods. The presence of this multi-collinearity (see Table 7) shows that the various satisfaction variables are dependent on each other and together explain the subjective QoL of a household. It also revealed that Subjective QoL is multidimensional. However, Neighborhood satisfaction also shows a poor relationship with the other variables measured.

4.1.4. Relative importance of the domain of Quality of Life

To get a good report on the overall level of QoL in Kumasi, respondents were asked to rank the level of importance of each of the selected domains of QoL for the study in Kumasi. The satisfaction with each of the domains was measured on a 5-point scale where a score of 5 showed that the domain is very important, 4 = important, 3 = fairly important, 2 = not important and 1 = absolutely unimportant. The scores reported by all the respondents in each domain was summed up and divided by the number of respondents to obtain the average importance level of a selected domain of QoL in Kumasi. Table 8 shows the total scores for each domain and the averages.

Table 8: Ranking of the Relative Importance of Domains of QOL in Kumasi

Domain	Total Score	Relative weight
Transportation	1137	0.45
Environment	984	0.39
Housing	887	0.35
Neighborhood	810	0.32
Education	778	0.31
Health	709	0.28
Economic Status	669	0.27

Source: Estimated from field survey, 2017

The results in Table 8 show that respondents in Kumasi saw the transportation domain as the most important domain with a score of 1,137 out of a possible total score of 2,500. The high score for Transportation can be attributed to the fact that most respondents had to travel or trek from their place of residence to their work centers and the associated high levels of vehicular traffic in the CBD. Transportation has become a cause for concern in Kumasi and hence the level of importance the respondents attached to their transportation domain. According to Poku-Boansi (2008), a typical journey to work increased from 35 minutes in 2001 to 45 minutes in 2008.

Again, given the fact that average households sizes have increased, this has a direct impact on the average daily trips embarked upon by a typical household. The typical Ghanaian household would also want to own their own means (car, bicycle, or motorcycle) of transport. The combined effect of the foregoing conditions can be linked to the high scores in the transportation domain. This finding is in agreement with Fletcher *et al.* (2010) who found that the lack of reliable transportation was a barrier to child care, while Brabo *et al*. (2003) found that the purchase of a reliable vehicle allowed the majority of respondents to find better child care. Also, Othman *et al*. (2010) found that a direct relationship exists between the number of owned vehicles and the level of job and income satisfaction. They further argue that social satisfaction and economic fulfillment, as well as access to public amenities, were positively enhanced by vehicle ownership.

Following the transportation domain is the environment domain with a total score of 984. The issue of the environment, which in this context refers specifically to sanitation, has also gained prominence in Kumasi. The Ghana Statistical Service (2014), from the *2010 Population and Housing Census*,

established that more than half (58.8%) of the households dump their solid waste into containers at approved sites in Kumasi. However, these containers are often left unattended to and, therefore, generate major health hazards which directly affect the residents of Kumasi. Again, the environment domain had such a high score because more than one-third of the population, 32.2%, throws their liquid waste directly into open drains. It is noted that the difference between 1,500 and 1,300 tons/day is 200 tons/day which will be the remainder at communal sites, gutter and open spaces as uncollected in the city (KMA-WMD, 2010). This method of disposal of solid waste has had its own health implications on the respondents and hence the high score for its importance.

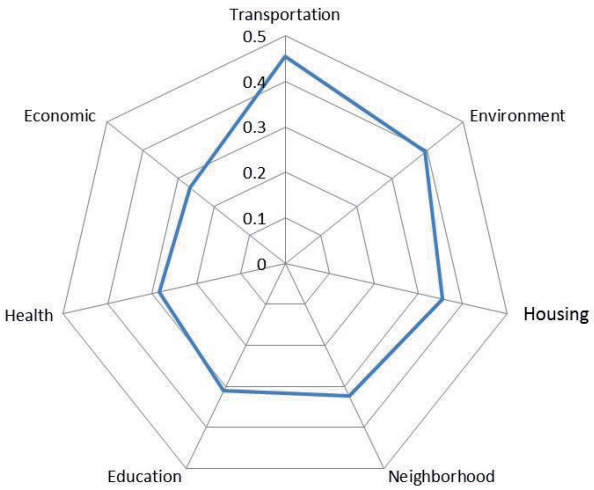
Another finding relates to that of household economic status. In measuring the economic status of a household, the household heads were asked to rank the level of satisfaction on the 11-point scale taking into account the Employment status of members in the household, household income, ability to pay rent, and the ability to afford the basic necessities of life. A question was posed in the form: "*Looking at the household status in the above-mentioned indicators, how would you rank the Economic Status of your household?*" The analysis indicates that household economic status had an aggregate score of 669 far less than all the aggregate scores in the other domains. Respondents reported that the domain they least cared about is the domain of a household's overall economic status. The reason for this finding may stem from the fact that people had become despondent about the general outlook of the economy in Ghana. Indeed, virtually every Ghanaian worker, trader and businessperson was at the time despondent because of declining economic circumstances. People tend to place more emphasis or focus on essential aspects of life in which they have little advantage or to which the least attention is given. By so doing, they crave to draw people's attention to it with the hope that some solutions can be found. This would not in any sense mean those issues they draw attention to are actually more important than those which they do not or feel reluctant to call to others' notice. These issues may only be more important to the extent that they remain the least attended to concerns about quality living. This finding is, nonetheless, possible since Hsieh (2003), using a sample of 430 respondents in Chicago based on the mean of discrete domain importance rating, found that the most important domain was family life, followed in order by health, friendships, religion, spare time, financial situation, neighborhood and work (least important).

