AN EXAMINATION OF THE RELATIONSHIP BETWEEN SPATIAL MORPHOLOGY AND RESIDENTIAL SATISFACTION IN RESIDENTIAL SETTINGS IN GARKI, ABUJA

By

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A Thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the award of the degree of Master of Philosophy in Housing Studies

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MAY 2011

CERTIFICATION PAGE

I, Elizabeth Tidak Dassah hereby declare that this submission is my own work towards the Master of Philosophy, and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University except where due acknowledgement has been made in the text.

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ACKNOWLEDGEMENTS

I acknowledge and appreciate the University of Jos for granting me this time to be on study leave. I would like to thank my supervisors, Professor George Insitful and Dr. Rudith King, for the support and guidance they gave. I also appreciate the thoughtful suggestions and encouragement offered by Professor Abiodun Olotuah, Dr. Kootin-Sanwo and Dr. Anthony Ogbonna. I acknowledge the assistance given to me by professional colleagues in FCDA, Abuja. Thank you to Brown, Mary Gandu, Rhoda Galadima, Norma Laing, Efe and Cecilia. My sincere appreciation also goes to members of the Dassah and Gamba family; particularly my parents for your constant support and prayers. I appreciate the courage and resilience of my children - Jahleel, Chalya and Salome, in the past three years. To my husband, Edward, I will forever be grateful for your financial, moral and loving support. Finally, I give thanks to the Almighty God; in whom alone, the wisdom, knowledge and understanding that we seek is found.

DEDICATION

Dedicated to the memory of the courage and faith of my sister

Lando Mercy Gamba (1952-2008).

ABSTRACT

Coming from the perspective that the configuration and use of space in built form mediates the relationship between architecture and social behaviour (Hillier, 2007), this study examined the relationship between spatial morphology and residential satisfaction among the housing residents of two different building types in Garki, Abuja. Spatial form has been acknowledged in the past as a primary independent variable with respect to residential satisfaction, however relatively little work has been done in explaining the role social factors play. Based on a multi-variate model which combined physical and social variables as well as attitudinal ones, a scale was developed to make residential satisfaction operative. The study tested the hypothesis that residential satisfaction would be greater among housing residents occupying semi-detached terrace housing than would be the case among those occupying blocks of flats. Findings from the study revealed that although residential satisfaction is the outcome of several variables, spatial variables were in this case the most significant in explaining the variance in residential satisfaction.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

The configuration of space in the built environment carries psycho-social implications to the people that occupy such spaces. Cognisance of this is often overlooked in the planning of residential environments; although the idea is one supported in literature (Montello, 2007). The present study examines the place of spatial and social factors in contributing to residential satisfaction. Hillier and Hanson (1984) maintain that not understanding the relation between spatial morphology and social life place constraints on the possibility of improving future designs. Spatial morphology, in broad terms refers to spatial form and structure (Hanson, 2001). Previous attempts have been made in the past, by other researchers, at conceptualising residential satisfaction. In general terms it refers to the relatively stable attitude an individual has towards their housing environment.

According to Turkolu (1997), most of the previous studies related to residential satisfaction emerged from within the context of western experiences with limited empirical data as to what pertains in developing countries. Literature indicated that in Nigeria, studies which have particularly focused on residential satisfaction within the past thirty years, have remained comparatively few (Muoghalu, 1984; Gyuse, 1986, cited in Uji, 1999; Ukoha and Beamish, 1997; Oladapo, 2006; Jiboye, 2009). Likewise, previous studies that sought to examine spatial morphology and residential satisfaction within a single framework were not only discovered to be relatively few, but also had perspectives arising from contextual frameworks

different from those applicable to that of Nigeria (Reis, 2003; Sungur and Cagdas, 2003; Hanson and Zako, 2007). The complexity of this is better appreciated when one recognises that residential satisfaction and space use in residential settings are culturally determined (Kent, 1993; Loni, 2005). Parkes, Kearns and Atkinson (2002), pointed out that there are constraints associated with applying the results of studies carried out in one cultural context to that of another. Consequently, this has created a gap in the field of knowledge.

A reason that may account for this gap was probably the emphasis placed by past studies in housing research in Nigeria on issues relating to housing provision in quantitative terms. This obviously had direct links with the direction of previous housing policies in the country. Issues relating to the quality of residential settings, and residents' opinions with respect to levels of satisfaction among them, were observed to have been relegated to the background. Closely linked to the preceding reason is the fact that the Nigerian society, until recently has not been one that placed much importance on evaluative housing research. In previous housing programmes that had been initiated by the government, the architects' primary interest was to serve his client (which in this case was public agency), and not particularly the spatial requirements of the housing residents. The outcome of such actions are evident in the dissatisfaction expressed among the residents of government-initiated housing programmes (Salau, 1992), and the tendencies among such residents to modify or altar spatial form at their disposal.

In this light, the present study intends to examine the relationship between spatial morphology and residential satisfaction in selected neighbourhoods in Garki I, Abuja. This

will serve the purpose of explaining the role played by morphological features of space and social factors in contributing to residential satisfaction.

1.2 Background to the Study

The study emerges from the contextual framework of housing research in Nigeria. The influence of housing on multiple aspects of people's lives such as, health, efficiency at work, social behaviour, satisfaction with life and overall welfare have been pointed out elsewhere (Onibokun,1982). In considering the problems associated with housing in Nigeria, Awotona (1982b), indicated that what is expressed as housing need relates not only to quantitative aspects, but also those more qualitative in nature. What however stands out clear from literature is that previous research efforts relating to housing problems in Nigeria largely focused mainly on the quantitative aspects (Awotona, 1982a; Salau, 1992; Olotuah, 2000, Okewole and Aribigbola, 2006; Oruwari, 2006).

Certain factors encouraged the emphasis on the quantitative dimensions of housing research. Among these has been the fact that in most post-independence Nigerian cities housing provision has always lagged behind population growth. This scenario created a situation in which most urban dwellers have had great difficulty in accessing dwellings of reasonable quality. Against such a backdrop, it is not strange that previous housing policies (FMWH, 1991), which had greatly influenced research direction in the country were more concerned with the issues of low-income housing provision than with the residents' evaluations of housing circumstances.

Nigeria still has a current housing deficit of 16 million units; however recent shifts in policy currently encourage greater private sector involvement in housing delivery (NNHP, 2002). This shift has resulted in the emergence of more planned residential developments, in the country and particularly in Abuja. Consequently, it becomes necessary for greater attention to be given to qualitative aspects of housing environments.

Figure 1.1 Layouts in emerging residential developments

1.3 Statement of the Problem

Architects and planners, through decisions taken at the design stage determine the basic spatial form within and around dwellings; however it is the individuals occupying such spaces that give the space meaning, this being indicated by how such spaces are used. If residents are unable to establish a link with designed space and their everyday patterns of activity, what reveals itself is a mismatch between their expectations and a given housing circumstance. In such cases, it is easier to identify *dissatisfaction* by indicators of residents

adapting spaces to suit lifestyles and activity patterns. The section that follows offers a brief discussion of developmental, cultural, social and economic factors that influenced the emergence of the research problem.

From the context of a Nigerian society, the consequences resulting from rapid socio-political and socio-cultural developments in the fifty years post-independence time frame was a major influence affecting social life, cultural values and lifestyles. The interaction of these factors, coupled with opportunities offered by education increased the level of cultural expectancy for better quality dwellings and residential environments. These developments also resulted in a society that shifted to one being more urban than rural; and as such reflected changes in household structure and spatial patterns which were in sharp contrast to traditional settlements. Such changes created situations where those in close proximity as neighbours were often not relatives, or from the same ethnic extraction and oftentimes were complete strangers. The implication of this comes to bear in the social environment thus created.

The use of space within and around housing units is also influenced in several ways by cultural forces. As ways of behaving in certain settings are picked up as cultural norms, design features in residential settings that are not sensitive to 'culturally-based' needs will most probably be adapted by residents to suit the needed activity space. This can either be considered a 'design failure', or a "reflection of the fact that cultural patterns tend to be more complex than the possibilities offered by space, and it may not be possible to give a spatial form to all the social rules that operate in a situation," (Hillier, 2007, p.304). Yet another way the influence of culture relates to the problem is in the issue of the boundaries defining

personal space. When considered at the building scale, the spatial layout of the rooms reflect the degree to which household members share space or have highly differentiated spaces in the form of separate rooms. At the neighbourhood scale, cultural factors intersect with social factors with regard to the levels of privacy and social interaction residents need and the amount of public space they are able to control. Interpersonal and economic factors are other equally important factors. The choices households make reflect interpersonal and economic aspects of the situation that are important to them; these often being closely linked to the stage of the family life-cycle, lifestyle and available economic resources. While some residents consider issues of housing compatibility to lifestyles to be very important, others are willing to compromise a current housing situation with the expectation of moving to something more preferable at a later date; to yet another group, economic factors and the need to use space as a means of income generation outweigh interpersonal considerations.

The present study proposes to examine the interacting influences of spatial form and social behaviour, and how these affect satisfaction among housing residents. This is presently relevant as the direction of current thinking acknowledges the need for investigating how people use or 'mis-use' designed spaces, as a means towards understanding the social effects of design (Zeisel, 1991; Hanson, 2001; Reis, 2003).

1.4 Research Question and Hypothesis

The sub-issues surrounding the research problem are summed up in the main question the research addresses:

> *Do the conditions created by the morphological features of space in residential settings facilitate or constrain behaviour, in terms of social interaction and ties among housing residents and to what degree does this affect residential satisfaction?*

The research further hypothesises that, residential satisfaction will be greater among housing residents occupying semi-detached terrace housing than among those occupying blocks of flats, on account of the fact that spatial layout in the former allows more opportunities for social interactions than what is found in the latter building type. Sub-issues contained in the research question and which the research seeks to address are found in the following questions:

- Does spatial form constrain or afford opportunities for social encounters and interactions?
- Do irregularities in social behaviour, with regard to use of space for activities different from original design intent, result due to constraining features in the design?
- How do residents' perceptions of various settings influence their expectations, behaviour, and the extent to which they are satisfied with an environment?
- Do the perceptions held by residents regarding social factors in residential settings affect residential satisfaction?

1.5 Aim and Objectives of the Study

The aim of this study is to investigate the relationship between space and the satisfaction expressed by residents as indicated on a residential satisfaction scale, for the purpose of explaining the role of spatial and social factors in contributing to residential satisfaction. To assist in achieving this aim, the following objectives have been identified:

- To identify the determinants of residential satisfaction among housing residents, and develop a reliable and valid scale for the assessment of residential satisfaction.
- To identify differences between actual use of space by housing residents and the original design intentions for its use.
- To investigate how morphological spatial features encourage or hinder social patterns of interaction and how this affects residents' perceptions of the social climate being favourable (or contrariwise).
- To make recommendations that will assist in directing future design decisions with respect to residential settings.

1.6 Theoretical Framework of the Study

The purpose of the research necessitates that theoretical underpinnings be made clear. The research is based upon a theoretical framework encompassing the following:

i. Ecological approach to space underpinned on the behaviour-setting theory.

The behaviour-setting theory proposed by Barker (1968, cited in Rapoport, 1977) suggests that a setting operates as a system, having unwritten 'rules' that suggest behaviour or activities considered acceptable.

ii. A social approach to space based on space syntax theory.

Space syntax, as a theory and a method, suggests that space has a definite morphological structure, with relational patterns existing within such a structure. An assumption carried by this theory is that, space in built form is organised for social purposes, and as such, social and cultural patterns are actually encoded within spatial structure. In addition, the theory further proposes that spatial structure in its configuration, can either structure existing social relations (characterised by how it segregates individuals), or generate potential social relations (by how it integrates individuals) through co-presence (Hillier and Hanson, 1984; Hillier, 2007).

iii. The concept of residential satisfaction as a multi-variate construct

Residential satisfaction has been recognised as a complex cognitive construct and to be the outcome of several variables. Based on this knowledge, residential satisfaction within the present study is regarded as a multi-variate construct.

1.7 Significance of the Study

The design and consequent use of spaces in built form is the intervening variable linking architecture and human behaviour (Hillier, 2007). An appreciation of this and a consideration of Hillier and Hanson's (1984) argument that not understanding the relation between spatial morphology and social life places constraints on the possibility of better design, highlights the significance of the present study. Residential satisfaction studies are likewise important within the context of housing research due to their significant role in providing *evaluative feedback* (Canter and Rees, 1982). Such feedback from residents increases the likelihood of

improved design features in buildings and the planning of residential developments as a whole, and has been identified by Canter and Rees, (1982) "as being an integral part of the design process" (p.185).

1.8 Study Justification

Residential satisfaction studies seek the feedback of housing residents; such evaluations being done relative to what individuals consider to be housing needs and aspirations (Galster and Hesser, 1981). The definition of what constitute 'needs' to the residents are considered to be an outcome of the social environment and are best expressed relative to residents' behaviour, attitude or opinions (Awotona, 1982a). Currently there are gaps in the architectural knowledge base as to what constitute specific housing needs of residents in an urban Nigerian setting. It has been argued that, "*morphology has a special place in advancing architectural knowledge because it is able to make the link between design and its social consequences,*" (Hanson, 2001, 06.1). These perspectives consequently, form the basis on which the study finds its justification.

1.9 Limitations of the Study

Several factors have placed constraints on the present study. One of such factors is the absence of a database relating to the housing stock in Nigeria, and the residents' opinions to housing conditions and the liveability of their residential environment. Such data, often gotten from a National Housing Survey is currently lacking, though sections of the recent National Population and Housing Census (NPC, 2006) tried to reflect certain aspects related to the quality of individual dwellings.

Problems associated with *response sets* posed yet another limitation. Due to the fact that the Nigerian society is not one culturally predisposed to individuals conducting surveys, and particularly not on issues related to the attitude held towards residential settings, some respondents were initially hesitant to participate on two grounds. Some questioned why personal details should be disclosed to strangers while others wanted to know if the government was in any way involved in the survey. Such issues according to de Vaus (1996) may either produce acquiescent response sets, where individuals agree and give answers that do not really reflect their opinions or social desirability response sets, where individuals give answers that they feel the researcher wants to hear. In order to minimise the effects of this limitation, the letter of introduction stressed the fact that the survey was purely for academic purposes alone, and that there were no questions considered either correct or incorrect. Constraints of cost and time also constituted limiting factors in the extent to which the physical survey has been undertaken. In addition, since the scope of the study was limited to include only households living in a specific residential area in Abuja and not the whole town or the satellite towns around it, the applicability of the findings will be limited in interpretation to these neighbourhood areas alone.

1.10 Definition of Key Terms

The key concepts used in this study are spatial morphology, residential satisfaction and residential settings. Subsequently, these are defined to convey the ideas they carry within the context of the study.

i. Spatial morphology

The term spatial morphology is defined in this study to mean, the interconnected patterns of space that arise, as space is organized, and differentiated by physical and social boundaries (Peponis, 2001). Space here is considered to include internal spaces of individual housing units, that are linked to a related system of public and private open spaces within a defined residential setting.

ii. Residential satisfaction

Residential satisfaction describes an attitude individuals have towards a residential environment, which has cognitive, affective, and behavioural aspects (Weidemann and Anderson, 1985).

iii. Residential settings

Canter and Rees (1982), identify dwelling units, neighbours and the neighbourhood as the three essential components of any residential setting; recognizing the physical and the social aspects as important features defining any residential setting. This is what the present study means in the concept referred to as 'residential settings'.

Figure 1.2

Typical residential setting in a medium/high density development

1.11 Structure of the Study

The study has been organised into five chapters, with relevant sub-sections within each chapter. The background to the study as the context from within which the research problem emerges is described in Chapter One; included with this too are the study aim, questions, significance and the theoretical framework underpinning the entire study. Chapter Two reviews relevant literature. Chapter Three describes the strategy and methodology used in the research. A description of the development of the research instrument and the processes of data collection and analysis is in addition, provided for in this chapter. Chapter Four presents the results and discusses the research findings. Chapter Five concludes the study by presenting a summary of the study, conclusions from the findings and the implications of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter, consisting of five sub-sections, presents a review of literature related to space, social behaviour in residential settings and residential satisfaction. The first section considers the subject within the context of the built environment. This is done by examining philosophical perspectives on the nature of space, spatial morphology and methodological approaches adopted in previous studies. The next section examines the relationship between space and social behaviour. Subsequent sections present the theoretical framework underpinning residential satisfaction studies with a concluding section providing a summary of the key findings from the reviewed literature.

2.2 Space in the Built Environment

2.2.1 Philosophical Perspectives on the Nature of Space

Space has physical, social, and psychological dimensions; and because of this multi-dimensional nature has been the focus of research interest in several disciplines (Madinapour, 1996). This has placed constraints on attaching a single meaning to the concept. In addition to difficulties associated with conceptualising the subject, there have also been philosophical arguments to the actual nature of space. One position, underpinned on realist philosophy, considers the existence and relevance of space to be dependent on other objects or processes (either social or economic). In which case, space is defined in terms of its relations to such

entities and not as an object of independent interest. The other position views space as capable of existing as n independent entity (Hillier and Hanson, 1984; Hillier, 2007).

