HOUSING DEVELOPMENT FOR RESIDENCE IN SUDAN

MOHAMED ABDULLA NUGDALLA

UNIVERSITI TEKNOLOGI MALAYSIA
HOUSING DEVELOPMENT FOR RESIDENCE IN SUDAN

MOHAMED ABDULLA NUGDALLA

A project report submitted in partial fulfilment of the requirements for the award of the degree of Master of Engineering (Construction Management)

Faculty of Civil Engineering
Universiti Teknologi Malaysia

JANUARY 2016
This project report is dedicated to my parents and my family for their endless support and encouragement.
ACKNOWLEDGEMENT

First and foremost, I have to thank my parents for their love and support throughout my life. Thank you both for giving me strength to reach for the stars and chase my dreams. My brothers and sisters deserve my wholehearted thanks as well.

I would like to sincerely thank my supervisor, Mr. Bachan, for his guidance and support throughout this study, and especially for his confidence in me.

To all my friends, thank you for your understanding and encouragement in my many, many moments of crisis. Your friendship makes my life a wonderful experience. I cannot list all the names here, but you are always on my mind.
ABSTRACT

One of the main needs for the population of a country is housing. Some countries do not address the housing problems and this eventually led to people building houses individually without proper supervision from the authorities. The main aim of this study is to identify the problems faced by the owners and developers of the housing in Sudan. The objectives of the study are to identify the problems faced by the house owners who build houses individually in Sudan, to assess the problems faced by housing developers in Sudan, to investigate the factors that influence house owners to either construct houses individually or buy from developers in Sudan and to assess the approval process of the building plans in Sudan. This study is carried out in Khartoum, Sudan. The study is carried out through questionnaires. A total of 50 respondents submitted the questionnaires duly answered. The data is analysed using Average Index. From the study, the problems faced by the housing owners who build houses individually are the high cost of land, the escalation of material price and the approval process from the authorities. The problems faced by the housing developers in Sudan are the delay, too expensive due to its properties and the lack of infrastructure. The factors that influence house owners to construct houses individually are categorized into two groups, the first group is the financial factors and the other one is the design related factors. Also the respondents agreed that the main factors that influence people to houses from developers are: facilities available in the housing projects such as gardens, power and water backup and more security. From the study and the interviews conducted with the number of the construction engineers to study the approval process for housing construction in Sudan the response stated that there is no standard process for the approval which lead the researcher to recommend approval process for houses constructed in Sudan which stated as a part from the recommendations of this research.
ABSTRAK

# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECLARATION</td>
<td></td>
<td>ii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td></td>
<td>iv</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td></td>
<td>v</td>
</tr>
<tr>
<td>ABSTRAK</td>
<td></td>
<td>vi</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td></td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td></td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td></td>
<td>xiii</td>
</tr>
<tr>
<td>LIST OF APPENDICES</td>
<td></td>
<td>xiv</td>
</tr>
</tbody>
</table>

## 1 INTRODUCTION

1.1 Introduction  | 1 |
1.2 Background of the Problem  | 3 |
1.3 Problem Statement  | 6 |
1.4 Scope of the Study  | 7 |
1.5 Significance of the Study  | 7 |