Health status also did not rank high in the scheme of things as far as the relative importance of the various domains of QoL was concerned. The consequence of

this result is that the respondents placed great importance on the domains that lacked attention or had deteriorated in their communities. This finding provides great insight into how respondents reported the lack of certain necessities in their lives. The position of the health domain, in this case, can be attributed to the presence of the National Health Insurance scheme, which means that respondents had little to worry about. Once a person was sick, he or she just needed to get to a health facility with the insurance card and that person would have access to health care.

A visual impression of the relative importance of the various domains of QoL is presented in Figure 2. In the figure, the thick line represents the relative importance line and the farther a point is from the center, the more important that domain. The benchmark index was set at *"fairly important" = 3 on the rating scale*, that is, weighted index of 0.6 meant that none of the domains could achieve the benchmark index. This indicates the heterogeneity of the respondents in the selection of domains important to them.

FIGURE 2: RELATIVE IMPORTANCE OF DOMAINS OF SUBJECTIVE QOL IN KUMASI



Source: Authors' construct, 2017

The importance of QoL has long been established because it is what makes a comfortable and fulfilling life. In the same vein, the importance of the domains of QoL is not any distinct from the fact that they provide unique platforms, sometimes in overlapping and interdependent fashion, which enable attributes of QoL to bring about the desired QoL for households. It is upon these platforms that the following proposition appears quite settled in the intellectual discourse

of QoL. Keith (2001) observes that the combination of the core domains of QoL makes up the whole concept of QoL. Equally, the relative importance of QoL domains triggers the interrelationships that exist between the domains. Indeed, when QoL of different parts of human life is determined, it has the tendency to inure to the benefit of effective planning and policy implementation. The study established the relative importance through a rating scale which measured how critical the core domains teased out from literature were to the respondents. These domains or dimensions include Economic Status (Income and Household income), Housing and Housing Infrastructure, Health, Neighborhood, Education, Transportation, and Environment. On a five-point Likert Scale of level of importance; from 5 (very important), 4 (important), 3 (fairly important), 2 (unimportant) to 1 (absolutely or very unimportant), the respondents had ranked the level of importance of each of the domains of QoL (see, for example "Economic Decline Take Toll-Despondency Greets Ghanaians on all Fronts. – http://m.peacefmonline.com/pages/business/news/201612/300126.php.).

It is exceptionally interesting the way the results turned out – that is, transportation and environment appeared more important to respondents than, for example, health and economic status. Understandably though, this rating should not be that surprising. People tend to place more importance or focus on essential aspects of life where they have the least advantage or to which the least attention is paid with the aim to draw people's attention to it in the hope that some solutions can be found. This would not in any sense mean those issues they draw attention to are actually more important than that which they do not or feel reluctant to do so. These issues may only be more important to the extent that they remain the least attended to concerns about quality living. Thus, it could be viewed from this angle that respondents' rating of transportation as the most important domain relative to the other domains is primarily because traffic congestion in Kumasi is increasingly becoming a daily problem which consistently begs for frontal solutions. This would not suggest that transportation is considered more important than health, except to underscore that transportation is instrumental in determining ready access to or enjoyment of many good things in life, including health.