Proponents of the former viewpoint provided an interpretation of the nature of space relative to the processes of societal structures, human agents or by limiting its discussion only as it is linked with building form (Hall, 1982; Giddens, 1984 cited in Hillier, 2007). Hillier (2007) asserted that because it is difficult to address space as an entity of interest on its own, previous concepts that provided useful insights on the subject tied it to human agency or considered it relative to the spatiality of biological or cultural processes. One of such concepts is 'human territory' (Newman, 1972). The alternative position maintain that although in a philosophical sense the specific nature of physical space seems to be the emptiness surrounding objects, space does however exist as an objective, independent entity and for this reason, ought to be recognised as such (Hillier, 2005; 2007). Contemporary thinking has however argued that there are limitations linked to concentrating only on physical space advocating rather an approach which integrates physical spaces with the people found within them (Tanghe, Vlaeminck, and Berghoef, 1984; Madinapour, 1996).

2.2.2 Overview of approaches in the methodological study of space

For the benefit of the insight which they would provide, approaches adopted in previous works that studied space in residential environments were reviewed. Against claims that beyond the satisfaction of practical requirements, space in the home was also important to residents as a bearer of meaning, Norberg- Schulz (1977) approached the study of the subject from phenomenological perspectives. Whereas Hanson (2001), Kent (1993) and Lawrence

(1993) chose ethnographic approaches to study how individuals organise and use domestic space, Nylander (2002) used case studies and grounded theory methods to examine relationships between spatial variables and residents' perceptions. Other researchers in the past have relied on multiple methods of collecting data within field surveys to objectively measure factors affecting the use of space (Newman, 1972; Coleman, 1985; Hillier, 2007; Hanson and Zako, 2007). It is worth pointing out that the choice of using a particular research methodology was observed to be driven by considerations entailed in the scope defined by various research questions.

2.3 Spatial Morphology

2.3.1 Conceptual definition of spatial morphology

The origin of the term morphology is traced to Goethe, who used it to represent the science that investigates form and spatial structure in living organisms (Steadman, 1983). Although an explicit definition of the term *spatial morphology* is not given in literature, within the context of the built environment, Hanson (2001), refers to morphology as the study of pattern and form. Steadman (1983) refers to architectural morphology as the study of the principles that govern formal possibility. Spatial morphology is defined in this study to mean the interconnected patterns of space that arise at the urban and building scale as space is organized, and differentiated by physical and social boundaries. Space is defined to include enclosed and partially enclosed areas within buildings, as well as open areas and streets around the buildings. Boundaries in this regard are considered to be barriers (physical or contextual) that define the limits of control people or groups of people exercise over a given space.

2.3.2 Characteristic features of spatial morphology

Spatial patterns in the built environment and boundaries are two characteristic morphological features. Included among the spatial patterns identified from literature are patterns of permeability, patterns of human activity and interface patterns. Patterns of permeability are related to the relative connectivity of spaces. This in other words, refers to the relationships of adjacency existing between spaces and the degree of accessibility one space permits to the other spaces. Patterns of human activity relate to the function of space, while patterns of interface relate to the social ordering that takes place in space when some individuals exert greater control over specific spatial domains as inhabitants of the space (Steadman, 1983; Hillier and Hanson, 1984; Hillier, 2007).

Boundaries are likewise important morphological features of space which are useful in establishing fundamental spatial categories such as, public or private space, interior or exterior space. Boundaries also indicate discontinuities in space and define the limits of control individuals or groups have over a space (Hillier and Hanson, 1984). Thomas (2002) suggests the importance of ensuring a clear definition of the public/private interface established by boundaries; this he says will prevent public activities from spilling into private space. The interface should provide a sense of enclosure, scale, continuity and protection as it has the potential of being an effective device for defining privacy.

2.4 Space and Social Behaviour in Residential Settings

Concentrating discussions on the physical dimensions of space alone places limits on its relevance. For it to be useful, the subject must be addressed relative to its bearing on people (Madinapour, 1996). Following suggestions that insight can be acquired to the meaning space holds for a people by analysing how they categorise, differentiate, and distribute human activities within the space currently at their disposal (Zeisel, 1991; Kent, 1993; Lawrence, 1993), this section reviews literature related to the relationship between space and social behaviour.

The concept of 'settings' was introduced by Roger Barker in the behaviour-setting theory (Rapoport, 1977). The theory proposes that there are acceptable behaviours and on-going cues suggested by physical indicators or informal social rules, associated with various physical settings. An assumption made by this theory is that as a result of shared meaning of the cues, social groups within similar cultures are able to relate settings with appropriate behaviours and activities. Attached to this theory is the idea that social and spatial environments are nested within physical settings (Zeisel, 1991; Schmidt, 2007).

2.4.1 The meaning of space at the neighbourhood level

Space has been observed to carry both social and ecological meanings. The meaning it holds to the people who occupy it depends on the distribution of people, their activities and the presence of other inanimate objects within its structure (Schmidt, 2007). According to Hillier and Hanson (1984), society is encoded in the way individuals and groups organise space in

built form. They assert that "social considerations are present in the very physical form of the building. Social meaning is not a gloss added to buildings: it is an intrinsic aspect of their physical form" (p.62). An ecological meaning of space with regards to the objects distributed within it is linked to the concept of the affordance offered by such objects. The theory of affordances suggests that an object will convey meaning on account of the fact that it provides an opportunity for action (Gibson, 1979). Illustrated in Figure 2.1 is an informal open space in one of the residential areas. The presence of the tree in the background serves as a physical affordance that encourages social activities (sitting, conversing etc.), likewise the space created under a staircase (in the forefront), suits the child's immediate purpose relative to his spatial needs.

Figure 2.1 **Physical elements in residential settings afford opportunities for interactions (**Source: Author's field data, 2010)

Distinction of definitions of public and private spaces has also been found to differ between individuals of different social groups. Streets and open spaces around and between dwelling units are generally considered to constitute communal public space. Apart from streets being viewed as only spaces for movement, they have been identified to play roles in residential settings as social binders; also serving as settings for recreational, economic and social activities. A case in point is findings from literature that indicated the preference of children in France and Britain, to play in streets and open spaces around the residential environment rather than use formal playgrounds (Rapoport, 1977; Carr et al, 1992; Thomas, 2002).

Varying levels of importance are attached to different aspects of residential settings by people from different socio-cultural backgrounds. In certain contexts the shared exterior spaces connecting dwellings to streets played more prominent roles than interior spaces within the house. Uji (1999) demonstrated a recurring theme in the spatial organisation of traditional homesteads in the northern and middle-belt region of Nigeria where spaces created by inward-facing courtyards formed the primary activity spaces. Due to the differences existing between traditional and contemporary residential environments there are limits to the degree to which they can be realistically compared.

In contemporary society, the social networks a person has would depend on one's social class, lifestyle and family values. Findings from Rapoport (1977) suggested that neighbouring was considered less important among upper-class families, where the private space of the house featured more than that of the neighbourhood. In a case where family-centred lifestyles are preferred above those that revolve around the community, encouraging

social interaction may be considered to be inhibiting by some. Due to the fact that on one hand people have social needs of wanting to belong to a community and, on the other hand they are also driven by individual needs of maintaining a sense of privacy, it is however essential to have a balance of private as well as public spaces (Carr et al, 1992).

2.4.2 Meaning and categories of domestic space at the dwelling level.

Domestic space can be organised along functional lines in terms of how the space is used; whether it is *function-generic* or *function-specific*. While function-generic areas are those that are used for multiple purposes, areas which are function-specific spaces are used for one or sometimes other closely related functions. Findings from previous research indicate that Europeans and Americans place a higher value on having more function-specific rooms in dwellings than function-generic ones, and so have greater spatial segregation for different activities (Gauvain and Altman, 1982; Loni, 2005). From the perspective of contemporary African society, research findings that may suggest whether the same preferences apply are not readily available. One can however infer from observing common practices in Nigerian homes particularly, that in certain instances, the contrary may be the case.

Social meaning as revealed in domestic spaces can also be understood through examining how people organise space to reflect the *front* or *back* areas of the dwelling unit. Individuals seek to present themselves to others in good light by the activities they engage in, in front areas of dwellings. Activities performed in rooms and areas situated towards the back are considered to be more private, and less formal in nature (Rapoport, 1977; Gauvain and

Altman, 1982; Zeisel, 1991). In certain cases, the use of specific spaces is restricted to either men or women alone; where such is the case, space is then considered to be differentiated along *gender* lines (Kent, 1983). At times, more than a single criterion may serve as the basis for the organisation of space. Hillier and Hanson (1984) described the spatial structure within Mongolian yurts, where although internal partitions were absent, yet conceptually the space indicated a high level of structure and organisation. Sections were designated for men, women, children, servants, and the poor; and within a single spatial unit differentiations in use of space along lines of gender, age and social class were evident.

This is illustrated in Figure 2.2.

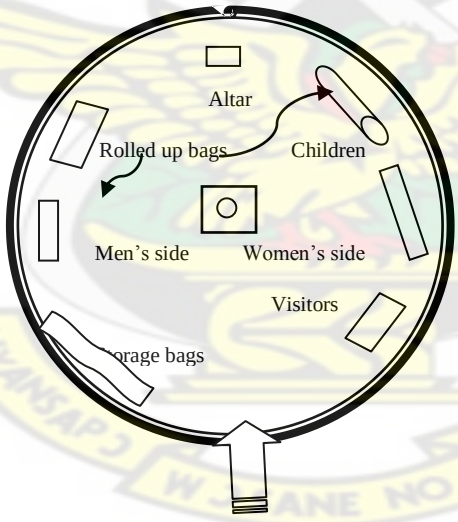

Figure 2.2 **Organisation of space in a Mongolian yurt revealing differentiation based on gender, age, and social class, after Faegre. Source: Hillier and Hanson, (1984, p.179)**

2.4.3 The influences of space on social behaviour

This section presents a critical analysis of literature regarding whether the spatial structure of the built environment has any influence on human beings. Some argue that it is possible for environments to be successfully designed to encourage and 'create' community life, with positive social outcomes as the benefits of such (Newman, 1972; Coleman, 1985). Others however argue, that the social implications of spatial situations do not necessarily evolve within a cause-and-effect context, and to imagine that such is the case is to presuppose the idea of architectural determinism is true (Tanghe et al, 1984; Chapman and Donovan, 1996; Hillier, 2007). Architectural determinism is defined by Hillier et al (1987), to be "the belief that architectural design affects human behaviour in some way" (p.233). Though differing views exist on the issue, it is generally accepted that environments are not determining and people will not all behave in the same manner on account of a particular setting. They are however capable of influencing human perception and spatial experience, and may constrain or facilitate opportunities for the patterns of social behaviour within them (Chapman and Donovan, 1996; Peponis, 2001; Dine, 2003; Hillier, 2007). Along similar lines, Deasy (1974) points out that *"the form of the spaces we use, both inside and outside of buildings has a direct bearing on our personal competence; either supporting or inhibiting our effectiveness as human beings" (p.45).* According to Hillier (2007) adopting a position suggesting that no association exists between spatial morphology and social behaviour, "*leads to the odd proposition that it does not matter at all how environments are designed since they are behaviourally neutral, this proposition seems less credible than architectural determinism*" *(p.139).*

Newman (1972) discovered the tendency for crime to be more in spaces between housing blocks than it was in the streets which bordered them. He was among the earliest researchers to suggest that organising spaces beyond the dwelling unit in a hierarchy of clearly identified zones was a means of enhancing surveillance and security in residential environments. Identifying the street as the most public space and that within the dwelling as the most private, hierarchies of semi-public and semi-private spaces would be organised along this continuum, which Newman proposed would serve as 'defensible space'. This would bring the environment under the control of the inhabitants, encourage surveillance among the housing residents and reduce crime. Figure 2.3 illustrates this proposition.

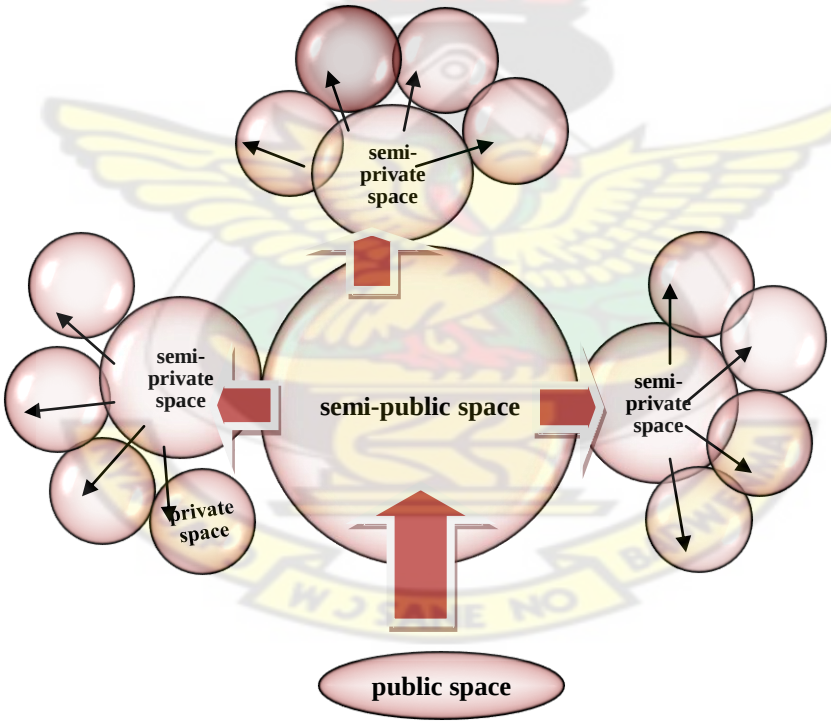

Figure 2.3 **Hierarchies of public and private spaces as defense mechanisms (Source: Newman, 1972, p.9)**

Dine (2003) noted that the perception and cognition of 'cues' in an environment serve as the mechanism linking how people behave with respect to spatial form. The perception of relevant aspects of a place affects people's expectations of the activities that may likely occur there, and subsequently has a bearing on behaviour. Dine links individual's expectations that a place has potential to serve as a dwelling with the social quality of *habitability*. With respect to the potential it affords for communication (in terms of seeing and interacting with others), he relates to the *visibility* offered by the space.

Hanson and Zako (2007) using the social quality of *liveability* in the design of external public spaces in residential areas, investigated the relationship between residential satisfaction and anti-social behaviours. They found associations between areas regarded as being problematic to having spatial factors that appeared to encourage anti-social behaviours and established a relationship between such areas and low liveability scores among the residents living there.

Zeisel (1991) also suggested that the *shape* and the *size* of spatial form in settings influence social interaction. Indicating that in smaller settings people are more involved with each other than they would normally be in larger ones, Zeisel also indicated that the orientation of buildings, with respect to the positions of entrances are likely to influence social behaviour among individuals residing in such environments. Evidence to support this claim was drawn from a study conducted by Festinger, Sachter, and Back (1968, cited by Zeisel, 1991). This study investigated the role building orientation played with respect to the location of entrances and staircases, in influencing social interaction among the housing residents. The study tested the hypothesis that housing residents in buildings which were planned to be

functionally close (described by reason of the fact that building features created opportunities for residents to be aware of each other through movement), were often more friendly with each other, than they were with neighbours who were physically closer, in terms of proximity, but had less chances of seeing or having contact with each other. Findings from the study suggested that, although physical proximity alone does not lead to greater friendship, the likelihood of such however, increases when circulation routes are positioned so that opportunities for residents to see, meet or just pass each other daily are created.

2.4.4 Housing suitability and explanatory factors of disparity in space use

People require housing which is suitable to their needs. Ukoha and Beamish (1997) assert that providing additional housing units alone, without consideration of their suitability to the actual needs of the housing residents, does not provide an accurate measure of whether a housing programme is successful or not. Housing suitability relates to the dwelling meeting the spatial requirements of housing residents relative to the functions to which the spaces would be used for. It can be judged by spatial size, layout and circulation patterns, as well as by the degree of privacy and flexibility it offers at different stages of a household's life-cycle (Agyefi-Mensah et al, 2010).

It has been documented in literature that space use in completed housing projects oftentimes differ with what the designers originally intended (Tanghe et al, 1984; Kent, 1993; Hanson, 2001); some explanatory factors to this disparity are presented. One of such relates to the differences in the value system of professionals making design decisions to those of the actual users of the space. When the assumptions underlying such decisions are contrary to

user needs and values the result oftentimes is dissatisfaction with housing (Tanghe et al, 1984; Hanson, 2001).

