Maintenance conditions and occupant behavior in government provided housing in Lagos, Nigeria

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*University of Northern Iowa*

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MAINTENANCE CONDITIONS AND OCCUPANT BEHAVIOR IN
GOVERNMENT PROVIDED HOUSING IN LAGOS, NIGERIA

A Dissertation
Submitted
In partial Fulfillment
of the Requirements for the Degree
Doctor of Industrial Technology

Approved:

Dr. Ervin A. Dennis, Advisor
Dr. H. Steven Egger, Co-Advisor
Prof. Roy Chung, Member
Dr. Ali E. Kashef, Member
Dr. Bruce G. Rogers, Member

Paul Abayomi Bajere
University of Northern Iowa
May 1996
DEDICATION

In high honor of my mother, Mrs. Maria Ekundayo Bajere, and in a deep memory of my grandmother, Mrs. Winifred Adeshinyen Damazio, without whose blessing I could never have begun.

In high honor of my family: Adeola (wife), Opeyemi (daughter), Bamidele, and Adewale (sons), without whom I could never have finished.
ACKNOWLEDGEMENTS

This research could not have been completed without the assistance and encouragement of other individuals. The support and cooperation of members of my academic program committee must be acknowledged. I would like to thank my advisor, Dr. Ervin A. Dennis, who despite all odds, inspired me to get this far. He was always giving me words of encouragement and eventually brought the best out of me. He kept me on schedule and insured that the manuscript met the high academic standards of the graduate faculty, University of Northern Iowa. He also provided encouragement and words of wisdom when I needed it most.

I gratefully acknowledge the efforts of members of my academic committee: Dr. H. Steven Egger, my Co-Advisor, Dr. Ali E. Kashef, Professor Roy Chung, and Dr. Bruce G. Rogers. They all offered constructive criticisms on the research design, questionnaire construction, and offered advise on the appropriate statistical methods.

Dr. Rogers and Professor Chung always listened patiently to any problems and offered helpful suggestions throughout the course of the research. Dr. Rogers helped me with the statistical analysis of my data. He also offered relentless effort toward the successful completion of this research. Professor Chung also assisted me with the statistical analysis of the data and the interpretations of the research findings. Dr. Egger and Dr. Kashef both gave
me the best cooperation and support, not only during the conduct of this study, but throughout my entire doctoral study. They maintained an open-door policy for consultation and advice regarding this research and other academic matters.

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A special thanks and adoration to my loving wife, Adeola, who patiently endured many painful and boring years so that I could struggle through. I thank you for your words of encouragement. I would especially like to thank my loving sons, Bamidele and Adewale, and my daughter, Opeyemi for standing by me throughout the last three difficult years.

Other people deserve credit for assisting me with the successful completion of this dissertation. I acknowledge their individual and group contributions.
# CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td></td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>CONTENTS</td>
<td></td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td></td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td></td>
<td>xi</td>
</tr>
<tr>
<td>CHAPTER 1:</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>THE RESEARCH PROBLEM</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Background of the Problem</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Need for the Research</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Statement of Purpose</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Research Questions</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Limitations</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Delimitations</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Assumptions</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Operational Definitions</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Schedule of Research Activities</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Research Budget and Actual Expenses</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Disposition of Results</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>CHAPTER 2:</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>REVIEW OF THE LITERATURE</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>The Concept of Housing</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Evolution of Government Provided Housing in Nigeria</td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>
Contributions of Military Governments and Administrators ........................................ 28
Factors Influencing Home Maintenance Behavior ......................................................... 30
Influence of Technology .................................................................................................. 37
Influence of Social Factors ............................................................................................. 38
Influence of Culture ......................................................................................................... 39
Influence of Perception, Attitude, and Performance ....................................................... 41
Influence of Tenureship Factors ....................................................................................... 43
Economic, Resources, Demographic, and Competence Factors .................................. 44
Summary of Related Research and Information ............................................................. 50
Conceptual Model for the Study ...................................................................................... 53

CHAPTER 3:

RESEARCH DESIGN AND METHODOLOGY .................................................................. 55
Study Area ....................................................................................................................... 55
Research Design ............................................................................................................. 57
The Population ................................................................................................................ 57
The Sample ...................................................................................................................... 57
Design of the Survey Instruments .................................................................................. 59
Jury Selection for Validating the Instruments ................................................................. 62
Pilot Test of the Primary Instrument .............................................................................. 64
Research Data Collection ............................................................................................... 65
Statistical Procedures ..................................................................................................... 66
Measurement of Variables .............................................................................................. 66
Conclusions ............................... 133

Conclusions Related to
Research Question One ............... 133

Conclusions Related to
Research Question Two ............... 136

Conclusions Related to
Research Question Three .......... 137

Recommendations for Action .......... 138

Recommendations for Further Study ... 139

REFERENCES ......................... 141

APPENDICES .......................... 147

A. Research Activity Schedule ...... 148

B. Research Budget and Actual Research Expenses .. 150

C. Photographs of Existing Maintenance
Condition of Buildings and Housing Units .. 153

D. Survey Instruments ................ 164

E. Correspondence .................... 190

F. Jury Members ...................... 195

G. Tables: 40 and 41 ................. 197

H. Resume .......................... 202
<table>
<thead>
<tr>
<th>TABLES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Home Maintenance Behavior of Occupants (X1)</td>
<td>70</td>
</tr>
<tr>
<td>2. Maintenance Condition of Housing Surroundings</td>
<td>73</td>
</tr>
<tr>
<td>3. Maintenance Condition of Housing Unit Exteriors</td>
<td>74</td>
</tr>
<tr>
<td>4. Maintenance Condition of Housing Unit Interiors</td>
<td>75</td>
</tr>
<tr>
<td>5. Occupant Attitudes Toward Home Maintenance</td>
<td>76</td>
</tr>
<tr>
<td>6. Occupant Beliefs regarding Seriousness of Home Maintenance</td>
<td>77</td>
</tr>
<tr>
<td>7. Important Factors in Home Maintenance Decisions</td>
<td>78</td>
</tr>
<tr>
<td>8. Performer of Identified Maintenance Defects</td>
<td>79</td>
</tr>
<tr>
<td>9. Reasons For Not Repairing the Three Identified Defects</td>
<td>81</td>
</tr>
<tr>
<td>10. Quality of Construction Technology</td>
<td>82</td>
</tr>
<tr>
<td>11. Home Maintenance Competencies</td>
<td>83</td>
</tr>
<tr>
<td>12. Previous Immediate Residence</td>
<td>84</td>
</tr>
<tr>
<td>13. Length of Stay in Government Housing</td>
<td>85</td>
</tr>
<tr>
<td>14. Education Level of Respondents</td>
<td>88</td>
</tr>
<tr>
<td>15. Household Size of Respondents</td>
<td>89</td>
</tr>
<tr>
<td>16. Ages of Respondents</td>
<td>90</td>
</tr>
<tr>
<td>17. Occupations of Respondents</td>
<td>91</td>
</tr>
<tr>
<td>18. Ages and Number of Household Members Assisting with Maintenance</td>
<td>92</td>
</tr>
<tr>
<td>20. Attitude of Government Officials Towards Home Maintenance</td>
<td>95</td>
</tr>
<tr>
<td>21. Government Officials’ Claim Regarding Available Maintenance Codes and Standards</td>
<td>96</td>
</tr>
</tbody>
</table>
22. Reasons for the Occurrence of Home Maintenance Problems ................................................. 97
23. Types and Sources of Assistance Available ........................................................................ 98
24. Effectiveness of Maintenance Assistance Programs .......................................................... 99
25. Strengths of Assistance Programs ....................................................................................... 100
26. Responsibility for Home Maintenance .................................................................................. 100
27. Difficulties Encountered in Enforcing Home Maintenance Standards ............................... 101
28. Recommendations for Solving Home Maintenance Problems .............................................. 102
29. Research Variables .............................................................................................................. 106
30. Inter-Correlation Matrix for Research Question One .......................................................... 114
31. Highest Correlates of Home Maintenance Behavior (X1) ............................................... 115
32. Highest Correlates of Exterior Maintenance Conditions (X2.1) ....................................... 117
33. Highest Correlates of Conditions of Building Structure (X2.2) ...................................... 118
34. Highest Correlates of Conditions of Interior Areas (X2.3) ............................................... 119
35. Regression Model for Research Question Two ................................................................. 121
36. Inter-Correlation Matrix for Research Question Two ......................................................... 124
37. Highest Correlates of Summation of Attitude and Perception of Home Maintenance of Occupants (X3) ................................................................. 127
38. Inter-Correlation Matrix for Research Question Three .................................................... 129
39. Highest Correlates of Summation of Existing Maintenance Conditions (X3) ...................... 130
40. Correlation Coefficients for all Measurements. . . 198

41. Statistics on Home Maintenance
   Behavior Variables. . . . . . . . . . . . . . . . . . 201
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Hypothesized Model of Home Maintenance Behavior</td>
<td>54</td>
</tr>
<tr>
<td>3. Maintenance Condition of Drainage Ditch (Gutter)</td>
<td>154</td>
</tr>
<tr>
<td>4. Condition of Exterior Walls and Surrounding Area</td>
<td>155</td>
</tr>
<tr>
<td>5. Condition of Entrance Doors, Windows, Electrical Wiring, and Plumbing</td>
<td>156</td>
</tr>
<tr>
<td>6. Condition of Doors and Windows to Individual Housing Units</td>
<td>157</td>
</tr>
<tr>
<td>7. Vegetation Growing on Exterior Walls</td>
<td>158</td>
</tr>
<tr>
<td>8. Maintenance Condition of Walkway</td>
<td>159</td>
</tr>
<tr>
<td>9. Condition of Play Area</td>
<td>160</td>
</tr>
<tr>
<td>10. Condition of Stairs and Entrance Wall</td>
<td>161</td>
</tr>
<tr>
<td>11. Maintenance Condition of Ceiling</td>
<td>162</td>
</tr>
<tr>
<td>12. Maintenance Condition of Floor</td>
<td>163</td>
</tr>
</tbody>
</table>
MAINTENANCE CONDITIONS AND OCCUPANT BEHAVIOR IN
GOVERNMENT PROVIDED HOUSING IN LAGOS, NIGERIA

An Abstract of a Dissertation
Submitted
In Partial Fulfillment
of the Requirements for the Degree
Doctor of Industrial Technology

Approved:

Dr. Ervin A. Dennis, Faculty Advisor

Dr. John W. Somerville, Dean of the Graduate College

Paul Abayomi Bajere
University of Northern Iowa
May 1996
ABSTRACT


Maintenance conditions and occupant behavior towards maintenance in government housing in developing countries are universal problems. Perceptions, construction technology, competencies, tenureship, cultural tradition, and demographic factors have been identified as major constraints influencing housing maintenance behavior. There was a need for this study because limited literature exists on maintenance of urban government provided housing in Nigeria. Also, the degree of success of the government's efforts concerning environmental cleaning has not been remarkable.

The primary purpose of this study was to investigate the maintenance of government provided housing, as perceived by the residents and observed by the researcher, to determine the relationships of maintenance constraints on existing home conditions. A secondary purpose was to investigate these conditions as perceived by government housing officials and private individuals.

The primary sample consisted of 74 dwelling units randomly selected from four public housing projects in Lagos, Nigeria. The secondary sample consisted of 20
randomly selected government officials and four randomly selected private Nigerians.

The analysis involved the use of mean, standard deviation, correlation, and multiple regression. The research findings indicated that:

1. Observed maintenance defects are very serious on the outside of the sampled buildings and in the surrounding areas, but not nearly as bad on the inside of the housing units.

2. Untarred roads, poor street lighting, and lack of security were very serious problems.

3. Nigerians residing in the sampled government provided housing units have a low level of consciousness regarding home maintenance problems.

4. Occupants of government provided housing understand the significance of performing needed maintenance, but they are constrained or limited by the lack of adequate financial assistance, cooperation among neighbors, mis-understandings of owners regarding maintenance responsibilities, and lack of maintenance skill like carpentry, roofing knowledge, and plumbing.

Based on the research findings, recommendations were being made. These include the following: (a) conduct further research in the use of existing construction materials and the development of alternative materials, (b) promote existing codes, types and sources of funding and
other assisting programs, including educational opportunities on home maintenance, and (c) conduct a study to determine the reasons why people have negative attitudes toward government properties.
CHAPTER 1
THE RESEARCH PROBLEM

It was endeavored in this study to determine the magnitude of home maintenance problems and the determinants (constraints) of home maintenance behavior of occupants in government provided housing in Lagos, Nigeria. In this study, maintenance is used as a generic term to identify all work, both planned and unplanned, necessary to ensure that a building remains at an acceptable standard for the purpose of preventing progressive deterioration due to age and usage (Quah, 1992, p. 33). Defining what constitutes maintenance, Seygnola (1987) explained that "the maintenance of the housing environment takes the form of cleaning weeds in the surrounding areas, as well as repairing cracked walls, faulty roofs, and windows" (p. 74).

Background of the Problem

There is a universal shortage of decent and well maintained dwelling units in developing countries. Rapid population growth and urbanization are creating escalating demands for added living spaces. In Nigeria, as in other developing countries, there is a wide gap between housing needs and efforts to increase the number and quality of available housing units (Megbolugbe, 1983; Onibokun, 1987; Seygnola, 1980). One of the reasons for inadequate housing in Nigeria is poor maintenance. For both public buildings
and family homes, maintenance is performed only when the need becomes acute and invariably comes much too late.

Poor maintenance of the building shell, interior, and its surroundings continue to add to the acute shortage of decent homes in Nigeria. The rate of population increase, inflationary trends, and other socio-economic conditions in the country limit efforts by government agencies and private developers to adequately construct new housing units to satisfy the needs of the growing population. Awotona (1977) observed that solving Nigeria's housing problems by building more houses without maintaining the existing ones will not solve the housing problem. He also claimed that "although more than 20,000 new housing units are built in the country annually, Nigeria will need to build at least 60,000 dwelling units every year for the next 30 years to overcome the housing shortages" (p. 101). On first observation, the numbers appear to be low considering the facts that: (a) the United States with a population twice that of Nigeria's needs to engage in the construction of over one million new housing units each year to accomplish the same goal, and (b) the quality of housing maintenance in the United States is very high by comparison to the situation in Nigeria.

**Need for the Research**

There is an urgent need for the development of a housing maintenance framework and institutionalized policies for management of government provided housing in Nigeria.
An understanding of the magnitude and causes of home maintenance must precede the formulation and implementation of any home maintenance policies. The need for the study stems from the facts that: (a) limited literature exists on maintenance of urban government provided housing in Nigeria, and (b) the degree of success of Nigerian government's efforts on environmental cleaning has been minimal.

Umeh (1993) conducted a study on urbanization and housing trends for the purpose of investigating some of the critical housing issues in Nigeria. He stressed that "perhaps the most visible and pressing challenges of Nigeria's urbanization is housing deficiency" (p. 103). However, there is no evidence in the literature of studies being conducted in sub-saharan Africa, especially in urban Nigeria, relating maintenance constraints and perceptions of residents to the existing maintenance conditions and home maintenance behavior.

Most of the literature on housing in Nigeria focused on infrastructural problems in the urban and rural areas. These research efforts merely describe in general terms the poor physical or structural features and conditions of the houses (Iyagba, 1983). The researchers did not undertake an investigation of the problem of poor quality of maintenance of government provided housing in Lagos, Nigeria (Onibokun, 1987; Segynola, 1985). This conclusion may be because: (a) the issue is not considered important enough, (b) there is
limited understanding of the issues, or (c) the authors came from societies where housing maintenance is of little importance.

Since 1985, the Nigerian government officials have mandated monthly nationwide cleaning of housing units, and the neighborhoods in their politics of the country and especially, in Lagos. On the last Saturday morning of each month, between 8-11 a.m., individuals are supposed to stay at home and maintain their homes and surroundings. Despite these substantial efforts, the need for home maintenance continues to be apparent.

In 1986, military government officials terminated the mass housing provision program in Nigeria. In defense of their action, they claimed that "Nigerians by nature do not demonstrate maturity in the use of public property" (Ogunshakin & Olayiwola, 1992, p. 46). This claim somehow relates existing maintenance conditions throughout the country to maintenance culture and personal home maintenance behavior. However, it is not clear from the statement whether this is culturally based or whether the statement is applicable to occupants of government provided housing units in Lagos.

Previous research efforts to identify the factors responsible for the low level of home maintenance in the developing countries blamed the designers, contractors, and the government rather than the specific occupants of the
housing units. For instance, the authors of a United Nations sponsored study of Ghana and other developing countries attributed the reasons for poor building maintenance in the developing countries to bad project planning, low labor productivity, poor management, and other unfavorable general economic conditions (The United Nations, 1970:7). Ogunshakin and Olayiwola (1992), during their investigation of the collapse of housing policies and the defense of the need for government intervention in mass housing construction in Nigeria, revealed that even though the:

Socio-economic situation laid the foundation of the housing problem, it was perpetuated by the post-colonial development orientation and economic policies (in terms of institutionalized mechanisms of decision making and implementation process) of the successive national governments. (p. 43)

Ogunshakin and Olayiwola warned that "if appropriate measures are not embarked upon, sooner or later, many of these mass housing units would be turned into official slums." These researchers further suggested that "the most positive answer lies in the absence of an organized participatory estate maintenance and management system" (p. 50).

It was evident in the literature that socio-economic and political variables alone do not seem to answer some of the fundamental questions regarding the ubiquitous absence of maintenance in Nigerian public housing. In addition, the
results of previous research studies do not suggest conclusions that might lead to a defensible proposal for a home maintenance framework and policies for public and private housing projects in the urban regions of Nigeria (Segynola, 1987).

The limited literature available on the subject appear to suggest that the maintenance problem demands a research-based solution. It is intended that this investigation will provide a better understanding of the maintenance problems in government housing in Lagos, Nigeria.

Recommendations will be offered, from the results of this study, to the inhabitants of public housing, officials at government housing agencies in Nigeria, and Nigerian citizens regarding improving home maintenance behavior in Lagos, Nigeria. It is anticipated that the findings of this study will provide useful information to local, state, federal housing agencies, and private owners. The information provided may be useful in the development of maintenance framework, and the formulation of appropriate maintenance policies for improving housing conditions in Lagos, Nigeria which is considered sub-saharan Africa. The results of this study may also create awareness of the need for home maintenance and provide the incentives for performing the needed housing maintenance in Lagos, Nigeria. Hopefully, this will contribute to the quality of housing and reduce the rapid deterioration of houses in Lagos.
Furthermore, it could provide useful information for other areas of Nigeria faced with housing shortages and home maintenance problems.

**Statement of Purpose**

The primary purposes of this study were to investigate the maintenance conditions of government provided housing, as perceived by the residents and observed by the researcher, and to determine the relationships of maintenance constraints to existing home conditions. To accomplish these purposes, data were collected and analyzed: (a) to assess the existing maintenance conditions in selected public housing units, and (b) to determine the extent that differences in home maintenance behavior can be attributed to differing perceptions, construction systems, resources, competencies, tenureship, culture, and demographic constraints (Figure 1 shows the conceptual framework of home maintenance behavior).

A secondary purpose was to investigate the concept of maintenance as perceived by government housing officials. To accomplish this secondary purpose, several questions were administered to collect relevant data from various individuals and organizations responsible for the development and maintenance of the government provided housing units.
Statement of the Problem

As stated earlier, the results of a research study indicated that it is not practical to continue building new homes without maintaining the existing housing stock (Awotona, 1977). It was suggested that improving the standard of maintenance of the existing housing stock could...
help to maintain the quality and quantity of the existing housing in Nigeria (Onibokun, 1987). Hence, the specific objectives of the study were: (a) to investigate existing maintenance conditions, (b) to determine the causes of maintenance problems, and (c) to investigate the relationship between occupant home maintenance behavior and attributes in government provided housing in Lagos, Nigeria, as perceived by residents, government housing officials, and other citizens of Nigeria.

Research Questions

Three major research questions were used to establish the basis for this study. The specific research questions are listed as follows:

Question 1: How is home maintenance behavior of residents constrained or influenced by (a) the existing home maintenance conditions and (b) the perceptions of people living in the government provided homes?

Question 2: How does the following set of variables affect the home maintenance perception: (a) construction systems and technology factors, (b) competence of the residents and resource factors, (c) tenureship factors, (d) cultural factors, and (e) demographic factors?

Question 3: How do the existing home conditions relate to the maintenance needs that have either been deferred or neglected as influenced by resident awareness of the need.
Limitations

Because of the existing large population of Nigeria and the concentration of government provided housing units, Lagos was selected for the study. The following limitations were enforced:

1. The population was confined to occupants of government provided multi-level and multi-family (condominium) housing units in Lagos, Nigeria.

2. Because Lagos is located in the southern part of the country, results of the study may not be generalized for the northern part of Nigeria. There are considerable differences in characteristics such as cultural, climate, socio-economic, and housing conditions between the south mangrove which is essentially humid tropical rain forest area with heavy rainfall and the northern sub-sahel region.

3. Because gender bias is part of the Nigerian culture, many of the surveyed households were male oriented.

4. The scope of data collected and analyzed were constrained by time and financial limitations.

Delimitations

Efforts were made to minimize inherent weaknesses related to survey research. The following delimitations were made with respect to this study:

1. Measures of variables are subject to any weakness inherent in the measurements and scales used. Omitted
variables may exist in the design of the theoretical model. Biases in selection of respondents, non-response, question wording, and errors of response are recognized as possible influences on the research results. Survey data are also subject to sampling variability. However, all necessary steps were taken to reduce these biases.

2. Because the potential exists for biased responses under conditions of self-report of beliefs, satisfaction, and behavior; self-report nature of the survey poses a potential threat.

3. The subjects who completed the government official survey questionnaire correctly interpret each item in the survey instrument and respond accurately and honestly.

Assumptions

Data provided by the respondents were assumed to reflect the demographic characteristics of the sample population and the existing home maintenance conditions. It was also assumed that appropriate expert jurors were selected and their contributions were sincere.

In the construction of measuring techniques and analyses of the data for this dissertation, the following assumptions are made: attitudes are measurable, attitudes give rise to motivated behavior, attitudes vary along a linear continuum, and attitudes are relatively stable and enduring. In addition, it was assumed that attitudes vary in quality and intensity or strength on a continuum from
positive through neutral to negative (Remmers, 1954; Shaw & Wright, 1967). The neutral position is the point of balance in positive-negative evaluation conflict or an ambivalent attitude rather than no attitude toward the object in question.

**Operational Definitions**

To properly interpret the procedure, data, and other information collected, it is critical that certain terms be identified so that all readers are on the same bases of understanding. Thus, the following key terms were used in the study and are defined for reader clarification and understanding.

**Construction Cost:** The cost of building materials, labor, equipment rental, contractor's overhead, and owners profit. Site improvements other than those customary for urban land, such as walks, drives, grading, planting, and ornamental construction, are also included (Cowgill, 1949, p. 70).

**Developing Country:** A classification of countries in the world. Specifically, it refers to countries in the southern hemisphere and includes a majority of countries in Asia, Africa, and Latin America. These countries are characterized by economic dependence, relatively low levels of industrialization, and reliance on cash crop products for export (Wolansky, 1987). Nigeria is a developing country located in West Africa.
Dwelling: A physical structure in which people live; commonly used terms include house, condominium, cottage, cabin, townhouse, and apartment (Goetsch & Nelson, 1987, p. 83).

Family: Refers to both the nuclear and extended families. A nuclear family usually includes the husband, wife, and two or more children. An extended family, in most African societies, is a group of people. It can be a small group of as few as 20 people or as large as 200 people. An extended family also could include grandparents, uncles, nephews, aunts, nieces, cousins, and in-laws.

Head of Household: The person responsible for all members of his/her housing unit. However, in the case of a married woman living with her husband, the husband was considered the head for the purpose of this study (U.S. Department of Housing and Urban Development, 1979).

Household: A group of individuals who share a dwelling unit; household is equivalent to a housing unit (U.S. Department of Housing and Urban Development, 1979).

Housing: A physical structure and the surroundings used as a shelter. These include all residential real estate such as a single room, neighborhood, and micro-district meeting place. Irrespective of the size, proper housing helps to facilitate the well-being of the individual and the family (World Health Organization, 1961).
Housing Environment or Surrounding: Man-made and natural elements that are external to the dwelling and its occupants (Onibokun, 1973, p. 461).

Housing Unit: A house, apartment, group of rooms, or a single room occupied or intended for occupancy as a separate living quarter. The criteria of separateness, direct access, and complete kitchen facilities for exclusive use also apply for vacant units whenever possible (U.S. Department of Housing and Urban Development, 1979).

Maintenance Constraints: Factors that could prevent occupants from carrying out the work necessary to fix an identified home maintenance needs.

Maintenance Culture: The beliefs, perceptions, and attitudes of people towards engaging in home maintenance behaviors.

Maintenance Need: A physical deficit in a home that reflected a failure to take corrective action. Deficiencies in the home exclude items that did not meet building codes but appeared to be a longstanding design defect as long as they did not affect the functioning of the home. For example, a room that lacked the required number of electrical outlets did not constitute a deficiency (Merrill, 1989, p. 24).