On the other hand, the ranking of level importance of QoL that places 'transportation' first; 'Environment' second; 'Housing' third; 'Neighborhood' fourth; 'Education' fifth; 'Health status' sixth; and 'Economic status' seventh does suggest that respondents would have been guided by the imperative contributions each of the domains would have been making or not making but

required to be made in enhancing or fulfilling their desired QoL. This finding is possible since Hsieh (2003), using 430 respondents in Chicago based on the mean of discrete domain importance rating, identified that the most significant domain was family life, followed, in order, by health, friendships, religion, spare time, financial situation, neighborhood and work (least important). He ascribed the result to age difference. Hsieh (2003) explains that various ages have different priorities and this tends to influence how the individuals reported the relative importance of domains of QoL. Schenck and Blaauw (2015) have also argued that money and livelihoods were considered as a means to an end and not an end in itself. Wellbeing was rather seen as being able to foster and enlarge human capabilities, life choices and opportunities.

5. Conclusion

In this paper, subjective quality of life was analyzed using various dimensions of the quality of life of people living in Kumasi, Ghana. The results of the study showed that the subjective QoL of residents of Kumasi was above average (an average of 6.17 on a scale of 0-10). The paper has shown that QoL in Kumasi is also multidimensional. The main elements underlying Subjective QoL in Kumasi are Health, Economic, Neighborhood and Housing domains. Respondents derived the highest level of satisfaction from the health domain. In terms of the relative importance of the domains of QoL, Transportation was chosen as the most significant domain.

It is also significant to underscore, from the results of the study, that quite clearly, the enhancement of the QoL of individuals is dependent on key components of subjective QoL: thus; (i) the capabilities people are consciously endowed with to enable them realize their 'human needs', and (ii) the kind of perception individuals have of the extent to which such 'human needs' are achieved. This implies that the two qualifying dimensions of QoL that have been established by the study's results which have also been supported by previous literature are essential parameters upon which QoL can be attained. These qualifying imperatives, therefore, bring up an 'integrated framework' which can be used in measuring the QoL of people and societies.

Conscious and equitable investment efforts have to be made towards unlocking the potentials of people, society and environment, as well as making it possible for life-enhancing opportunities to be created in ways that would enable individuals in society to achieve their desired ends. It is also recommended that there is

the need to explicitly adjust 'social norms and preferences' through disabusing the minds of people on 'misinformation that results in inefficient allocation of resources' (Costanza & Daly, 1992). An instance given is to the effect that it is common to see individuals prioritizing increases in income to achieve a better wellbeing to the detriment of other indicators. It is also recommended that city managers divest resources and 'reallocate resources where marginal utility is highest such as urban investment in natural amenities' as proposed by Costanza, *et al*. (2008) and Costanza and Daly (1992).

Biographical Notes

Michael Ayertey Nanor is a Teacher and a Part-Time Lecturer in Economics at the Presbyterian University College, Ghana. He holds a degree in B.Ed. Social Sciences from the University of Cape Coast, Ghana, an MPhil. Economics from the Kwame Nkrumah University of Science and Technology (KNUST),Kumasi, Ghana and a Ph.D. in Development Studies from the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. His research interests are focused on quality of life studies, development economics, urban poverty, and urban economics.

Michael Poku-Boansi is a Senior Lecturer in the Department of Planning of Kwame Nkrumah University of Science and Technology KNUST), Kumasi, Ghana. He has a BSc. and Ph.D. in Planning from KNUST. He research interests include transportation planning and economics, urban development, human security, urbanisation, land use planning, urban infrastructure planning housing, climate change and regional planning. Poku-Boansi has published in international journals including *Journal of Social Development in Africa*, *West Africa Review*, *Journal of Sustainable Development in Africa*, *Geoforum* and *GeoJournal*.

Kwasi Kwafo Adarkwa is a Professor of Planning at the Kwame Nkrumah University of Science and Technology KNUST), Kumasi, Ghana. He holds a B.Sc. from KNUST, M.Sc. from University of British Columbia, Vancouver, Canada and a Ph.D. degree from Michigan State University, East Lansing, Michigan, U.S.A. He is a Fellow of the Ghana Academy of Arts and Sciences, Ghana Institute of Logistics and Transport, Ghana Institute of Planners and Member of Charted Institute of Transport. His research interests include rural transport planning, urban and regional development policy as well as local

economic development. His publications include a book he edited, *Future of the Tree: Towards growth and development of Kumasi* (2011). He has also published in several international journals including *Journal of Property Management*, *Regional Development Dialogue*, *Journal of Advanced Transportation*, *World Health*, *African Urban Studies*, *Rural Africana*, *Canadian Journal of African Studies* and *Journal of Social Development in Africa*.

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