According to Rapoport (1977), behaviour within a setting is dependent on the potential the setting holds to be adapted to a range of uses. He asserts that ignoring such factors and designing without including supporting cues and not appropriately defining boundaries within settings, has resulted in some designed environments being rejected by housing residents. This point of view is also supported by Hillier (2007), who maintains that when spatial form ignores social rules and important physical cues, residents will either modify patterns of behaviour to fit the spatial form, or modify the space to suit what they require.

2.5 Theoretical Framework of Residential Satisfaction

In a housing environment, residents have needs and housing expectations. Residential satisfaction relates to how residents perceive and evaluate a residential setting relative to housing expectations. The attitudes individuals express as responses to social objects have affective, cognitive, and behavioural components (Ajzen and Fishbein, 1981, cited in Weidemann and Anderson, 1985). The affective aspects relate to how one *feels* about the object, characterised by the individuals' emotions and perceptions. The cognitive aspects describe what one *knows* about the object, while behavioural aspects relate to *actions* towards the object. In this section, definitions of residential section from literature are highlighted first, before a description of the different conceptual models that were used in the approach of the subject in previous studies is given. Finally, the review identifies factors likely to determine residential satisfaction among housing residents.

2.5.1 Definitions of residential satisfaction

Recognising that residential satisfaction is a complex and cognitive construct, it has been defined severally in different studies. While some have defined the concept based on all the components that comprise attitude (Francescato et al, 1989), others have either focussed on cognitive components (Galster and Hesser, 1981) or on affective components (Adriaanse, 2007). Residential satisfaction has been conceptualised as a construct which reflects the gap between the actual housing situations individuals have to that which they desire (Galster and Hesser, 1981). Such a definition recognises residential satisfaction to be a function of how closely an individual's current housing corresponds to housing expectations. In this case, the evaluation of satisfaction is considered relative to a "set of felt needs and aspirations" (p.737*).*

Canter and Rees (1982) considered residential satisfaction to be "*the degree to which the inhabitants feel that their housing is helping them to achieve their goals*" *(p.185).* Adriaanse (2007) considered it to be a "*positive, affective state that the individual experiences towards his or her residential environment, that will cause him or her to behave in certain ways in order to maintain or increase congruence with the environment*" *(p.290).* Expressing another opinion, Vera-Toscano and Ateca-Amestoy (2007) state that:

> Satisfaction with one's residential situation indicates the absence of complaints and a high degree of agreement between actual and desired situations, on the other hand incongruence between their actual housing and needed conditions may lead to dissatisfaction.

Residential satisfaction has also been defined operationally in various ways in different studies. Some researchers employed scales having a single item as a measure of residential satisfaction (Hadden and Lager, 1990, cited in Adriaanse, 2007), whereas others used multiple-item scales (Parkes et al, 2002; Gilderbloom et al, 2005). The practice of using a single item satisfaction scale as opposed to a multiple-item one has been criticized on the basis that it may not capture the whole range of issues involved (Pinquart and Burmedi, 2004, cited in Adriaanse, 2007). It is observed multi-dimensional scaling techniques is now the norm rather than the exception in many recent studies.

2.5.2 Models of residential satisfaction

According to Francescato et al (1989), models as conceptual formulations, are potentially useful for developing explanatory theories in three ways. First, they permit the results of a study to be interpreted by giving explicit indications of the theoretical orientations underpinning a research approach. They also serve to shed light on how the models are connected to research in other fields, making it possible for perspectives to be compared, and thirdly, models provide a structured means by which research is classified. Four conceptual models identified in literature are:

- Residential quality predicting model
- Behaviour predicting model
- Attitudinal model
- Multi-variate model

Residential quality predicting model

The residential quality predicting model was first developed and used in the Marans and Rodgers' (1975) study in the United States. The evaluation of residential satisfaction served as a criterion for predicting the quality of residential environments. This model hypothesizes that residents' behaviour is influenced by overall satisfaction, residents' perceptions and assessments of the physical attributes, as well as the physical attributes themselves. Although, this model has been criticised on the grounds that behaviour is not always a direct predictor of attitude (Francscato et al, 1989), it has however been the basis for a large number of previous research (Francescato, Weidemann, Anderson and Chenoweth, 1979; Galster and Hesser, 1981; Turkolu, 1997; Ukoha and Beamish, 1997).

Behaviour predicting model

The behaviour predicting model considers residential satisfaction as a predictor of how housing residents will behave if the current housing circumstance is found unsuitable. This model postulates that residents will either move to another location or make adjustments on a dwelling unit as a strategy to overcome dissatisfaction. This model is often used to explain why homeowners modify their houses or in studies dealing with residential mobility to predict moving behaviour (Adriaanse, 2007).

Attitudinal model

The attitudinal satisfaction model identifies attitudinal factors as the link between residential satisfaction and social behaviour (Weidemann and Anderson, 1985). This model recognises that certain intangible qualities cannot be measured on the basis of objective attributes alone (Parkes et al, 2002; Adriaanse, 2007), and so it seeks to integrate the physical attributes of

the dwelling/neighbourhood, individual resident attributes, with subjective (attitudinal and affective) variables.

Multi-variate model

This model hypothesizes residential satisfaction to be the outcome of multiple correlated variables. Synthesizing the variables in such a model therefore, assists in explaining the relationships among the different variable groupings. Variants of this model have been developed and used in previous studies (Canter and Rees, 1982; Muoghalu, 1984; Gilderbloom et al, 2005). In the present study, the multi-variate model is that which is used.

2.5.3 Review of findings from previous satisfaction studies

Findings from previous satisfaction studies have been varied. Some of the studies (Galster and Hesser, 1981; Hanna and Lindmood, 1979, cited in Gilderbloom et al, 2005) indicated satisfaction to be as a result of the perceived quality of neighbourhood conditions and features of the dwelling unit (housing attributes). Fried (1982) contends that socio-demographic factors have a direct correlation with satisfaction. Literature indicates that higher educated people have higher housing expectations and are thus more critical f their housing conditions (Vera-Toscano and Aleca-Amestoy, 2007). Furthermore, it also shows that women tend to be more satisfied than their male counterparts (Galster and Hesser, 1981), while older residents often express greater residential satisfaction than those in younger age groups (Galster, 1987, cited in Gilderbloom et al, 2005).

Hanna and Lindmood (1981, cited in Gilderbloom et al, 2005) in particular found out that the number of rooms, the size of the home, inside and outside appearances, amount of storage, and utility costs directly related to residential satisfaction. Another set of studies carried out in a low-income slum by Fried and Gleicher (1961, cited in Hourihan, 1984) revealed that notwithstanding the poor housing conditions, residents were however, satisfied. Residential satisfaction was here indicated as a result of social factors - in terms of the high levels of social interaction evident among neighbours, and also the proximity of friends and family members. Findings from Galster and Hesser's (1981) study also showed that satisfaction tends to improve with nearness to friends and relatives, and when one is generally satisfied with social relations with neighbours.

Findings carried out within Nigeria indicated social factors to be important indicators of residential satisfaction (Moughalu, 1984). In a study to investigate the quality of habitability in Nigerian towns, spatial factors were indicated as sources of dissatisfaction, in terms of the spatial size (Salau, 1992). With regards to public housing, design features of dwelling units, and management issues were found to be key issues in determining satisfaction levels among housing residents (Ukoha and Beamish, 1997). By way of summing up what most of the studies indicated, housing residents make judgement about their housing circumstances based on what they consider to be their housing needs and aspirations. Dissatisfaction sets in when there is incongruence between actual housing conditions and what they perceive to be a preferable condition.

2.5.4 Determinants of residential satisfaction

Certain factors have been identified from literature as determinants of residential satisfaction. Among these are personal factors related to individual characteristics of residents, physical factors related to characteristics of the dwelling units and the neighbourhood, social factors and those related to residents' perceptions. Personal factors include socio-demographic variables such as age, income, education, gender, household size and the stage of the family life-cycle. Lifestyle factors, tenure status of residents and residential attachment to the area are also included in this category. Residential attachment refers to the positive, affective relation people develop with a place due to their evaluation and sense of identification with the place (Bonnes and Secchiaroli, 1995). Satisfaction related to the physical characteristics of neighbourhoods and the quality of dwellings, were other factors found to affect residential satisfaction. Neighbourhood factors considered include physical features of the setting (general appearance, infrastructure, and locational characteristics), nearness to needed facilities and the presence of other services. Social factors have also been found to affect satisfaction among housing residents (Gilderbloom et al, 2005; Moughalu, 1984). Individuals filter environments through cognitive and evaluative perceptions (Rapoport, 1977; Jiboye, 2009) and because of this, factors related to the residents' perceptions have featured in recent studies as being determinants of residential satisfaction (Adriaanse, 2007).

Table 2 .1 provides a summary of key findings in relation to space, residential satisfaction and the relationship between space and social behaviour from previous work.

2.6 Summary of Review

Table 2.1 Summary of key findings from literature

Key findings related to space	*Key findings in reviews of relationship between space and social behaviour*	*Key findings in reviews related to Residential Satisfaction*
Morphological features of space describe elements that make up spatial structure. Patterns of permeability, activity, and interface, together with boundaries are some of such features. ***Significance of boundaries*** Boundaries establish spatial categories, define limits, and establish discontinuities in space. The public/private interface established by boundaries in residential settings should be well defined, and provide a sense of enclosure, scale, continuity, and protection as it is instrumental in determining how well public space is used. ***Social meaning of space*** The way in which societies differentiate and order social relations and activities in space reveal the meaning it holds to them. Ecologically, the meaning of space with respect to objects distributed in space depends on the perception of the social affordance offered by the object.	Social and spatial milieus are nested within physical settings; the probability of social relationships existing depends on co-awareness among people within the space. Suggested in literature is the idea that although no direct causal relationship exists between spatial form in the built environment and behaviour, through perceptions of relevant aspects, morphology facilitates or constrains human experience and social behaviour. It can also be considered to have social implications to the extent that the layout generates fields of probable encounter and co-presence among people, causing them to be aware of each other. ***Previous findings*** indicate that depending on the setting size, social distance between self and others can be regulated. The Festinger, Sachter, and Back study found out that with respect to location of entranceways, functional distance rather than proximity, affected patterns of social relationships. Also suggested was the idea that clearly identified zones of public, semi-public, and private spaces in residential settings, designed so that surveillance by housing residents was enabled, served as an effective mechanism for crime prevention. Residents' behaviour of using space contrary to original design intentions is an indicator of *dissatisfaction*, and is likely due to ignoring social factors or due to differences in the users and designer's value systems.	Residential satisfaction has been defined conceptually in several ways. Residential satisfaction is the outcome of several variables. Key determinants in predicting residential satisfaction include: ▪ Residents' characteristics ▪ Neighbourhood-related characteristics ▪ Dwelling characteristics ▪ Social factors ▪ Residents' perceptions ***Relationships indicated in previous findings*** ▪ Residents' socio-demographic characteristics directly correlate with satisfaction ▪ Neighbourhood satisfaction and overall satisfaction are significantly related ▪ Dwelling units not meeting housing expectations of the users are negatively associated with satisfaction ▪ Satisfaction with social ties and also the proximity of family and friends sometimes plays a greater role in influencing overall residential satisfaction. ▪ Evidence indicates that sometimes the residents' perceptions of various aspects of the setting influences residential satisfaction more than the physical characteristics.

(Source: Chapman and Donovan, 1996; Dine, 2003; Hillier and Hanson, 1984; Hillier, 2007; Peponis, 2001; Kent, 1993; Montello, 2007; Thomas, 2002)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research methodology. Reasons underlying the strategy taken in the study are put forward first, as a justification of the research design. The research was carried out in the residential areas of Garki I, Abuja. The study area that served as the setting for the research is presented, alongside the socio-demographic profile of the selected sample. In addition, descriptions of the research instruments utilised, the data collection, and the procedures adopted to ensure instrument reliability are also provided.

3.2 Justification of the Research Design

The research strategy was selected on the basis of that which was identified to most closely address the goals of the research. The purpose of the research as earlier indicated was to investigate the relationship between morphological features of space in residential settings and the satisfaction expressed by housing residents; with the intention of validating relationships between spatial morphology and social factors, and the extent to which they affect residential satisfaction. Furthermore, another implicit intention of the research is to make generalisations about the total population from the selected sample. For these reasons, a quantitative questionnaire-based survey was selected as the major research approach. According to Babbie (1990), a survey research adequately serves the aim of generalising from a sample of a population.

3.3 The Study Area

3.3.1 Geographical setting

Garki I is situated in Abuja, the new administrative capital of Nigeria. The Federal Capital Territory, the geo-political region Abuja is located within, falls between latitude 8˚ and 10˚ north of the equator and longitude 6˚45′ and 7˚30′ east of the Greenwich Meridian. With a total area of 7,315 square kilometres, the region has a current population of about 778,567 people (NPC, 2006). The Abuja Master Plan (FCDA, 1979) proposed a two-phase developmental plan for the region. The two major residential areas in the Phase 1 developmental plan are located in Garki and Wuse districts. Garki I was developed to serve as a mix of administrative, residential, and commercial use.

3.3.2 Sampling procedure and socio-demographic characteristics of sample

From a total of approximately 2,700 households living in the seven residential areas of Garki I, a sample of two hundred and seventy households was randomly selected. This was carried out by adopting the proportional stratified sampling technique. This is a form of sampling used when distinct categories of cases appearing in different proportions are identifiable within a population. The procedure suggested by literature for doing this is to

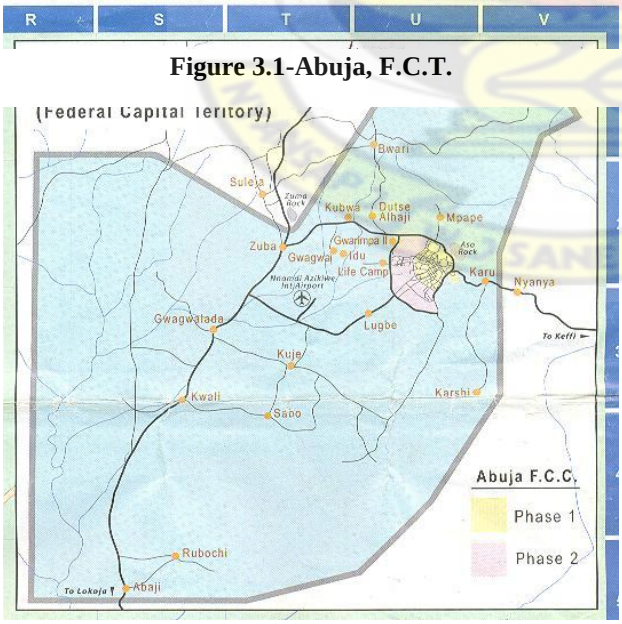

Figure 3.1-Abuja, F.C.T.

draw randomised samples separately from each category; the size of which should be proportional to the known proportion with respect to the entire population (Walliman, 2001; Fowler, 2002).

In this light, the population was stratified along the lines of the particular building type the household occupied. Two principal building types identified in Garki I are blocks of flats and semi-detached terrace housing; within which sub-types are present as small, medium, and large units. Descriptions of the spatial sizes of the various dwelling sub-types and the ranges of built space per household are provided in Appendix 1. The proportions of the blocks of flats to the semi-detached terrace housing are at approximately 60% and 40 % (FCDA, 1979). The households which participated in the research were selected randomly from within these two categories, in a manner which allowed the sizes taken from each category to reflect these proportions. From the households that were sampled, two hundred questionnaires were considered appropriate for analysis. The average age of the participants was found to fall within the forty five years to fifty four years age bracket. Of this number, sixty seven percent (67%) were male, and thirty three percent (33%) were women. Furthermore, ninety one percent (91%) of these had attained a tertiary education, with sixty nine percent (69%) of them working in the civil service. Among those currently employed in the civil service, eighty two percent (82%) of the total sample occupy medium and upper income salary ranges (GL8 – GL16). The average housing density was indicated to be at an average of 5 persons per household. Table 3.1 provides summaries of the socio-demographic characteristics of the selected sample.

Table 3.1 Socio-demographic profile of selected sample

Characteristics **Sample size (n=200)**	*Percentage*
Age	
Less than 25 years	**2%**
25 – 34 years	**10%**
35 – 44 years	**33%**
45 – 54 years	**47%**
Over 55 years	**8%**
Gender	
Male	**67%**
Female	**33%**
Household size	
Less than 3 people	**20%**
3 – 5 people	**51%**
6 – 8 people	**20%**
9 – 10 people	**7%**
More than 10 people	**2%**
Highest level of education attained	
Primary education	**2%**
Secondary education	**4%**
Vocational training/craftsman	**4%**
Tertiary education	**91%**
Employment status	
Civil servants	**69%**
Retired civil servants	**13%**
Self –employed	**18%**
Monthly expenditure	
Less than N19,999	**5%**
N20,000 – 39,999	**23%**
N40,000 – 59,999	**33%**
N60,000 – 79,999	**16%**
N80,000 – 99,999	**12%**
N100,000 or more	**11%**
Form of tenure	**82%**
Owner-occupier	**18%**
Rent	

(Source: Author's field data, 2010)

3.3.3 Building typologies in the study area

The seven neighbourhoods where the research was conducted were planned to meet the needs of different income sub-groups and as such some of the areas reflect a mix of high and medium densities, and relatively few being low density areas. The two principal dwelling types present are blocks of flats, and single family semi-detached terrace housing. Following is a brief discussion of these dwelling types.