Vocational-Technical Education: Refers to a field of study or a program curricula such as agricultural education, construction, and home economics education. The primary
objective for developing such a skill(s) is to seek gainful employment.

**Schedule of Research Activities**

The research activities demanded considerable planning and coordination. All the activities scheduled within this time span are identified in Appendix A. The period for the study spanned approximately 16 months: December 1994, through April, 1996.

**Research Budget and Actual Expenses**

The actual cost of the entire study was about four thousand dollars ($4,000) which was entirely provided by the researcher. A break out of the budget is shown in Appendix B.

**Disposition of Results**

It is planned that the results of this research study will be presented at housing conferences and submitted to scholarly journals for publication. In addition, invitations will be sought to present the research findings to scholars at research institutions such as the Nigerian Institute of Social and Economic Research (NISER) and the Center for African Settlement Studies and Development (CASSAD).

The research results will also be made available to government housing agencies and organizations in the form of extension bulletins. These include home owners...
associations, real-estate, architectural, construction, and planning associations.
CHAPTER 2
REVIEW OF THE LITERATURE

Several studies have been conducted regarding home maintenance in many countries. During the literature review for this research, previous studies, journal articles, books, project reports, personal interviews with government housing officials, and private Nigerian citizens, and newspaper and magazine articles on home maintenance were thoroughly examined. In addition to these sources, the findings of related studies were also examined and are summarized in this chapter.

The meaning and significance of housing, the evolution of government provided housing in Nigeria, reasons for the failure of government housing programs and policies, and the factors influencing housing maintenance behavior are covered in the review of literature. This chapter ends with a summary of the factors identified as having considerable influence on home maintenance behavior.

The Concept of Housing

Housing is a very unique commodity with defined non-homogeneous characteristics such as fixed location, indestructibility of its physical features, non-substitutability, and differences in location. Changes in individual or family needs often necessitate making marginal adjustments in housing characteristics. Such adjustments will likely include repairs and improvements to individual
and family housing conditions. These activities prevent deteriorations, provide added space or other desired amenities, thus eliminating the need for a complete new housing unit.

Research efforts to understand the magnitude and causes of housing problems in developing countries have resulted in the creation of housing policy guidelines (Adedibu, 1980; Adeniyi, 1978; Iyagba, 1983; Onibokun, 1987; Sada, 1975; Segynola, 1985). Despite these remarkable efforts, there appears to be no general consensus on the meaning and significance of the term housing.

In a study conducted within the World Health Organization in 1961, housing was defined as the residential environment, neighborhood, micro-district or the physical structure that is used to shelter human beings from the elements. The definition also includes the environment of that structure, including all necessary services, facilities, equipment and devices needed for the physical health and social well-being of the individual and the family. An ad-hoc expert group convened in 1962 by the United Nations Secretary-General, at the request of the Economic and Social Council of the United Nations, stated that "housing" is not "shelter" or "household facilities" alone, but comprises a number of facilities, services, and utilities which link the individual and his/her family to
the community and the community to the region in which
growth and progress takes place (United Nations, 1970).

In 1970, another United Nations ad hoc expert group on
Social Programming of Housing in Urban Areas (United
Nations, 1976) concluded that:

In the fulfillment of social needs, housing plays both a
direct and an indirect role, and both roles are
decisive. In its direct role, housing serves as the area
where the individual becomes capable of experiencing
community and privacy, social well-being, and shelter and
protection against hostile physical forces and disturbances.
In its indirect role, housing serves as the area where an abundant
supply of social relationships and services are accessible, such as
places for social intercourse, education, recreation, sports, social
welfare and health protecting services, shopping and
transportation. (p. 13)

At an interregional seminar on the social aspects of housing, it was reiterated that the concept of housing
should be more than merely a physical shell. It was also suggested that in most developing countries, especially in
the cities (urban areas), the concept of housing should
encompass all the ancillary services and community
facilities that are necessary to human well-being, including
community facilities, social amenities, and services (United

As a way of summary, Mills-Tetty (1989) claimed that "it is the totality of the dwelling and its environment that
constitutes a house" (p. 43). Supporting this claim, Aina
(1992) also pointed out that shelter includes "not only the
dwelling unit, but also the necessary basic services and the maintenance of appropriate standards" (p. 3).

Housing could also be regarded as an investment to the owner. The return on investment in housing results either from collecting rent from tenants or by accumulating equity when an owner occupies the residence.

Olatubara and Agbola (1992) explained that housing could also be viewed as either a social product or as a social symbol. These social products are services that a government provides for its people free of charge, because it is incapable of paying for itself. Olatubara and Agbola studied the possibility of recovering the costs expended on public housing projects. They argued that when housing is viewed as a social product, it is difficult or impossible to include the recovery of investment cost in the housing program. Doing this might make the politicians unpopular among their constituents. Olatubara and Agbola further claimed that this view is one of the factors that led to the failure of government housing programs in the developing countries, especially in Nigeria. It was suggested that effective recovery of costs would "ensure a supply of funds to augment the usual inadequate amount available for government housing programs" (p. 84).

Although the review of literature revealed different viewpoints on the definition of the term housing in different cultures and societies, the writers all stressed
the role of housing as the place of social relationships. Housing is also viewed as a center of family structure, and the physical organization of spaces for community activities. These social relationships and physical organizations are governed by technical, economic, and socio-cultural factors. These factors include climate, social and cultural patterns, local beliefs and customs, and the available technology (Aranha, 1980, p. 11).

An efficient system of housing is necessary in order to achieve economic development. The United Nations Committee on Housing and Urban Development (1962) also suggested that the improvement in housing conditions is an essential ingredient for socio-economic development of a nation. It provides "the physical framework in which man's human, social, economic and cultural resources are released, enriched and integrated" (p. 2). Supporting this claim, Ogunshakin and Olayiwola (1992) stated that "good housing and an organized environment are vital for the reproduction of labor power." They further argued that "direct government interventions in housing provision and construction could generate capital investment, provide capital gains and employment opportunities, and lead to the development of skilled construction labor, and reduce state expenses in the areas of health, slum and squatter development expenditure and maintain urban social law and order" (p. 51).
It was also suggested in the review of the literature that good housekeeping is essential for human dignity and self-fulfillment. It could be inferred that the efficiency, convenience, life span, economic viability, and appearance of any building can be affected by decisions taken and actions performed at any time in the history of the building.

Evolution of Government Provided Housing in Nigeria

Awotona (1977) reported that the establishment of housing corporations in the late 1950s and early 1960s was the first governmental attempt to intervene in housing. He noted that corporations were responsible for providing some mortgage financing for colonial leaders and "for developing a few housing estates for the middle class" (p. 101).

Ogunshakin and Olayiwola (1992) also claimed that:

State intervention in the form of direct housing construction was embarked upon during the period of colonial domination, to provide housing for the white colonial population settled in specially protected and developed areas, referred to as the Government Reservation Areas (GRAs). "Prohibited" to the local population, the housing forms and spatial patterns of the GRAs reflected the English nostalgia for the "garden city." (p. 44)

Supporting both claims, Mba (1993) argued that the establishment of the GRA is "one of the most significant of the governmental housing programs which has considerably affected the development of housing and real estate development in Nigeria" (p. 119). Concerning its purpose and significance, Mba further claimed that:
These GRAs were areas initially set out as residential districts for former British colonial administrators who were coming to Nigeria in large numbers during the late 1920s. These were people recruited to serve in the British Colonial Administrations. They also included the executives of key commercial firms, such as the United Africa Company (U.A.C.), Societe Compagnie Occidentale L'afrique (S.C.O.A.), Compagnie Francaise de L'Afrique Occidentale (C.F.A.O.), G.B. Olivant, and John Holt. The GRAs' were established with the top European executives in mind, and conformed to the western style of single family housing. The areas are park-like with abundant ground space per parcel. The density of housing in these areas is about one unit per two hectares, although there are slight variations between cities. Since houses are located at the center of the lot, they could not be subdivided.... the maintenance of the park-like surroundings of these government estates is done by labor provided by the government. Although such favorable terms were intended to encourage expatriates to stay and work in Nigeria, the top Nigeria elites who now occupy these estates have continued to enjoy these rather extravagant amenities. (p. 118)

Ogunshakin and Olayiwola discovered that "in both the colonial GRAs and the post-independence state housing, the needy urban population affected by the housing crisis was totally excluded" (p. 44). Mills-Tetty also claimed that "many a program fails because where physical housing units are provided by government, the intended occupants of a house find the shelter provided at variation with their social habits, norms, culture, climate, and other activities related to everyday living" (p. 45). Finally, Awotona (1990) concluded that the government's intervention failed to make any substantial impact on the housing sector during the First and Second National Development Plan periods (1962-1968 and 1970-1974) because:
Nigerian investors were not told how, when, and where to invest in housing. They were left to their own devices, and lacking guidance through the national plans, decided on what appeared the most profitable course. Houses were built for foreign firms, embassies and other wealthy clients. The middle and lower income groups were left to help themselves as well as they could by building illegally on the outskirts of cities or by squatting on public land. (p. 18)

According to Mba (1993) "the first recorded attempt by government to provide public housing for the poor was the establishment of the Lagos Executive Development Corporation (now known as the Lagos State Development and Property Corporation) in 1928" (p. 119). Mba further claimed that "attempts at mass housing in Lagos have included the high density residential developments in Apapa, and low density developments in Ikeja and Victoria Island" (p. 120).

During the oil boom era (1970-1976), there was a tremendous increase in revenue, and a rapid urbanization into Nigerian cities. In 1971, the National Council on Housing was formed which led to the institution of the National Housing Program and the establishment of the Federal Housing Authority (FHA) to implement housing program for the migrants (Umeh, 1993, p. 112). According to Awotona (1990), the Federal Government initiated a national policy to provide low income housing at this time. Awotona also claimed that "the Federal and State governments took a series of actions, programs, reorganizations, and creation of institutional frameworks and policies which had a direct
impact on housing supply throughout the country" (p. 101).

Although, Mba (1993) remarked that:

These housing programs built for the low income workers employed in government corporations such as the employees of Nigerian Railway Corporation, the Post and Telegraphs Department, the Nigerian Ports Authority, and the Nigerian Coal Corporation have made an impact on housing in Nigeria, despite their relatively small number and monotonous design. These buildings are usually one to two bedroom row houses. (p. 119)

However, he emphasized that these public policies and programs were ineffective because of "lack of incentives for the private sector to participate actively in the housing sector and the inadequacy of mortgage finance institutions" (p. 101).

During the Second National Development Plan period (1970-1974) total expenditure on housing was short of the plan target. For instance, out of N3.6 million (N1 = US$1.64 in November 1970) which the federal government allocated for housing development in 1970-1974, only N1.8 million (or 50%) was spent.

According to Mba (1993), during the Third National Development Plan period (1975-1980), government participation in housing provisions involved direct construction of housing units by the federal and state governments" (p. 125). He also claimed that these governments leased and sold the housing units at subsidized rates. He further claimed that the government also increased the number of quarters built for government
officials and provided extensive credit facilities to promote housing construction. Mba explained that "while the states were charged with the responsibility for the implementation of the projects, the Federal Housing Authority was responsible for monitoring the construction activities" (p. 126). Awotona (1990) also reported that:

In the Third National Development Plan period (1975-1980), the Federal Government for the first time accepted it as part of its social responsibility to participate actively in the provision of housing for all income groups and will therefore, intervene on a large scale in this sector during the plan period. For example, an investment of N154.45 million was made by the Lagos State in the Lagos State Development and Property Corporation’s housing projects. (p. 19)

Supporting these reports, Folami (1982) stated that out of the 50,000 housing units commitment by the Lagos State Government, about 12,000 units have been completed. These housing units are located at Amuwo Odofin (Scheme One), Iponri (Scheme Two), Abule Nla (Scheme Three), Dolphin Area (Scheme Four), and Agege (Scheme Five)" (p. 155). Folami further explained that:

In order to qualify for these housing units, the Lagos State Development and Property Corporation (LSDPC), which is handling the scheme requires applicants to buy forms for 50 naira (about $90) each and to pay an initial deposit of 1,000 naira (about $1,800) for a two-bedroom flat that costs 5,000 naira (9,000) and 1,200 naira (about $2,160) for a three-bedroom flat that cost 6,000 naira (about $10,800 at that time). (p. 155)

The Lagos State Government provided loans for the applicants, who were unable to finance the initial deposit, through the Lagos State Building Investment Corporation.
Applicants in the middle and higher income groups, who did not qualify for the low-income houses, were promised land and assured of loans to build their own houses according to the government approved building standards. At the federal level, Awotona (1990) reported that "the Third National Development Plan also indicated an intention of concentrating on the housing policy option of direct construction of housing estates and dwelling units by government agencies for leasing at subsidized rates such as the Festac Town in Metropolitan development in Metropolitan Lagos" (p. 21).

In reviewing the literature on the plethora of housing institutions at federal and state levels, Awotona (1990) found "that government programs during the Third National Development Plan period did not substantially resolve the acute housing problems facing the mass of the population" (p. 19). Ogunshakin and Olayiwola (1992) also concluded that through a deep analysis of the Nigerian urban social classes housing provision policy, it was easy to find that "the vast majority of the needy has been excluded from the government exercise" (p. 47).

The Fourth National Development Plan (1981-85) highlighted the commitment of the federal government to provide 200,000 housing units annually plus policy statements on rural and urban development. Mba (1993) argued that "unlike the preceding program, which was
implemented through the states, the Federal Ministry of Housing and Environment sent its staff directly from Lagos to the states to implement the scheme" (p. 126). Mba further explained that "the second scheme was the development of serviced plots for leasing to individuals who could then arrange to construct their own houses" (p. 126). He remarked that this was a radical shift from the previous group of direct construction strategies.

Mba also reported that "the third scheme was the setting up of the Nigerian States Urban Development Project that involved extensive infrastructural expansion activities" (p. 126). However, he argued that "the indiscriminate and uncoordinated location of the housing projects was the main criticism against the housing program introduced and implemented in the Fourth National Development Plan" (p. 127).

Contributions of Military Governments and Administrators

Braimah (1993), in his study of urban planning and development in Nigeria, claimed that "since independence, successive administrations, whether civilian or military, paid scant attention to the citiscape" (p. 55). He also reported that:

The military take-over in 1983 ushered in a new approach to dealing with the environmental decay of the cities. The military targeted two urban planning policies: first, improving the urban environment; and second, involving the community in the clean-up. (p. 55)
Braimah reported on the steps taken by the military government concerning environmental planning. These steps are summarized as follows:

1. Establishment of an environmental task force, headed by military personnel, who were empowered by edict to take all lawful measures to provide effective and continuous sanitation as well as general cleanliness of the urban center.

2. Establishment of environmental awareness campaign committees in the various states with the purpose of spreading the message to the people. This campaign was accomplished through all forms of media. Targeted people included the traditional chiefs, local leaders, and retired civil servants (retired government employees) who helped in educating the urban people on the implications of indiscriminate disposal of waste over the cityscape.

3. Declaration of specific days of the month, usually on a Saturday, for general clean-up or environmental sanitation. During the selected hours of each specified day, shops and markets were closed and no traffic was allowed on the streets except those vehicles and associated personnel engaged in providing essential services.

4. The main activity involved the general clean-up of the cityscape, the individual housing units, and the surrounding environment.
5. Those who participated in the clean-up were rewarded, but those who did not participate were penalized for non-observance. Refuse centers were used as the primary collection points, and incinerators were often used to dispose off the collected waste.

In his evaluation of the implications of the military government's efforts to clean-up the environment, Braimah (1993) stated that "these environmental improvements have come at the expense of the low income urban dweller and other participants in the informal sector" (p. 56). Braimah further expressed that "livelihoods based on street trade and services are disrupted, and urban residents have been rendered homeless when the authorities bulldozed their illegal dwellings which were considered uninhabitable by government" (p. 56).

Factors Influencing Home Maintenance Behavior

Merrill (1989) investigated possible reasons for apparent age-related differences in home maintenance behavior between older home owners and their younger peers in a selected part of Wisconsin, United States of America. He hypothesized that older home owners (age 65 and over) do less home maintenance work than younger owners. He developed a framework to help identify factors that influence a decision to either accept a maintenance deficit in the home or take action to alter that condition. Research findings indicated that desire for improvements,
expectation that improvements will increase the value of the home, length of residence, level of education, and expected duration of continued residence were critical variables that explain age-related differences in the initiation of home maintenance activity. He went on to report that sex of the respondents and household size were not critical factors. Merrill further claimed that "the results of the study suggested that causes of home maintenance behavior are multifaced", and that "it may be useful to distinguish between various sub-categories of maintenance behavior and study the factors that contribute to them separately" (p. 35).

Meeks and Firebaugh (1974) described home maintenance and remodeling activities in small Ohio towns in the United States. They used a systems analysis of maintenance and improvement behaviors of male heads of households. It was revealed in the study that maintenance skill, improvement skill, and time available were factors that affected home maintenance behavior. In an earlier study, Meeks (1972) found that the investment and consumption orientation of the head, maintenance and improvement skills, and interest in learning maintenance and improvement skills, were all reliable, valid, and internally consistent predictors of maintenance and improvement behavior.

Mendelsohn (1977) analyzed housing behaviors of households where earnings were more than the national
average income. The study was conducted in greater Toronto, Canada. By analyzing census data on residential alterations and repairs, he developed a home improvement model. He observed that higher income influences both the frequency and magnitude of household expenditures on home improvements. He also found age of resident and age of the structure to be important variables.

Morgan (1981) conducted a comprehensive study to analyze variables affecting housing repairs and improvements by using the 1979 panel data of the Michigan Study of Income Dynamics. Age, gender, marital status, an employed wife, and home ownership were major variables identified in the study. Analysis indicated that age of the respondent was the most significant variable. It was also emphasized that home repair activities were most often performed by married couples with large families who lived in single family structures, and had no children under the age of two years. Age of structure, length of stay, repair skills possessed, the degree to which the respondent enjoyed repair activities, and the age and sex of the respondents were also found to affect repair activities.

In a similar study, Garner (1983) developed and tested a household production model to identify key decision variables associated with home repair by using discriminant analysis of nine home repair categories: interior painting, exterior painting, papering, plumbing, electrical,
carpentry, masonry, television, and other household appliance and equipment repairs. He acknowledged that household income, age of respondents, household size, households with teenagers, respondent repair skill, respondent satisfaction in doing repairs, age of housing structure, and use of vacation time were variables that discriminate between the two household groups. These household groups were those who self produce housing repairs and those who contract these repairs.

Tremblay, Sweaney, and Walls (1985) conducted a study of households in the southern region of the United States. The researchers sought to identify the types of information families needed when making housing decisions. The roles of family members, friends, and housing professionals in the search of this information were analyzed.

Parrott (1988) analyzed relationships of household characteristics with the home remodeling process and found important variables in the family life cycle, length of marriage, occupation, and education. Parrott (1988) also examined the extent of do-it-yourself (DIY) activities, and observed that a higher incidence of such activities were associated with younger stages in the family life cycle, lower educational levels, and lower occupational status.

These findings were important in that identified variables might help in understanding determinants of home repairs in the developed countries. These findings were
further supported by other studies conducted in the developing countries. For instance, Segynola (1987), Mills-Tetty (1989), and Ogu (1994) investigated the housing quality in the rural settlements of Nigeria. Segynola studied the Nigerian rural housing environment in Bendel State. He collected data for the research by direct observation and a questionnaire. The content of the questionnaire was focused on the three aspects of the housing environment: (a) the housing unit, (b) internal facilities, and (c) the neighborhood in which the housing environment is located. Information on the socio-economic status of the respondent was included in the first section of the questionnaire. Data on the housing unit included the cost of the houses, sources of finance and labor, the type of house, the different construction materials, and the cost and source of the materials.

The second section of the questionnaire was focused on determining the available facilities in the houses such as number of rooms, type and position of kitchen, and bathroom and toilets. Contrary to expectation, the results of the study indicated that "a negative relationship existed between the housing environment and family income" (p. 81). Finally, he recommended investigating variables such as "respondent’s education, family size, and accessibility to urban centers, as determinants of the quality of the housing environment" (p. 81).
Mills-Tetty examined the state-to-state variations (among the Nigerian southern states—Lagos, Ogun, Ondo, Bendel, Rivers Anambra, Imo, and Cross River) using rural characteristics such as cultural, historical, socio-economic, and ecological factors. He found that:

There is a close correlation between the age of the buildings in the study area and their condition of maintenance. The older a building becomes, the more the problem of its maintenance. (p. 36)

He also claimed that:

The major problems faced by rural dwellers can be grouped into two categories. The first relates to the lack of infrastructural facilities such as water supply, access roads, electricity and other social amenities. The second set of problems is related to the qualitative inadequacies of the building fabric. This includes quality of building materials with a short life span, and unsophisticated construction techniques with a lot of limitations. (p. 44)

He argued that the success of any housing program "will depend on the suitability of physical structures and amenities provided" (p. 44). His suggestions are summarized as follows:

1. Builders should be encouraged and trained in the use of modern building materials.

2. Research should be conducted to investigate the viability of local alternative materials such as techniques of treatment of thatch roofing materials for better durability through the provision of funds to research institutes.
3. Encourage the expansion of local manufacturing capacity for building materials through the establishment of cottage industries for the production of materials such as burnt bricks, ceramic tiles, mud blocks, sandcrete blocks, window/door frames, and other building elements.

4. The development and enforcement of building design and layout codes. This includes establishment of a Housing Monitoring Unit within the federal and state ministries of housing with field units in the local government authorities. The officials duties will be to plan, develop, and enforce standards for home improvements and upgrade activities, "while working in liaison with local planning authorities for general maintenance of good housing and planning standards" (p. 46). Finally, he remarked that strict adherence to the measures previously suggested and "other more comprehensive socio-economic and regional development policies should improve the quality of rural life and stem the tide of rural-urban drift" (p. 46).

Ogu (1994) identified the three most common construction techniques for government provided housing in Nigeria. These include (a) traditional load-bearing method, (b) reinforced concrete skeleton and brick in-fill construction, and (c) panel prefabricated method. He also identified criteria for assessing materials technology such as types of material, its durability, and local availability. It could be argued from Ogu's findings that
government standards for housing construction are either inadequate, inconsistent regarding established goals, or simply fail to meet minimum requirements desired by the occupants of the housing unit. These findings were important in that they introduced cultural and technological dimensions as identified variables which could help in understanding determinants of home repairs in developing countries such as Nigeria.

Influence of Technology

The problem of inappropriate housing in modern times, especially in the developing countries, has been blamed on general misconceptions about local conditions. These primarily include cultural misconceptions of western trained architects and urban planners. For instance, until recently, the development of government housing projects in Nigeria usually began with designs by foreign trained architects, or by others using western systems. The relationships between the construction techniques and practices, and the culture of the people are analyzed in this section.

With limited understanding of the socio-cultural needs of the society as well as the direct involvement of the families who would occupy the housing, the designer produced design solutions which often turn out to be inappropriate solutions. The designer and the occupant were never close partners in the decision making and implementation process.
except in isolated cases. In order to administer large housing development programs, the distance between the designer and the user was further widened by the creation of large bodies of management and administrative personnel. These bodies were responsible for developing certain standards on behalf of the users and their own particular requirements and procedures. They often failed to understand the perception and goals of the user even though some indirect consultation may have occurred.

According to Ogu (1994), this situation led to the establishment of inadequate development standards by the governmental bureaucracy and the reliance on the personal judgement, assumptions, and beliefs of the designers. He claimed further that many of these designers are foreign and did not adequately understand the local culture. In the last 15 years, numerous architects and engineers have been trained in local schools. Also, school officials have been engaging in co-operative (industrial) training programs with local architects and planners.

Influence of Social Factors

According to Aranha (1980, p. 31), social interaction differs from culture to culture. It is determined by many factors including religious beliefs, family and clan structure, social organization, way of gaining a livelihood, and social relations among individuals. One aspect may be more dominant in one culture than in others.
Serving as social intercourse is one of the five basic functions of a housing unit (Rapoport, 1969). In traditional settlements, the special arrangement of dwellings is determined by the pattern of social intercourse. Most designers and urban housing agencies in developing countries employ this concept in their design. These designed environments are usually modelled on lifestyles and standards of the western cultures and on the designer’s notion of how people ought to live. The inhabitants tend to adapt their way of life to this alien environment. They also tend to neglect the maintenance of the structures either because they lack basic technical knowledge or because of the poor technology utilized in the construction. Consequently, several of these projects failed.

Recently, designers often attempted to adapt the designer-built dwelling environments to socio-cultural behavior of the people in the community. This practice also resulted in the deterioration of the designed environment. The most recent approach involves assessing community needs and understanding them in relation to the local culture. This attempt led to the creation of a culturally acceptable building environment.

Influence of Culture

There is a unique relationship between cultural values and the standards of housing. Hence, different cultures
have different rules for living, and these rules gave rise to different forms and quality of design, construction and maintenance of the housing environment. **Culture** refers to acquired knowledge that people use to interpret their experiences in order to generate acceptable social behavior. Cultural variables include the language, values, clothing, styles and religious beliefs. From a sociological perspective, Morris and Winter (1978) call these rules **norms**.