Blocks of flats

The blocks of flats, depending on the density-type have one-bedroom, two-bedroom, and three-bedroom apartments, arranged on four floors. Slight variations exist in the spatial configuration of the proto-type plan to accommodate a range of sizes, corresponding with the income level the dwelling was designed to cater for.

Figure 3.2 Typical configurations of blocks of flats (Source: Author's field data, 2010)

Semi-detached housing type

This type of dwelling ranges from one-bedroom semi-detached bungalows, to two and three-bedroom semi-detached duplexes. Planned to be occupied by single-families, each household has access to private exterior space in front and behind the dwelling unit. Typical facades and prototype floor plans are shown in Figure 3.3 and Figure 3.4..

Figure 3.3 **Typical configuration of semi-detached terrace housing (Source: Author's field data, 2010)**

Table 3.2 shows the quantity of dwelling units and the different sub-types present in the seven neighbourhoods where the research was carried out.

Table 3.2 Quantity of dwellings and their sub-types in different neighbourhood locations

Neighbourhood location	Density type	Quantity of dwelling units	Dwelling sub-type
Area 1	Medium, high density	620	Semi-detached terrace housing, blocks of flats
Area 2	Medium, high density	695	Semi-detached terrace housing , blocks of flats
Area 3	Medium density	280	Semi-detached terrace housing, blocks of flats
Area 7	Medium density	330	Semi-detached terrace housing, blocks of flats
Area 8	Low density	184	Semi-detached terrace housing
Area 10	Medium, high density	295	Semi-detached terrace housing, blocks of flats
Area 11	Medium density	296	Blocks of flats
Total	*	2700	*

(Source: Author's field data, 2010)

3.4 Research Instruments

Data was needed regarding the residents' *attitude* to various aspects of their current residential environment and also to indicate *behaviour* with respect to actual patterns of space use; to which end three research instruments were developed and used. This included a questionnaire containing a twenty six item scale. Semi-structured interviews, and observations, alongside photographic and architectural drawing surveys to indicate changes to spatial form, and other social behaviours comprised the remaining instruments. Sample questionnaires and interview schedules utilised in the study are provided in the Appendices.

3.4.1 Development of residential satisfaction scale

This section outlines the procedures taken in the construction of the scale used in the present study. Following the multi-variate model proposed by Canter and Rees (1982) which makes residential satisfaction operative as the outcome of several variables, physical, social and attitudinal variables were identified from literature as the major predictors of residential satisfaction. It was discovered that although the personal characteristics of the residents' were included in multi-variate models, they were considered to be independent variables that explained the outcome and for this reason are not included in the scale. Factor analysis was the method used in the development of the five point residential satisfaction scale. Factor analysis is a statistical technique of data analysis that identifies the principal components for any set of inter-correlated data. According to de Vaus (1996), factor analysis is useful because it is able to detect structure in relationships among variables and group them into general factors. He offers four steps as guidelines in the development of scales (p.258). The procedures involved include:

- the selection of the variables to be factor analysed;
- the extraction of an initial set of factors
- the extraction of a final set of factors by 'rotation';
- the construction of the scale;

i. Selection of variables

In developing any scale, Sommer and Sommer (2002, p.162) suggest that a range of statements expressing attitudes that are either '*extremely favourable*' or '*extremely unfavourable*' about the construct to be studied, should first be collected as the items that will

make up the scale. Twenty six items observed to have been used in previous studies (Turkolu, 1997; Gilderbloom et al, 2002; Adriaanse, 2007) were generated, and used as sub-scales to indicate satisfaction with neighbourhood features, satisfaction with design features of the dwellings, residents' perceptions and satisfaction with social attributes. The participants were asked to indicate how satisfied they were with these aspects on a five-point Likert scale.

ii. Extraction of initial set of factors

The statistical procedure of extracting factors, involves an initial un-rotated component extraction. This extracts the principal components or factors. To further reduce the factors to those that explain the most variance, a statistic known as the *eigenvalue* is used. This is a measure that indicates the degree of variance a factor explains. The only factors that are retained are those that have an eigenvalue greater than one.

iii. Extraction of final set of factors

The final set of factors is extracted using Varimax rotated component extraction methods. From this final rotation, factors having an eigenvalues greater than one are retained, with observations made on the variables that load highly on each. The coefficient that attaches itself to a variable is what gives the factor loading.

iv. Construction of scale

The procedure for constructing a weighted factor-based scale was carried out following suggestions from de Vaus (1996). This approach proposes weighting the raw scores recorded by individuals, by the factor loading of each variable derived from the factor matrix. Also suggested by de Vaus (1996) is the exclusion factors which load weakly, as they do not contribute in a significant way to the final scale.

3.4.2 Reliability and validity of scale

The need for a research instrument to be reliable and valid is indicated in literature (Sommer and Sommer, 2002). By using correlational coefficients, one is able to indicate how reliable an instrument actually is, in terms of the items in the sub-scales measuring the same construct. There are four ways indicated in literature by which this can be done (de Vaus, 1996; Fowler, 2002). It can either be by using the instrument twice on the same group of persons (test-retest correlation), by split-half correlation, average item-total correlation, or by correlating each item with the other items, and averaging the coefficients (average inter-item correlation). This study employed the Cronbach's alpha to give a measure of reliability, as it is considered to provide all the possible ways of splitting the test items. According to Field (2000, cited in Adriaanse, 2007), the degree of reliability is considered to be acceptable when Cronbach's alpha is greater than 0.70. The coefficient alpha for the scale developed and used in the research was 0.85.

3.5 Data Collection

3.5.1 Questionnaire distribution

From the two hundred and seventy households that made up the sample, self-administered questionnaires were distributed to the heads of households. The researcher and three other trained assistants verbally explained the purposes for which the data was required, and made it clear that it was more preferable for the heads of the household to fill out the questionnaires. Two hundred and forty five questionnaires were retrieved, indicating a response rate of ninety one percent (91%). Of this number, however, forty five were not completed properly, having cases of missing data, and as such were discarded. Ultimately

two hundred questionnaires, indicating an acceptance rate of seventy four percent (74%) were used in the analysis.

3.5.2 Interviews and observations

To gain further insight about the resident's views on living in the residential areas and, explanations for why they modified spaces within individual dwellings, semi-structured interviews were conducted. The interviews were not conducted concurrently with questionnaire distribution. Consent for further interviewing were obtained at this time from heads of households that showed interest in the research and a willingness to open up their homes for observation. Ten households were selected for these interviews. The interviews were conducted in the respondent's homes with each interview going on within a time span of forty five minutes to one hour.

3.5.3 Photographic documentation

Data related to the use of public space in the residential settings was obtained by observing patterns of space use outside. These were collected through generating lists of what people were engaged in at the time the setting was visited, and making field notes of these. In addition also, photographs of street scenes were taken and documented. Five neighbourhoods were randomly selected, so that the resident's behaviour in exterior spaces could be observed. The observations were mainly carried out on week-ends, since this was the time most of the residents were at home.

3.6 Data Analysis Procedures

In analysing the quantitative data the SPSS-16.0 statistical package was used. Explorative factor analysis was used in the development of the scale, and in assisting in the extraction and classification of the principal factors. Descriptive statistics were used in the analysis of frequencies related to satisfaction within the sub-scales. The t-test on Independent Samples was conducted on the two building types to test the statistical hypotheses. In order to analyse the interviews, themes that were repeatedly expressed were extracted. These were put together with what was observed to give interpretation to the findings.

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents findings from the research. Subsequently, discussions relating these findings to the research problem follow. The first group of findings is those that emerged from the factor analysis. The principal factors extracted are interpreted to show which factors explain the greatest variance among the variables used in the study. The next group of findings provides descriptive frequencies within sub-scales and also as indicated on the developed scale. Results from statistical tests carried to investigate the differences among residents occupying different housing types are also presented and discussed.

4.2 Classification and Interpretation of Principal Factors

Techniques of factor analysis not only allow a large number of variables to be reduced, but also aid in detecting structure in the relationships between variables. By detecting such structure and based upon the premise that correlated variables can be combined into a single factor, it is possible to classify several variables into principal factors. In this way one has a model of a few factors explaining the most variance in a set of individual variables. Prior to the extraction of the initial set of factors, the suitability of factor analysis to be applied on the variables was assessed. The Kaiser-Meyer-Olkin test was conducted on the twenty six variables which made up the residential satisfaction scale, described in the preceding section, to give a measure of sampling adequacy. This test yielded a KMO value of 0.85, confirming the suitability of the set of variables in the correlation matrix for further analysis. Table 4.1

provides a description of the variables used in the factor analysis with the corresponding variable labels.

Table 4.1 Description of variables used in the factor analysis

Variable labels	Variable description
V11	Satisfaction dwelling in the house
V12	Satisfaction with appearance
V13	Satisfaction with dwelling size
V14	Satisfaction with spatial layout
V15	Satisfaction with the number of rooms
V16	Satisfaction with privacy
V17	Satisfaction living in the neighbourhood
V18	Satisfaction with the appearance of the neighbourhood
V19	Satisfaction with location in terms of accessibility
V20	Satisfaction with availability of facilities
V21	Satisfaction with waste management
V22	Satisfaction with security
V23	Satisfaction with living environment
V24	Feel buildings in neighbourhood are attractive
V25	Feel neighbours are annoying
V26	Feel at home in neighbourhood
V27	Feel an urge to move out of neighbourhood
V28	Perception of regular contact with neighbours
V29	Perception of neighbours as being friendly
V30	Sense of attachment to the neighbourhood
V31	Satisfaction with level of interaction
V38	Satisfaction with level of concern among neighbours
V39	Satisfaction with social ties in the neighbourhood
V40	Satisfaction with sense of unity (community spirit)
V41	Satisfaction with level of involvement
V42	

(Source: Author's field data, 2010)

The initial extraction brought out eight factors. Each of these factors had eigenvalues greater than one and accounted for 67.6% of the total variance. To clarify which variables 'belong' (load) to each factor, Varimax with Kaiser Normalisation rotation was applied as the final stage of extraction. The rotated factor matrix gives a pattern of high and low loading

coefficients on each factor. Coefficients of 0.5 and higher are considered to load on a factor, while those that were found to load weakly (lower coefficients) were dropped from further analysis. Results of the initial and final rotated factor matrices are shown in the Appendix. Information relating to the factor loadings, eigenvalues, variance explained by the extracted factors and an interpretation of the factors is provided in Table 4.2

Table 4.2 Factor loading, eigenvalues, % of variance explained and interpretation of factors

Factor	Variable label	Factor loading	Eigenvalue	%variance	Factor Interpretation
1	V11 V13 V14 V15 V17	0.60 0.87 0.62 0.81 0.62	7.79	29.97	**Physical factors related to spatial aspects of dwelling**
2	V18 V24 V26 V27 V28	0.60 0.53 -0.77 0.59 -0.66	2.08	7.98	**Residents' perceptions of neighbourhood factor**
3	V39 V41 V42	0.61 0.86 0.79	1.74	6.71	**Communal factors**
4	V29 V30 V38	0.8 0.7 0.7	1.43	5.49	**Social factors related to sociability of neighbours**
5	V19 V22 V23	0.6 0.7 0.6	1.26	4.86	**Neighbourhood factors**
6	V25 V31	0.7 0.5	1.19	4.56	**Psycho-social factor**
7	V20 V40	0.7 0.8	1.08	4.16	**Socio-physical (location-based) factor**
8	V21	0.7	1.00	3.85	**Presence of facility factors**

(Source: Author's field data, 2010)

It was observed from the structure of the factor analysis that the variables that clustered together reflected similar themes. The practice in this technique is to interpret and assign a name to each of the factors on the basis of the dimensions reflected by the 'variable cluster'. The findings show that the first factor which explained nearly thirty percent (30%) of the total variance is marked by high loadings on items related to satisfaction with spatial features of the housing units. Variables such as 'satisfaction with the size of the house' and 'number of rooms' had the highest coefficients within this grouping. Others included 'satisfaction with spatial layout' and 'privacy within the dwelling'. The first factor is therefore interpreted to mean *physical factors related to spatial features in the dwelling*. The second factor which accounted for 7.98% of the variance had five variables observed to load highly on it. These variables reflected how the residents perceived physical characteristics of the neighbourhood and included 'satisfaction living in the neighbourhood', 'satisfaction with living environment' and 'I feel at home in this neighbourhood'. The factor loadings of the variables 'living in this neighbourhood is annoying' and 'I feel an urge to move out of this neighbourhood' were high with a negative sign. According to literature, a negative loading rather than indicating the strength of the relationship between a variable and a factor simply indicates that the variable relates to the factor in the opposite direction (de Vaus, 1996). In this case the findings show that residents did not have negative feelings towards the neighbourhood that would influence their intention to consider moving elsewhere. This factor is given an interpretation as *residents' perceptions of the positive attributes of the neighbourhood*. Three variables were observed to load on the third factor accounting for 6.7% variance. These were 'satisfaction with concern among residents', 'satisfaction with

sense of community spirit' and 'satisfaction with residents' involvement in neighbourhood issues'. What these variables had in common was that they reflected dimensions of community living, and as such the third factor is interpreted as *communal factors.* Three variables loaded on the fourth factor explaining 5.49% of variance, these included 'I have a lot of contact with my neighbours', 'residents are friendly with each other' and 'satisfaction with levels of interaction'. The common strand linking these variables seemed to relate to perceptions the residents held to social issues (intra-relationships) within the neighbourhood and interpreted as *social factors related to sociability of neighbours.* Three variables loaded on the fifth factor and explained 4.86% of the variance. The relative importance of neighbourhood characteristics, with respect to the physical appearance, waste management and security issues was what was observed to be the dimension shared by these variables which are interpreted as *neighbourhood factors.* The sixth factor accounted for 4.56% of the total variance, and had variables related to residential attachment and appearance of the neighbourhood loading highly on it. One can infer from the variables a factor linking emotional ties the residents have to the area as a result of the social status of the neighbourhood. Consequently, this factor is interpreted to reflect *psycho-social factors.* The seventh factor had the variables 'satisfaction with location' and 'satisfaction with social ties in the neighbourhood' loading on it, explaining 4.16% of the variance. This factor is interpreted as *socio-physical location-based factors*. The availability of facilities in the neighbourhood, *facility-associated factors*, accounted for the least variance (3.85%) and ranked the least important among the factors which the analysis extracted as being significant.

4.3 Findings

4.3.1 Descriptive statistics of residential satisfaction within different building types

Table 4.3 gives a summary of residents' satisfaction with different aspects of the dwelling.

Table 4.3 Satisfaction with dwelling attributes

Variable	Rating	Semi-detached housing residents Freq. (N*)	%	Blocks of flats housing residents Freq. (N**)	%
Satisfaction dwelling in the house	Very dissatisfied	0	0.0	2	1.5
	Dissatisfied	2	2.9	9	6.9
	Neutral	4	5.9	23	17.6
	Satisfied	44	64.7	70	52.7
	Very satisfied	18	26.5	28	21.4
Satisfaction with the physical appearance of the house	Very dissatisfied	1	1.5	5	3.8
	Dissatisfied	4	5.9	22	16.9
	Neutral	8	11.8	24	18.5
	Satisfied	42	61.8	64	47.7
	Very satisfied	13	19.1	17	13.1
Satisfaction with the size of the house	Very dissatisfied	4	5.9	9	6.1
	Dissatisfied	14	2.6	33	25.2
	Neutral	13	19.1	24	18.3
	Satisfied	30	44.1	56	42.7
	Very satisfied	7	10.3	10	7.6
Satisfaction with the spatial layout	Very dissatisfied	1	1.5	3	2.3
	Dissatisfied	14	19.4	35	26.0
	Neutral	8	11.9	22	16.8
	Satisfied	39	58.2	53	40.5
	Very satisfied	6	9.0	19	14.5
Satisfaction with the number of rooms	Very dissatisfied	6	8.8	15	10.7
	Dissatisfied	17	25.0	45	34.4
	Neutral	16	23.5	27	20.6
	Satisfied	23	33.8	38	29.0
	Very satisfied	6	8.0	7	5.3
Satisfaction with the size of the rooms	Very dissatisfied	4	5.9	11	8.4
	Dissatisfied	10	14.7	29	22.1
	Neutral	8	11.8	27	20.6
	Satisfied	42	61.8	48	35.9
	Very satisfied	4	5.9	17	13.0
Satisfaction with privacy	Very dissatisfied	6	8.8	13	9.9
	Dissatisfied	9	13.2	23	17.6
	Neutral	7	10.3	25	19.1
	Satisfied	33	48.5	55	41.2
	Very satisfied	13	19.1	16	12.2

Total *N = 68 housing residents **Total **N = 132 housing residents**

(Source: Author's field data, 2010)

Table 4.4 gives a summary of the residents' satisfaction with neighbourhood attributes.

Table 4.4 Satisfaction with neighbourhood attributes

Variable	Rating	Semi-detached housing residents		Blocks of flats housing residents	
		Freq. (*N)	%	Freq. (**N)	%
Satisfaction dwelling in the neighbourhood	Very dissatisfied	0	0.0	3	2.3
	Dissatisfied	3	4.5	12	9.2
	Neutral	5	7.5	19	14.5
	Satisfied	34	49.3	79	59.5
	Very satisfied	26	38.2	19	14.5
Satisfaction with the appearance of the neighbourhood	Very dissatisfied	0	0.0	4	3.1
	Dissatisfied	3	4.5	22	16.8
	Neutral	3	4.5	21	16.0
	Satisfied	47	68.6	68	51.1
	Very satisfied	15	22.4	18	13.0
Satisfaction with location in terms of accessibility	Very dissatisfied	0	0.0	1	0.7
	Dissatisfied	0	0.0	3	2.3
	Neutral	1	1.5	3	2.3
	Satisfied	31	46.3	62	46.6
	Very satisfied	36	52.2	63	48.1
Satisfaction with availability of facilities	Very dissatisfied	0	0.0	5	3.8
	Dissatisfied	3	4.5	13	9.9
	Neutral	7	9.0	14	10.7
	Satisfied	31	46.3	59	44.3
	Very satisfied	27	40.3	41	31.3
Satisfaction with waste management	Very dissatisfied	2	3.0	9	6.9
	Dissatisfied	9	13.4	33	24.4
	Neutral	10	14.9	14	10.7
	Satisfied	31	46.3	56	42.7
	Very satisfied	15	22.4	20	15.3
Satisfaction with security	Very dissatisfied	0	0.0	10	7.6
	Dissatisfied	10	14.9	28	21.4
	Neutral	10	14.9	19	13.7
	Satisfied	36	53.7	52	39.7
	Very satisfied	12	16.4	23	17.6

Total *N = 68 housing residents **Total **N = 132 housing residents**

(Source: Author's field data, 2010)

Table 4.5 gives a summary of residents' perceptions

Table 4.5 Residents' perceptions

Variable	Rating	Semi-detached housing residents		Blocks of flats housing residents	
		Freq. (*N)	%	Freq. (**N)	%
I am satisfied with my living environment	Strongly disagree	1	1.5	3	2.3
	Disagree	2	3.0	20	13.8
	Neutral	6	9.0	25	19.2
	Agree	42	62.7	66	50.8
	Strongly agree	17	23.9	18	13.8
The buildings in this neighbourhood are attractive	Strongly disagree	1	1.5	10	7.6
	Disagree	12	17.6	30	22.1
	Neutral	9	13.2	35	26.7
	Agree	41	60.3	46	35.1
	Strongly agree	5	7.4	11	8.4
Living in this neighbourhood is annoying	Strongly disagree	19	27.9	19	14.5
	Disagree	32	47.1	58	43.5
	Neutral	9	13.2	29	22.1
	Agree	6	8.8	20	15.3
	Strongly agree	2	2.9	6	4.6
I feel at home in this neighbourhood	Strongly disagree	2	2.9	3	2.3
	Disagree	4	5.9	18	13.7
	Neutral	8	11.8	26	19.8
	Agree	39	57.4	71	53.4
	Strongly agree	15	22.1	14	10.7
I feel an urge to move out of this neighbourhood	Strongly disagree	12	17.6	12	9.2
	Disagree	28	41.2	42	31.3
	Neutral	11	16.2	28	21.4
	Agree	11	16.2	35	26.7
	Strongly agree	6	8.8	15	11.5
I have a lot of contact with my neighbours	Strongly disagree	2	2.9	10	6.9
	Disagree	3	4.4	30	22.9
	Neutral	8	11.8	28	21.4
	Agree	44	64.7	50	38.2
	Strongly agree	11	16.2	14	10.7
Residents in this neighbourhood are friendly with each other	Strongly disagree	0	0.0	4	3.1
	Disagree	3	4.5	20	15.3
	Neutral	7	10.4	23	17.6
	Agree	42	61.2	72	54.2
	Strongly agree	16	23.9	13	9.9
I feel attached to this neighbourhood	Strongly disagree	1	1.5	7	5.3
	Disagree	8	11.8	36	27.5
	Neutral	12	17.6	30	22.9
	Agree	33	48.5	51	38.2
	Strongly agree	14	20.6	8	6.1

(Source: Author's field data, 2010)

Total *N = 68 housing residents **Total **N = 132 housing residents**

Table 4.6 gives a summary of the residents' satisfaction with the social climate of the neighbourhood.

Table 4.6 Satisfaction with social climate of the neighbourhood

Variable	Rating	Semi-detached housing residents		Blocks of flats housing residents	
		Freq. (*N)	%	Freq. (**N)	%
Satisfaction with level of interaction among neighbours	Very dissatisfied	0	0.0	3	0.8
	Dissatisfied	3	4.4	12	9.2
	Neutral	4	5.9	27	20.8
	Satisfied	45	66.2	68	52.3
	Very satisfied	16	23.5	22	16.9
Satisfaction with level of concern among neighbours	Very dissatisfied	0	0.0	5	3.9
	Dissatisfied	5	7.3	25	19.3
	Neutral	10	14.7	23	17.1
	Satisfied	38	55.9	61	45.7
	Very satisfied	15	22.1	18	14.0
Satisfaction with social ties in the neighbourhood	Very dissatisfied	0	0.0	4	1.5
	Dissatisfied	1	1.5	11	8.39
	Neutral	2	2.9	7	2.9
	Satisfied	30	44.1	54	44.1
	Very satisfied	35	51.5	56	51.2
Satisfaction with sense of unity (community spirit)	Very dissatisfied	1	1.5	7	5.4
	Dissatisfied	3	4.5	29	22.5
	Neutral	14	20.9	31	23.2
	Satisfied	41	59.7	55	41.9
	Very satisfied	9	13.4	10	7.0
Satisfaction with level of involvement in neighbourhood issues	Very dissatisfied	2	2.9	13	10.0
	Dissatisfied	4	5.9	32	23.8
	Neutral	15	22.1	25	19.2
	Satisfied	36	52.9	50	38.5
	Very satisfied	11	16.2	12	8.5

Total *N = 68 housing residents **Total **N = 132 housing residents**

(Source: Author's field data, 2010)

4.3.2 Residential satisfaction index

Residential satisfaction was made operative in the study by using a multi-variate model consisting of four sub-scales. Values on the scale were derived using the expression,

Residential Satisfaction Index, RSI =

$$\frac{\sum_{i=1}^{4} x1 + x2 + x3 + x4}{10}$$

x_1 = *SATISDA*, gives a measure of satisfaction with dwelling attributes = (*n*) × (*wv*)

x_2 =*SATISNA* gives a measure of satisfaction with neighbourhood attributes = (*n*) × (*wv*)

x_3 =*RESPERC* gives a measure of residents' perceptions = (*n*) × (*wv*)

x_4 =*SATISSOC* gives a measure of satisfaction with the social climate = (*n*) × (*wv*)

where *n* represents raw scores given on each variable,

wv represents the factor loading.

Table 4.7 Descriptive statistics of residential satisfaction scores

	Statistic	Std. Error
Mean	5.7525	.05321
95% Confidence Interval for Mean Lower Bound	5.6476	
Upper Bound	5.8574	
5% Trimmed Mean	5.7466	
Median	5.7800	
Variance	.566	
Std. Deviation	.75248	
Minimum	3.79	
Maximum	7.77	
Range	3.98	
Interquartile Range	1.01	
Skewness	.020	.172
Kurtosis	-.020	.342

(Source: Author's field data, 2010)

The lowest score recorded was indicated to have a value of 3.79, while the highest score recorded 7.77. The study sample yielded satisfaction scores with a mean of $\bar{x}$ = 5.75. The data also indicated that the difference between the mean and median scores was comparatively small, (.020), indicating a lack of skewness in the data. The standard deviation of the data set, *s*, was found to have an approximate value of 0.75. A comprehensive description of these statistics is provided in Table 4.7.

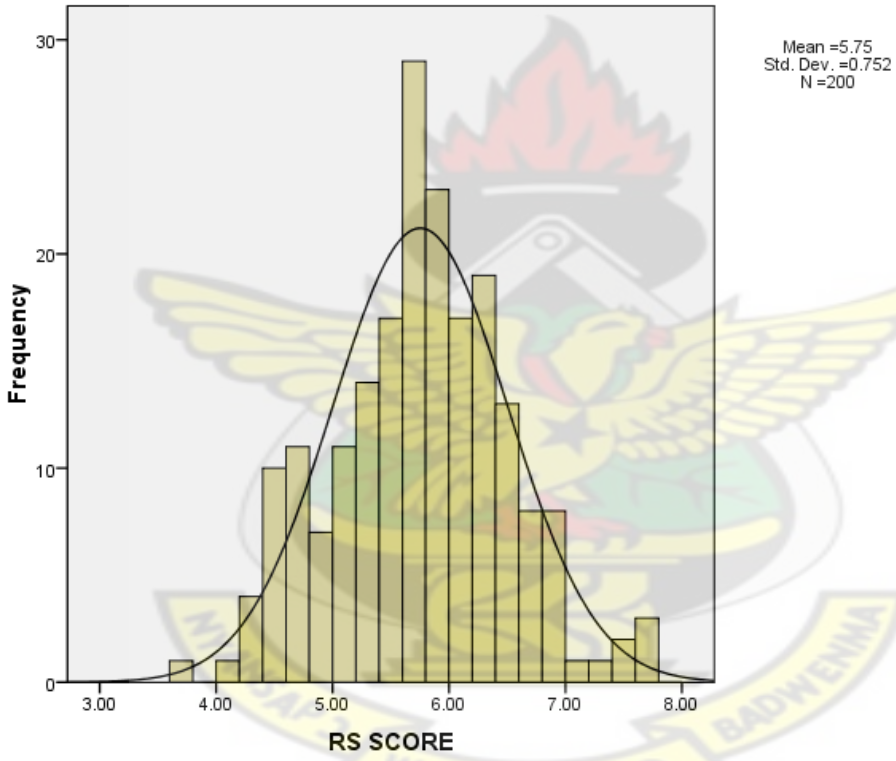

Figure 4.1 **Histogram showing frequencies of satisfaction scores**

Figure 4.1 is a histogram which indicates the variability of frequency distributions. Statistical inferences that can be drawn from the 'normal curve' shape of the graph indicates that approximately 68% of the scores fall within one standard deviation ($\bar{x} \pm s$), having scores

ranging from 5.0 to 6.5, and approximately 95% of the scores fall within two standard deviation, ($\bar{x} \pm 2s$), with scores ranging from 4.25 to 7.25.

4.3.3 Residential satisfaction and residents' characteristics

Findings from the research indicate the relative importance of differences in residents' socio-demographic characteristics in explaining residential satisfaction. With respect to age, it was observed that people below the age of thirty-five and older than fifty-five years were generally very satisfied with their present housing circumstances. Although females represented only thirty three percent (33%) of the entire samples, residential satisfaction levels were higher among them than those scored by their male counterparts. Differences among residents due to educational background were not obvious. A probable reason for this is due to the homogeneity of the sample in this regard (91% of the participants had attained the equivalent of a tertiary education). Analysing the salary grade levels and estimated monthly expenditure of the respondents, upper middle income group residents, who constituted thirty percent of the sample, were among those indicated to be least satisfied. Further analysis showed that majority in this group had been living in the same house for twenty years or more. With respect to the form of tenure, a correlation was observed between residents who owned the dwelling and residential satisfaction. Differences in satisfaction levels among residents that had lived in the area for less than ten years were relatively small when compared with those among residents that had been living there for about twenty years. Only one of every eight persons that had lived in the area for *more* than twenty years however, were very dissatisfied. The emotional bond residents had with the neighbourhood, with respect to the residential attachment was found to directly affect the degree to which

they expressed satisfaction or the contrary. A summary of observed differences linked to the residents' characteristics and residential satisfaction is given in Table 4.8.

Table 4.8 Summary of findings of residents' characteristics and residential satisfaction

Residents' characteristics	Residential satisfaction
Age	Although residents that fell below the age of thirty five years represented a small proportion of the total sample, nearly all of them indicated high satisfaction levels. The same was the case for residents that were more than fifty-five years of age.
Gender	Female residents indicated greater satisfaction levels than their male counterparts.
Education	Differences were not particularly obvious.
Income	Within the upper middle-income bracket, residents who had resided in the block of flats for twenty years or more were observed to be among those that indicated the greatest dissatisfaction.
Form of tenure	Home ownership correlates strongly with residential satisfaction. The findings also revealed that only three of every ten residents renting were not satisfied.
Length of stay	Differences in satisfaction levels among residents that had lived in the area for less than ten years were relatively small when compared with those among residents that had been living there for about twenty years. Only one of every eight persons that had lived in the area for *more* than twenty years however, were very dissatisfied.
Residential attachment	Residential attachment was found to relate positively with residential satisfaction.

(Source: Author's field data, 2010)

4.3.4 Residential satisfaction and spatial variables

Although residential satisfaction is the outcome of several variables, findings from the current study indicate spatial variables related to the dwellings to explain the greatest variance. These variables included 'satisfaction with the size of the house', 'satisfaction with the spatial layout', 'satisfaction with the number of rooms', 'satisfaction with the size of the rooms' and 'satisfaction with privacy'. Analysis of the findings revealed that differences in expressed satisfaction within the groups of building types considered were not so much as a result of the spatial layout of the houses, as they were to the size of the houses and the size

and number of rooms contained within them. A greater degree of dissatisfaction was recorded among residents occupying one-bedroom units. Across the building types it was observed that 8.5% of the residents living in semi-detached housing types indicated dissatisfaction with the size of the house, while in the blocks of flats 31.3% were dissatisfied. The differences found between these house types, with respect to the spatial layout were relatively small and majority of the residents appeared in this regard to be satisfied. Residents of the blocks of flats however expressed lesser satisfaction with the size of rooms (48.9% were satisfied), than what was obtained among residents of the semi-detached housing (67.7%). A direct correlation was observed between the number of rooms in a house and residential satisfaction. A summary of findings of the relationships found between spatial variables and residential satisfaction is given in Table 4.9.

Table 4.9 Summary of findings of spatial variables and residential satisfaction

Spatial variable	Residential satisfaction
Size of house	Majority of residents living in one-bedroom units were more dissatisfied with the size of the house than others. 8.5% of the residents living in semi-detached housing types indicated dissatisfaction with the size of the house in contrast to 31.3% in the blocks of flats.
Spatial layout	Differences observed among the building types were relatively small. With a few exceptions, majority of the sample were satisfied with the spatial layout of the dwellings.
Size of rooms	Greater satisfaction with the sizes of rooms was indicated among residents living in semi-detached housing types.
Number of rooms	The number of rooms in a house has a direct correlation with residential satisfaction. Among the residents living in semi-detached housing, 41.8% of the sample was satisfied; while among those living in the blocks of flats only 34.3% expressed satisfaction.

(Source: Author's field data, 2010)

4.3.5 Residential satisfaction and social variables

In some studies the perceived social climate was sometimes more important than other factors in contributing to the understanding of residential satisfaction (Adriaanse, 2007). Because of this, variables that could be considered social indices were included to measure perceptions of the social climate, frequency of interaction among neighbours, description of social relations with neighbours and the presence of social networks. It was observed that among the respondents, 64.5% felt their neighbours were friendly while 35.5% were of the contrary opinion. Although 54.5% of the sample recorded their relations to neighbours to be good, it was observed that 8.5% seldom interacted with neighbours, 50.5% occasionally interacted and 41% interacted regularly with neighbours. Having good relationships with neighbours was found to correlate strongly with residential satisfaction. Most of the residents that did not have positive opinions of the social climate of the neighbourhood and that rated their social relations with neighbours as being less than good were observed to be residents occupying houses in the blocks of flats. The presence of social networks, in terms of proximity of family members or the presence of friends within the neighbourhood is an important aspect of the residents' social life. Residents occupying semi-detached housing types who had recorded greater satisfaction levels were observed to have more social networks. Differences emerged among residents occupying the blocks of flats. A group representing 22% of the sample in this building type, although indicating the absence of social ties were however satisfied; 35.6% of the residents had social networks and also expressed satisfaction. Residents having no social ties and recording the least levels of satisfaction constituted the greater proportion, representing 42.4% of the sample. Table 4.10

summarises the findings with respect to the interaction of social variables and residential satisfaction.