The existence of cultural norms and needs has a long history in sociological analysis (Tarde, 1903, p. 44; Parsons & Shils, 1954, pp. 9-10). These may be based on verbal reports regarding standards for behavior and on the occurrence of sanctioning behavior but not the behavior being sanctioned. According to Korllos (1980), the man-made environment is understood as a cultural product. Cultural norms are sets of rules for behavior as formulated and maintained by society. At the level of the family, there are norms by which families evaluate housing. A family whose housing does not meet the "norms" experiences deficits. In order to rectify such deficits, family members respond to housing problems by making adjustments.

Housing norms can be used to determine housing adjustments. However, Morris and Winter (1975, p. 81) claimed that the existence of housing norms must be inferred from sources other than housing behavior if there is a wish
test whether cultural norms are effective in governing housing adjustments. They further claimed that housing norms should be measured independently when using them as dependent variables to explain or predict housing behavior.

Religious beliefs are an important cultural factor. No study was found in the review of literature correlating the relationship between religion and housing maintenance. However, considering the present sensitive nature of religion in Nigerian culture, it may be pertinent to consider this as a factor limiting home maintenance behavior.

Influence of Perception, Attitude, and Performance

The attitude of a person determines what the individual will see, hear, think, and do; i.e., attitudes empirically guide the possession of information. Lingll and Ostrom (1981) pointed out that attitudes provide a framework in terms of which subsequent judgmental decisions are made. Generally, attitudes influence perceptions relevant to objects. Thus, an individual always guides perceptions of the object in the immediate situation when he or she encounters an attitude object.

Lingll and Ostrom (1981) further claimed that attitude consists of the following three components: affective, cognitive, and behavioral intentions. The affective component involves the emotional underpinning of these beliefs and represents the amount of positive or negative
belief that an individual has towards the attitude object. The cognitive component of attitude refers to the way in which the attitude object is perceived and conceptualized, and thus represents the individual's picture of the attitude object and his or her belief about it. The behavior intentions component is conceived as a consequence as well as a corollary of the other two components. It refers to the individual's intentions to behave in a particular way, or to actual behavior, with regard to the attitude object.

Lingl1 and Ostrom (1981) argued that although attitude cannot be measured directly, it can be inferred by the following five methods: (a) observation of overt behavior; (b) performance of the objective which involves the attitudinal object or situation; (c) reaction to or interpretation of partially structured stimulation which involves the attitudinal object or situation; (d) physiological reactions to the attitudinal object or representations of it; and (e) self reports of an individual's beliefs, thoughts, and behaviors toward an attitudinal object or situation.

Lingl1 and Ostrom (1981) concluded that the existence of attitude and its strength can only be inferred from what is observable. Therefore, people must choose behaviors that are acceptable as bases of inference. Traditionally, self-reported beliefs, feelings, and/or intention to act
with respect to an object have been used as the primary basis of inference.

Studies involving the investigation of the relationship between attitude and performance were also examined. However, from review of the literature, no consistent conclusion about the relationship between attitude and performance could be made. Further study is needed in this area. In addition to economic benefits, satisfaction or utility-gain may also encourage participation in housing repairs (Becker, 1965; Sweeney, 1974). Housing is typically one of the basic components in any attempt to measure an individual’s sense of well-being. Housing satisfaction is generally perceived as having both physical and psychological aspects. Owners are more satisfied than renters (Campbell, 1981). People living in poor housing are not dissatisfied as might be expected (Campbell, 1981). In fact, dissatisfaction is more commonly related to neighbors and neighborhood than to the housing structure itself. Though psychic income is an important determinant in the investment of human capital, economist have not been able to isolate and measure this factor (Gronau, 1977).

**Influence of Tenureship Factors**

The type of land ownership system influences occupant home maintenance behavior. Owner occupied housing units tend to be better maintained than rental units (Sweeney, 1974). This might be because they have weaker incentives to
do maintenance work, since they are not responsible to bear the full cost of failure to preserve the structures.

Homeowners spend substantially more than do renters and/or landlords, on home repair. Part of the difference in expenditures of home owners can be explained by the larger size and value of single family, owner occupied homes, and the marginal utility of the housing unit to the owner. Housing repair expenditures may be considered luxury goods from an economic perspective. The home owner probably maintains investment in housing and derives pleasure in occupancy through repair because of the higher marginal utility derived from housing as compared to other goods and services.

Expected tenure could be considered an important variable in estimating maintenance expenditures (Sweeney, 1974). Renters with long leaseholds, as well as owners, are expected to maintain, whereas, renters with short leases may not. Owners with no immediate moving plans probably maintain their properties to keep up the value.

Economic, Resources, Demographic, and Competence Factors

Higher income home owners face higher relative time costs (higher opportunity cost in terms of time) and can be expected to contract home repairs. In support of this claim, Mendolsohn (1977) found that higher income home owners were more likely to hire outside help. Middle class
occupants were more likely to alter their housing than lower or upper income groups.

Shomrock (1975) found a curvilinear relationship between economic status and alterations. He also claimed that the higher income households frequently included two income families. The presence of wage earning spouses may reduce the tendency for families to do home repairs and improvements and increase the willingness to hire others to do the job (Morgan, 1981). Supporting this claim, Morris and Winter (1978) argued that a change in income is one of the best predictors of a change in the amount of money spent for housing. Income constraints may allow only the most essential repairs and may preclude major improvements unless external assistance is provided. Low income is a problem for low income housing (Grisgsby, 1963). Higher income also allows household heads to opt for new and higher quality housing units that are likely to require lower maintenance costs.

Low income households may also be faced with problems within the market environment such as difficulty in getting loans for repair. Private contractors may find higher profit in new construction rather than in rehabilitating existing structures (Wagstaff, 1979). Salin (1980) identified social class, determined by income, as the fundamental factor in housing demand.
Resource availability presents an opportunity to engage in housing repair. Resources of any kind tend to be limited for low income families. Opportunity to perform home repairs based upon home ownership, tools, skills, materials, and time may be available more often to higher income groups. Miller (1975) claimed that availability of tools and materials were distinguishing considerations affecting commitment to do home repairs.

Respondent’s age has a direct relationship with availability of resources such as financial income, tools, and skills. These could be expected to increase with time, although the physical energy to actually do the job might decrease in later years of the life cycle. Some tasks require less physical energy than others. Time pressures are heavier in the beginning stage of the family life cycle, whereas income demands are heaviest during the expanding stage of the cycle (Nickell, Rice, & Tucker, 1976).

The relationship between age of a building and its physical conditions has been of interest to researchers for many years. According to Nutt et al. (1976), the earliest works to be published in this century concerning the physical deterioration of older buildings were based on the results of surveys of American railway station buildings and buildings in the city of London, England. In the first instance, the number of renewals to the various parts of the railway station structures were analyzed and depreciation

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curves produced. The analysis of the second survey showed, that with the exception of a few historic buildings, most buildings in London were altered after 30 years and then abandoned after 60 years.

In another study of non-rural school buildings in the state of Michigan, Wifrey and Kurtz (1931) claimed that during the first 20 years of the life of these buildings, some defects occurred and were easily corrected. Grigsby (1963) also stated that structural deterioration usually becomes more pronounced between the tenth and twentieth years of the house. Wifrey and Kurtz explained that the second phase of the life-cycle of buildings begins after the 20th year. At that time, gradual increases occur in annual maintenance costs as components wear out and operating costs accelerate.

Nutt et al. (1976) further explained that if the deteriorations were not arrested and the defects continued to mount until after the fortieth and fiftieth years, schools enter a third phase in which functional, site, locational, and environmental obsolescence become apparent. Nutt et al. concluded that there were two important conclusions of interest from the study. "First, a distinction was made between 'correctable' obsolescence (e.g. constructional defects and poor services), and 'non-correctable' obsolescence (poor location, inadequate site, unsatisfactory environment). Second, the question of change
of use was touched upon and it was concluded that the location of the property had a great bearing on the disposable value" (p. 9).

Hill (1981) found that time spent in repair and maintenance activity increases with the age of the structure. Families occupying older structures and living in houses rather than apartments, spend considered time doing housing repair and improvements (Michelson, 1977). Respondents living in houses twenty-five years old or older spent almost 16 more hours per year in repair activities than people living in housing structures five years or less old. The time and goods required to repair a housing unit is related not only to the age of the unit but also to its general construction quality. Analyzing census data regarding home improvement expenditures, Mendolsohn (1977) found that outside maintenance help was more frequently utilized with older and higher-valued homes. Perhaps, this practice reflected the difficulty and desired quality of needed repairs.

Household family size and composition can affect home upkeep decisions in several ways. These conditions may increase the demands on income and available housing space. Also, these situations offer possibilities for specialization and increases the need of time resources. Nickell, Rice, and Tucker (1976) claimed that families generally face the maximum need for housing space for both
privacy and entertainment of friends during the expanding stage when children are teenagers. Demands on income are also high during this period. If adults or older children can assist in doing the repairs or in caring for younger children while others do the repairs, available time can be substituted for the scarcity of income. The allocation of time of any family member is greatly influenced by the opportunities open to other members. Families limited to very young children will likely be constrained by time demands of these children (Becker, 1965). Morgan (1981) found that the larger the household, the more likely the family was to perform work on the house. However, this effect was not significant in the multivariate analysis.

Skill levels varied directly based on available time given to making home repairs. Mendolsohn (1977) hypothesized that owners who were more skillful with repairs would have high productivity and would spend more time doing home repair jobs than other owners. Hill (1981) found that respondents having repair skills increased time allocation to that activity by almost 27 hours per year.

Increased skill and knowledge, usable for future repairs and improvements, are benefits of do-it-yourself activity. Home owners who directly participate in planning, purchasing, and/or actual home repair work gain knowledge and skills that may encourage more effective future maintenance (Wagstaff, 1979).
Summary of Related Research and Information

The review of the literature revealed three primary points. The first was the different viewpoints about the concept of housing. While some individuals believe that the primary function of housing is to protect occupants from the elements, others believe that it is mainly responsible to serve as a link between families, communities, and regions.

The second primary point that was revealed in the review of literature is explained as follows: (a) there has been a clear indication of the Nigerian federal and state governments concern over the seriousness of the shortage of decent housing in the country, (b) there have been several phases of federal and state governments involvement in each national development plans, (c) there have been several types of housing programs and policies introduced, (d) the contributions of the military governments and administrators have been extensive, and (e) the reasons for the consistent inability to achieve development targets were clearly identified. Umeh (1993) observed that:

Out of the total of 202,000 housing projects proposed by the Federal Government for the 1975-80 plan period, only 13.3% were built. Mobilization of adequate resources for meeting set targets has been frustrated by inflation and escalating costs of housing construction, competing claims on the limited resources by other sectors of the economy, and the limitations imposed by governmental administrative inertia. (p. 105)

Ogunshakin and Olayiwola (1992) also observed that the "planning, programming, and implementation of the mass
housing policy and programs suffered grossly from planning inconsistency and organizational structures due to political instability and an overcentralized mechanism of decision and execution" (p. 46). Ogunshakin and Olayiwola recommended that "organized and consistent approaches, less susceptible to political instabilities, are needed to challenge the growing urban housing crisis such as mass housing provision" (p. 46). They further stressed that "such approaches, should secure the political support and genuine participation of the needy at local government and mass organizational levels, supplemented by an organized system of participatory financing, implementation and management not exclusively dependent on the center or dictated by it" (p. 46).

Awotona (1990) identified 10 major factors which help clarify the overall ineffectiveness of public policies and programs. These factors are summarized as follows:

1. The cumbersome system of land ownership and tenure.
2. Poor development of the construction and building materials industries.
3. Lack of adequate technical and managerial manpower.
4. Lack of attention to the housing requirements of rural Nigerians which caused migration of these people to the urban centers.
5. Lack of housing research policies at the state and national levels for collecting, managing, updating,
retrieving, and disseminating important housing statistics, including unreliability of available census data.

6. Lack of an integrated housing strategy that is formulated on complete information and adequate assessment of user needs.

7. Acute shortage of developable land in locations that provide housing users with access to those aspects of housing that are most relevant to their needs, especially in the big cities.

8. Lack of an unified institutional framework to ensure the administration, management and maintenance of public and private housing.

9. Lack of incentives for the private sector, and the constant undermining of the productive capacity of this sector in the National Development Plans.

10. Lack of adequate financing for housing.

Finally, the review of the literature helped to identify major factors limiting home maintenance behavior. Based on the review of major studies regarding housing maintenance behavior, the most important variables affecting this activity were identified. These appear to include: (a) the existing home maintenance conditions, (b) the occupants' awareness of maintenance needs, (c) construction systems and technology factors, (d) competence of the occupants to perform home repair, (e) resource factors such as the availability of educational opportunities to learn necessary
maintenance skills, (f) tenureship factors of the housing unit occupants, (g) family cultural factors, and (h) demographic factors such as income, age of family head, age of structure, family size, family composition, level of education, and possessed skill levels.

**Conceptual Model for the Study**

This study was guided by the framework in Figure 2. As shown, the solid lines between awareness of need and existing home maintenance conditions, deferred maintenance, and neglected need simply mean that, although the two variables may be associated, no causal relationship is presumed by the theory.

The theoretical basis presented and developed in previous works (Garner, 1983; Meeks & Firebaugh, 1974; Mendelsohn, 1977; Merrill, 1989; Morgan, 1981; Morris & Winter, 1978; Segynola, 1980) serve as a developmental framework for this study. The attitudinal framework regarding home maintenance behavior developed by Merrill (1989) serves as the specific model for the development of this conceptual research model. This model, as presented by Merrill, was developed to identify and organize variables that influenced maintenance behavior of home occupants and to help determine why or why not home maintenance was performed. The proposed hypothesized relationships of home maintenance behavior were based on the findings of the previously tested housing maintenance behavior models.
Figure 2. Hypothesized model of home maintenance behavior.
CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

The steps involved in conducting this study are described in this chapter. The methodology included the study area, research design, the design of the survey instruments, jury selection for validating the instruments, identifying the population for the study, selection of the samples, conducting the pilot survey, administering the validated survey, research data collection, and statistical procedures.

Study Area

Nigeria is a vast country of over 900,000 square kilometers. It consists of a large and diverse number of ethnic groups with different environments, languages, traditions, religions, and outlooks. The population of Nigeria is estimated at between 112 and 116 million (Nwaka, 1992). The urban population has grown from 3.2 million in 1952 to 10.7 million in 1963, and is expected to be over 40 million by the year 2000, which represents about 34% of the total population. According to Nwaka, in 1970, 72% of the families in Lagos lived in one room. On average, this meant that four persons occupied one room.

The city of Lagos is the headquarters for commercial activities in Nigeria. It is also a major destination for migrants from other parts of Nigeria and from other West-African countries. Until recently, Lagos was the capital of
Nigeria. In a period of 32 years (1960 to 1992), Lagos grew in population from 1.14 million to a staggering six million. Nwaka (1992) claimed that Lagos is reputed to have the worst living conditions of all African cities. Nwaka argued that the worsening housing and living conditions were caused by the failure of past government policies to address the housing problems, and the high urban growth. These conditions resulted in overcrowding and the spread of slums and squatter settlements. According to Ayeni (1977), a slum is "a group of buildings or areas characterized by overcrowding, deterioration, unsanitary conditions, and lack of amenities" (p. 77).

In 1963 the population of Nigeria was 55.6 million and the population of Lagos was 665,246 people. In 1990, there were 90 million people in Nigeria and 6 million people in Lagos. During the 1970s, Lagos grew by 15% annually, thus doubling every 10 years (Taylor, 1993).

There are many residential zones in Lagos but only four housing estates were selected for this research study. These included the Abesan, Abule-Nla, Gowon, and Ipaja housing estates. The Gowon housing estate belongs to the federal government while the other three housing estates are owned by the Lagos State Development and Property Corporation (LSDPC). The criteria for the selection of these residential zones included the large concentration of government provided housing units in the housing estates,
ethnic diversity of the occupants in the housing estates, and the age of the buildings.

**Research Design**

An exploratory research design method was used to determine the relationships among the variables. An exploratory design can be used to accumulate data in order to formulate a well refined hypothesis or research questions (Behling 1984). An example of an exploratory research design was shown and used by Shofoluwe (1992). A combination of direct observation and administered survey questionnaires was determined to be the most appropriate technique to collect data for this study.

**The Population**

The population for this study consisted of two different groups. The primary population included the occupants of government provided multi-level, multi-family (condominium) housing units in Lagos, Nigeria. These housing units are commonly referred to as a block-of-flats. The secondary population for the study consisted of officials of government housing agencies and private individuals. The private citizens included designers, contractors, realtors, bankers, and members of home owners associations.

**The Sample**

In consultation with members of the researcher’s University of Northern Iowa academic program committee and
the director of the Center for Social and Behavioral Research at the University of Northern Iowa, it was decided that a sample size of between 70 and 100 housing units would be adequate for the primary population. Approximately 20 government housing officials and four private citizens were considered adequate for the secondary population. The sample size for the secondary population consisted of individuals who were high ranking officials in the planning, public-works, and housing departments of the government agencies.

According to government officials at LSDPC, there was no accurate data on the number of government provided housing units in Lagos, Nigeria. The selection for the primary population was made from government provided housing projects intended for low and moderate income households. The selected housing estates were constructed between five and fifteen years apart. As previously stated, samples were taken from the Abesan, Abule Nla, Gowon, and Ipaja housing estates.

Based on the Lagos metropolitan planning standards, a systematic stratified random sample of streets in the residential households was made. From each street, a systematic sample of every third building was selected. Within each of the selected buildings, every fourth housing unit was selected for the survey, using a random numbering system. Heads of households in the selected housing units
were then interviewed according to the format of the primary survey instrument. There were one, two, and three bedroom units in each of these housing projects.

An introductory statement accompanied each interview questionnaire. In addition to personal observations, photographs were used as a component of data collection procedures (see Appendix C).

Design of the Survey Instruments

Two separate questionnaires were created for the study. The primary survey instrument was titled "Observation and Occupants Interview Questionnaire." The secondary instrument was titled "Government Official Survey Instrument." Both of these data collection instruments are shown in Appendix D.

The instrument prepared for the residents of government provided housing contained four parts with a total of 63 questions. Part A (13 questions) was designed to address the researcher's observations of the exterior and surrounding areas, including the construction systems and technology of the sampled housing units. Part B (22 questions) contained questions asked of household heads regarding their home maintenance perceptions, tenureship, awareness of need, acquired maintenance skills, performed home maintenance, and constraints preventing or limiting occupants' home maintenance behavior. Part C (7 questions) was designed to address the researcher's observation of the
interior conditions of sampled housing units. Part D (21 questions) contained questions that were similar to those in Part B, but focused on demographic and other variables affecting occupants home maintenance behavior.

The instrument prepared for the officials of the government housing agencies consisted of 15 questions. These items were created to address government responsibility in regard to maintenance, available government and private assistance, programs on home maintenance, and housing code enforcement. It was expected that this line of questioning would reveal the nature of programs available to encourage residents of government provided housing units to perform their own home maintenance. These procedures could be from government and private bodies in the form of training, funding, and technical support.

Each of the items contained instructions that guided the respondents' comprehension of some phrases and their significance. These items were also structured to address all pertinent factors identified from the review of literature that would answer the research questions.

Before designing the instruments, considerable efforts were made to review similar surveys. Other instruments used in housing related research and books on designing survey instruments were also examined. The instruments used by Merrill (1989) and Niemeyer (1990) were considered most
useful. The doctoral committee members were also consulted and their suggestions elicited.

The first drafts of the instruments were developed by employing the findings from the review of literature. Questionnaire items were written to address those pertinent factors emphasized in the literature regarding factors responsible for poor physical conditions of homes in Lagos, Nigeria and other developing countries. Also, constraints limiting home maintenance behavior of occupants were addressed.

Each member of the doctoral committee was then given copies of the two instruments and requested to critique them. Comments made by each member were reviewed at scheduled committee meetings to review the proposal and copies of the instruments. At these meetings, suggestions were made on (a) the format of the instruments and the appropriateness of each item, (b) removal of items considered irrelevant or ambiguous, (c) rewording of questions considered offensive, (d) design of appropriate scales of measurement, and (e) suggestions for contacting members of the Nigerian government to request one or more letters of endorsement for this research. A copy of the letter sent to the Nigerian officials is included in Appendix E.

The director of the Center for Social and Behavioral Research at the University of Northern Iowa, Dr. Robert E.
Kramer, was also contacted and asked for specific assistance. He graciously provided: (a) appropriate measures for safeguarding the privacy of the subjects and the confidentiality of the data, (b) appropriate procedures for conducting research that involves direct observation and questionnaires, and (c) a review of the letter of introduction to the members of the housing associations in Lagos, Nigeria, and the letter of endorsement of this study. These letters were not used but they were available if needed.

**Jury Selection for Validating the Instruments**

There was need to form a committee to critique the instruments for validity and appropriateness of each item. Based on the approval of the academic program committee members, a seven-member jury of experts was formed. The jury members consisted of three American and three Nigerian scholars with research and/or publication experiences with housing problems in developing countries. The names and titles of these jury members are shown in Appendix F. Each of these experts was contacted and requested to serve on the jury. In April, 1995, a letter requesting participation (Appendix E), a letter of support from the researcher’s academic advisor (Appendix E), a copy of the proposal, and copies of the two instruments were mailed to each of the jury members to critique and return within three weeks. Five of the seven jury members replied with very useful
suggestions within the given timeline. After reviewing their responses, follow-up telephone calls were made to clarify some issues raised and offer words of thanks.

The suggestions of the reviewers were incorporated in the final draft of the instruments. The comments and suggestions from the jury members were collated as follows:

1. Eliminate questions that do not directly relate to answering the research questions for the study. These include the following: (a) questions regarding local availability of construction materials because, the government has banned importation of foreign materials, residents are encouraged to obtain local materials and labor, (b) questions about respondent's citizenship, (c) questions reflecting subjective opinions regarding appropriateness of the technology, construction methods, and quality of construction materials, (d) questions regarding who did the repair work, how much it cost, whether it was completed within budget and on time, and (e) questions relating to the respondent's subjective assessment of the quality of repairs performed.

2. Eliminate questions that are too personal such as respondent's physical fitness and asking open ended questions regarding respondent's age.

3. Measure the degree of importance of each reason for doing the maintenance work as "very important, important,
somewhat important, and not important" rather than just mentioning the reasons for the home maintenance decision.

4. Change some phrases such as "acceptable" to "adequate," and "Christians" instead of "Catholics" and "Protestants."

5. Describe the extent of the maintenance problem observed in the respondent's residence as being "very serious, serious, somewhat serious, minor, no problem."

6. Move questions that relate to respondent's demographics to the last section of the questionnaire because this section contains sensitive information.

7. Prepare an in-depth discussion of the theoretical and empirical literature that undergirded the hypothesized model of home maintenance behavior.

8. Describe the climate in Lagos as humid tropical rain forest rather than mangrove tropical forest.

9. Describe the differences in home maintenance behavior between monogamous and polygamous families.

10. Keep a detailed log of daily activities and report these dates in the methodology section of the research.

**Pilot Test of the Primary Instrument**

Six Nigerian families living in Iowa were selected and personal interviews were conducted to pre-test the survey questionnaire in each of the selected households. The main criteria for the selection of the households for the pre-test involved previous living experience in public housing
in Lagos, Nigeria. Minor modifications of the questions were made after the pilot test was conducted.

**Research Data Collection**

Once the instruments were revised, the researcher then travelled to Nigeria in July, 1995 and spent two weeks to collect necessary data on selected sample of the specified population. Prior to administering the questionnaires, the commissioner for housing in the Lagos State Government and the leaders of the housing associations were contacted to seek endorsement to conduct the study. A copy of the letter to the Nigerian Government asking for permission to conduct a pilot study is shown in Appendix E.

The primary instrument was administered to the residents of government provided housing units, focusing on the primary purpose of the study. It took an average of 35 minutes to administer each of the primary survey instruments which included observing the conditions of the interior and exterior of the housing units sampled.

The secondary instrument was administered to officials of government housing agencies and selected private citizens. The officials sampled were high ranking officers in the Federal Ministry of Works and Planning and the Lagos State Development and Property Corporation. These people included senior estate surveyors, public relations officers, resident engineers, building or mechanical engineers, chief
research officers, town planners, technical officers, and architects.

Because of time constraints, it was necessary to leave instruments with eleven officials to complete and then they were collected the following day. Because of that procedure, some of the questions were not answered. Hence, there was some missing information in this segment of the research, but it could not be helped.

Upon returning to the United States, the collected data was compiled and statistically analyzed. Other information collected in Nigeria was organized for the written report. The compilation of the data involved reading, coding, and aggregation of responses that addressed the three research questions.

Statistical Procedures

The collected data were both quantitative and qualitative, hence, descriptive statistics and inferential statistics were used for the analysis. The Statistical Packages for Social Sciences (SPSS) computer program was used for the data analysis. Professional judgement was used to quantify personal observations and other responses. The basic procedures and purposes of the analyses are reviewed in the following paragraphs.

Measurement of Variables

Conceptual definitions and specific methods of measurement of each variable directly related to the
analysis in this study are explained in this section. Questions used in the measurement of a particular variable or variables are noted in parentheses and listed in Appendix D. Where necessary, recodes were used to ensure scale consistency in the direction of level of measurement and then indicated in the chapter on data presentation. Specific information about the single item and composite item measures were also noted.

The concepts included in the Hypothesized Model of Home Maintenance Behavior, as illustrated in Figure 2, were measured by either single measure or composite measure techniques. The single item measurement technique involves using one question or indicator to measure the concept. Composite measure techniques were used to build a summary score, scale, or index to measure the concept.

Single item measures were used to measure the demographic profile of the residents, cultural factors, construction system and technology, awareness of need, degree of satisfaction with maintenance conditions, resource, and tenureship factors. Composite measures were constructed to measure home maintenance behavior, existing maintenance conditions, occupant perception of home maintenance, occupant competencies, and resource factors.
CHAPTER 4
DATA PRESENTATION

Factors having considerable influence on home maintenance behavior were identified in the review of the literature. The information presented in this chapter consists of all pertinent data that relates to all the identified variables as presented in the methodology section. These factors were used to establish the basis for the type of data collected and to answer the three research questions.

Observation and Occupants Interview

Data collected on occupant home maintenance behavior are presented in this section. Sources of information gathered include personal observations and occupant interviews.

Home Maintenance Behavior Data

Information was gathered from all the occupants sampled regarding how recent selected maintenance activities were performed. Data collected are presented in Table 1. As shown in this table, only six of the respondents performed maintenance on the roofs of their housing units within the last three years. Those who never performed this activity claimed that they are incompetent or had other reasons that prevented them from performing necessary maintenance
defects. For instance, it is shown in Table 11, that 49 of the 74 (66.2%) respondents claimed that they are not competent to perform roofing activities.

Existing Maintenance Conditions

While conducting the survey at the many sites, information was gathered on the construction technology and maintenance condition of the surrounding areas including exterior, overall structure, and interior parts of the sampled housing units. It was noted that the buildings in the sampled housing projects have remarkably similar features. For instance, each building was roofed with galvanized iron sheets or ceramic tiles, under which were timber trusses and celotex ceiling materials. The walls were constructed of concrete blocks and painted with water-based paints on the outside and oil-based paints on the inside. All floors, including those in the common areas, were made of concrete and finished in cement screed. Doors were made of batten, ledged and braced type, and attached to the timber frame with nacolouvre materials. Some of the exterior windows were internally outfitted with burglary and mosquito proofs by the occupants.

The housing schemes were designed on a tenant-lease-purchase program with a 99 year leasehold. The housing units were originally intended to accommodate low and middle income households. At the time of the lease application,
Table 1

Home Maintenance Behavior of Occupants (X1)

<table>
<thead>
<tr>
<th>Maintenance Activity</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpentry</td>
<td>9</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>13</td>
<td>20</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Painting</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>36</td>
<td>6</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Roofing</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>6</td>
<td>23</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Electrical</td>
<td>12</td>
<td>4</td>
<td>11</td>
<td>6</td>
<td>16</td>
<td>7</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Sewage system</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Plumbing</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

Note.  n = 74.
A = Very recent; B = Once in a while; C = One to nearly 6 months; D = Six months to nearly one year; E = One to nearly three years; F = Three years to nearly five years; G = Five years and over; H = Never.

each applicant made a specified down-payment towards the purchase-price of the housing unit. Those approved were assessed monthly charges based on their income. Payments made were credited towards the payment of the cost of the housing units and for ownership charges such as insurance and property tax. Except for the Abesan Housing Estate,
which is owned by the Lagos State Development and Property Corporation (LSDPC), all the other sampled housing estates were part of the Federal Government Housing Program.

In general, there was evidence of maintenance defects in all the sampled housing estates. These defects included loose floors, broken louvre glass windows, doors that did not operate properly, peeling paint on walls, leaking roofs, cracked floors, and vegetation growing around the buildings and drainage ditches.

Evaluation of the maintenance conditions of the structures involved examination of selected elements of each building in the sampled housing units. Selected elements included windows, stairs, floors, ceilings, roofs, walls, and doors.

The magnitude of each identified repair and maintenance defect was also assessed. Data collected on specific types of defects identified in the housing units are presented in Tables 2, 3, and 4.

Regarding the surrounding areas of the houses, research findings revealed that untarred roads, poor street lighting, poor electrical-wiring, and poor security within the housing estates were the most serious problems. For instance, all the sampled housing units had very serious road, street lighting, and security problems (Table 2). In addition, none of the respondents perceived the condition of the exterior painting of their housing units as being adequate.
The status of the exterior conditions of the housing unit are presented in Table 3. Except for the exterior doors, which were found to be in adequate condition as shown in Table 3, the exterior paint, window framing, and common floor areas were found to be the most serious maintenance problems of the housing unit exteriors. For example, 47 of the 74 respondents disagreed that the conditions of the paint were adequate. Caulking around the exterior joints were identified as the least serious of all identified problems.

Observed maintenance conditions of the interiors of the housing units are presented in Table 4. For example, only one of the 74 sampled housing units had a ceiling in adequate condition, and only three of the 74 interior window framings of the sampled homes were in adequate condition.

Home Maintenance Perception Variable

Tables 5, 6, and 7 were created to depict the profile of responses regarding occupant attitudes towards home maintenance, their perception of the seriousness of home maintenance problems in government provided housing units, and important factors in home maintenance decisions. As shown in Table 5, for instance, 47 of the 74 (64%) of the respondents indicated that they enjoyed maintaining their homes and that they viewed home maintenance as a legacy. None of those interviewed claimed that they strongly disagreed with any of the selected attitudinal factors.
Table 2

Maintenance Condition of Housing Surroundings

<table>
<thead>
<tr>
<th>Problems</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VS  SE  SS MI NP</td>
</tr>
<tr>
<td>General cleanliness of surrounding</td>
<td>17 9 13 25 10</td>
</tr>
<tr>
<td>Rats, mice, termite, and other pests</td>
<td>10 11 2 44 7</td>
</tr>
<tr>
<td>Refuse disposal (garbage) problem</td>
<td>17 8 27 22 0</td>
</tr>
<tr>
<td>Caulking problems around joints</td>
<td>10 14 19 30 1</td>
</tr>
<tr>
<td>Vegetation growth on buildings</td>
<td>0 9 11 26 28</td>
</tr>
<tr>
<td>Evidence of significant erosion</td>
<td></td>
</tr>
<tr>
<td>or pooling of water on sites</td>
<td>14 4 8 25 23</td>
</tr>
<tr>
<td>Electrical wiring problems</td>
<td>2 47 19 6 0</td>
</tr>
<tr>
<td>Evidence of sewer backup or stoppage</td>
<td>10 0 2 45 17</td>
</tr>
<tr>
<td>Evidence of water leaks</td>
<td>5 3 10 18 38</td>
</tr>
<tr>
<td>Evidence of gutter problems</td>
<td>11 8 7 27 21</td>
</tr>
<tr>
<td>Untarred roads</td>
<td>74 0 0 0 0</td>
</tr>
<tr>
<td>Poor street lighting</td>
<td>74 0 0 0 0</td>
</tr>
<tr>
<td>Security problems</td>
<td>74 0 0 0 0</td>
</tr>
</tbody>
</table>

Note. n = 74.

VS = Very serious; SE = Somewhat serious; SS = Serious; MI = Minor; NP = No problem.
Table 3

Maintenance Condition of Housing Unit Exteriors

<table>
<thead>
<tr>
<th>Variables Conditions (Adequacy)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows casting or framing</td>
<td>2 20 8 30 14</td>
</tr>
<tr>
<td>Doors or framing</td>
<td>18 23 10 15 8</td>
</tr>
<tr>
<td>Exterior walls</td>
<td>16 26 11 12 9</td>
</tr>
<tr>
<td>Floors in common areas</td>
<td>6 33 14 10 11</td>
</tr>
<tr>
<td>Caulking problems around exterior joints</td>
<td>27 1 15 24 7</td>
</tr>
<tr>
<td>Exterior paint</td>
<td>0 4 14 47 9</td>
</tr>
<tr>
<td>Roofs</td>
<td>12 22 16 22 2</td>
</tr>
<tr>
<td>Exterior stairs</td>
<td>11 31 9 15 8</td>
</tr>
</tbody>
</table>

Note.  n = 74.

SA = Strongly Agree; AG = Agree; NU = Neutral; DA = Disagree; SD = Strongly Disagree.

The responses of the occupants' perceptions of the seriousness of home maintenance problems in Lagos, Nigeria are presented in Table 6. As shown, 57 of the 74 occupants (77%) interviewed believed that home maintenance varies from being a serious to being an extremely serious problem. Only
Table 4

Maintenance Condition of Housing Unit Interiors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SA</td>
</tr>
<tr>
<td>Windows casting or framing</td>
<td>3</td>
</tr>
<tr>
<td>Door or framing</td>
<td>15</td>
</tr>
<tr>
<td>Interior walls</td>
<td>13</td>
</tr>
<tr>
<td>Floor in common areas</td>
<td>5</td>
</tr>
<tr>
<td>Interior paint</td>
<td>7</td>
</tr>
<tr>
<td>Ceiling</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. n = 74.

SA = Strongly Agree; AG = Agree; NU = Neutral; DA = Disagree; SD = Strongly Disagree.

9.5 percent of those surveyed believed that home maintenance is a somewhat-serious problem. This data indicated that home maintenance problems do exist.

In the process of evaluating occupant home maintenance behavior, respondents were asked to indicate the degree of importance of selected factors in their home maintenance decisions. The results are presented in Table 7. As shown in that table, a high percentage of the respondents agreed
Table 5
Occupant Attitudes Toward Home Maintenance

<table>
<thead>
<tr>
<th>Selected Attitudinal Factors</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worry about safety more than appearance</td>
<td>25  20  16  13  0</td>
</tr>
<tr>
<td>Concerned about work required</td>
<td>35  22  8  9  0</td>
</tr>
<tr>
<td>Enjoy maintaining my home</td>
<td>47  19  4  4  0</td>
</tr>
<tr>
<td>Views home maintenance as investment</td>
<td>43  21  8  2  0</td>
</tr>
<tr>
<td>Views home maintenance as a legacy</td>
<td>47  15  10  2  0</td>
</tr>
</tbody>
</table>

Note. n = 74.
SA = Strongly Agree; AG = Agree; NU = Neutral; DA = Disagree; SD = Strongly Disagree.

that the selected factors, such as safety and longevity, were very important in their home maintenance decisions.

Need Awareness Variable

The awareness question was focused on the person who first noticed the defect in the sampled housing units. As found, 94.6% of those surveyed claimed that they first noticed the defect themselves, and none of the respondents claimed that contractors first noticed the identified maintenance defect. However, they could not perform the
repair-work themselves because of their technical incompetence.

Table 6

Occupant Beliefs Regarding Seriousness of Home Maintenance

<table>
<thead>
<tr>
<th>Variable Values</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. No Problem</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>1. Not a serious problem</td>
<td>10</td>
<td>13.5</td>
</tr>
<tr>
<td>2. Somewhat serious problem</td>
<td>7</td>
<td>9.5</td>
</tr>
<tr>
<td>3. Serious problem</td>
<td>10</td>
<td>13.5</td>
</tr>
<tr>
<td>4. Very serious problem</td>
<td>21</td>
<td>28.4</td>
</tr>
<tr>
<td>5. Extremely serious problem</td>
<td>26</td>
<td>35.1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>74</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Deferred Maintenance Variable

The three most serious and visible major defects in each of the sampled housing units formed the bases for the enquiry. Questions were asked regarding who actually performed the repair. Information gathered from all the respondents surveyed is shown in Table 8. As noted in the table, 81.1% of the respondents hired contractors to do the
Table 7

**Important Factors in Home Maintenance Decisions**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VI</td>
</tr>
<tr>
<td>Safety</td>
<td>66</td>
</tr>
<tr>
<td>Matter of necessity</td>
<td>33</td>
</tr>
<tr>
<td>Making house look better</td>
<td>41</td>
</tr>
<tr>
<td>Sees home maintenance as investment</td>
<td>16</td>
</tr>
<tr>
<td>More comfort and convenience</td>
<td>40</td>
</tr>
<tr>
<td>Making the house last longer</td>
<td>51</td>
</tr>
</tbody>
</table>

**Note.** n = 74.

VI = Very important; IM = Important; SI = Somewhat important; NI = Not important.

repair, and only 16.2% of the respondents performed the repair work themselves.

**Neglected Maintenance Variable**

Three major defects were identified inside each of the sampled housing units. The most common defects inside the sampled units include cracked ceiling, paint peeling off, leaky roof, and broken glass windows. Woofter (1969) stated that "a rough method of summarizing housing
conditions is to classify dwellings according to the number of defects found" (p. 115). During his study of African American housing problems, he identified four categories of home maintenance defects (Classes A, B, C, and D). He defined Class A as a dwelling that does not lack in any major deficit. He also referred to dwellings that are inadequate in one major item or in two minor ones as Class B. Those lacking in two or more major respects or in three minor items were referred to as Class C. Class D houses according to Woofter are those lacking in at least five major defects, or in many cases even approaching the uninhabitable state. Most of the housing units sampled in

Table 8

Performer of Identified Maintenance Defects

<table>
<thead>
<tr>
<th>Variable Values</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household head did the repair</td>
<td>12</td>
<td>16.2</td>
</tr>
<tr>
<td>Secured a relative to do the repair</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Hired friend to do the repair</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Hired contractor to do the repair</td>
<td>60</td>
<td>81.1</td>
</tr>
</tbody>
</table>

TOTAL 74 100.0

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this study would qualify as Class C and none of the sampled units was without any defects.

Concerning the three major defects identified, questions were asked regarding the reasons for neglecting the identified defects. Nine reasons were suggested for not-fixing the identified defects. This information, as gathered from the respondents, is shown in Table 9. As shown in this table, occupant indecision, financial constraint, lack of cooperation from neighbors, and belief that the government is responsible were the most common reasons that occupants gave for not repairing the defects. For instance, 29 of the 74 respondents indicated that they believed that the government is responsible for repairing the identified defects. In addition, 21 of the 74 respondents claimed that they were undecided on what to do concerning the first identified defect. Only two people claimed that they had no time to actually repair the third identified defect in their units.

**Construction Technology Variable**

The material characteristics and quality of construction of these housing projects were compared to determine the level of deterioration in the building materials. Information was gathered from all the sampled homes and the results are presented in Table 10. As shown in the table, the quality of the construction and the materials, based on visual observation, were valued between


Table 9

Reasons For Not Repairing the Three Identified Defects

<table>
<thead>
<tr>
<th>Reasons</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The money is not available</td>
<td>8</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>2. Not worth the cost, breaks easily</td>
<td>6</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>3. Cannot decide what to do</td>
<td>21</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>4. Don’t know how to repair it</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Landlord’s responsibility to repair</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6. Don’t know who can do the repair</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. No time to be concerned with repairs</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>8. Cooperation from neighbors lacking</td>
<td>4</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>9. Responsibility of the government</td>
<td>29</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

Note. n = 74.

the low and medium ranges. It was also observed that the traditional load bearing method was used for the construction of all the buildings in the sampled housing estates.

**Competence and Resource Variable**

The profile of respondents' competence on selected maintenance activities is presented in Table 11. Of the six
areas sampled, with the exception of painting, it is very clear that an uneducated population exists regarding the ability to perform basic home maintenance. For instance, only 5.4% of the respondents were very competent in the areas of carpentry, painting, roofing, and electrical wiring, respectively.

In addition, 54.1% of the respondents and 66.2% indicated that they had no competence in carpentry and roofing, respectively. The low level of competence was a surprise considering the high level of literacy among the occupants of government provided housing units.

Table 10

Quality of Construction Technology

<table>
<thead>
<tr>
<th>Quality of Variables</th>
<th>Technique</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>71.6</td>
<td>59.5</td>
</tr>
<tr>
<td>Low</td>
<td>28.4</td>
<td>40.5</td>
</tr>
</tbody>
</table>

Note. n = 74.
Table 11

Home Maintenance Competencies

<table>
<thead>
<tr>
<th>Level of competence in variable</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VC</td>
</tr>
<tr>
<td>Carpentry</td>
<td>4</td>
</tr>
<tr>
<td>Painting</td>
<td>4</td>
</tr>
<tr>
<td>Roofing</td>
<td>4</td>
</tr>
<tr>
<td>Brick-laying</td>
<td>3</td>
</tr>
<tr>
<td>Electrical/wiring</td>
<td>4</td>
</tr>
<tr>
<td>Plumbing</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. \( n = 74 \).

VC = Very competent; CO = Competent; SC = Somewhat Competent; NC = Not Competent.

Tenureship Variable

Questions were asked regarding the current residence location of those who participated in the survey, and the length of time the respondents had lived in the sampled government housing units. The primary purpose of the tenureship question (Number 23) was to determine whether there were differences in maintenance conditions of their units and the home maintenance behavior between occupants.
who were accustomed to city living and rural migrants unaccustomed to city life. Differences were also sought between owners and renters, their moving plans, and length of stay, regarding the maintenance conditions and their home maintenance behavior. The results of these questions are shown in Tables 12 and 13.

As shown in Table 12, 32 of the 74 (43.2%) respondents moved from public urban residences to their present government provided housing units, and only 10 of 74 (13.5%) moved from private rural residences. From this analysis, it could be inferred that the government provided housing units were occupied primarily by people who are accustomed to city life and not rural migratory life.

Table 12

<table>
<thead>
<tr>
<th>Previous Immediate Residence</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Urban</td>
<td>32</td>
<td>43.2</td>
</tr>
<tr>
<td>Public Rural</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Private Urban</td>
<td>32</td>
<td>43.2</td>
</tr>
<tr>
<td>Private Rural</td>
<td>10</td>
<td>13.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>74</td>
<td>100.0</td>
</tr>
</tbody>
</table>

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The profile of responses regarding length of stay at the government housing unit sampled is shown in Table 13. As shown, 66 of the 74 respondents have been in government housing for more than three years. It could be inferred that these occupants were long term tenants. It could also be suggested that these type of tenants would have a high sense of ownership and are very conscious of the existing maintenance problems.

The occupants were also asked about the type of ownership interest in the sampled government housing units. It was found that 54% of the 74 respondents were renters. A possible explanation is that the units were rented to these

### Table 13

**Length of Stay in Government Housing**

<table>
<thead>
<tr>
<th>Variables (years)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>1 to nearly 3 years</td>
<td>6</td>
<td>8.1</td>
</tr>
<tr>
<td>3 to nearly 6 years</td>
<td>33</td>
<td>44.6</td>
</tr>
<tr>
<td>6 to nearly 9 years</td>
<td>16</td>
<td>21.6</td>
</tr>
<tr>
<td>9 to nearly 12 years</td>
<td>15</td>
<td>20.3</td>
</tr>
<tr>
<td>12 years and over</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>74</td>
<td>100.0</td>
</tr>
</tbody>
</table>
young generation of professionals. The owners are either
dead or have moved to other private houses.

Cultural Variable

The occupants were also asked about their ethnic
background, religion, and type of marriage. As found, all of
the respondents in the sampled housing units were Nigerian
citizens from the Yoruba and Igbo ethnic groups. The
Yorubas migrated from the western region of Nigeria, and the
Igbo ethnic group came from the eastern part of Nigeria.
Most of the respondents (97.3%) indicated that they were
Yorubas and only 2.7% of the 74 respondents were Igbos.
Because of this high percentage, it could be inferred that
the Yoruba people had a greater influence in securing a unit
in the government provided housing than the Igbos.

Regarding the question on respondents religion, 53 of
the 74 (71.6%) indicated Christianity as their religion
while the remaining 21 (28.4%) were Muslim. It was also
shown in Tables 36 and 38, that a significant low positive
correlation exists between respondents religious beliefs
(X10.2) and the maintenance conditions of their building
structures (X2.2). Because polygamy is allowed in the
Islamic religion, this may help to explain the fact that
polygamous household heads have poor attitudes regarding
maintenance.

With regards to the question about type of marriage,
most of the respondents (89.2%) indicated that they were
from monogamous households. A question was asked regarding marital status. It was found that 89.2% of the respondents were married and only 10.8% were single.

**Demographic Variable**

The distribution of the respondents according to their level of education (X11.3) is indicated in Table 14. As shown, a high percentage of the respondents had some form of formal education beyond secondary school level. For instance, 23 of the 74 respondents (31.1%) completed secondary school, 33 (44.6%) of them actually had some university education, and 10.8% also attended some vocational or trade school. In addition, gender, size of household, age, occupation, and the ages and number of household maintenance assistance personnel in each household were used as the basis for categorizing responses. The results of the data according to these variables are shown in Tables 15 through 18.

The respondents were categorized by gender for the purpose of determining the number of male and female household heads. It was found that the bulk of the data (87.8%) was provided by male-headed households in the sampled housing projects. This was probably due to the existence of communication barriers between a male stranger and local women. These barriers have been created by socio-cultural constraints.
The results of tabulating the respondents according to household size are indicated in Table 15. It is noted that 42 of the 74 (56.8%) households have five or more people living in each housing unit. In addition, 64 of the 74 households included four or more people living in each housing unit.

Table 14

<table>
<thead>
<tr>
<th>Education Level of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Values</td>
</tr>
<tr>
<td>None</td>
</tr>
<tr>
<td>Primary school</td>
</tr>
<tr>
<td>Secondary school</td>
</tr>
<tr>
<td>Vocational/trade school</td>
</tr>
<tr>
<td>Some university</td>
</tr>
<tr>
<td>Baccalaureate degree</td>
</tr>
<tr>
<td>Post-graduate degree(s)</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>
The age ranges and the number of respondents in each age are indicated in Table 16. As shown, most of the respondents were between ages 31 and 50 (83.8%).

Table 17 depicts a tabulation by occupation. As shown in that table, most of the respondents were professionals. For instance, 31.1% of the respondents were engineers and architects. A possible explanation for this is that a vast majority of the poor people have been eliminated from the government housing program. This statement confirms the claim made by Ogunshakin and Olayiwola (1992) that "the vast

Table 15
Household Size of Respondents

<table>
<thead>
<tr>
<th>Variable Values</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 person</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>2 people</td>
<td>4</td>
<td>5.4</td>
</tr>
<tr>
<td>3 people</td>
<td>6</td>
<td>8.1</td>
</tr>
<tr>
<td>4 people</td>
<td>22</td>
<td>29.7</td>
</tr>
<tr>
<td>5 or more people</td>
<td>42</td>
<td>56.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>74</td>
<td>100.0</td>
</tr>
</tbody>
</table>
majority of the needy has been excluded from the government mass housing provision" (p. 46).

The respondents were also asked to indicate the number of people in their household who could assist them on maintenance activities throughout the housing unit. The

Table 16
Ages of Respondents

<table>
<thead>
<tr>
<th>Variable Values</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>20-30</td>
<td>6</td>
<td>8.1</td>
</tr>
<tr>
<td>31-40</td>
<td>31</td>
<td>41.9</td>
</tr>
<tr>
<td>41-50</td>
<td>31</td>
<td>41.9</td>
</tr>
<tr>
<td>51-60</td>
<td>4</td>
<td>5.4</td>
</tr>
<tr>
<td>Over 60</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>74</td>
<td>100.0</td>
</tr>
</tbody>
</table>

results of tabulating the data according to the ages and number of household members who could assist on maintenance activities are presented in Table 18. As shown, most of the respondents had four maintenance assistants in their
households who were teenagers. It was also indicated from the data that many of the respondents claimed that they had no maintenance assistants in their housing unit.

The respondents were also asked to indicate their interest in learning about home maintenance. It was found that 57 of the 74 (77%) expressed interest in learning about home maintenance.

Table 17

**Occupations of Respondents**

<table>
<thead>
<tr>
<th>Variable Values</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountant and Administrative</td>
<td>7</td>
<td>9.5</td>
</tr>
<tr>
<td>Civil Servant (Government worker)</td>
<td>14</td>
<td>18.9</td>
</tr>
<tr>
<td>Computer Science Professional</td>
<td>14</td>
<td>18.9</td>
</tr>
<tr>
<td>Engineering and Architecture</td>
<td>23</td>
<td>31.1</td>
</tr>
<tr>
<td>Journalism</td>
<td>6</td>
<td>8.1</td>
</tr>
<tr>
<td>Retired</td>
<td>4</td>
<td>5.4</td>
</tr>
<tr>
<td>Student</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td>Trader</td>
<td>4</td>
<td>5.4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>74</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The government officials were also asked to indicate whether they were aware of the existence of local educational opportunity to learn home maintenance. It was found that 53 of 74 household heads were not aware of such opportunities.