Table 4.10 Summary of findings of social variables and residential satisfaction

Social Variable	Residential satisfaction
Perception of friendliness	64.5% felt their neighbours were friendly while 35.5% were of the contrary opinion. Although some respondents perceived neighbours as being unfriendly they still recorded average satisfaction levels.
Frequency of interaction	8.5% seldom interact 50.5% occasionally interact 40.5% regularly interact with neighbours.
Social relations	Good relationships correlate strongly with residential satisfaction. 54.5% of the respondents considered their relations with neighbours good, 40.5% considered it fair; while 5% did not consider their social relations to be good.
Social networks	Residents of semi-detached housing types had more social networks and indicated greater satisfaction than residents in the blocks of flats. In the latter group 42.4% of the residents who indicated not having social ties in the neighbourhood, were observed to be among those least satisfied.

(Source: Author's field data, 2010)

4.3.6 Hypothesis testing and residential satisfaction in different building types

The research tested the hypothesis that satisfaction levels would be greater among residents occupying semi-detached type housing than among residents occupying blocks of flats. This was done statistically by conducting a t-test. The hypotheses postulated a null hypothesis, $H_{0;}$ suggesting that the mean scores recorded among housing residents living both housing types would be the same. and alternate hypotheses H_1 suggesting a difference in recorded scores on the basis of observed differences among means of the samples and H_2 suggesting that residential satisfaction would be greater among housing residents of Group 1 (semi-detached

housing) than housing residents of Group 2 (blocks of flats). The statistical hypotheses were expressed as

H_0: $\bar{x}_1 = \bar{x}_2$

H_1: $\bar{x}_1 \neq \bar{x}_2$

H_2: $\bar{x}_1 > \bar{x}_2$

Mean recorded scores $\bar{x}_1$, $\bar{x}_2$ were 6.10 and 5.57 respectively. The null and alternate hypotheses were tested on Independent Samples Test using a significance level, also referred to as the *p-value* of 0.05, two-tailed test. These results are shown in Table 4.11.

Table 4.11 Findings from t-test of Independent Samples

Group Statistics

	Building Type	N	Mean	Std. Deviation	Std. Error Mean
RS SCORE	Group 1	68	6.1037	.65966	.08000
	Group 2	132	5.5716	.73525	.06400

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
RS SCORE	Equal variances assumed	1.611	.206	5.016	198	0	.53209	.10607	.32292	.74125
	Equal variances not assumed			5.194	148.990	0	.53209	.10244	.32966	.73452

(Source: Author's field data, 2010)

The calculated t-value when equal variances were assumed among the two groups was 5.01. Since this value is less than critical values of *p* at 0.05, there is sufficient evidence to reject the null hypothesis, H_0. Indicative also in the results of the t-test of mean differences, was the fact that the claims made in $H_{2,}$ suggesting greater satisfaction among individuals in Group 1 (semi-detached housing) buildings is supported.

4.3.7 Boundary definitions and space use - findings from observations/interviews

It was observed that nearly all the houses articulated private space by setting physical boundaries. Although the advantages provided by design features in the semi-detached housing obviated the need for creating a sense of enclosure at the street-dwelling interface, most homeowners established control on how accessible the entranceway was by using physical barriers. In the blocks of flats although the possibilities of establishing accessibility gradients were limited, it was still observed that most of the housing residents still put up doors or security bars, which were not part of the original design in the spaces between entranceways and staircases to further establish boundaries. The use of public space at the neighbourhood level was also found to differ in areas having the semi-detached housing types, than what was the case in configurations of the blocks of flats. In the former, even on week-ends people preferred to stay indoors and except parked cars, outside spaces were left vacant. Family life was observed to revolve within the dwelling, with children play areas being limited to the spaces immediately in front of individual houses; while in the latter outside spaces were more actively used. The use of outside space around the blocks of flats was observed to be such that interfaces of categories of people laid claim and used the spaces for a range of activities. Vendors and those that did not reside in the neighbourhoods claimed

spaces for commercial purposes. When meeting places were required, the social groups put up canopies and chairs, as 'props' to convert the setting to the use which they required. Staircase landings were also observed to be places teenagers and older children chose to appropriate as their own. Figure 4.2 depicts a typical street scene behind one of the blocks of flats, adjacent to the shopping centre in Area 2.

Figure 4.2 Typical street scene in Area 2 (Source: Author's field data, 2010)

From the interviews certain themes continually recurred, suggesting reasons as to *why* the housing residents were either satisfied or not; and what constituted positive social interactions or good neighbouring to them. These themes related to factors of dwelling construction (which were positively appraised), location, and the availability of services and

facilities, relative to what is experienced in other locations in Abuja. A few themes related to the noise generated by street hawkers; while for others, the desire was to keep their children indoors, away from excessive interactions with other children in the area.

4.4 Discussions

Discussions of findings from the study are organised into six sections. The first part discusses what the study revealed to be key factors in determining residential satisfaction among the residents. Subsequent sections focus on the sub-issues contained in the research question; with a concluding section highlighting the issues that emerged from results of the hypothesis which the research tested.

4.4.1 Discussion 1 – Determinants of residential satisfaction in Garki I

From the findings it was observed that with the exception of gender and socio-income groups, where what was observed was consistent with that indicated in literature (Galster and Hesser, 1981), differences in satisfaction on account of the residents' socio-demographic characteristics appeared to be relatively small. This is probably due to the homogenous nature of the residents' characteristics. Majority of them are at least thirty-five years of age or older, have attained a tertiary level of education, are married with average household densities of five persons, have similar socio-occupational status (civil servants) and own the houses. Indicated also from the study is that even among those renting, though they made up a smaller proportion of the whole sample, negative relationships with residential satisfaction is absent. The findings indicated residents, identified to belong to upper middle income groups and that had been living in the area for a comparatively long time as expressing

dissatisfaction. This may not be unconnected to the changing character of housing expectations to people in different life-cycles. For them to have occupied the houses for that length of time, suggests that at the time they moved into the area they were younger, with smaller families and at a lower salary scale. Their expectations and housing aspirations with increased socio-income mobility and a household at a chronologically older cycle would most likely be greater.

Physical factors related to the type of structure and the spatial quality of the dwelling emerged from the analysis as being more important in affecting residential satisfaction than the residents' socio-demographic characteristics. Other key determinants indicated by the study are the perceived quality of the neighbourhood (psycho-social factors), communal, social, availability of facilities and socio-physical (location-based) factors. The findings support what was found in previous studies with respect to the quality of dwelling units and particularly the spatial aspects as being important predictors of residential satisfaction (Galster and Hesser, 1981; Ukoha and Beamish, 1997). This was likewise reflected to be the case with respect to the other factors; perceptions of the neighbourhood as a good place to live (Parkes et al, 2002), a sense of residential attachment (Fried, 1982), satisfaction with social relations (Galster and Hesser, 1981) and advantages associated with location and availability of facilities (Turkolu, 1997).

4.4.2 Discussion 2 – Spatial morphology and social considerations

Residential settings create the context for social relations. Does spatial morphology constrain or support social encounter and interaction? This is discussed on two levels. First, by

considering how relationships among family members are probably affected by the spatial features of individual houses; and secondly, by focusing on the influence morphological spatial features around the dwellings have on mutual awareness and social interaction among the housing residents.

All the building types considered were designed to satisfy the users' functional requirements; which explains why spatial layout was not considered by many an issue. Shared spaces for family activities and personal space are essential within a dwelling unit. The issue of the house being too small, or of the number and size of the rooms being inadequate was largely a problem expressed by residents of the blocks of flats or among people living in the one-bedroom semi-detached type housing. The findings further indicated privacy within dwellings emerging as an issue. With an average household density of five persons, the possibility of maintaining private space is restricted when the size of relational settings are small relative to the people within it (Zeisel, 1991). Suggesting a link between the inadequacy of private space within the dwelling and the tendency observed for children and young adults to be found occupying the verandas or open spaces around the dwellings may not be improbable. There are issues linked with large numbers of people sharing space within a home. According to Miller and Maxwell (2003 cited in Loni, 2005) household crowding has a negative influence on social interactions between parents and children, with the likelihood of quarrelling and conflict to be more in such households. It has also been found to increase stress and negatively affect the mental health of individuals (Carter and Polevychok, 2004).

In investigating the relationship between morphology and patterns of social encounters at the neighbourhood scale, the dwelling-street relationship is considered. Apart from primarily serving as movement corridors, the presence of streets as socio-morphological elements functioning as social binders has been indicated (Chapman and Donovan, 1996; Tanghe et al, 1984). Among residents living in the blocks of flats, a small semi-public space which linked the front entrances of the apartments to the stairwell mediated the interface between the dwelling and the street.

Figure 4.3 Dwelling-street relationship in one of the blocks (Source: Author's field data, 2010)

The findings suggest that probably due to inadequacy of living spaces within the apartments, a lack of clarity in the definition of the public-private space interface or as responses to cultural space needs, instead of public activities spilling into private space as indicated by

Thomas (2002), the contrary was rather the case. Residents were observed to dry foodstuffs on the walkways, wash clothes and engage in petty economic activities on these public spaces as illustrated in Figure 4.4.

Figure 4.4 Private activities spilling to public space (Source: Author's field data, 2010)

Socializing with neighbours and exchanging greetings seemed to occur more often on the street or parking spaces in front of the buildings, when residents are either in the process of coming in or going out. This could be explained as being influenced by individual's priorities and lifestyle factors; as most of the individuals interviewed expressed having little or no time

for close interaction with their neighbours on account of busy work schedules. Another explanatory factor is linked to the observation of a mix of different social classes within the neighbourhoods. Due to the privatisation policy, former housing occupants that could not meet the mortgage requirements moved out; and others more affluent were allocated the dwelling. This finding is consistent with previous research, that suggests neighbouring as being less important to middle class families and the tendency for one's social network to reflect individuals that are perceived as having similarity in characteristics and values to one (Rapoport, 1977).

4.4.3 Discussion 3 – Social considerations reflected in the residents' use of space

According to Hillier and Hanson (1984), society is encoded in the way individuals and groups organise and lay claim to space. What can be understood about a people by observing social relations in the differentiation and use of space? The discussion is structured by examining the social considerations influencing space use as it was observed at the building and neighbourhood scale. For some residents, making changes in the dwellings' spatial features is driven by necessity; to increase the compatibility of spatial form with lifestyle and specific household needs. Functionally-labelled spaces like the living areas were observed to be used to serve multiple purposes, although most times permanent structural alterations were not made. In most of the semi-detached type houses however, where balconies and small outdoor terraces had been provided, the occupants regarded such as space that could be put to good use; and adopting various strategies created extra rooms. This validates what was indicated by Rapoport (1977) on the way individuals behave when spaces do not restrict or rigidly define how they should be used. The practice of defining the boundaries of private

space with plantings and security gratings came across distinctly in the areas where the two and three-bedroom semi-detached housing types were found. Beyond being used for security purposes or to establish physical and social barriers, these according to Rapoport (1977) are social cues meant to indicate status and group identity. The appearance of residential environments is important to middle class families.

Public open spaces in the neighbourhoods were mainly used as parking spaces, while those without clear functions assigned to them were observed not to be fully utilised by residents. In some of the neighbourhoods, it was evident that vendors and street traders exerted greater control on such spaces in the daytime than the housing residents. The absence of landscape elements or other physical affordances suggesting such spaces could be potential relational settings has resulted in strangers 'owning' the space. Indicated also from the findings was the presence of children around the staircases, playing along the street pavements or other places which could be considered as 'odd'. This appears to be consistent with what Hillier (2007) observed as the inclination by children to occupy and use spaces not prioritised by adults.

4.4.4 Discussion 4 - Influences of residents' perceptions on residential satisfaction

How residents perceive the neighbourhood emerged from the findings as a significant factor in explaining differences in residential satisfaction. Perceptions are subjective in nature, conveying aspects that in some way seem 'intangible', but are nonetheless very important to housing residents. Three things were observed to stand out in this regard. Depending on what

expectations with respect to the quality of the environment are, perceptions and assessment of the setting were observed to vary among residents. Rather than the 'objective' quality of dwellings or neighbourhood being the issue, how they are *perceived*, was rather discovered to be more important. The importance of this factor was highlighted in previous studies (Gilderbloom et al, 2005; Parkes et al, 2002).

Secondly, the findings indicated that satisfaction living in the neighbourhoods and the presence of psycho-social bonds to the neighbourhoods, in terms of feeling a sense of belonging and attachment to the area, was linked to residents' perceptions of the areas as being 'good places to live'. With more than half of government offices located in the Garki area of Abuja, the pressure of accessing affordable accommodation near one's office is an issue of concern to many; by reason of the central location and well planned neighbourhoods, living in these areas is presently regarded by most government workers as a privilege. Such areas are perceptually considered to project 'status symbols' and consequently affect how they are evaluated by residents (Rapoport, 1977). Finally, the findings revealed that although neighbouring and social interaction among the neighbours was not extensive, yet most of the residents indicated perceptions of neighbours as being 'friendly' and the social climate as being positive. Some of the residents did not indicate the presence of strong social ties within the neighbourhood; neither did they appear to favour intensive interactions with neighbours, yet expressed satisfaction living with their perceptions of the social environment. An explanation of this can be related to cases of forced, affinity-based or anonymous sociability (Pan Ke Shon, 2007). In such instances, people observed to be close with respect of the

proximity of dwellings to each other, are distant and superficial in social relations on account of differences in social class, religious affiliations or ethnicity.

4.4.5 Discussion 5 - Role of spatial and social factors in affecting satisfaction

This section briefly discusses findings related to the relationships between spatial factors, social factors and residential satisfaction. Focus for the discussion will be provided by putting two questions across. What is the importance of social factors within the contextual framework to residential satisfaction? What are some undesirable social consequences that can be linked to the absence or presence of certain morphological features of space? Having good social relations with neighbours, as well as the presence of social networks in the area one resides, have been emphasized in previous studies as being important to residential satisfaction (Galster and Hesser, 1981). Given that an individuals' social network depends on social class, lifestyle and family values (Rapoport, 1977), neighbouring was not reflected in the study as a shared social value among the housing residents. This interpretation is likely when one considers the findings of those not having friends or family living near; yet were satisfied.

Private space within dwellings likewise emerged as being the focal point around which the family life of most residents revolved around. Findings from the factor analysis, though not contradicting this, indicated that people expressed a desire to have a sense of belonging to 'community'. This suggests that although residents tend to favour autonomous 'family-centred' relations, they still seek identification with a social group as a community to which

they belong to. This raises an issue of the need for provision of communal spaces for socialisation among housing residents, beyond the family unit.

4.4.6 Discussion 6 – Differences in satisfaction levels explained by building types

The research tested the hypothesis that satisfaction levels would be greater among residents occupying the semi-detached terrace type housing than it would be among residents occupying the blocks of flats.

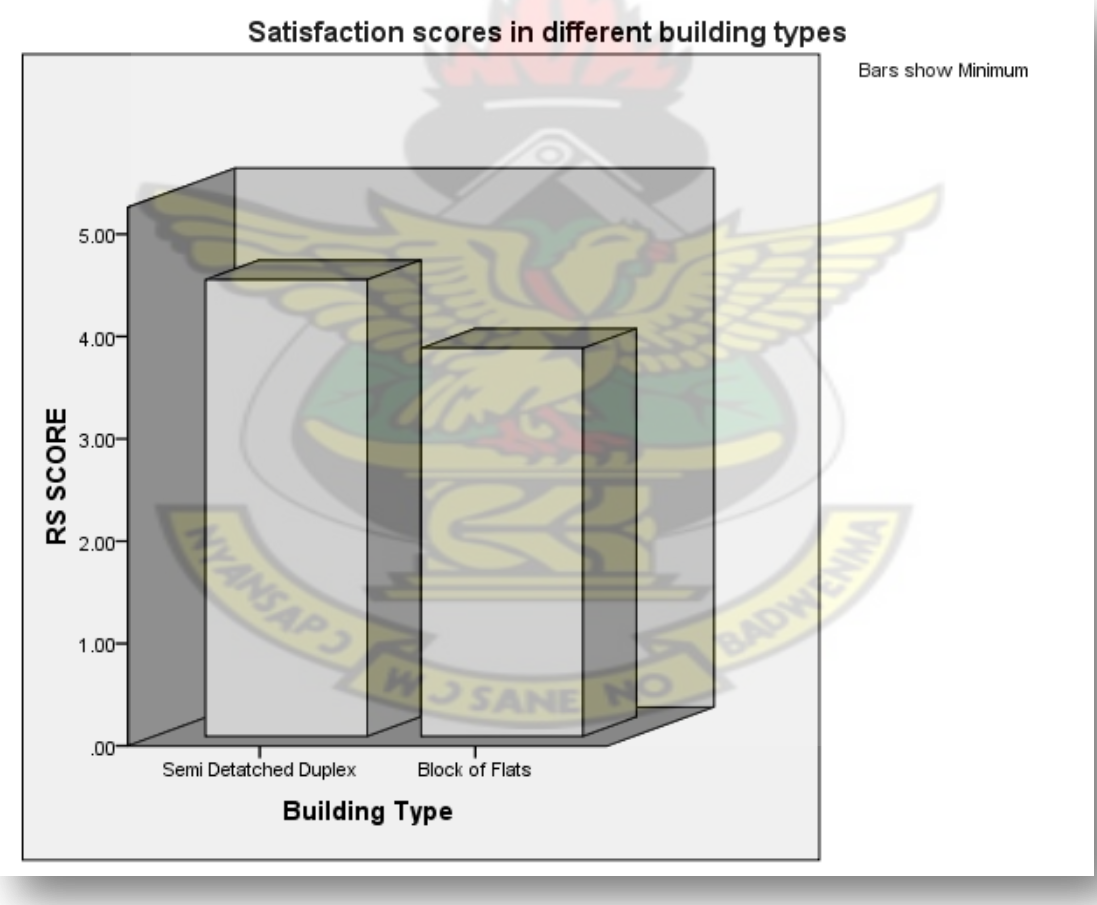

Figure 4.5 **Differences in satisfaction levels in different building types (Source: Author's field data, 2010)**

CHAPTER FIVE

CONCLUSION

5.1 Introduction

This chapter concludes the study by providing a summary of the entire study and highlighting the conclusions drawn from the research findings. Possible implications suggested by the study, as well as what it has contributed to knowledge is also included in this chapter. Subsequent sections make recommendations and offer suggestions for future research directions.