Table 18

Ages and Number of Household Members Assisting with Maintenance

<table>
<thead>
<tr>
<th>Age</th>
<th>One</th>
<th>Two</th>
<th>Three</th>
<th>Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>14.9</td>
<td>37.8</td>
<td>48.6</td>
<td>75.7</td>
</tr>
<tr>
<td>Under 20</td>
<td>33.8</td>
<td>52.7</td>
<td>45.9</td>
<td>10.8</td>
</tr>
<tr>
<td>21-30</td>
<td>27.0</td>
<td>6.8</td>
<td>5.4</td>
<td>0.0</td>
</tr>
<tr>
<td>31-40</td>
<td>18.9</td>
<td>2.7</td>
<td>2.7</td>
<td>13.5</td>
</tr>
<tr>
<td>41-50</td>
<td>5.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>51-60</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Over 60</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

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Survey of Government Officials

Data collected through the survey of government officials is presented in this section. Twenty government officials were sampled. The focus of the survey included the perception of the respondents regarding home maintenance, available assistance and funding programs, types of codes available, responsibility for home maintenance activities, strengths and weaknesses of the available programs, and recommendations for solving home maintenance problems in government provided housing.

The profile of responses based on the government officials' perceptions concerning their belief regarding the existence of home maintenance problems in government housing units is indicated in Table 19. As shown, all the respondents indicated that maintenance problems exist at varying degrees. Since none of the officials claimed that there were no problems, it could be inferred that all the officials perceived the maintenance problems at varying degrees. For instance, 18 of the 20 officials claimed that maintenance problems are serious to extremely serious.

In order to identify respondent attitudes towards maintenance of government housing, the government officials were also asked to indicate their degree of agreement or disagreement as to the importance of home maintenance. Their responses are illustrated in Table 20. As shown, 12 of the 20 government officials indicated that they agree
that home maintenance is a necessity, while 11 people indicated that the act of maintenance increases the longevity of a home. This indicates a positive attitude of government officials toward the need for favorable home maintenance behavior by the families living in the housing units.

Table 19
Belief of Government Officials in the Seriousness of Home Maintenance Problems

<table>
<thead>
<tr>
<th>Level of Concern</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Problem</td>
<td>0</td>
</tr>
<tr>
<td>Not a serious problem</td>
<td>1</td>
</tr>
<tr>
<td>Somewhat serious problem</td>
<td>1</td>
</tr>
<tr>
<td>Serious problem</td>
<td>8</td>
</tr>
<tr>
<td>Very serious problem</td>
<td>6</td>
</tr>
<tr>
<td>Extremely serious problem</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

In order to identify whether government officials were aware of the existence of housing codes and standards, they
were asked to give a yes or no response to question number 8 in the secondary instrument. Their responses are shown in Table 21. As shown, only 2 officials claimed that they are aware of the existence of environmental sanitation codes and 17 people did not respond to the question.

Table 20

<table>
<thead>
<tr>
<th>Attitude of Government Officials Towards Home Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Attitude Categories</td>
</tr>
<tr>
<td>Safety</td>
</tr>
<tr>
<td>Matter of necessity</td>
</tr>
<tr>
<td>Making house look better</td>
</tr>
<tr>
<td>Sees home maintenance as investment</td>
</tr>
<tr>
<td>More comfort and convenience</td>
</tr>
<tr>
<td>Making the house last longer</td>
</tr>
<tr>
<td>Keep as its personal property</td>
</tr>
</tbody>
</table>

Note. n = 20.
SA = Strongly Agree; AG = Agree; NU = Neutral; DA = Disagree; SD = Strongly Disagree.
Table 21

Government Officials' Claims Regarding Available Maintenance Codes and Standards

<table>
<thead>
<tr>
<th>Types of code</th>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>15</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Plumbing</td>
<td>9</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Electrical</td>
<td>9</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Environmental sanitation</td>
<td>2</td>
<td>1</td>
<td>17</td>
</tr>
</tbody>
</table>

Note. n = 20.

The respondents were also requested to indicate their beliefs regarding reasons for the occurrence of home maintenance problems. Their responses are presented in Table 22. As shown, nine of the twenty respondents indicated that they believed that problems occurred because the residents could not afford repair costs. None of the government officials interviewed indicated that problems occurred as a result of bad planning on the part of the government.

An effort was made to identify whether government officials were aware of the existence of selected housing maintenance programs. Their responses are shown in Table 23. As shown, the majority chose not to respond as to
whether they were aware of the existence of the selected variables.

Table 22

Reasons for the Occurrence of Home Maintenance Problems

<table>
<thead>
<tr>
<th>Respondents Belief in the Variable</th>
<th>MI</th>
<th>SA</th>
<th>AG</th>
<th>NU</th>
<th>DA</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of local availability of construction materials</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Lack of competent labor</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Lack of funding availability</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Lack of encouraging programs</td>
<td>1</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Residents cannot afford repair cost</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Occupant\government irresponsibility</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Bad government planning</td>
<td>17</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. n = 20.
MI = Missing Data; SA = Strongly Agree; AG = Agree; NU = Neutral; DA = Disagree; SD = Strongly Disagree.

The government officials were also requested to comment on the effectiveness of the home maintenance programs. Their
responses are indicated in Table 24. As shown, nearly half of the officials claimed that the assistance programs are effective to somewhat effective, but several officials claimed that the programs are ineffective.

The government officials were also requested to comment about the strengths and weakness of the home maintenance programs. The profile of responses regarding strengths of assistance programs is shown in Table 25. As shown, the majority of the government officials did not respond to the suggested variables as being strengths of the program. It

<table>
<thead>
<tr>
<th>Types and Sources of Assistance Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of Assistance</td>
</tr>
<tr>
<td>Government assistance program</td>
</tr>
<tr>
<td>Relatives and friends</td>
</tr>
<tr>
<td>Work colleagues</td>
</tr>
<tr>
<td>Money lenders</td>
</tr>
<tr>
<td>Banks and other financial</td>
</tr>
<tr>
<td>institutions</td>
</tr>
<tr>
<td>Mortgage corporations</td>
</tr>
</tbody>
</table>

Note. n = 20.
was also found that all the respondents indicated that the programs are located in inconvenient places for those who need it and 14 claimed that the programs were difficult to get into.

Table 24
Effectiveness of Maintenance Assistance Programs

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Response</td>
<td>2</td>
</tr>
<tr>
<td>Very Effective</td>
<td>2</td>
</tr>
<tr>
<td>Effective</td>
<td>4</td>
</tr>
<tr>
<td>Somewhat Effective</td>
<td>6</td>
</tr>
<tr>
<td>Ineffective</td>
<td>5</td>
</tr>
<tr>
<td>Extremely Ineffective</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

The government officials were also requested to indicate their understanding of the responsibility for selected home maintenance activities. Their responses are shown in Table 26. As shown, the majority of the officials believed that the responsibility for the exterior wall and roofing maintenance lie with the government. A few of the
Table 25

**Strengths of Assistance Programs**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Missing</th>
<th>Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate funding availability</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Convenience Available</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Short Turnaround time</td>
<td>14</td>
<td>6</td>
</tr>
</tbody>
</table>

Note. n = 20.

Table 26

**Responsibility For Home Maintenance**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Govt</td>
</tr>
<tr>
<td>Exterior Wall Maintenance</td>
<td>16</td>
</tr>
<tr>
<td>Exterior Window Maintenance</td>
<td>6</td>
</tr>
<tr>
<td>Common floor area maintenance</td>
<td>6</td>
</tr>
<tr>
<td>Roofing Maintenance</td>
<td>12</td>
</tr>
<tr>
<td>Who makes sure overall repair is done right</td>
<td>11</td>
</tr>
</tbody>
</table>

Note. n = 20.
officials claimed that home maintenance is the responsibility of both the occupants and the government. The government officials were also requested to comment on the difficulties encountered towards enforcing home maintenance. They were also asked to indicate their understanding of the responsibility for selected home maintenance activities. The responses are indicated in Table 27. As shown, the majority of the officials did not respond to this question. For instance, when asked whether the limited number of government officials is a major factor

Table 27
Difficulties Encountered in Enforcing Home Maintenance Standards

<table>
<thead>
<tr>
<th>Variables</th>
<th>No Response</th>
<th>Agreed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited supply of government inspectors</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Restricted training available</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Low maintenance budget</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Evidence of corruption</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Negative attitude of people to government property</td>
<td>17</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. \( n = 20 \).
in making it difficult to enforce home maintenance standards, 12 people did not respond and only 8 agreed to this question.

The government officials were also requested to recommend possible solutions for home maintenance problems in government provided housing units. The viewpoints gathered are summarized and presented in Table 28. As shown, the majority of the respondents (12 out of 20) suggested that regulations and other policy statements

Table 28
Recommendations for Solving Maintenance Problems

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Yes</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide education for occupants</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Create learning experience for the occupants</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Develop regulations and other policy statements and policies</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Supervise compliance to existing regulations and policies</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Have maintenance crew live within the housing estate</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Establish and adequately fund maintenance department in government ministries</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Environmental sanitation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. \( n = 20 \).
guiding housing unit maintenance should be developed. This confirms the claim that they are not aware of the existence of the maintenance standards and codes.

Interviews with Private Citizens

Data collected through interviews with private Nigerian citizens are presented in this section. Four personal interviews were conducted focusing on views of individual citizens regarding causes and solutions to housing maintenance problems. During data collection on one of the Saturdays (July 29, 1995), it happened to be an environmental day which meant that this day was scheduled for cleaning. By casual observation, it was noted that very few people were outside cleaning around their housing units. There were, though, some people who were cleaning and they agreed to provide some information. The viewpoints gathered during the private conversations are summarized as follows:

1. Because of the high cost of building materials, many owners could not afford to make repairs. Many tenants could not pay their rent and this consequence had an indirect effect on maintenance of the property. By involving the landlords in the enlightenment programs, it was hoped that their consciousness would be awakened.

2. Because of the predominantly poor health care system in the country, many people are ill and cannot maintain
their homes. This may have accounted for some lack of participation in the environmental cleaning day.

3. Housing unit residents lacked personal hygiene and many of the people appeared to have nonchalant attitudes toward government properties.

4. Observed differences in attitude between former rural and urban dwellers.

5. Government instability results in movement of government workers at short notices. This appears to affect people’s attitude towards home maintenance.
CHAPTER 5
DATA ANALYSIS

All collected data are analyzed in this chapter for the purpose of providing answers for the three research questions. The results of each of the three research questions were treated individually and sometimes with supportive information for the particular questions.

Analysis of Research Variables

The variables used for this study are listed and identified below. A total of 11 major variables (X1-X11), and 16 sub-categories were used in the analysis of the data for the three research questions. Four of the major variables (X2, X3, X10, and X11) included sub-categories. For instance, Variable X2 has three sub-categories which include X2.1, X2.2, and X2.3. Variable X3 has two sub-categories which include X3.1 and X3.2. Variable X10 has four sub-categories which include X10.1, X10.2, X10.3, and X10.4. Variable X11 has eight sub-categories which include X11.1 through X11.8. The names of these variables are explained in Table 29.

The variables relating to existing maintenance conditions (X2) are identified in Sections 1A and 1B of the Primary Instrument. These sections were used to assess the magnitude of necessary repair and maintenance defects in the building exterior including the surroundings, maintenance
condition of the building structure, and the condition of the interior area of the housing units. The exterior

Table 29
Research Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>Home maintenance behavior of occupants</td>
</tr>
<tr>
<td>X2</td>
<td>Summation of existing maintenance conditions</td>
</tr>
<tr>
<td>X2.1</td>
<td>Condition of exterior and surrounding areas</td>
</tr>
<tr>
<td>X2.2</td>
<td>Condition of building structure</td>
</tr>
<tr>
<td>X2.3</td>
<td>Condition of Interior area</td>
</tr>
<tr>
<td>X3</td>
<td>Summation of attitude and perception of home maintenance of occupants</td>
</tr>
<tr>
<td>X3.1</td>
<td>Attitude towards home maintenance</td>
</tr>
<tr>
<td>X3.2</td>
<td>Occupant perception of home maintenance</td>
</tr>
<tr>
<td>X4</td>
<td>Deferred maintenance need</td>
</tr>
<tr>
<td>X5</td>
<td>Neglected maintenance need</td>
</tr>
<tr>
<td>X6</td>
<td>Awareness of maintenance need</td>
</tr>
<tr>
<td>X7</td>
<td>Construction technology</td>
</tr>
<tr>
<td>X8</td>
<td>Competencies and resource factors</td>
</tr>
<tr>
<td>X9</td>
<td>Tenureship</td>
</tr>
<tr>
<td>X10</td>
<td>Summation of cultural factors</td>
</tr>
<tr>
<td>X10.1</td>
<td>Respondent's ethnic group</td>
</tr>
<tr>
<td>X10.2</td>
<td>Respondent's religion</td>
</tr>
<tr>
<td>X10.3</td>
<td>Respondent's marital status</td>
</tr>
<tr>
<td>X10.4</td>
<td>Household type (Type of marriage in household)</td>
</tr>
<tr>
<td>X11</td>
<td>Summation of demographic factors</td>
</tr>
<tr>
<td>X11.1</td>
<td>Respondent's gender</td>
</tr>
<tr>
<td>X11.2</td>
<td>Respondent's age</td>
</tr>
<tr>
<td>X11.3</td>
<td>Level of education</td>
</tr>
<tr>
<td>X11.4</td>
<td>Household size</td>
</tr>
<tr>
<td>X11.5</td>
<td>Occupation</td>
</tr>
<tr>
<td>X11.6</td>
<td>Number of maintenance assistants in household</td>
</tr>
<tr>
<td>X11.7</td>
<td>Ages of household maintenance assistants</td>
</tr>
<tr>
<td>X11.8</td>
<td>Number of bedrooms</td>
</tr>
</tbody>
</table>

The maintenance condition variable was identified as X2.1, and it was measured by 13 items in the primary questionnaire (Questions 1-2L). The condition of the exterior part of the
building structure was identified as variable X2.2, measured with eight items in the primary questionnaire (Questions 3b, 4b, 5b, 6b, 7b, 8b, 9b, and 10b). The interior maintenance condition variable was identified as variable X2.3, and was measured with 10 items (Questions 36a-36e, 37b, 38b, 39b, 40b, and 41b). The existing maintenance condition is referred to as variable X2, the summation of X2.1, X2.2, and X2.3. Composite Likert scales were used for the assessments. Strongly agree or disagree responses to the above questions indicate higher levels of maintenance conditions. Very serious or serious responses also indicate high degree of seriousness of the problem and that an urgent need exists to correct the defect.

The variable relating to construction systems and technology (X7) is identified in Section 2 of the Primary Instrument. This section was used to assess the quality of construction methods, techniques, and material used based on the professional judgement of the researcher. The construction technology variable was identified as X7, and measured with three items (Questions 11-13).

The variable relating to occupants attitude and perception of home maintenance (X3) is identified in Section 3 of the Primary Instrument. This section was used to assess the respondents attitude towards home maintenance, and the importance of some selected factors in occupant perception of home maintenance behavior. The attitude was
identified as variable X3.1, measured with five items (Questions 14-18). The factors influencing occupant home maintenance decisions were identified as variable X3.2, measured with seven items (Questions 34a-34f). The occupant home maintenance perception, a summation of variables X3.1 and X3.2 was referred to as variable X3. Another pertinent question considered in the analysis was the respondent’s belief in the seriousness of the home maintenance problem (Question 19).

A composite scale was used to measure the home maintenance perception variable. For instance, in questions 14-18, using the composite scale, strongly agree or agree responses indicate higher levels of perception of home maintenance. Also, in questions 34a-34f, using the composite Likert scale, very important or important responses indicate higher levels of perception of home maintenance.

The variable relating to tenureship factors (X9) is identified in section 4 of the Primary Instrument. This section was used to assess the length of stay in the present government provided housing unit. The variable was identified as X9, and measured with one item (Question 25). Other pertinent questions were asked about the occupant’s moving plan (Questions 26-27), whether the respondent is an owner or renting the housing unit being sampled (Question
24), and whether the respondent moved from a public/private, rural/urban resident (Question 23).

The variables relating to deferred need (X4), neglected need (X5), and awareness of maintenance need (X6) are identified in section 5 of the Primary Instrument. This section was used to assess maintenance deficits perceived by the heads of households or the members of the household. According to Merrill (1989), the awareness may be influenced by visual acuity of the perceiver, previous experience and adaptation to current standards. Merrill also claimed that maintenance deficits may be deferred or neglected for one reason or the other.

In this study, deferred need (X4) was measured with one item (Question 29), the neglected need variable (X5) was measured with three items (Questions 45, 48 and 51), and the need awareness was identified as variable (X6) was measured with one item (Question 28). For a better understanding of the level of occupant awareness of maintenance need, questions were also asked about reasons for not performing the maintenance defects identified during the observation of the sampled units.

The variable relating competence and resource factors (X8) is identified in section 6 of the Primary Instrument. These factors were used to assess maintenance and home repair skills such as carpentry and roofing that the
respondent possesses. The competence and resource factors were measured with six items (Questions 30a-30f).

Other pertinent resource factors considered include funding availability, assistance programs, home repair learning opportunities, and respondent’s interest in learning maintenance skills. These issues were addressed in the secondary survey instrument administered on the officials of government housing agencies (Questions 5, and 11-14) and other information collected from the government housing officials.

The variable relating to home maintenance behavior of occupants (X1) is identified in Sections 7A and 7B of the Primary Instrument. This section was used to assess the type of home maintenance activities performed, and measured with six items (Questions 33a-33f). In each of these questions, a very recent actual completion of selected repair work indicates that the occupant performs home maintenance or has a positive attitude with regard to home their maintenance behavior. Questions were also asked concerning important factors that influenced individual occupant’s home maintenance decision. These include expenditures on maintenance, the type of activity performed, who performed it, when it was performed and why it was performed (Questions 28 and 29).

The variable relating to cultural factors of occupants (X10), the summation of X10.1 through X10.4 is identified in
section 8 of the Primary Instrument. These factors were used to assess respondents' citizenship, religion, and type of household (Questions 52a-54). The citizenship was identified as variable X10.1, religion was identified as variable X10.2, marital status was identified as variable X10.3, and household type (type of marriage in the household) was identified as variable X10.4.

The variable relating to demographic factors of occupants (X11) is identified in section 9 of the Primary Instrument. These factors were used to assess respondents' demographic factors. These include gender, identified as variable X11.1, age of respondent, identified as variable X11.2, respondents' level of education, identified as variable X11.3, respondents' household size, identified as variable X11.4, respondents' occupation, identifies as variable X11.5, number of people in household that could assist on maintenance, identified as variable X11.6, the ages of household assistance, identified as variable X11.7, number of bedrooms in the housing unit, identified as variable X11.8. These issues were addressed in Questions 55-63. Gender is a dichotomous variable with male respondents coded as 1, and female respondents coded as 2 (Question 56). Age referred to the respondent's age at the time of the survey (Question 57). Education referred to the number of years of schooling the respondent had obtained (Question 58). Other questions addressed household-size,
number of bedrooms in the unit, and occupation of household head (Questions 69-73). The demographic factors are referred to as variable X11, and measured by the summation of X11.1 through X11.8 responses to the above questions.

Analysis of Data for Research Questions

Three empirical relationships are presumed to address the three research questions. The names of all the variables used in the research are shown in Table 29, and the correlation coefficients for all measurements are indicated in Table 40, Appendix G. Three identified regression equations presuming causal relationships among the variables are:

1. \( X_1 = f(X_2, X_3) \);
2. \( X_3 = f(X_7, X_8, X_9, X_{10}, X_{11}) \), and
3. \( X_2 = f(X_4, X_5, X_6) \).

A relationship is presented in each of the hypothesized relationships as shown in Figure 2. The dependent variables in the regression equations are located on the left hand side of the above equations, and the independent variables are identified on the right side of each of the above equation.

Analysis of Research Question Number One

The first of the three research questions was used to ascertain the extent to which home maintenance behavior of occupants (\( X_1 \)) depends on (a) the summation of existing home maintenance conditions (\( X_2 \)), and (b) summation of attitude
and perception of home maintenance of occupants (X3): \( X_1 = B_0 + B_2 X_2 + B_3 X_3 \). In this equation, \( X_1 \) represents the criterion to be predicted (dependent variable), and \( X_2 \) and \( X_3 \) are predictor (independent) variables. The \( B \) values represent the raw score of regression coefficients (slopes).

When this equation was run, the values of \( R^2 = .03, F = .9, \) and \( p \) (Significance of \( F \)) = .4 were obtained. Since the \( p \) value is much larger than .10, the value of \( F \) is not statistically significant. Therefore, the data obtained does not give evidence to support an affirmative answer to research question one.

The inter-correlation matrix of the primary variables \( (X_1, X_2, \) and \( X_3) \) and their sub-variables \( (X_{2.1}, X_{2.2}, X_{2.3}, X_{3.1}, \) and \( X_{3.2}) \) are shown in Table 30. As shown, there is no significant correlation between the primary dependent variable home maintenance behavior \( (X_1) \), and the two independent summation variables, the summation of existing maintenance conditions \( (X_2) \), and summation of attitude and perception of home maintenance of occupants \( (X_3) \). It is also indicated in Table 30 that a high positive correlation did exist between the summation of existing maintenance condition \( (X_2) \) and one of its sub-variable, maintenance condition of exterior and surrounding areas \( (X_{2.1}) \) (\( r = .86 \)). A very high positive correlation also exists between the summation of existing maintenance condition \( (X_2) \) and the condition of the interior areas \( (X_{2.3}) \) (\( r = .91 \)).
Table 30

Inter-Correlation Matrix for Research Question One

<table>
<thead>
<tr>
<th></th>
<th>X1</th>
<th>X2</th>
<th>X2.1</th>
<th>X2.2</th>
<th>X2.3</th>
<th>X3</th>
<th>X3.1</th>
<th>X3.2</th>
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</thead>
<tbody>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2.3</td>
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<td>.91**</td>
<td>.77*</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>X3</td>
<td>.14</td>
<td>-.28*</td>
<td>-.32*</td>
<td>.17</td>
<td>-.38**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X3.1</td>
<td>.14</td>
<td>-.32**</td>
<td>-.29*</td>
<td>.07</td>
<td>-.45**</td>
<td>.93**</td>
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</tr>
<tr>
<td>X3.2</td>
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<td>-.08</td>
<td>-.26*</td>
<td>.28*</td>
<td>-.10</td>
<td>.74**</td>
<td>.44**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.

It is also shown in Table 30 that there was no significant correlation between home maintenance behavior of occupants (X1), attitude towards home maintenance (X3.1), and occupant perception of home maintenance (X3.2), respectively. This finding that no significant correlation exists confirms the claim in the review of literature that no consistent conclusion could be made about the relationships between attitude and behavior, since the
attitude cannot be measured directly (Lingll & Ostrom, 1981). However, a very low negative correlation exists between summation of existing home maintenance condition (X2) and occupants home maintenance perception (X3) ($r = -0.28$), at the .05 level of significance.

The table of highest correlates of the primary dependent variable, home maintenance behavior of occupants (X1) is shown in Table 31. As shown, it could be inferred that the best indicators of home maintenance behavior (X1) are construction technology (X7) and household size (X11.4).

Table 31

<table>
<thead>
<tr>
<th>Variables Description</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>X7 = Construction technology</td>
<td>.45**</td>
</tr>
<tr>
<td>X11.4 = Household size</td>
<td>.40**</td>
</tr>
<tr>
<td>X9 = Tenureship</td>
<td>.29*</td>
</tr>
<tr>
<td>X10 = Cultural factors</td>
<td>-.32**</td>
</tr>
<tr>
<td>X10.1 = Respondent's ethnic group</td>
<td>-.33**</td>
</tr>
</tbody>
</table>

Note. Only the significant correlations were included in this table. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.
which are positively related, and respondents ethnic group (10.1) which is inversely related.

Similarly, the highest correlates of exterior maintenance conditions (X2.1), condition of building structure (X2.2), and conditions of the interior areas (X2.3) are shown in Tables 32, 33, and 34. As shown in Table 32, for instance, exterior maintenance conditions (X2.1) are moderately positively related to interior maintenance condition (X2.3) and the level of education (X11.3), and inversely related to summation of attitude and perception of home maintenance of occupants (X3). Also in Table 33, maintenance condition of building structure (X2.2) is moderately positively related to occupation (X11.5), respondent's gender (X11.1), and respondent's religion (X10.2), and moderately negatively related to construction technology (X7) and occupants perception of home maintenance (X3.2). In Table 34, it was indicated that condition of interior areas (X2.3) is moderately positively related to level of education (X11.3), and inversely related to the attitude towards home maintenance (X3.1).

The mean and standard deviation scores on home maintenance variables are presented in Table 41, Appendix G. In this table, for instance, a mean score of 33.76, and a standard deviation of 7.48 were reported for home maintenance behavior variable (X1). Six items were used to measure this particular variable (Questions 33a-33f).
Table 32

**Highest Correlates of Exterior Maintenance Conditions (X2.1)**

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2.3 = Interior maintenance condition</td>
<td>.77**</td>
</tr>
<tr>
<td>X11.3 = Level of education</td>
<td>.48**</td>
</tr>
<tr>
<td>X3.2 = Occupants perception of home maintenance</td>
<td>-.26*</td>
</tr>
<tr>
<td>X10.4 = Household type</td>
<td>-.26*</td>
</tr>
<tr>
<td>X11.8 = Number of bedrooms</td>
<td>-.27*</td>
</tr>
<tr>
<td>X11.2 = Respondent’s age</td>
<td>-.28*</td>
</tr>
<tr>
<td>X3.1 = Attitude towards home maintenance</td>
<td>-.29*</td>
</tr>
<tr>
<td>X3 = Home maintenance perception</td>
<td>-.32**</td>
</tr>
</tbody>
</table>

Note. Only the significant correlations were included in this table. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.