5.2 Summary of the study

Social activities occur in space, with spatial morphology affecting the form and nature taken by such activities. As such, architects and planners involved in shaping spatial form in residential settings have some responsibility in ensuring the people who occupy such spaces are reasonably satisfied. The aim of the present study was to examine how morphological features of space interacted with social factors, in influencing residential satisfaction among residents occupying two different building types in the planned residential settings of Garki I, Abuja. The study considered how housing residents organise and differentiate space for diverse activities after the completion of a housing project. Through considering how individuals use space for social or cultural practices and in the process invested it with meaning, the study sought to explain why at times people modify spaces or use them in ways contrary to that intended in the original design. It also went further to investigate the role

spatial factors play in influencing social interaction among housing residents and consequently residential satisfaction.

Residential satisfaction among housing residents was also evaluated and compared. This was done by testing a multi-variate model that was developed into a residential satisfaction scale. In order to capture the salient issues relevant to residential satisfaction, the model featured the following variable groupings; personal characteristics of the residents, physical characteristics related to the neighbourhood and individual dwellings, resident perceptions and affective characteristics, as well as social variables. In addition, statistical analysis were carried out to test the hypothesis that residential satisfaction would be greater among housing residents in one housing form than would be the case among housing residents in another.

The study identified eight factors observed to influence residential satisfaction. To the extent to which they explained the most variance, these are ranked in the order of importance to be physical factors related to spatial aspects of the dwelling, perceptions held by residents to aspects of the neighbourhood, communal and social factors related to the sociability of neighbours and neighbourhood factors. Other factors found to be significant included psycho-social factors related to the emotional bonds and attachments residents hold to the area, as well as physical factors linked to location characteristics and the proximity and availability of facilities. The study findings indicated that satisfaction levels were less differentiated along lines of what the residents' socio-demographic characteristics were than according to the dwelling type occupied. This validates the result of a previous study in Abuja, with respect to residents being dissatisfied when housing conditions, structure type

and design features of individual dwellings did not correspond to housing expectations (Ukoha and Beamish, 1997). The study shed light on how spaces were altered by the residents as well as the different ways in which they established boundaries not previously included in the original design around their houses; either as security devices, status symbols or as a means of restricting social interaction. Although the desire for intensive neighbouring or the need for strong social ties within the neighbourhood did not emerge as a prime consideration among the housing residents, particularly among those occupying multiple-family dwellings in the blocks of flats, yet there were indications suggesting the need for common public spaces beyond the dwellings, which would provide a sense of belonging to the community. Other concerns further indicated in the study related to the undesirable social consequences in allowing 'outsiders' to claim and use space in residential environments more than the housing inhabitants, as well as the negative psycho-social effects among family members in households when too many people occupy a small setting. The next section provides an outline of the conclusions drawn from the research findings.

5.3 Conclusions from the findings

- **Spatial aspects of dwelling units positively correlate with residential satisfaction.**

Evidence from the present study indicates the relative importance of having spatial units suitable, (in size and number), to the household size as a factor affecting residential satisfaction. The ability of spaces, not closely tied to specific functions within dwellings, to adapt themselves to specific spatial needs is critical to the satisfaction derived from the housing. In addition, family members also have social needs related to privacy. These cannot

be met where the household density far exceeds available space and will most probably result in children and private activities of the household spilling on to public space.

- **Residential satisfaction is affected by building type.**

Residents occupying single-family housing types were on the whole more satisfied than among those living in the blocks of flats, confirming previous research (Gilderbloom et al, 2005).

- **Open accessibility from public to semi-public spaces in the residential layout has resulted in public space being poorly used by the housing residents.**

In the semi-detached housing forms, the front entrances of all the dwellings open directly to public space. This openness emphasized by the original design does not appear to be appreciated by the housing residents. According to Thomas (2002), when interface between the street and the dwelling is not clearly defined it will affect the *'social performance' (p.95)* of open spaces in residential settings. Providing zones of semi-public, public and private spaces will provide greater opportunities for the residents to keep watch over the area as well as discourage non-inhabitants in using the space (Newman, 1972; Hanson and Zako, 2007).

- **Most households revealed lifestyles in which family space within the dwellings featured as being more important than communal space.**

The preference for 'closed' private lifestyles featured prominently among the research sample. Backyard spaces left open in the original design were demarcated and fenced, and were more actively used as family spaces than was the case in the space fronting the building. That notwithstanding however, the findings still indicated that the need for a 'sense of community' within the neighbourhood as a key consideration for being satisfied with one's residential environment.

- **An environment considered to project a good 'image' as being more important to social involvement with neighbours.**

Findings from the study show that sometimes, depending on the social groups present satisfaction with one's environment does not necessarily depend on the presence of social ties in the area as it does with the social image projected by the area.

- **Residents' perceptions to physical and social features of the residential setting play a key role in explaining satisfaction.**

Residents' perceptions are influenced by lifestyle factors, values and housing expectations, (which is also linked to previous housing history), that individuals bring to bear when assessing current housing.

- **The streets around the dwellings are socio-morphological elements which serve as settings for social relations among housing residents.**

The streets around the dwellings were observed to serve, more than any other place, as places where inhabitants met and socialised.

5.4 Implications and Contributions of the Study

Several implications can be linked to the preceding conclusions. With respect to satisfaction in housing, space is a central concern. The issue of providing single bedroom units within the African cultural context is not tenable under any circumstance. From the research, having enough rooms to ensure that the privacy needs of parents and children alike are met, far outweigh economic and structural considerations. When this is not satisfied it has psycho-social implications on relationships among family members (Deasy, 1978). Providing spaces

in residential settings which not only allow the development of healthy relationships within dwellings but which also promote social interaction among residents by providing communal facilities or shared public space is essential. The social needs of residents, in terms of what represents their priorities concerning the degree of privacy or interaction they desire also needs to be considered. Closely linked to this point is the need to consider an implication suggested by the research of sociability being 'forced' or 'anonymous'. In some of the areas, as a result of the government privatisation policy, people from different social groups have been integrated spatially, however it appears those higher up in the social ladder resent this and consequently do not favour regular social interactions with their neighbours.

Another implication from this study is the recognition of the role played by streets as social binders. The creation of informal places along the walkways where people can sit or where children can play may likely provide greater opportunities for social interaction. Constant use of such spaces by the inhabitants will also ensure natural surveillance and safety in the area.

This study has made contributions to knowledge in three ways. First, by providing evidence to the role of spatial and social factors in determining residential satisfaction among housing residents in Garki I, Abuja. It also shed light on explanatory factors accounting for the disparity of the use of space in completed projects to original design intentions. Finally, this study developed a residential satisfaction scale, applicable upon a multi-variate model of satisfaction. to the context considered.

5.5 Recommendations and Future Research Directions

Realising that housing involves more than the physical aspects alone (market-driven forces often sell 'images' of the developments), in the near future the performance of these residential developments will most likely be judged on how adequately they satisfied the users' housing expectations. Against the backdrop of the research findings, the following recommendations are made.

Re-defining the role of government in housing delivery

Re-defining the role of government is critical in ensuring the quality of the residential settings meet up to standard. Although the process may be initiated and funded by private developers, the government by providing the political backing will ensure the socio-spatial requirements of the future housing occupants are not compromised.

Need to develop housing research

The research identified evaluative feedback as one of the linkages in the housing process. In this light it is recommended that an effective framework for further research be established as a means of improving housing quality and overall residential satisfaction.

Need to recognise cultural issues as a vital aspect of architectural education

The fact that culture affects the use of space by individuals and groups of people is a point the research brought out. These issues need to be recognised and integrated in the processes of architectural education.

Create opportunities by design and building layout for shared communal activities

Opportunities for residents to meet socially in formal community halls or in informal spaces is essential, and needs to be integrated in future design.

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APPENDICES

Appendix I Sample Questionnaire Schedule

Introduction

Dear Sir/Madam,

This survey is part of a study aimed at evaluating your level of satisfaction with the residential setting in your neighbourhood in Garki I. The aim of this exercise is to obtain feedback on how you as the user evaluate aspects of the housing environment. It is hoped that the information you provide will in the long run, assist the professionals involved in making informed design decisions and proffer better solutions with respect to planning residential developments.

The process of filling the questionnaire will involve a little of your time, and so we crave your indulgence. This questionnaire is not a test, and so no answer is considered wrong; however, we seek your sincere opinions, which we anticipate will be reflected in the answers you choose.

The information you provide about yourself is needed for the research purposes only and will be treated as strictly confidential. We appreciate your co-operation and time shared with us.

Yours sincerely,
Dassah, Elizabeth (Mrs)

Index Number ☐

NEIGHBOURHOOD LOCATION _____
NAME OF HOUSEHOLD _____
BUILDING TYPE IDENTIFICATION _____
DATE _____

SCHEDULE I

Section I **Socio-demographic Data**

The following background information is needed about you for classification purposes. Please indicate the classifications which best describe you by ticking the appropriate box.

1. Age

☐ Below 25 years ☐ 25 – 34 years

☐ 35 – 44 year ☐ 45 – 54 years

☐ Over 55 years

2. Gender

☐ Male ☐ Female

3. Household Size

a. Indicate the number of wives you have (*Where head of household is female please skip*).

_____

b. Indicate the number of children and dependents living with you.

☐ Less than 3 in number ☐ 3 -5 in number

☐ 6 – 8 in number ☐ 9 – 10 in number

☐ More than 10 in number

4. Education (*highest level completed*)

☐ Primary education ☐ Secondary education

☐ Vocational training/craftsman ☐ Tertiary education

5. What is your employment status?

☐ I am a civil servant.

☐ I am a retired civil servant.

☐ I am self-employed.

6. If you are in the civil service, indicate present grade level.

_____

7. What is your estimated monthly household expenditure?

- ☐ N19,999 or less
- ☐ N20,000 – N39,999
- ☐ N40, 000 – N59, 999
- ☐ N60,000 – N79,999
- ☐ N80, 000 – N99,999
- ☐ N100,000 or more

Section II **Dwelling Attributes**

8. Indicate how long you have lived in this house.

- ☐ Less than 5 years
- ☐ 5 – 9 years
- ☐ 10 – 14 years
- ☐ 15 – 20 years
- ☐ Over 20 years

9. Indicate the form of tenureship?

- ☐ Owner-occupied
- ☐ Rent

10. Satisfaction with dwelling attributes.

*The following statements relate to how satisfied you are with features of your present house. Indicate the statement that best reflects how you feel by marking Very Satisfied (**VS**), Satisfied (**S**), Neither Satisfied or Dissatisfied (**N**), Dissatisfied (**D**), Very Dissatisfied (**VD**) in the space provided.*

_____ how satisfied are you living in this house?

_____ how satisfied are you with the physical appearance of your

_____ how satisfied are you with the size of your house?

_____ how satisfied are you with the overall spatial layout of the house?

_____ how satisfied are you with the number of rooms?

_____ how satisfied are you with the size of the rooms?

_____ how satisfied are you with privacy within the house?

Section III **Neighbourhood Attributes**

11. Satisfaction with neighbourhood attributes.

*The following statements relate to how satisfied you are with aspects of your neighbourhood. Indicate the statement that best reflects how you feel by marking Very Satisfied (**VS**), Satisfied (**S**), Neither Satisfied or Dissatisfied (**N**), Dissatisfied (**D**), Very Dissatisfied (**VD**) in the space provided.*

_____ how satisfied are you living in this neighbourhood?
_____ how satisfied are you with the appearance of the neighbourhood?
_____ how satisfied are you with the location in terms of accessibility to work?
_____ how satisfied are you with the proximity and availability of facilities?
_____ how satisfied are you with waste management in the neighbourhood?
_____ how satisfied are you with the security (safety) in the neighbourhood?

Section IV **Residents' Perceptions Attributes**

12. Residents' perceptions

*The following statements are concerned with your general opinion and feelings about living in this neighbourhood. Indicate the degree to which you agree with each statement by marking Strongly Agree **(SA),** Agree (**A**), Neither Agree or Disagree (**N**)**,** Disagree (**D**), Strongly Disagree **(SD)** in the space provided.*

_____ I am satisfied with my living environment.
_____ The buildings in this neighbourhood are attractive.
_____ Living in this neighbourhood is annoying.
_____ I feel at home in this neighbourhood.
_____ I feel an urge to move out of this neighbourhood.
_____ I have a lot of contact with my neighbours.
_____ Residents in this neighbourhood are friendly with each other.
_____ I feel attached to this neighbourhood.

Section V **Social Climate**

13. Do you feel people in your neighbourhood are unfriendly, friendly or tend to keep to themselves and mind their business?

☐ Unfriendly ☐ Friendly ☐ Keep to themselves

14. How often do you interact with your neighbours?

☐ Often ☐ Once in a while ☐ Seldom

15. How would you describe your relations with your neighbours?

☐ Good ☐ Fair ☐ Not good

16. Do you have a lot of friends or family members living near or within your neighbourhood?

☐ Yes ☐ No

17. Do you feel an attachment to this neighbourhood?

☐ Yes ☐ No

18. If your answer to (17) above was yes, in a few words could you explain why you feel a sense of attachment to the neighbourhood?

_____

19. Satisfaction with the social climate of the neighbourhood.

*The following statements relate to how satisfied you are with the social relationships between you and other residents in the neighbourhood. Indicate the statement that best reflects how you feel by marking Very Satisfied (**VS**), Satisfied (**S**), Neither Satisfied or Dissatisfied (**N**), Dissatisfied (**D**), Very Dissatisfied (**VD**) in the space provided.*

_____ how satisfied are you with the level of interaction with your neighbours?

_____ how satisfied are you with the concern shown by residents to each other?

_____ how satisfied are you with your social ties in the neighbourhood?

_____ how satisfied are you with the sense of unity (community spirit) here?

_____ how satisfied are you with residents' involvement in issues involving the neighbourhood?`

Appendix II Sample Interview Schedule

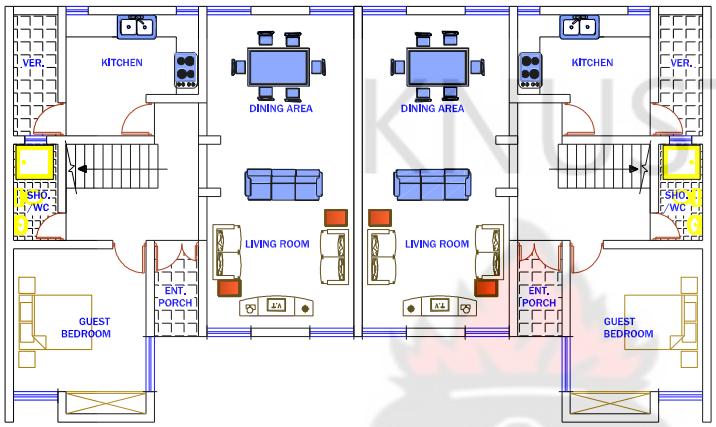
House location..... Interview number.....

1. How long have you lived in this neighbourhood?
2. Do you think this is a good place in which to live?
3. What are your reasons for saying so?
4. *(Optional if preceding answer is affirmative)*, Does that mean you like this place so much that you would not consider moving from here?
5. What are the three things about your dwelling and the neighbourhood with which you are most satisfied and pleased with?
6. Could you please explain your reasons for these?
7. What are the three things about your dwelling and the neighbourhood which dissatisfy you the most?
8. Could you please explain your reasons for these?
9. Do you think the space in your house meets what you and your family actually require?
10. *(Optional if preceding answer is negative)*, what do you consider to be lacking, or provision to have been made for?
11. Have you in any way altered the original design of the house?
12. What informed your decision to do this?
13. How frequently do you interact with your neighbours?
14. Do you feel the need for more interaction with your neighbours, or are you satisfied with the status quo?
15. Do you think the fences, and security devices most people put around their houses contribute in restraining more interactions among neighbours?
16. *(Optional if preceding answer is affirmative)*, Please explain why you think this is so.

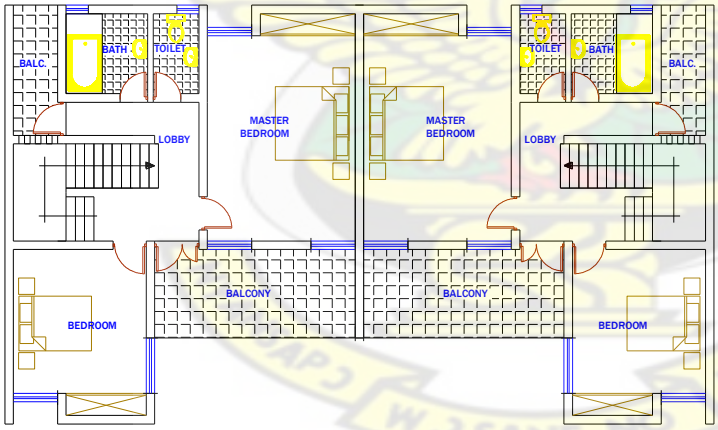
Thank you for your time and co-operation in participating in this research.

Appendix III Sample floor plans and photographs

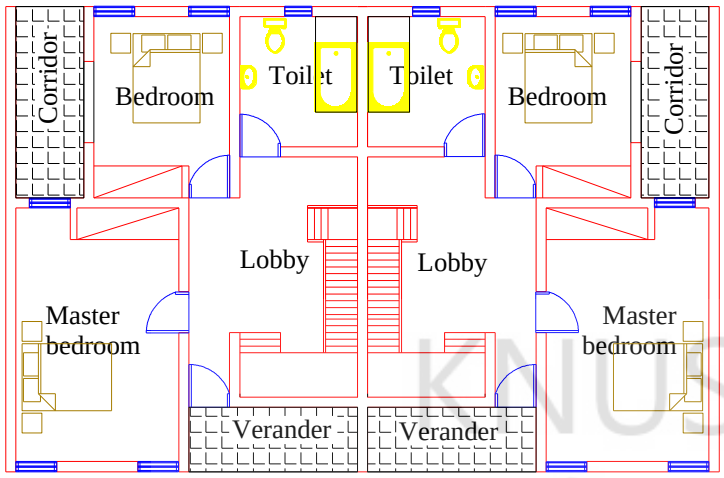
PLATE 1



GROUND FLOOR PLAN



UPPER FLOOR PLAN



Upper floor

PLATE 2

Appendix IV Output of Factor Analysis

Table 1 Correlation Matrix

orrelation Matrix[a]

		Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q39	Q38	Q40	Q41	Q42
Correlation	Q12	1.000	.434	.410	.350	.355	.301	.300	.382	.158	.231	.305	.184	.394	.290	-.174	.313	-.328	.165	.182	.253	.238	.217	.216	.202	.339
	Q13	.434	1.000	.634	.715	.421	.449	.247	.225	.038	.244	.296	.138	.410	.211	-.017	.342	-.338	.144	.141	.332	.258	.249	.211	.221	.314
	Q14	.410	.634	1.000	.522	.405	.323	.270	.426	.106	.275	.338	.176	.424	.258	-.091	.404	-.329	.077	.194	.302	.304	.267	.075	.302	.367
	Q15	.350	.715	.522	1.000	.439	.478	.279	.244	.064	.186	.251	.144	.401	.190	-.074	.347	-.303	.175	.212	.299	.295	.270	.136	.246	.293
	Q16	.355	.421	.405	.439	1.000	.378	.243	.325	.140	.291	.139	.079	.236	.123	-.169	.156	-.150	.136	.264	.294	.269	.247	.041	.266	.250
	Q17	.301	.449	.323	.478	.378	1.000	.299	.210	.133	.131	.209	.126	.256	.094	-.203	.325	-.307	.169	.188	.130	.381	.370	.037	.192	.193
	Q18	.300	.247	.270	.279	.243	.299	1.000	.506	.198	.217	.226	.252	.461	.190	-.314	.466	-.442	.214	.366	.347	.213	.379	.266	.180	.247
	Q19	.382	.225	.426	.244	.325	.210	.506	1.000	.140	.256	.347	.351	.448	.257	-.268	.350	-.333	.053	.266	.274	.203	.188	.183	.235	.337
	Q20	.158	.038	.106	.064	.140	.133	.198	.140	1.000	.317	.259	.028	.098	.128	-.176	.103	-.085	.195	.185	.075	.135	.219	.346	.080	.050
	Q21	.231	.244	.275	.186	.291	.131	.217	.256	.317	1.000	.258	.011	.285	.274	-.124	.249	-.009	.144	.143	.301	.167	.137	.206	.250	.172
	Q22	.305	.296	.338	.251	.139	.209	.226	.347	.259	.258	1.000	.212	.279	.277	-.104	.238	-.172	.109	.209	.186	.319	.267	.075	.173	.250
	Q23	.184	.138	.176	.144	.079	.126	.252	.351	.028	.011	.212	1.000	.282	.120	-.169	.212	-.201	.007	.103	.123	.174	.162	.169	.094	.150
	Q24	.394	.410	.424	.401	.236	.256	.461	.448	.098	.285	.279	.282	1.000	.397	-.419	.631	-.426	.282	.314	.469	.348	.375	.249	.283	.340
	Q25	.290	.211	.258	.190	.123	.094	.190	.257	.128	.274	.277	.120	.397	1.000	-.178	.335	-.256	.142	.177	.377	.148	.152	.188	.217	.292
	Q26	-.174	-.017	-.091	-.074	-.169	-.203	-.314	-.268	-.176	-.124	-.104	-.169	-.419	-.178	1.000	-.373	.361	-.084	-.238	-.258	-.146	-.196	-.188	-.191	-.177
	Q27	.313	.342	.404	.347	.156	.325	.466	.350	.103	.249	.238	.212	.631	.335	-.373	1.000	-.520	.198	.271	.443	.319	.385	.179	.240	.345

	Q28	-.328	-.338	-.329	-.303	-.150	-.307	-.442	-.333	-.085	-.009	-.172	-.201	-.426	-.256	.361	-.520	1.000	-.056	-.222	-.350	-.285	-.330	-.233	-.227	-.265
	Q29	.165	.144	.077	.175	.136	.169	.214	.053	.195	.144	.109	.007	.282	.142	-.084	.198	-.056	1.000	.525	.449	.257	.451	.134	.259	.257
	Q30	.182	.141	.194	.212	.264	.188	.366	.266	.185	.143	.209	.103	.314	.177	-.238	.271	-.222	.525	1.000	.451	.522	.590	.198	.468	.462
	Q31	.253	.332	.302	.299	.294	.130	.347	.274	.075	.301	.186	.123	.469	.377	-.258	.443	-.350	.449	.451	1.000	.281	.415	.279	.396	.401
	Q39	.238	.258	.304	.295	.269	.381	.213	.203	.135	.167	.319	.174	.348	.148	-.146	.319	-.285	.257	.522	.281	1.000	.595	.282	.562	.487
	Q38	.217	.249	.267	.270	.247	.370	.379	.188	.219	.137	.267	.162	.375	.152	-.196	.385	-.330	.451	.590	.415	.595	1.000	.184	.414	.366
	Q40	.216	.211	.075	.136	.041	.037	.266	.183	.346	.206	.075	.169	.249	.188	-.188	.179	-.233	.134	.198	.279	.282	.184	1.000	.247	.220
	Q41	.202	.221	.302	.246	.266	.192	.180	.235	.080	.250	.173	.094	.283	.217	-.191	.240	-.227	.259	.468	.396	.562	.414	.247	1.000	.737
	Q42	.339	.314	.367	.293	.250	.193	.247	.337	.050	.172	.250	.150	.340	.292	-.177	.345	-.265	.257	.462	.401	.487	.366	.220	.737	1.000
Sig. (1-tailed)	Q12		.000	.000	.000	.000	.000	.000	.000	.015	.001	.000	.005	.000	.000	.008	.000	.000	.011	.006	.000	.000	.001	.001	.002	.000
	Q13	.000		.000	.000	.000	.000	.000	.001	.303	.000	.000	.028	.000	.002	.406	.000	.000	.023	.026	.000	.000	.000	.002	.001	.000
	Q14	.000	.000		.000	.000	.000	.000	.000	.072	.000	.000	.007	.000	.000	.104	.000	.000	.144	.003	.000	.000	.000	.152	.000	.000
	Q15	.000	.000	.000		.000	.000	.000	.000	.189	.005	.000	.024	.000	.004	.152	.000	.000	.008	.002	.000	.000	.000	.030	.000	.000
	Q16	.000	.000	.000	.000		.000	.000	.000	.027	.000	.027	.138	.000	.044	.009	.016	.019	.030	.000	.000	.000	.000	.286	.000	.000
	Q17	.000	.000	.000	.000	.000		.000	.002	.033	.035	.002	.040	.000	.098	.002	.000	.000	.010	.005	.036	.000	.000	.303	.004	.004
	Q18	.000	.000	.000	.000	.000	.000		.000	.003	.001	.001	.000	.000	.004	.000	.000	.000	.001	.000	.000	.001	.000	.000	.006	.000
	Q19	.000	.001	.000	.000	.000	.002	.000		.026	.000	.000	.000	.000	.000	.000	.000	.000	.232	.000	.000	.002	.004	.005	.001	.000
	Q20	.015	.303	.072	.189	.027	.033	.003	.026		.000	.000	.352	.088	.038	.007	.077	.121	.003	.005	.151	.031	.001	.000	.136	.247
	Q21	.001	.000	.000	.005	.000	.035	.001	.000	.000		.000	.438	.000	.000	.044	.000	.450	.023	.024	.000	.010	.029	.002	.000	.009
	Q22	.000	.000	.000	.000	.027	.002	.001	.000	.000	.000		.002	.000	.000	.077	.000	.009	.067	.002	.005	.000	.000	.152	.008	.000
	Q23	.005	.028	.007	.024	.138	.040	.000	.000	.352	.438	.002		.000	.049	.010	.002	.003	.464	.078	.045	.008	.012	.010	.097	.019

Q24	.000	.000	.000	.000	.000	.000	.000	.000	.000	.088	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Q25	.000	.002	.000	.004	.044	.098	.004	.000	.038	.000	.000	.049	.000		.007	.000	.000	.025	.007	.000	.021	.018	.004	.001	.000	
Q26	.008	.406	.104	.152	.009	.002	.000	.000	.007	.044	.077	.010	.000	.007		.000	.000	.124	.000	.000	.022	.003	.005	.004	.007	
Q27	.000	.000	.000	.000	.016	.000	.000	.000	.077	.000	.000	.002	.000	.000	.000		.000	.003	.000	.000	.000	.000	.006	.000	.000	
Q28	.000	.000	.000	.000	.019	.000	.000	.000	.121	.450	.009	.003	.000	.000	.000	.000		.221	.001	.000	.000	.000	.001	.001	.000	
Q29	.011	.023	.144	.008	.030	.010	.001	.232	.003	.023	.067	.464	.000	.025	.124	.003	.221		.000	.000	.000	.000	.032	.000	.000	
Q30	.006	.026	.003	.002	.000	.005	.000	.000	.005	.024	.002	.078	.000	.007	.000	.000	.001	.000		.000	.000	.000	.003	.000	.000	
Q31	.000	.000	.000	.000	.000	.036	.000	.000	.151	.000	.005	.045	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	
Q39	.000	.000	.000	.000	.000	.000	.001	.002	.031	.010	.000	.008	.000	.021	.022	.000	.000	.000	.000	.000		.000	.000	.000	.000	
Q38	.001	.000	.000	.000	.000	.000	.000	.004	.001	.029	.000	.012	.000	.018	.003	.000	.000	.000	.000	.000	.000		.005	.000	.000	
Q40	.001	.002	.152	.030	.286	.303	.000	.005	.000	.002	.152	.010	.000	.004	.005	.006	.001	.032	.003	.000	.000	.005		.000	.001	
Q41	.002	.001	.000	.000	.000	.004	.006	.001	.136	.000	.008	.097	.000	.001	.004	.000	.001	.000	.000	.000	.000	.000	.000		.000	
Q42	.000	.000	.000	.000	.000	.004	.000	.000	.247	.009	.000	.019	.000	.000	.007	.000	.000	.000	.000	.000	.000	.000	.001	.000		

a. Determinant = 2.11E-

005

(Source: Author's field data, 2010)

Table 2 Variance, sum of squared loadings

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.792	29.968	30	7.79	30	30	3.7	14.2	14
2	2.079	7.997	38	2.08	8	38	2.7	10.4	25
3	1.744	6.706	44.7	1.74	6.71	45	2.4	9.27	34
4	1.428	5.494	50.2	1.43	5.49	50	2.4	9.24	43
5	1.263	4.857	55	1.26	4.86	55	1.8	6.83	50
6	1.185	4.559	59.6	1.19	4.56	60	1.7	6.54	57
7	1.082	4.163	63.7	1.08	4.16	64	1.4	5.57	62
8	1.002	3.852	67.6	1	3.85	68	1.4	5.46	68
9	0.91	3.501	71.1						
10	0.781	3.004	74.1						
11	0.731	2.81	76.9						
12	0.682	2.621	79.5						
13	0.609	2.342	81.9						
14	0.568	2.184	84.1						
15	0.529	2.034	86.1						
16	0.518	1.991	88.1						
17	0.445	1.713	89.8						
18	0.399	1.536	91.3						
19	0.366	1.407	92.7						
20	0.36	1.383	94.1						
21	0.344	1.322	95.4						
22	0.305	1.174	96.6						
23	0.26	0.999	97.6						
24	0.242	0.929	98.5						
25	0.204	0.785	99.3						
26	0.173	0.666	100						

Table 3 Component Matrix

	Component							
	1	2	3	4	5	6	7	8
Q11	0.595	0.129	0.08	0.17	0.24	0.2	0.3	-0.2
Q12	0.489	0.155	0.14	-0	0.28	0.2	0.2	0.13
Q13	0.869	0.042	0.11	0.03	0.03	0.2	0	0.07
Q14	0.622	0.114	0.23	-0	0.26	0.2	-0.1	0.26
Q15	0.808	0.103	0.11	0.12	0.01	0.1	-0	0.1
Q16	0.47	0.169	0.21	0.09	-0	-0.2	-0.1	0.1
Q17	0.622	0.251	0.03	0.25	0.09	-0.4	0	0.1
Q18	0.191	0.6	-0.02	0.26	0.29	0.1	0.1	0.09
Q19	0.154	0.427	0.18	-0.1	0.58	0.1	-0	0.29
Q20	-0.01	0.034	-0.11	0.22	0.18	-0.1	0.7	0.37
Q21	0.132	0.017	0.06	0.07	0.08	0.4	0.3	0.66
Q22	0.225	-0.088	0.04	0.21	0.7	0.2	0.1	0.18
Q23	0.056	0.267	0.11	-0.1	0.63	-0	0	-0.2
Q24	0.335	0.527	0.11	0.22	0.21	0.4	0	0.01
Q25	0.141	0.135	0.11	0.06	0.18	0.7	0.1	0.08
Q26	0.098	-0.771	-0.11	-0	-0	0	-0.1	-0.2
Q27	0.328	0.586	0.07	0.21	0.13	0.3	-0	-0.1
Q28	-0.341	-0.655	-0.15	-0	-0.1	-0.1	-0.1	0.21
Q29	0.065	0.009	0.04	0.81	-0.1	0.2	0.1	0.06
Q30	0.016	0.199	0.42	0.69	0.12	0	0	0.1
Q31	0.168	0.332	0.26	0.42	-0.1	0.5	-0	0.16
Q38	0.218	0.223	0.29	0.71	0.16	-0.1	0.1	-0
Q39	0.259	0.089	0.61	0.4	0.21	-0.1	0.2	-0.1
Q40	0.096	0.211	0.26	-0	-0	0.2	0.8	-0.1
Q41	0.103	0.093	0.86	0.19	0.01	0.1	0.1	0.14
Q42	0.209	0.105	0.79	0.15	0.15	0.2	0	0.03

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

(Source: Author's field data, 2010)