Dividing the mean score by the number of items gave a value of 5.62. This corresponds to value number six in Table 1. It can be inferred that, on the average, occupants performed the selected maintenance activities within the last three to five years.
Table 33

**Highest Correlates of Condition of Building Structure (X2.2)**

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>X11.5 = Occupation</td>
<td>.43**</td>
</tr>
<tr>
<td>X11.1 = Respondent's Gender</td>
<td>.34**</td>
</tr>
<tr>
<td>X10.2 = Respondent's religion</td>
<td>.32**</td>
</tr>
<tr>
<td>X10 = Summation of cultural factors</td>
<td>.29*</td>
</tr>
<tr>
<td>X10.3 = Respondent's marital status</td>
<td>.28*</td>
</tr>
<tr>
<td>X11.8 = Number of bedrooms</td>
<td>.27*</td>
</tr>
<tr>
<td>X11.7 = Age of household maintenance Assistance</td>
<td>-.25*</td>
</tr>
<tr>
<td>X3.2 = Occupants perception of home maintenance</td>
<td>-.28*</td>
</tr>
<tr>
<td>X7 = Construction Technology</td>
<td>-.44**</td>
</tr>
</tbody>
</table>

**Note.** Only the significant correlations were included in this table. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.

In addition, the existing maintenance condition variable (X2) has a mean of 90.84, and a standard deviation of 16.19. A breakdown of this figure shows that the exterior maintenance condition variable (X2.1) has the
The highest mean of 40.58 with a standard deviation of 8.28, followed by the interior maintenance condition variable (X2.3) with a mean of 26.78 and a standard deviation of 7.16. A mean of 23.47 and a standard deviation of 5.65 can be attributed to the maintenance condition of the structure, variable (X2.2). In the Primary Instrument, 13 items were used to measure X2.1, eight items to measure X2.2, and 10 items were used to measure X2.3. Dividing each mean score by the number of items gave 3.12, 2.93, and 2.68, respectively.

Table 34

**Highest Correlates of Condition of Interior Areas (X2.3)**

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>X11.3 = Level of education</td>
<td>.56**</td>
</tr>
<tr>
<td>X8 = Competencies and resource factors</td>
<td>.25*</td>
</tr>
<tr>
<td>X3 = Summation of attitude and perception of home maintenance of occupants</td>
<td>-.38**</td>
</tr>
<tr>
<td>X3.1 = Attitude towards home maintenance</td>
<td>-.45**</td>
</tr>
</tbody>
</table>

Note. Only the significant correlations were included in this table. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.
From this analysis, a mean of 3 corresponded to number three on the six-point scale used in Tables 2, and 3. It could be inferred that, on the average, a somewhat serious maintenance problem exist on the surrounding of the housing units (see Table 2). In addition, it could be claimed that, on the average, people were neutral about their perception of the conditions of the exterior and the interior maintenance conditions of these housing units as being adequate (Tables 3 and 4).

Analysis of Research Question Number Two

The second research question was used to ascertain the extent to which summation of attitude and perception of home maintenance of occupants (X3) depends on construction technology (X7), competencies and resource (X8), tenureship (X9), summation of cultural factors (X10), and summation of demographic factors (X11): 

\[ X_3 = B_0 + B_7X_7 + B_8X_8 + B_9X_9 + B_{10}X_{10} + B_{11}X_{11} \]

In the equation, X3 represents the dependent (criterion) variable, and X7, X8, X9, X10 and X11 are independent (predictor) variables.

The result of the regression analysis is presented in Table 35. The values of \( R^2 = .16, F = 2.58, p = 0.03 \) were obtained. Since the \( p \) value was less than .05, the value of \( F \) is statistically significant. It could be suggested that from the set of variables used in the above regression analysis, variables X8 (competencies and resource factors) and X10 (summation of cultural factors) are most likely to
be the best predictors of X3 (summation of attitude and perception of home maintenance of occupants). Therefore, the data obtained gave some evidence to support an affirmative answer to the research question two.

Table 35

Regression Model for Research Question Two

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variables</th>
<th>B (Slope)</th>
<th>t</th>
<th>p (Sig. of t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X3</td>
<td>X7</td>
<td>.08</td>
<td>.01</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>X8</td>
<td>-.39</td>
<td>-2.83</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>X9</td>
<td>.72</td>
<td>1.27</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>X10</td>
<td>1.20</td>
<td>1.94</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>X11</td>
<td>.14</td>
<td>1.38</td>
<td>.17</td>
</tr>
</tbody>
</table>

Note. \( R^2 = .16; \) Degree of Freedom (df) = 5; \( F = 2.58; \) \( p = 0.03. \)

The inter-correlation matrix for research question two is indicated in Table 36. As shown, there is no significant correlation between the primary dependent variable summation of attitude and perception of home maintenance of occupants (X3), and the five independent summation variables, the construction technology (X7), competencies and resource
factors (X8), tenureship (X9), summation of cultural factors (X10), and summation of demographic factors (X11). It is also indicated that a very high positive correlations also exists between the summation of attitude and perception of home maintenance of occupants (X3), and attitude towards home maintenance (X3.1) \( (r = .93) \) and occupants perception of home maintenance (X3.1) \( (r = .74) \). All these correlations are significant at the .01 level. Also, a very low negative correlation \( (r = -.29) \) existed between summation of attitude and perception of home maintenance of occupants (X3) and the level of education (X8). A possible explanation for the low level is that the formal education in areas of building maintenance that the respondents completed might have been without its practical components. Since they had no experience in the construction industry, they were unable to learn the skilled jobs, and consequently, they were not technically minded men and women.

In addition, it was indicated that a low positive correlation exists between attitude towards home maintenance (X3.1) and household type (type of marriage in household) \( (X10.4) (r = .31) \). This correlation was significant at the .05 level. It could be inferred that monogamous household heads have a better attitude toward housing maintenance than polygamous household heads. It was also indicated in Tables 36 and 40 that significant moderate positive correlations
exist between occupant attitudes toward home maintenance (X3.1), respondent’s age (X11.2) (r = .42), and their level of education (X11.3) (r = .32).

It could be inferred that, on the average, people with a high level of formal education have positive attitudes toward home maintenance. Also, older people have higher level attitudes than younger people.

The highest correlates of summation of attitude and perception of home maintenance of occupants (X3) are indicated in Table 37. As shown, the summation of attitude and perception of home maintenance of occupants (X3) is highly positively related to attitude towards home maintenance (X3.1), and occupant perception of home maintenance (X3.2), and negatively related to respondent’s gender (X11.1). It could be inferred that the best indicators of summation of attitude and perception of home maintenance of occupants (X3) are attitude towards home maintenance (X3.1), occupant perception of home maintenance (X3.2), respondent’s age (X11.2), household type (type of marriage in household) (X10.4), and respondent’s gender (X11.1).

Data on the home maintenance perception variable (X3) is reported in Table 41. A mean score of 13.28, and a standard deviation of 4.84 were indicated for this variable. A breakdown of this figure shows that attitude towards home maintenance (X3.1) has a mean of 8.80 with a standard
Table 36

**Inter-Correlation Matrix for Research Question Two**

<table>
<thead>
<tr>
<th></th>
<th>X3</th>
<th>X3.1</th>
<th>X3.2</th>
<th>X7</th>
<th>X8</th>
<th>X9</th>
<th>X10</th>
</tr>
</thead>
<tbody>
<tr>
<td>X3</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X3.1</td>
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<td>1.00</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>.44**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X7</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>X8</td>
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<td></td>
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<td>.07</td>
<td>.40**</td>
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</tr>
<tr>
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<td>.30*</td>
<td>-.05</td>
<td>-.26*</td>
<td>-.04</td>
<td>-.27*</td>
<td>1.00</td>
</tr>
<tr>
<td>X10.1</td>
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<td>.24*</td>
<td>-.04</td>
<td>-.25*</td>
<td>.06</td>
<td>-.09</td>
<td>.48**</td>
</tr>
<tr>
<td>X10.2</td>
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<td>.05</td>
<td>-.20</td>
<td>-.12</td>
<td>-.07</td>
<td>-.34**</td>
<td>.70**</td>
</tr>
<tr>
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<td>.13</td>
<td>.10</td>
<td>.13</td>
<td>-.27*</td>
<td>.25*</td>
<td>.02</td>
<td>.52**</td>
</tr>
<tr>
<td>X10.4</td>
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<td>.09</td>
<td>.07</td>
<td>-.34**</td>
<td>-.19</td>
<td>.63**</td>
</tr>
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<td>.11</td>
<td>-.16</td>
<td>.42**</td>
<td>-.20</td>
<td>.05</td>
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<td>.30**</td>
<td>.30*</td>
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<td>.11</td>
<td>.13</td>
<td>.12</td>
<td>.52**</td>
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<td>.32**</td>
<td>.15</td>
<td>-.21</td>
<td>.26*</td>
<td>-.11</td>
<td>.13</td>
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<td>-.05</td>
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<td>.10</td>
<td>.22</td>
<td>-.04</td>
<td>.34**</td>
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<td>-.11</td>
<td>.05</td>
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<td>.21</td>
<td>-.28*</td>
<td>-.23*</td>
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<tr>
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<td>.09</td>
<td>.25*</td>
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<td>.01</td>
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(table continues)
<table>
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<tr>
<th></th>
<th>X10.1</th>
<th>X10.2</th>
<th>X10.3</th>
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<th>X11.2</th>
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</tr>
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<td>0.12</td>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
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<td>0.13</td>
<td>0.13</td>
<td>0.40**</td>
<td>0.09</td>
<td>1.00</td>
</tr>
<tr>
<td>X11.2</td>
<td>-0.08</td>
<td>0.32**</td>
<td>0.70**</td>
<td>0.47**</td>
<td>0.36**</td>
<td>0.33**</td>
</tr>
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<td>X11.3</td>
<td>0.35**</td>
<td>-0.08</td>
<td>0.14</td>
<td>-0.20</td>
<td>0.00</td>
<td>-0.14</td>
</tr>
<tr>
<td>X11.4</td>
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<td>-0.10</td>
<td>0.36**</td>
<td>0.05</td>
<td>0.42**</td>
<td>0.13</td>
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<td>X11.5</td>
<td>-0.07</td>
<td>-0.02</td>
<td>0.18</td>
<td>-0.06</td>
<td>0.31**</td>
<td>0.10</td>
</tr>
<tr>
<td>X11.6</td>
<td>-0.18</td>
<td>0.42**</td>
<td>0.15</td>
<td>0.53**</td>
<td>0.52**</td>
<td>0.20</td>
</tr>
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<td>-0.28*</td>
<td>0.07</td>
<td>-0.21</td>
<td>0.76**</td>
<td>-0.14</td>
</tr>
<tr>
<td>X11.8</td>
<td>0.04</td>
<td>-0.25</td>
<td>-0.18</td>
<td>0.08</td>
<td>0.07</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*(table continues)*
<table>
<thead>
<tr>
<th></th>
<th>X11.3</th>
<th>X11.4</th>
<th>X11.5</th>
<th>X11.6</th>
<th>X11.7</th>
<th>X11.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>X11.3</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X11.4</td>
<td>-.05</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X11.5</td>
<td>-.08</td>
<td>.20</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X11.6</td>
<td>-.22</td>
<td>.34**</td>
<td>-.11</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X11.7</td>
<td>-.09</td>
<td>.03</td>
<td>-.11</td>
<td>.20</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>X11.8</td>
<td>.10</td>
<td>.01</td>
<td>-.14</td>
<td>.09</td>
<td>-.02</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.

deviation of 3.62, and occupants perception of home maintenance (X3.2) has a mean of 9.49 with a standard deviation of 2.00. Five and seven items were used to measure the attitude towards home maintenance (Questions 14-18), and the decision variables affecting perception of home maintenance (Questions 34a-34f), respectively. Dividing each mean score by the number of items gave 1.76, and 1.36, respectively. These indicated that on the average, the mean score corresponds to about two (disagree) on the Likert scale used to measure attitude towards home maintenance (see Table 5), and one (not a serious problem) on the scale used to measure perception of home maintenance (see Table 6),
Table 37

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>X3.1 = Attitude towards home maintenance</td>
<td>.93**</td>
</tr>
<tr>
<td>X3.2 = Occupant perception of home maintenance</td>
<td>.74**</td>
</tr>
<tr>
<td>X11.2 = Respondent’s age</td>
<td>.40**</td>
</tr>
<tr>
<td>X10.4 = Household type (Type of marriage in household)</td>
<td>.27*</td>
</tr>
<tr>
<td>X11.1 = Respondent’s gender</td>
<td>-.30**</td>
</tr>
</tbody>
</table>

**Note.** Only the significant correlations were included in this table. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.

respectively. It could be inferred that, on the average, the occupants have a negative perception towards home maintenance, and they also believe that the home maintenance problem is not serious.

Data Presentation for Research Question Number Three

The third research question was used to ascertain the extent to which the summation of existing home maintenance condition (X2) is modeled as depending on the deferred
maintenance need (X4) and the neglected maintenance need (X5), as influenced by awareness of maintenance need (X6):

\[ X_2 = B_4X_4 + B_5X_5 + B_6X_6. \]

In the equation, \( X_2 \) is the dependent variable, and \( X_4, X_5, \) and \( X_6 \) represent the independent variables.

When this equation was run, the values of \( R^2 = .04, F = .88, \) and \( p = .46 \) were obtained. Since the \( p \) value is much greater than \( .10 \), the data does not give evidence to support an affirmative answer to the research question three.

The inter-correlation matrix for research question three is indicated in Table 38. As shown, there is no significant correlation between the primary dependent variable summation of existing maintenance conditions (X2), and deferred maintenance need (X4), neglected maintenance need (X5), and awareness of maintenance need (X6). It is also indicated that positive correlations exist between summation of existing maintenance conditions (X2) and condition of exterior and surrounding area (X2.1), condition of building structure (X2.2), and condition of interior area (X2.3).

The highest correlates of the primary dependent variable, summation of existing maintenance conditions (X2) is shown in Table 39. As shown, it could be inferred that the best indicators of summation of existing maintenance conditions (X2) are condition of interior area (X2.3),
Table 38

Inter-Correlation Matrix for Research Question Three

<table>
<thead>
<tr>
<th></th>
<th>X2</th>
<th>X2.1</th>
<th>X2.2</th>
<th>X2.3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2.1</td>
<td>.86**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2.2</td>
<td>.45**</td>
<td>.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2.3</td>
<td>.91**</td>
<td>.77**</td>
<td>.22</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X4</td>
<td>-.07</td>
<td>.05</td>
<td>.13</td>
<td>-.10</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X5</td>
<td>.17</td>
<td>.22</td>
<td>.15</td>
<td>.03</td>
<td>-.02</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>X6</td>
<td>.08</td>
<td>.17</td>
<td>-.23*</td>
<td>.18</td>
<td>-.10</td>
<td>.18</td>
<td>1.00</td>
</tr>
</tbody>
</table>

condition of exterior and surrounding areas (X2.1), level of education (X11.3), condition of building structure (X2.2), respondents marital status (X10.3), construction technology (X7), summation of attitude and perception of home maintenance of occupants, and attitude towards home maintenance (X3.1).
Table 39

**Highest Correlates of Summation of Existing Maintenance Conditions (X2)**

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Correlation Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2.3 = Condition of interior area</td>
<td>.91**</td>
</tr>
<tr>
<td>X2.1 = Condition of existing maintenance condition</td>
<td>.86**</td>
</tr>
<tr>
<td>X11.3 = Level of education</td>
<td>.54**</td>
</tr>
<tr>
<td>X2.2 = Condition of building structure</td>
<td>.45**</td>
</tr>
<tr>
<td>X10.3 = Respondent’s marital status</td>
<td>.28*</td>
</tr>
<tr>
<td>X7 = Construction technology</td>
<td>-.23*</td>
</tr>
<tr>
<td>X3 = Summation of attitude and perception of home</td>
<td>-.28*</td>
</tr>
<tr>
<td>maintenance of occupants</td>
<td></td>
</tr>
<tr>
<td>X3.1 = Attitude towards home maintenance</td>
<td>-.32**</td>
</tr>
</tbody>
</table>

**Note.** Only the significant correlations were included in this table. * Represent variables that are significant at the .05 level, and ** represent variables that are significant at the .01 level.
CHAPTER 6
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In this chapter, problem identification, review of the literature, and methodology used for the study are given. Conclusions were drawn on the research results, and recommendations are made for action and for further study.

Summary

The problems of this research were: (a) to investigate existing maintenance conditions, (b) to determine the causes of maintenance problems, and (c) to investigate the correlations between occupant home maintenance behavior and attitudes in government provided housing in Lagos, Nigeria as perceived by housing residents, government housing officials, and selected citizens of Nigeria. The primary purposes of this study were to investigate the maintenance of government provided housing, as perceived by the residents and observed by the researcher, and to determine the relationships of maintenance constraints (perceptions, construction systems, resources, competencies, tenureship, culture, and demographic constraints) to existing home conditions. A secondary purpose was to investigate these maintenance conditions as perceived by government housing officials and selected private Nigerian citizens.

The subjects for the primary population consisted of 74 occupants of selected government housing units in Lagos, Nigeria. The subjects for the secondary population
consisted of 20 government officials and four private citizens.

Three research questions were developed and used as a basis for collecting data to answer the three research questions. The first research question was used to determine the relationships between home maintenance behavior, perceptions of people, and the existing home maintenance conditions. The second question was designed to ascertain the correlation between the home maintenance perception and the factors identified through a review of literature as having considerable potential for influencing home maintenance behavior. These include: (a) construction systems and technology factors, (b) competence of the residents and resource factors, (c) tenureship factors, (d) cultural factors, and (e) demographic factors. The third question was used to ascertain the correlations between existing home conditions and maintenance needs.

The review of literature undertaken for this study involved consultation with high ranking government officials, the use of libraries, and several computer-based searches. Based on the review of literature regarding housing maintenance behavior, the following variables were identified: (a) the existing home maintenance conditions, (b) the perceptions of existence of maintenance problems, occupants awareness of maintenance needs, whether the maintenance need was neglected or deferred, and satisfaction
with existing standards, (c) construction systems and technology factors such as (construction techniques, material type, local availability, quality), (d) competence of the occupants ability to perform home repair, (e) resource factors relating to the availability of educational opportunities to learn necessary maintenance skills, (f) tenureship factors regarding ownership interest and moving plans, (g) cultural factors involving place of origin, religion, ethnic grouping, values, and beliefs, and (h) demographic factors such as income, age of respondent, age of structure, family size, family composition, level of education, and skill level.

An exploratory research design method was used to determine the relationships among the selected variables. Direct observation and survey techniques were utilized for data collection during a two week period, July 1995 and August 1995, as stated in the research activity schedule. Both descriptive statistics and statistical inference were used for data analysis.

Conclusions

Based on the data analysis, conclusions were drawn to answer the three research questions. Important conclusions drawn from the study are listed in the following paragraphs.

Conclusions Related to Research Question One

The issue of the extent to which home maintenance behavior of residents is influenced by (a) the existing home
maintenance conditions and (b) the perception of people living in the government provided homes were addressed in research question number one. No significant relationship was found between home maintenance behavior (X1), existing maintenance conditions (X2), and occupants perception of home maintenance (X3), respectively. It was observed that the evidence of maintenance defects existed in the sampled housing units is very serious on the outside of the buildings and the surrounding areas, but not nearly as bad on the inside of the sampled housing units.

All the respondents sampled claimed that untarred roads, poor street lighting, and lack of security were very serious problems in the surroundings of the housing units. Observed data supported this claim. For instance, the exterior maintenance condition (X2.1) showed the highest level of defects.

Despite the observed poor housing conditions, it appeared that the occupants of government provided housing units clearly possess a low level of consciousness regarding home maintenance problems. The average occupant was neutral about his/her perception of the exterior and the interior maintenance conditions of the housing units. They did, though, observe that maintenance problems were somewhat serious problems. For instance, about 35% of the respondents indicated that they believed that maintenance problems were extremely serious and only 13.5% claimed that
the problems were serious. These findings support the belief that Nigerians have limited ability regarding the maintenance of their housing units.

Comparatively, the interiors of the housing units were fairly well maintained. More than 30 of the 74 respondents claimed that the maintenance conditions of selected interior variables were adequate.

Nigerians residing in government provided housing units strongly agreed to all the selected attitudinal factors. Despite their low level of consciousness towards home maintenance, it was also revealed that they understand the significance of home maintenance. For instance, interior maintenance condition ($X_{2.3}$) had a significantly low negative correlation ($r = -0.45$) regarding attitude towards home maintenance ($X_{3.1}$), at the 0.01 level.

Evidence also exists that the majority of the housing units sampled were in the Class C category suggesting that they contain at least three major defects (see pages 79-80). It was also revealed that occupants of government provided housing units perceive the necessity of performing needed maintenance. However, they are constrained or limited by (a) lack of adequate financial assistance, (b) lack of maintenance skills, (c) lack of cooperation among neighbors, and (d) lack of understanding of the responsibilities associated with occupant and government maintenance responsibilities. Many respondents also indicated that they
were willing to acquire home maintenance skills such as carpentry, roofing, and plumbing.

**Conclusions Related to Research Question Two**

The issue of how some selected variables affect the home maintenance perception was addressed in research question number two. The variables explored were: (a) construction technology factors (X7), (b) competencies and resource factors (X8), (c) tenureship factors (X9), (d) summation of cultural factors (X10), and (e) summation of demographic factors (X11). It was revealed that monogamous households, younger respondents, and male headed households had positive perceptions regarding home maintenance. Contrary to expectation, there were low to moderate positive relationships between home maintenance perceptions (X3) and the household type (X10.4) (r = .27), at the .05 level, and between respondent's gender (r = .30) and age (r = .40), respectively, at the .01 level. In addition, only competencies and resource factors (X8) had a significant moderate negative correlation (r = -.40) with attitudes toward home maintenance at the .01 level. No significant relationships existed between summation of attitude and perception of home maintenance of occupants (X3) and construction technology (X7), tenureship factors (X9), summation of cultural factors (X10), and summation of demographic factors (X11), respectively.
The expectation that most household heads were male proved valid as about 88% of the respondents were men. This was probably due to the existence of socio-cultural constraints that created a communication barrier between a woman and a stranger.

However, contrary to expectation, most inhabitants of the sampled housing units moved from either public or private urban residences and not from the rural areas. It was expected that occupants were not maintaining their housing units because they migrated from the rural areas and brought with them the rural culture that encourages "abandonment and building new" rather than maintaining the existing residences. Only 10 of the 74 (13.5%) sampled respondents moved from private rural residences. In addition, it was revealed that none of the occupants had less than a high school education. In fact, 33 of the 74 (44.6%) of the respondents had some university preparation.

Conclusions Related to Research Question Three

The issue of how the existing home maintenance conditions relate to the maintenance needs that have either been deferred or neglected, as influenced by the residents' awareness of the need was addressed in research question number three. No significant relationship was found between existing maintenance conditions (X2) and deferred maintenance needs (X4), neglected maintenance needs (X5),
and residents awareness of maintenance needs (X6), respectively.

However, it appeared that an urgent need exists for occupants as well as government officials to be made aware of the existence of home maintenance standards or codes. About 71% of the government officials sampled claimed that they were aware of the existence of building codes, but only 9% of the officials surveyed claimed that sanitation codes existed. Though the occupants were not asked whether they were aware of the existence of these codes or standards, this situation could be improved by extensively promoting the existence of available codes and standards. The negative attitudes toward government property could be changed by creating awareness in people through organized seminars and short-term courses on different aspects of home maintenance such as roofing, plumbing, and painting. Leaders in different community organizations such as churches, elementary and secondary schools could be involved in providing appropriate information for the housing unit residents.

**Recommendations for Action**

The results of this study did indeed reveal many areas of concern where efforts of the officials of government housing agencies and occupants should focus attention in trying to solve the maintenance problems of low and middle income households. These could be greatly enhanced if the
following recommendations would be taken into consideration:

1. Concerted efforts should be made by government housing agents to promote (a) the existence of codes or standards guiding home maintenance with special emphasis on enforcement, and (b) various types and sources of funding and other assistance programs.

2. More efforts should be made to provide adequate funding and educational opportunities for housing occupants to learn about home maintenance.

3. Considering the amount of investment expended on the development of these housing projects, government officials should get more involved with the planning and scheduling of the monthly environmental activities and to create incentives to encourage participation by the residents.

4. Provide adequate funding and educational opportunities for people to learn about home maintenance.

5. Encourage government officials to get more involved with the planning and scheduling of the monthly environmental activities and to create incentives to encourage resident participation.

Recommendations for Further Study

Considering the fact that the problem is highly complex, further study is needed. The following recommendations are made for further research to complement this research effort:
1. Conduct further research in the use of existing construction materials and the development of alternative materials for building. These could include the manufacture of more economical alternate blocks that could reduce the demand for the conventional building blocks and consequently reduce building construction costs.

2. Research how to promote maintenance awareness at different levels of citizenry and government organizations for the purpose of creating a better understanding of the housing problems.

3. Direct future research efforts toward developing appropriate maintenance guidelines and a framework for long term public housing upkeep.

4. Conduct research to determine the reasons why people have negative attitudes toward government properties and to determine the reasons why they do not participate in scheduled environmental sanitation days.

5. Replicate this study to determine the differences between the maintenance conditions and occupant behavior in government provided housing projects occupied by private individuals versus those occupied by military personnel such as army, navy, and air-force.
References


APPENDICES
Appendix A:

Research Activity Schedule
Research Schedule

<table>
<thead>
<tr>
<th>Research Activity</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed the survey instrument</td>
<td>February 23-March 14</td>
</tr>
<tr>
<td>Submitted introduction chapter to advisor</td>
<td>April 5</td>
</tr>
<tr>
<td>Proposal meeting</td>
<td>April 15</td>
</tr>
<tr>
<td>Public Presentation of Proposal</td>
<td>April 30</td>
</tr>
<tr>
<td>Jury Review of Interview Schedules</td>
<td>May 19-June 5</td>
</tr>
<tr>
<td>Submitted literature review to advisor</td>
<td>July 15</td>
</tr>
<tr>
<td>Submitted methodology section</td>
<td>July 15</td>
</tr>
<tr>
<td>Conducted pilot test of primary instrument</td>
<td>July 1-15</td>
</tr>
<tr>
<td>Collected data in Nigeria</td>
<td>July 23-August 8</td>
</tr>
<tr>
<td>Analyzed survey results</td>
<td>August 31- November 24</td>
</tr>
<tr>
<td>Submitted First Draft of Dissertation</td>
<td>November 24</td>
</tr>
<tr>
<td>Attend Pre-defense Meeting with Committee Members</td>
<td>December 8</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-defense Meeting at the Graduate College (Ms. Kueter)</td>
<td>April 4</td>
</tr>
<tr>
<td>Dissertation Oral Defense</td>
<td>April 5</td>
</tr>
<tr>
<td>Graduation</td>
<td>May 11</td>
</tr>
</tbody>
</table>
Appendix B:

Research Budget and Actual Research Expenses
<table>
<thead>
<tr>
<th>Items</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living expenses in Nigeria (two weeks)</td>
<td>300</td>
</tr>
<tr>
<td>Roundtrip ticket to Nigeria from Iowa</td>
<td>2,800**</td>
</tr>
<tr>
<td>Local Travel in Nigeria (500 miles at $0.23/mile)</td>
<td>115</td>
</tr>
<tr>
<td>Supplies of stationery, graphic materials</td>
<td></td>
</tr>
<tr>
<td>research documents and microcomputer use</td>
<td></td>
</tr>
<tr>
<td>maintenance and supplies.</td>
<td>250</td>
</tr>
<tr>
<td>Manuscript edition</td>
<td>250</td>
</tr>
<tr>
<td>Data collection expenses</td>
<td>420</td>
</tr>
<tr>
<td>Preparation and reproduction of questionnaires</td>
<td>100</td>
</tr>
<tr>
<td>Final preparation of dissertation</td>
<td>500</td>
</tr>
<tr>
<td>Roundtrip air-fare from Greensboro, NC to Cedar Falls, IA to present and defend research findings</td>
<td>400</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$5,135</td>
</tr>
</tbody>
</table>

**Estimate obtained from Travel and Transport, Waterloo, Iowa.
**Actual Research Expenses**

The following is an itemized expenses for this research. Minor expenses incurred such as tips and telephone calls made within the United States are not included in this calculations.

<table>
<thead>
<tr>
<th>Activities and Materials</th>
<th>Amount in dollar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living expenses in Nigeria (two weeks)</td>
<td>300</td>
</tr>
<tr>
<td>Roundtrip ticket to Nigeria from Iowa</td>
<td>1,472</td>
</tr>
<tr>
<td>Local Travel in Nigeria</td>
<td>100</td>
</tr>
<tr>
<td>Stationery, graphic materials, research documents and microcomputer use</td>
<td>250</td>
</tr>
<tr>
<td>Manuscript editing</td>
<td>250</td>
</tr>
<tr>
<td>Data collection expenses in Nigeria</td>
<td>120</td>
</tr>
<tr>
<td>Preparation and reproduction of questionnaires</td>
<td>50</td>
</tr>
<tr>
<td>Final preparation of dissertation</td>
<td>100</td>
</tr>
<tr>
<td>Cost of attending a pre-defense meeting with members of committee (December 1995)</td>
<td>300</td>
</tr>
<tr>
<td>Roundtrip air-fare from Greensboro, NC to Cedar Falls, IA to present and defend research findings</td>
<td>400</td>
</tr>
<tr>
<td>Binding of dissertation</td>
<td>450</td>
</tr>
<tr>
<td><strong>TOTAL RESEARCH EXPENSES</strong></td>
<td><strong>$3,792</strong></td>
</tr>
</tbody>
</table>
Appendix C:
Photographs of Existing Maintenance
Condition of Buildings and Housing Units
Figure 3. Maintenance condition of drainage ditch (gutter).
Figure 4. Condition of exterior walls and surrounding area.
Figure 5. Condition of entrance doors, windows, electrical wiring, and plumbing.
Figure 6. Condition of doors and windows to individual housing units.
Figure 7. Vegetation growing on exterior walls
Figure 8. Maintenance condition of walkway
Figure 9. Condition of common play area
Figure 10. Condition of stairs and entrance wall
Figure 11. Maintenance condition of ceiling
Figure 12. Maintenance condition of floor
Appendix D:
Survey Instruments

1. Observation and Occupants Interview Questionnaire
   (Primary instrument)

2. Government Officials Survey Instrument
   (Secondary instrument)
OBSERVATION AND OCCUPANTS INTERVIEW QUESTIONNAIRE

OPENING STATEMENT
Hello, my name is PAUL ABAYOMI BAJERE. I am working on a research study of maintenance problems of government provided housing in Lagos. The results of the study may create awareness of the need for home maintenance, provide the incentives for performing the needed housing maintenance, and provide useful information for the development of maintenance framework and appropriate maintenance policies. Hopefully, this will contribute to the quality of housing and reduce the rapid deterioration of houses in Lagos. The research is focused on the perception, awareness of need, and attributes of the occupants and their housing units influencing home maintenance. Your household has been selected by chance to participate in the research. May I come in?

I will be making some observations about repair and maintenance need(s) in your home and also asking you questions. Are you the head of the household?

_____ 0 no, could I please speak with him or her? MAKE AN APPOINTMENT IF THE HEAD OF HOUSEHOLD IS ABSENT

_____ 1 yes

I would like to interview you now. I assure you that no one else will see your answers and identification will be kept with your answers to my questions.

Your participation is completely voluntary and if there are any questions that you believe are too personal, you do not have to answer them. Your participation in this research is very important because it will help to identify the main problems of home maintenance.

I WILL BE HAPPY TO ANSWER ANY QUESTIONS YOU MAY HAVE BEFORE WE BEGIN AS WELL AS DURING THE INTERVIEW. I APPRECIATE YOUR PARTICIPATION. DO YOU HAVE ANY QUESTIONS?

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PART A — HOUSING EXTERIOR OBSERVATIONS

SECTION 1A — EXISTING MAINTENANCE CONDITIONS

Exterior And Surrounding of Sampled Housing Units

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

1. Problems with the general cleanliness of the housing environment.

<table>
<thead>
<tr>
<th></th>
<th>VS</th>
<th>SE</th>
<th>SS</th>
<th>MI</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

2. To what extent are the following maintenance problems observed on the exterior of the respondent's residence?

a) Rats, mice, termite, and other pests.

<table>
<thead>
<tr>
<th></th>
<th>VS</th>
<th>SE</th>
<th>SS</th>
<th>MI</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

b) Refuse disposal (garbage) problem.

<table>
<thead>
<tr>
<th></th>
<th>VS</th>
<th>SE</th>
<th>SS</th>
<th>MI</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

c) There is evidence of caulking problem around expansion joints.

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d) The vegetation growing around the house detrimental to the building.

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e) There is evidence of significant erosion or pooling of water on site.

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f) Electrical wiring protected.

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g) Evidence of sewer backup or stoppage.

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h) Evidence of water leaks.

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i) Evidence of gutter problem.

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j) Untarred roads problem.

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k) Poor street lighting problem

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3. Observe and indicate main window material(s).

Legend: Strongly Agree (SA), Agree (AG), Neutral (NU), Disagree (DA), Strongly Disagree (SD).

a. Main material for exterior window frames.

[ ] 1 Glass
[ ] 2 Wood
[ ] 3 Metals
[ ] 4 Other____________________________(Specify)

b. Maintenance condition of the exterior windows casing or framing is adequate.

_ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
c. Specific sign(s) of defect.
[ ] 1 None
[ ] 2 Broken Glass
[ ] 3 Cracks
[ ] 4 Mechanism does not operate properly
[ ] 5 Rotten wood

4. Observe and indicate door(s) materials.
   a. Main material for exterior door.
      [ ] 1 Glass
      [ ] 2 Wood
      [ ] 3 Metal
      [ ] 4 Iron Burglary Proof

   b. Maintenance condition of the exterior door or framing is acceptable.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

   c. Specific sign(s) of defect.
      [ ] 1 None
      [ ] 2 Cracked/Broken Glass
      [ ] 3 Mechanism does not operate properly
      [ ] 4 Hardware (locks, hinges, knobs, and handles)
      [ ] 5 Rotten wood

5. Observe and indicate exterior wall material.
   a. Main material of exterior wall.
      [ ] 1 plastic
      [ ] 2 untreated wood
      [ ] 3 corrugated metal
      [ ] 4 Cement block or poured concrete
      [ ] 5 wattle and daub
      [ ] 6 brick
      [ ] 7 adobe
      [ ] 8 other ____________________
          (Specify)

   b. Maintenance condition of the exterior walls are acceptable.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
c. Specific signs of defect.
   [ ] 1 None
   [ ] 2 Cracked
   [ ] 3 Paint Peeling-off
   [ ] 4 Needs new paint job or paint fading
   [ ] 5 Holes
   [ ] 6 Mud/earth
   [ ] 7 Bad Plastering

6. Observe and indicate floor material in the common areas.
   a. Main material floor material.
      [ ] 1 Stone
      [ ] 2 Wood
      [ ] 3 Sheet metal
      [ ] 4 Cement block or poured concrete
      [ ] 5 Other __________________________
          (Specify)
   
   b. Maintenance condition of the floor is acceptable.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
   
   c. Specific signs of defect.
      [ ] 1 None
      [ ] 2 Cracked
      [ ] 3 Peeling-off
      [ ] 4 Sagging
      [ ] 5 Holes
      [ ] 6 Other________________________
          (Specify)

7. Observe and indicate caulking material.
   a. [ ] 1 Acrylic
      [ ] 2 Latex
      [ ] 3 Cement Screed
   
   b. Maintenance condition of caulking is acceptable.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
   
   c. Specific signs of defect
      [ ] 1 None
      [ ] 2 Cracked
      [ ] 3 Peeling-off
      [ ] 4 Discoloration
      [ ] 5 Other________________________
          (Specify)
8. Observe and indicate exterior paint material.
   a. [ ] 1 Water-base
      [ ] 2 Oil-base
      [ ] 3 Semi-oil mixed
   b. Maintenance condition of exterior paint material is acceptable.
      _ 1 SA  _ 2 AG  _ 3 NU  _ 4 DA  _ 5 SD
   c. Specific signs of defect.
      [ ] 1 None
      [ ] 2 Faded
      [ ] 3 Cracked/Peeling-off
      [ ] 4 Discoloration
      [ ] 5 Other_____________________________(Specify)

9. a. What is the principal type of material used for the roof?
    [ ] 1 plastic
    [ ] 2 thatch
    [ ] 3 tile
    [ ] 4 corrugated metal
    [ ] 5 shingles
    [ ] 6 asbestos roofing sheets
   b. Maintenance condition of roof material is acceptable.
      _ 1 SA  _ 2 AG  _ 3 NU  _ 4 DA  _ 5 SD
   c. Specific signs of defect.
      [ ] 1 None
      [ ] 2 Faded
      [ ] 3 Cracked/Peeling-off
      [ ] 4 Discoloration
      [ ] 5 Leaking

10. a. The principal material used for the exterior stairs.
    [ ] 1 wood
    [ ] 2 brick
    [ ] 3 concrete
    [ ] 4 stone
    [ ] 5 other_____________________________(Specify)
   b. Maintenance condition of exterior stairs material is acceptable.
      _ 1 SA  _ 2 AG  _ 3 NU  _ 4 DA  _ 5 SD
c. Specific signs of defect

[ ] 1 None
[ ] 2 Cracked
[ ] 3 Peeling-off
[ ] 4 Sagging
[ ] 5 Holes
[ ] 6 Other __________________________ (Specify)

SECTION 2 — CONSTRUCTION SYSTEMS AND TECHNOLOGY

11. Observe and indicate the construction method for the building.

[ ] 1 Traditional load bearing method
[ ] 2 Reinforced concrete skeleton and brick in-fill
[ ] 3 Panel prefabricated method
[ ] 4 Others __________________________ (Specify)

12. What do you think about the quality of construction of this house?

[ ] 1 Low [ ] 2 Medium [ ] 3 High
[ ] 4 Don’t know

13. What do you think about the quality of materials used for construction of this house?

[ ] 1 Low [ ] 2 Medium [ ] 3 High
[ ] 4 Don’t know
PART B — QUESTIONS ASKED OF HOUSEHOLD HEADS

SECTION 3 — HOME MAINTENANCE PERCEPTION

Attitude Towards Home Maintenance

What is your belief about the work required to maintain your home. I am going to read some statements and ask whether you strongly agree (SA), agree (AG), neutral (NU), disagree (DA), or strongly disagree (SD) with each statement.

14. I worry more about whether my home is safe than how it looks.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

15. I am concerned about the work required to maintain my home.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

16. I enjoy maintaining my home.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

17. I consider any money and time spent on repairs to be an investment in the house.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

18. It is important to keep up the house as a legacy to my family.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

Belief in Seriousness of Home Maintenance Problems

19. How serious do you think the public housing maintenance problem is in Lagos today?

   [ ] 0 There is no maintenance problem in Lagos, Nigeria.
   [ ] 1 Maintenance problem is not serious.
   [ ] 2 Maintenance problem is somewhat serious.
   [ ] 3 Maintenance problem is serious.
   [ ] 4 Maintenance problem is very serious.
   [ ] 5 Maintenance problem is extremely serious.
20. In the common areas of multi-story government provided housing units, who is responsible for maintaining the following repairs:

   a. Exterior walls [ ] 1 Government [ ] 2 Occupants
      [ ] 3 Others
   b. Windows [ ] 1 Government [ ] 2 Occupants
      [ ] 3 Others
   c. Floor areas [ ] 1 Government [ ] 2 Occupants
      [ ] 3 Others
   d. Roofing [ ] 1 Government [ ] 2 Occupants
      [ ] 3 Others

Degree of Satisfaction with Maintenance of Home

21. Overall, are you satisfied with the maintenance condition of your home?

   a. [ ] 1 Yes
      [ ] 2 No

   b. Why or why not ____________________________
      (Specify)

22. Overall, are you satisfied with the maintenance condition of the surrounding of your home?

   a. [ ] 1 Yes
      [ ] 2 No

   b. Why or why not ____________________________
      (Specify)

SECTION 4 — TENURESHIP FACTOR

23. From where did you move to this house?

   a. [ ] Other public housing
      [ ] 1 Rural residence
      [ ] 2 Urban residence
   b. [ ] Private residence
      [ ] 3 Rural residence
      [ ] 4 Urban residence

24. Do you own or rent this home?
[ ] 1 Own  [ ] 2 Rent  [ ] 3 Other

25. How long have you lived in this home?
   [ ] 1 Less than one year
   [ ] 2 One to less than three years
   [ ] 3 Three to less than six years
   [ ] 4 Six to less than nine years
   [ ] 5 Nine to less than twelve years
   [ ] 6 Over 12 years

26. Are you planning to move?
   [ ] 1 Yes (Go to question 27)
   [ ] 2 No (Go to question 28)

27. If yes,
   a. Specify when do you plan on moving
   b. Why?
      1 Job
      2 Up keep of home is too difficult
      3 Taxes/rent too high
      4 Be closer to relatives
      5 Don’t need this much space
      6 Home too small
      7 Home not safe any more
      8 Personal Reason

SECTION 5 — DEFERRED NEED, NEGLECTED NEED, AND AWARENESS OF NEED

28. Who first noticed that the work done on your home was needed.
   [ ] 1 I did
   [ ] 2 Someone else living with me
   [ ] 3 A relative not living with me
   [ ] 4 A friend not living with me
   [ ] 5 A contractor or workman
   [ ] 6 Other__
      (Specify)

29. If you have a recognized maintenance problem, do you:
   [ ] 1 Do the work yourself?
   [ ] Get someone else to do it?
      [ ] 2 Relative
      [ ] 3 Friend
      [ ] 4 Contractor
   [ ] 5 Other?__
      (Specify)
SECTION 6 — COMPETENCE AND RESOURCE FACTORS

Residents home repair and maintenance skills

30. What is your competency level as regards the following?

Legend: Very competent (VC), Competent (CO), Somewhat competent (SC), or Not competent (NC).

a) Carpentry?  _ 1 VC _ 2 CO _ 3 SC _ 4 NC
b) Painting? _ 1 VC _ 2 CO _ 3 SC _ 4 NC
c) Roofing? _ 1 VC _ 2 CO _ 3 SC _ 4 NC
d) Brick-laying? _ 1 VC _ 2 CO _ 3 SC _ 4 NC
e) Electrical/wiring? _ 1 VC _ 2 CO _ 3 SC _ 4 NC
f) Plumbing? _ 1 VC _ 2 CO _ 3 SC _ 4 NC

Resource factors

31. Are you interested in learning maintenance and home improvement skills?
   [ ] 1 Yes
   [ ] 2 No

32. Are you aware of educational opportunity in your neighborhood where you can learn about maintenance skills?
   [ ] 1 Yes.
   [ ] 2 No

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SECTION 7A — HOME MAINTENANCE BEHAVIOR

Performed Home Repair and Maintenance

33. How many years ago did you last complete repair works on the following items in or around your home?

a) Carpentry? 
   
   ______________________

b) Painting? 
   
   ______________________

c) Roofing? 
   
   ______________________

d) Electrical work? ______________________

e) Plumbing? 
   
   ______________________

f) Sewage system? 
   
   ______________________

34. Rank the following factors in order of their importance in your home maintenance decision.

Legend: very important (VI), important (IM), somewhat important (SI), or not important (NI)?

a. Safety.
   
   _ 1 VI _ 2 IM _ 3 SI _ 4 NI

b. Matter of necessity.
   
   _ 1 VI _ 2 IM _ 3 SI _ 4 NI

c. Making the house look better.
   
   _ 1 VI _ 2 IM _ 3 SI _ 4 NI

d. Save money now compared to future repair expenditure.
   
   _ 1 VI _ 2 IM _ 3 SI _ 4 NI

e. More comfort and convenience.
   
   _ 1 VI _ 2 IM _ 3 SI _ 4 NI

f. Making the house last longer.
   
   _ 1 VI _ 2 IM _ 3 SI _ 4 NI
35. How much did you spend last year on home maintenance?

[ ] 1 0 - N250
[ ] 2 N251 - N500
[ ] 3 N501 - N750
[ ] 4 N751 - N1,000
[ ] 5 Over N1,000

(One U.S. dollar = 80 Naira)
PART C — HOUSING INTERIOR OBSERVATIONS

SECTION 1B — EXISTING MAINTENANCE CONDITIONS

Interior of Sampled Housing Unit

36. The following maintenance problems are evident in the unit sampled.

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

a) Rats, mice, termite, roaches, tsetse flies etc?

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

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b) Refuse disposal (Garbage)?

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

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c) Electrical wiring protected?

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

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d) Sewer backup or stoppage.

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

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e) Water leaks.

Legend: Very serious (VS), Serious (SE), Somewhat serious (SS), Minor (MI), No problem (NP).

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37. Observe and indicate main window material(s).

a. Main material for interior windows.

[ ] 1 Glass
[ ] 2 Wood
[ ] 3 Metals
[ ] 4 Other __________________________

(Specify)
b. Maintenance condition of the interior windows casing or framing is acceptable.

_ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

c. Specific sign(s) of defect.

[ ] 1 None
[ ] 2 Broken Glass
[ ] 3 Cracked
[ ] 4 Mechanism does not operate properly
[ ] 5 Other

(Specify)

38. Observe and indicate door(s) materials.

a. Main material for interior door:

[ ] 1 Glass
[ ] 2 Wood
[ ] 3 Metal
[ ] 4 Other

(Specify)

b. Maintenance condition of the interior door or framing is adequate.

_ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

c. Specific sign(s) of defect

[ ] 1 None
[ ] 2 Cracked/Broken Glass
[ ] 3 Mechanism does not operate properly
[ ] 4 Hardware (locks, hinges, knobs, and handles)
[ ] 5 Other

(Specify)

39. Observe and indicate interior wall material.

a. Main material of exterior wall.

[ ] 1 plastic
[ ] 2 untreated wood
[ ] 3 corrugated metal
[ ] 4 Cement block or poured concrete
[ ] 5 wattle and daub
[ ] 6 brick
[ ] 7 adobe
[ ] 8 other

(Specify)
b. Maintenance condition of the interior walls are adequate.

   _ 1 SA _  2 AG _  3 NU _  4 DA _  5 SD

c. Specific signs of defect.

   [ ] 1 None
   [ ] 2 Cracked
   [ ] 3 Paint Peeling-off
   [ ] 4 Holes
   [ ] 5 Mud/earth
   [ ] 6 Poor plastering

40. Observe and indicate floor material.

a. Main material floor material.

   [ ] 1 plastic
   [ ] 2 untreated wood
   [ ] 3 Sheet metal
   [ ] 4 cement block or poured concrete
   [ ] 5 other ______________________
        (Specify)

b. Maintenance condition of the floor is adequate.

   _ 1 SA _  2 AG _  3 NU _  4 DA _  5 SD

c. Specific signs of defect.

   [ ] 1 None
   [ ] 2 Cracked
   [ ] 3 Peeling-off
   [ ] 4 Holes
   [ ] 5 Other_____________________
        (Specify)

41. Observe and indicate interior paint material.

a. [ ] 1 Water-base
   [ ] 2 Oil-base (emulsion paint)
   [ ] 3 Not painted

b. Maintenance condition of interior paint material is adequate.

   _ 1 SA _  2 AG _  3 NU _  4 DA _  5 SD
42. Observe and indicate ceiling material.

a. Main material of ceiling
   [ ] 1 tiles
   [ ] 2 wood joist
   [ ] 3 corrugated metal
   [ ] 4 asbestos (top floor)
   [ ] 5 concrete (middle floor)

b. Maintenance condition of interior ceiling material is adequate.

   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

c. Specific signs of defect.
   [ ] 1 None
   [ ] 2 Cracked
   [ ] 3 Paint Peeling-off
   [ ] 4 Discoloration
   [ ] 5 Weak structure
PART D — QUESTIONS ASKED OF HOUSEHOLD HEADS

SECTION 7B — HOME MAINTENANCE BEHAVIOR

I'D LIKE TO GET YOUR REACTION TO THREE MAJOR THINGS I NOTED IN MY INSPECTION.

43. Item one ____________________________

44. Have you noticed this in the last two months?
   1. Yes (Go to question 45)
   2. No (Go to question 46)

45. If yes, which of the following reasons justify why you may not have done this work.
   [ ] 1 The money is not available.
   [ ] 2 Not worth its cost, breaks easily.
   [ ] 3 I haven't decided what to do.
   [ ] 4 I don't know how to repair it.
   [ ] 5 Landlord's responsibility to repair it.
   [ ] 6 I don't know who I can get to repair it.
   [ ] 7 No time.
   [ ] 8 Co-ordination from neighbors lacking.
   [ ] 9 It's the responsibility of the government.

46. Item two ____________________________

47. Have you noticed this in the last two months?
   1. Yes (Go to question 48)
   2. No (Go to question 49)

48. If yes, which of the following reasons justify why you may not have done this work.
   [ ] 1 The money is not available.
   [ ] 2 Not worth its cost, breaks easily.
   [ ] 3 I haven't decided what to do.
   [ ] 4 I don't know how to repair it.
   [ ] 5 Landlord's responsibility to repair it.
   [ ] 6 I don't know who I can get to repair it.
   [ ] 7 No time.
   [ ] 8 Co-ordination from neighbors lacking.
   [ ] 9 It's the responsibility of the government.

49. Item three ____________________________

50. Have you noticed this in the last two months?
   1. Yes (Go to question 51)
   2. No (Go to question 52)

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51. If yes, which of the following reasons justify why you may not have done this work.

[ ] 1 The money is not available.
[ ] 2 Not worth its cost, breaks easily.
[ ] 3 I haven't decided what to do.
[ ] 4 I don't know how to repair it.
[ ] 5 Landlord's responsibility to repair it.
[ ] 6 I don't know who I can get to repair it.
[ ] 7 No time.
[ ] 8 Co-ordination from neighbors lacking.
[ ] 9 It's the responsibility of the government.

SECTION 8 — CULTURAL FACTORS

52. What is your citizenship?

a. Nigerian citizen, ethnic group.
   [ ] 1. I am a Yoruba
   [ ] 2. I am an Hausa
   [ ] 3. I am a Fulani
   [ ] 4. I am an Igbo
   [ ] 5. I am a Tiv
   [ ] 6. I am a Kanuri
   [ ] 7. Others
   (Specify)

b. Non-Nigerian citizen
   [ ] 1. African
   [ ] 2. Asian
   [ ] 3. British
   [ ] 4. American
   [ ] 5. Others
   (Specify)

53. What is your religion?

[ ] 1 None
[ ] 2 Christian
[ ] 3 Muslim
[ ] 4 Traditional Idol worshiper
[ ] 5 Others
   (Specify)

54. Type of household?

[ ] 1 Monogamous
[ ] 2 Polygamous

55. Marital Status?

[ ] 1 Single
[ ] 2 Married
[ ] 3 Divorced
[ ] 4 Widowed
[ ] 5 Others
   (Specify)
SECTION 9 — DEMOGRAPHIC PROFILE OF THE RESPONDENT AND HOUSEHOLD

56. What is your gender?
   [ ] 1 Male  [ ] 2 Female

57. What is your age?
   [ ] 1 Under 20
   [ ] 2 20 - 30
   [ ] 3 31 - 40
   [ ] 4 41 - 50
   [ ] 5 51 - 60
   [ ] 6 Over 60

58. Level of education?
   [ ] 0 None
   [ ] 1 primary
   [ ] 2 secondary
   [ ] 3 some university
   [ ] 4 Baccalaureate
   [ ] 5 post-graduate
   [ ] 6 vocational/trade school
   [ ] 7 others _____________________
   (Specify)

59. How many people live in this housing unit (household size), including children?
   [ ] 1 person
   [ ] 2 people
   [ ] 3 people
   [ ] 4 people
   [ ] 5 or more people

60. How many people are living in this unit that can assist you on maintenance?
    _____________________
    (Specify)

61. What are their ages?
   a. _____ b. _____ c. _____ d. _____

62. How many bedrooms do you have in this unit?
   [ ] 1  [ ] 2  [ ] 3  [ ] 4 or more

63. What is your occupation? _____________________
    (Specify)

THIS CONCLUDES MY QUESTIONS.
DO YOU HAVE ANY COMMENTS OR QUESTIONS?
GOVERNMENT OFFICIALS SURVEY INSTRUMENT

OPENING STATEMENT

Hello, my name is PAUL ABAYOMI BAJERE. I am working on a research study of maintenance problems of public housing in Lagos. This research is focused on the perception of government housing officials as regards government assistance and other funding programs. You have been selected by chance to participate in the research. I will be asking you some questions about encouragements of government and private bodies regarding the maintenance and observations of repair and maintenance in public housing.

Name of your establishment ___________________________
Type of establishment ________________________________
What is your role in this establishment ______________

Please respond to each of the following questions, accurately and honestly. I assure you that no one else will see your answers and identification will be kept with your answers to my questions.

Your participation is completely voluntary and if there are any questions that you believe are too personal, you may refuse to answer them. Your participation in this research is very important.

I WILL BE HAPPY TO ANSWER ANY QUESTIONS YOU MAY HAVE BEFORE WE BEGIN AS WELL AS DURING THE INTERVIEW. WE APPRECIATE YOUR PARTICIPATION. DO YOU HAVE ANY QUESTIONS?

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QUESTIONS

1. How serious do you think the public housing maintenance problem is in Lagos today?
   [ ] 0 There is no maintenance problem in Lagos, Nigeria.
   [ ] 1 Maintenance problem is not serious.
   [ ] 2 Maintenance problem is somewhat serious.
   [ ] 3 Maintenance problem is serious.
   [ ] 4 Maintenance problem is very serious.
   [ ] 5 Maintenance problem is extremely serious.

2. In the common areas of multi-story government provided housing units, who is responsible for maintaining the following repairs:
   a. Exterior walls [ ] 1 Government [ ] 2 Occupants [ ] 3 Others
   b. Windows [ ] 1 Government [ ] 2 Occupants [ ] 3 Others
   c. Floor areas [ ] 1 Government [ ] 2 Occupants [ ] 3 Others
   d. Roofing [ ] 1 Government [ ] 2 Occupants [ ] 3 Others

3. Who makes sure that repair work is done correctly?
   [ ] 1 Government Inspector [ ] 2 Contractors [ ] 3 Occupants [ ] 4 Other

4. What part of the government provided housing do you believe that the following maintenance problems evident?

Legend: Strongly Agree (SA), Agree (AG), Neutral (NU), Disagree (DA), Strongly Disagree (SD).

   a. Maintenance of building exterior.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
   b. Maintenance of building structure.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
   c. Maintenance of the building interior and its general surrounding.
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
   d. Pipework for waste water (sewers).
      _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
5. Indicate the reasons why this problem occurred.

a. Lack of availability of local construction materials.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

b. Lack of availability of competent laborer.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

c. Lack of funds for home repair.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

d. Lack of programs encouraging home repair.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

e. Residents cannot afford repair costs.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

f. Owner/government is expected to carry out specific repair works
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

g. Sometimes or always maintenance costs are not included in the construction costs so no allowance is usually allowed for.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

6. Indicate your belief about why residents of government provided housing should maintain their property.

a. Safety.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

b. Matter of necessity.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

c. Making the house look better.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD

d. Save money now compared to future repair expenditure.
   _ 1 SA _ 2 AG _ 3 NU _ 4 DA _ 5 SD
e. More comfort and convenience.

\( 1 \text{ SA} \quad 2 \text{ AG} \quad 3 \text{ NU} \quad 4 \text{ DA} \quad 5 \text{ SD} \)

f. Making the house last longer.

\( 1 \text{ SA} \quad 2 \text{ AG} \quad 3 \text{ NU} \quad 4 \text{ DA} \quad 5 \text{ SD} \)

g. To keep as its personal property.

\( 1 \text{ SA} \quad 2 \text{ AG} \quad 3 \text{ NU} \quad 4 \text{ DA} \quad 5 \text{ SD} \)

7. The inhabitants of government provided housing should maintain their properties.

\( 1 \text{ SA} \quad 2 \text{ AG} \quad 3 \text{ NU} \quad 4 \text{ DA} \quad 5 \text{ SD} \)

8. Are their written regulations/standards available to guide the maintenance of public housing units?

[ ] 1 Yes     [ ] 2 No

9. Indicate which of the following standards are available to guide home maintenance

a) Building code

[ ] 1 Yes     [ ] 2 No

b) Plumbing code

[ ] 1 Yes     [ ] 2 No

c) Electrical code

[ ] 1 Yes     [ ] 2 No

d) Environmental sanitation/code laws

[ ] 1 Yes     [ ] 2 No

10. If there are written standards, what are the difficulties encountered in enforcing them?

[ ] 1 Limited supply of Government Inspectors.
[ ] 2 Training restrictions.
[ ] 3 Low Budgets.
[ ] 4 Evidence of Corruption
[ ] 5 Negative attitude of people to government property

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11. Indicate the types and sources of funding or other assistance programs available for home maintenance
   1. Government assistance program
   2. Private assistance program
      a. Relatives and friends
      b. Work colleagues
      c. Money lenders
   3. Banks and other financial institutions
   4. Mortgage corporations

12. Indicate the degree of effectiveness of the program(s).
    Legend: Very effective (VE), Effective (EF), Somewhat effective (SE), Ineffective (IE), or Strongly ineffective (SI)

    _ 1 VE _ 2 EF _ 3 SE _ 4 IE _ 5 SI

13. What are some strengths of the available funding and/or assistance program(s)?
    [ ] 1 Adequate funding availability.
    [ ] 2 Convenience.
    [ ] 3 Turnaround time.

14. What are some weaknesses of the program?
    [ ] 1 Difficult to get.
    [ ] 2 Lack of cooperation.
    [ ] 3 Inconvenient Location.

15. What are your recommendations for solving home maintenance problems in government provided housing?
    a) Provide education for occupants
    b) Create learning experience for the occupants
    c) Develop regulations and other policy statements
    d) Supervise compliance to existing regulations and policies
    e) Have maintenance crew within the housing estate
    f) Establish and adequately fund maintenance department in government ministries

   THIS CONCLUDES MY QUESTIONS.
   DO YOU HAVE ANY COMMENTS OR QUESTIONS?
Appendix E:

Correspondence

1. Letter to Nigerian Government Official asking for permission to collect the research data.
2. Letter of request to participate as a jury member.
3. Letter of appreciation from advisor to jury members.
4. Thank you letters to jury members.
December 12, 1994

The Honorable Commissioner  
(Institution)  
(Address)  
(City/State)  
(Country)  

Dear Sir,  

May I seek permission from your office to conduct a survey assessing the maintenance conditions in government provided housing projects in Lagos, Nigeria, and to determine the factors that are associated with maintaining the housing units by the residents. Specifically, I will also like to request (1) a letter of support for the proposed research, (2) information about receiving assistance from Lagos state government in funding the proposed research effort, (3) information as to your government's position concerning funding an extensive joint research project on the issue of maintenance of public housing projects in Lagos, and (4) information on the steps to take in order to be permitted to conduct such a study.  

As a Nigerian, I have a keen interest in Nigeria's housing problems, especially, the maintenance of public housing projects. I am currently a doctoral graduate student in Industrial Technology at the University of Northern Iowa, with emphasis in Construction Management and Computer Aided Design. Someday, I plan to return with my family to contribute towards the development of my country, in my areas of expertise.  

I have chosen Lagos State housing projects for my research because of the large population and the concentration of public provided housing units. For this project to be truly successful, I need the support/assistance of the state government. Would you be so kind to inform me of any available government personnel and financial assistance? It is planned that the survey will be administered in Lagos, Nigeria in April, 1995.  

Your cooperation is very much needed in this and I can assure your excellency that it will be highly appreciated. I hope to receive your reply in early January, 1995. Many thanks for this favor and more as we work together in this.  

Sincerely Yours  

Phone (319) 277-8443.  
Paul Abayomi Bajere  
302 G Street, HSC,  
Cedar Falls, IA 50613, USA  
Enclosures: 1. Research proposal, 2. Curriculum Vitae  
c: Dr. E. A. Dennis, Advisor
April 27, 1995

Prof. Robert Findlay
College of Design
Dept. of Architecture
Iowa State University
Ames, Iowa 50011

Subject: REQUEST FOR PARTICIPATION AS A JURY MEMBER TO
REVIEW THE FIRST DRAFT OF A DOCTORAL RESEARCH
SURVEY INSTRUMENT

Dear Prof. Findlay:

Your participation as a jury member for validating my survey instrument is being requested. As I indicated during our telephone conversation, the instrument and the first draft are now ready for your review and suggestions.

A copy of my research proposal and the first draft of the questionnaire are enclosed. Reading the proposal first might give you a better insight about my research. The coding technique which I intend to use is also included. Please review the proposal and the instrument, and make necessary editorial and content suggestions. Your comments will be very useful in restructuring the instrument so that it will be useful for collecting the needed data. If possible, please return your comments to me with a postmark on or before May 20, 1995.

For this study to be successfully completed, your help is needed. I will appreciate your time and effort in helping me develop this instrument.

Sincerely Yours

Phone (319) 277-8443. Paul Abayomi Bajere
302 G Street, HSC,
Cedar Falls, Iowa 50613
U.S.A.

C: Dr. E. A. Dennis, Advisor

Enclosures:
Letter from Dr. E. A. Dennis, Advisor
Research Proposal
Draft Questionnaires
April 27, 1995

Prof. Robert Findlay
College of Design
Dept. of Architecture
Iowa State University
Ames, Iowa 50011

Subject: Participation as a juror for Paul A. Bajere

Dear Prof. Findlay:

Thank you for agreeing to serve as a juror for Paul Bajere's doctoral research on home maintenance in Lagos, Nigeria. As a jury member, you will be responsible for helping to validate the survey instruments.

Please review the attached proposal and two survey instruments and return your comments to Paul with a postmark on or by May 20, 1995. Paul is scheduled to travel to Nigeria on June 5, 1995 to collect data for his research. Your participation is greatly appreciated.

Sincerely

Ph. (319) 273-2753
Fax (319) 273-5818

Ervin A. Dennis, Ed.D., DTE
Professor and advisor for
Mr. Paul A. Bajere
MEMORANDUM

To: Jury Members for Doctoral Research

Dr. Duane Shinn
Dr. Adewale Alonge
Dr. Musibau O. Shofolufe
Prof. Robert Findlay
Dr. John Merrill
Dr. Samuel C. Obi

FROM: ___________________
Paul Abayomi Bajere, Doctoral Student

DATE: May 5, 1995

SUBJECT: APPRECIATION FOR REVIEWING SURVEY INSTRUMENTS

This is to say thanks for the time and effort you willingly devoted to help review and validate my survey instruments. Your comments and suggestions have been of considerable help in revising the instruments.

The pilot survey is in progress now, and the actual survey will commence in July of 1995. The entire study is scheduled to be finished in September of the same year, and a copy of the finished document will be kept at the University of Northern Iowa’s library.

I really appreciate your time and effort in helping me develop these instruments. Many thanks for all this sacrifice. May God bless you all.

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Appendix F:

Jury Members
Name of Jury Member Title/Rationale for Selection

Dr. Adewale Alonge, Instructor/Curriculum Specialist
   Dade County Public School System, FL. (Nigerian).

Dr. Samuel C. Obi, Assistant Professor,
   Division of Technology, San Jose State University, CA.
   (Nigerian).

Prof. Robert Findlay, Professor of Architecture,
   Iowa State University, Ames, IA.
   Conducted research on housing in developing countries.

Dr. John Merrill, Housing Specialist,
   University of Wisconsin, Madison, WI.
   Conducted research on home maintenance.

Dr. Duane Shinn, Professor, Department of Community &
   Regional Planning, Iowa State University, Ames, IA.
   Conducted research on housing in developing countries.

Dr. Musibau O. Shofoluwe, Associate Professor,
   Department of Construction Management and Safety,
   North Carolina A&T State University, Greensboro, NC.
   (Nigerian).
Appendix G:

Tables

1. Correlation Coefficients for all Measurements, #40
2. Statistics on Home Maintenance Behavior Variables, #41
Table 40

Correlation Coefficients For All Measurements

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<th>X11.4</th>
<th>X11.5</th>
<th>X11.6</th>
<th>X11.7</th>
<th>X11.8</th>
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<td>.09</td>
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<td>1.00</td>
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</table>

* Significant at the .05 level

** Significant at the .01 level
Table 41

Statistics on Home Maintenance Behavior Variables

<table>
<thead>
<tr>
<th>Values</th>
<th>Variable</th>
<th>Mean</th>
<th>Std Dev</th>
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<tbody>
<tr>
<td>X1</td>
<td>= Home maintenance behavior of occupants</td>
<td>33.76</td>
<td>7.48</td>
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<td>= Existing maintenance condition</td>
<td>90.84</td>
<td>16.19</td>
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<td>X2.1</td>
<td>= Exterior maintenance condition</td>
<td>40.58</td>
<td>8.28</td>
</tr>
<tr>
<td>X2.2</td>
<td>= Maintenance condition of structure</td>
<td>23.47</td>
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<td>X2.3</td>
<td>= Interior maintenance condition</td>
<td>26.78</td>
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<td>X3</td>
<td>= Home maintenance perception</td>
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<tr>
<td>X3.1</td>
<td>= Attitude towards home maintenance</td>
<td>8.80</td>
<td>3.62</td>
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<td>X3.2</td>
<td>= Occupants perception of home maintenance</td>
<td>9.49</td>
<td>2.00</td>
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<td>X7</td>
<td>= Construction technology</td>
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<td>0.89</td>
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<tr>
<td>X8</td>
<td>= Competencies and resource factors</td>
<td>19.60</td>
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<tr>
<td>X9</td>
<td>= Tenureship</td>
<td>3.57</td>
<td>1.07</td>
</tr>
<tr>
<td>X10</td>
<td>= Cultural factors</td>
<td>6.37</td>
<td>0.92</td>
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<tr>
<td>X10.1</td>
<td>= Respondent’s ethnic group</td>
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<td>X10.4</td>
<td>= Household type</td>
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<td>0.31</td>
</tr>
<tr>
<td>X11</td>
<td>= Demographic factors</td>
<td>26.34</td>
<td>5.86</td>
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<tr>
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<td>= Respondent’s gender</td>
<td>1.12</td>
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<tr>
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<td>= Respondent’s age</td>
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<td>0.83</td>
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<tr>
<td>X11.3</td>
<td>= Level of education</td>
<td>3.26</td>
<td>1.30</td>
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<tr>
<td>X11.4</td>
<td>= Household size</td>
<td>4.38</td>
<td>0.86</td>
</tr>
<tr>
<td>X11.5</td>
<td>= Occupation</td>
<td>3.93</td>
<td>2.37</td>
</tr>
<tr>
<td>X11.6</td>
<td>= Number of maintenance assistants in household</td>
<td>3.10</td>
<td>1.93</td>
</tr>
<tr>
<td>X11.7</td>
<td>= Ages of household maintenance assistants</td>
<td>4.24</td>
<td>4.49</td>
</tr>
<tr>
<td>X11.8</td>
<td>= Number of bedrooms</td>
<td>2.92</td>
<td>0.36</td>
</tr>
</tbody>
</table>

**Note.** Only means and standard deviations of continuous and dichotomous variables are included. Categorical variables were excluded.
Appendix H:
Resume of Paul Abayomi Bajere
PAUL ABAYOMI BAJERE
3021 A Cottage Place
Greensboro, North Carolina 27455
Home: (910) 545-4265
Office: (910) 334-7586
U. S. Permanent Resident

EDUCATION

1996
Doctor of Industrial Technology (D.I.T)
University of Northern Iowa, Cedar Falls, IA.
Major Emphasis: Construction Management and Computer Aided Design
Dissertation: "Maintenance Conditions and Occupant Behavior in Government Provided Housing in Lagos, Nigeria"

1990
Master of Architecture (M.Arch), and Master of Community & Regional Planning (MCRP)
Iowa State University, Ames, Iowa
Majors: Architecture, and Community and Regional Planning.
Thesis: "Image study for the interstate Corridor through Newton, Iowa"

1987
Master of Business Administration (MBA)
Golden Gate University, San Francisco, CA
Major: Real Estate

1982
Bachelor of Business Administration (BBA)
Kent State University, Kent, Ohio
Major: Real Estate and Finance

1976-80
Attended Faculty of Environmental Design and Management
University of Ife, Ife, Nigeria

PROFESSIONAL EXPERIENCE (ACADEMIC)

1995-Present
Visiting Instructor; North Carolina A. & T. State University, Greensboro, Dept. of Construction Management and Safety
Responsibility: Teaching upper level courses in Project Management; Materials and Processes of Construction; Construction Planning and Scheduling; Construction Financial Management; and Structural Principles
1992-1995

Teaching and Research Assistant
University of Northern Iowa, Cedar Falls, Iowa;
Assisted professors in Real estate principles, Real estate appraisal, Corporate finance, Assisted in conducting research and grading tests.
Performed other academic work as assigned by major advisor

1988-1992

Teaching and Research Assistant
Iowa State University, Ames; Iowa;
Taught undergraduates in Facilities Planning, Architectural Design & Construction Management; Graded tests and homework Assignments.
Assisted professors in different planning and construction research projects and administrative duties

PROFESSIONAL EXPERIENCE (INDUSTRY & CONSULTING)

1991-1995

President & General Contractor;
Bamington Contractors Inc., Des Moines, Iowa

Consulting experience in Building-design, Project Management, and Home Inspection:
1. Renovated and managed apartment buildings; Sold real estate; Led a team of eight staff.
2. Prepared design and construction documents (drawings and specifications) for residential and commercial projects using AutoCAD, AP Design, Facade, and AccuRender computer programs; Project estimates & marketing plans; 3D animations;
3. Prepared detailed mechanical drawings, and calculations to determine dimensions; Operated CADAM, computer CAD systems.
4. Performed home inspection services

1993
(May-Nov.)

Intern Architect; Kirk Gross Company, Architects, and Contractors, Waterloo, IA;
Prepared preliminary, construction & presentation drawings for new and renovated bank facilities
1991
(Jan.-June)  
**Estimator;** Garmer Construction, Des Moines, Iowa  
Performed quantity takeoff and prepared estimates and other bid packages for educational and commercial facilities

1991
(Summer)  
**Project Site Inspector;** City of Urbandale, Iowa  
Supervised earthwork subcontractors; and installation of underground utility lines on housing subdivision sites  
Conducted field inspections to ensure proper construction of site grades and installations in accordance with City guidelines

1987-1990  
**Draftsman;** Iowa State University Engineering Extension, Ames  
Worked from design development to site supervision  
Prepared preliminary and construction drawings for new and renovated houses and research facilities; inspected projects during construction; responsible for cost control  
Performed land-surveys and quantity takeoff

1988-1989  
**Planning Assistant and Intern;** Cities of Ames and Newton, Planning Departments, Iowa  
Compiled inventory of city assets from plat books & assessor's records  
Reviewed subdivision plans; enforced zoning codes; prepared land-use plans  
Prepared annexation drawings; inspected buildings  
Wrote annual reports of departmental activities for City Council

1988-1989  
**Manager;** Iowa State University Department of Residence, Ames; IA.  
Managed 100 university apartments for married students  
Scheduled maintenance; coordinated moves; resolved problems

1983-1986  
**Carpenter;** Louisiana State University Athletics Department, Baton Rouge, LA;  
Gained experience in wall/roof construction; Building repair and woodwork
1977
(Summer) Estimator & Scheduler; Adesoye & Partners, Chartered Quantity Surveyors, Nigeria; Worked from design development to site supervision Estimated construction costs and prepared bid packages Scheduled and budgeted projects; made safety analysis

COMPUTER LITERACY

Hardware: Proficiency on mainframe, IBM PC, Macintosh, and Amiga computer systems

Software: 1. Computer Aided Drafting and Design (AutoCad 10 & 12; AP Design, Facade, AccuRender, and Cadam): Skilled in using the software to produce architectural, construction, and production drawings; Knowledgeable about Artificial Intelligence (Expert Systems) in solving problems;
2. Primavera Project Planner (P3) (Project management & scheduling software): I have extensive hands-on training in the use of the software for project planning and scheduling, resource allocation and leveling, project progress reporting and monitoring.

Languages: Knowledgeable about C Programming & Basic Computer Languages

AREAS OF RESEARCH INTERESTS

Construction Project/Financial Management; CAD-Integrated Design and Planning; Computer-Integrated Construction;
Architectural design/housing in Developing countries; Artificial Intelligence (AI) Applications in Real-estate and Construction.

Funded Research

Responsibility: Assisted in developing research proposal for the grant, conducted review of the literature and developed a summary of related research and information, and ordering materials for performing the tests.

Title: Development of a New Technology For Pre-Formed Wall Panels Using Solid Waste Filler (Basic and applied research into mass usage of waste materials in concrete construction application)

P.I.: Ahmed ElSawy, Ph.D.
Account No.: 02093-15
Sponsor: College of Natural Sciences - RRTTC, University of Northern Iowa
Amount: $39,000
Duration: July 1, 1994 - June 30, 1996.

Research Activities

Relationships between design properties for cement concrete containing waste wood aggregate replacement (in progress)

Contemporary Issues in Computer Aided Drafting and Design: Implications for Technology Education (submitted for publication)

An Expert System Diagnostic Tool for Concrete Cracks (in progress)

Professional Development

Attended Primavera Project Planning (P3) training in Philadelphia, Pennsylvania, in January 1996. Received Training Certificate of Completion from Primavera Company for Training on P3 for Windows

Attended 1987 American Planning Association Conference on Growth Management and Impact Fees at Milwaukee, Wisconsin
TECHNICAL PRESENTATIONS


BOOK REVIEW


PROFESSIONAL AFFILIATIONS

Associate Member, American Institute of Architects
Associate Member, American Institute of Constructors
(AIC) Member, National Association of Industrial Technology (NAIT)

COMMUNITY SERVICE

1993-1995: Youth teacher, pastoral relations, and housing committee member;
Valley View Baptist Church, Cedar Falls, IA;

1993-Present: Member, African Student Association,

1980 - 1990: Member, Nigerian Student Union, Iowa State University, Ames, IA;

1987 - 1991: Close relation with the local chamber of commerce; regular participant, neighborhood watch group in Des Moines, Iowa.

(Prepared March, 1996)