## 2 LITERATURE REVIEW

2.1 Introduction  | 8 |
2.2 Housing  | 9 |
2.3 The Social Nature of Housing  | 9 |

2.3.1 The Economic Importance of Housing  | 9 |
2.3.2 Housing Externalities  | 11 |
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4 Housing Price</td>
<td>13</td>
</tr>
<tr>
<td>2.4.1 Determinants of Housing Prices</td>
<td>14</td>
</tr>
<tr>
<td>2.5 Housing Demand and Supply</td>
<td>16</td>
</tr>
<tr>
<td>2.6 Relationship between the Housing Market and Consumer Markets</td>
<td>16</td>
</tr>
<tr>
<td>2.7 Residential Developer Behavior in Land Price Determination</td>
<td>18</td>
</tr>
<tr>
<td>2.8 Landowner and Developer Behavior</td>
<td>19</td>
</tr>
<tr>
<td>2.9 User Satisfaction and Building Performance Evaluation</td>
<td>20</td>
</tr>
<tr>
<td>2.9.1 Customer Satisfaction</td>
<td>22</td>
</tr>
<tr>
<td>2.9.2 Variation in Housing Design: Identifying Customer Preferences</td>
<td>22</td>
</tr>
<tr>
<td>2.10 Need for Customizing Maintenance Services in Social Housing</td>
<td>23</td>
</tr>
<tr>
<td>2.11 Housing Quality</td>
<td>24</td>
</tr>
<tr>
<td>2.11.1 Definition of Housing Quality</td>
<td>26</td>
</tr>
<tr>
<td>2.12 Quality Assessment Systems in the Construction Industry</td>
<td>29</td>
</tr>
<tr>
<td>2.13 Government Policies and Strategies</td>
<td>30</td>
</tr>
<tr>
<td>2.13.1 Housing Policy in Sudan</td>
<td>32</td>
</tr>
<tr>
<td>2.13.1.1 Distribution of Residential Plots According to Income Groups</td>
<td>32</td>
</tr>
<tr>
<td>2.13.1.2 State Subsidies for Housing</td>
<td>33</td>
</tr>
<tr>
<td>2.13.1.3 Inadequate Housing Finance</td>
<td>34</td>
</tr>
<tr>
<td>2.13.1.4 Private Housing Investment</td>
<td>35</td>
</tr>
<tr>
<td>2.13.1.5 Technical Expertise in Housing Construction</td>
<td>35</td>
</tr>
<tr>
<td>2.13.2 Housing Policy in Malaysia</td>
<td>36</td>
</tr>
<tr>
<td>2.13.2.1 Problem of the Housing System</td>
<td>37</td>
</tr>
</tbody>
</table>
2.13.2.2 Land-use Policies 38
2.13.2.3 Building Codes and Planning Policies 38
2.13.2.4 Production and Construction Policies 39
2.13.2.5 Management and Distribution Policies 39
2.13.2.6 Housing Price Categories in Malaysia 40
2.13.2.7 BTS and STB 41

2.14 Public Housing in the World 42
2.14.1 Singapore’s Public Housing: From a Nation of Home-Seekers to a Nation of Homeowners 43
   2.14.1.1 The Role of HDB as Financier for Public Housing 44
2.14.2 Public Housing Supply in South Korea 45
   2.14.2.1 Major Challenges of Public Housing 46
   2.14.2.2 Supply Mechanisms 48
   2.14.2.3 Supply through the Purchase of Existing Housing Units 48
   2.14.2.4 New Experiments in Public-Private Cooperation 49

2.15 Financial Issue in Construction 49

2.16 Delay in Residential Construction Projects 51
2.16.1 Actual Causes of Delay in Different Countries 52
   2.16.1.1 Actual Causes of Delay in Indonesia 52
   2.16.1.2 Actual Causes of Delay in Saudi Arabia 52
   2.16.1.3 Actual Causes of Delay in Ghana 53
## 3 RESEARCH METHODOLOGY

3.1 Introduction 56
3.2 Research Stage 57
  3.2.1 Literature Review 57
3.3 Study Area 61
3.4 Target Area 61
3.5 Data Analysis 62
3.6 Frequency Analysis 62
3.7 Average Index 63
3.8 Conclusion and Recommendations 64

## 4 DATA ANALYSIS AND RESULTS

4.1 Introduction 66
4.2 Questionnaire Survey 67
  4.2.1 Section 1 67
  4.2.2 Section Two 71
  4.2.3 Section Three 73
  4.2.4 Section Four 76
  4.2.5 Section Five 78

## 5 CONCLUSION AND RECOMMENDATION

5.1 Introduction 81
5.2 Conclusion
  5.2.1 Objective 1: The Problems Faced by the Housing Owners Who Build Houses Individually 82
5.2.2 Objective 2: The Problems Faced by the Housing Developers in Sudan 82
5.2.3 Objective 3: Factors that Influence House Owners to Either Construct Houses Individually or Buy from Developers in Sudan 82
5.2.4 Objective 4: The Approval Process of the Building Plans in Sudan 83
5.3 Recommendation 84
5.3.1 Recommendation to People Who Build Individually 84
5.3.2 Recommendation to Developers 84
5.3.3 Recommendation to the Local Authority (Ministry of Planning and Urban Development) 85

REFERENCES 87
APPENDIX A 90
<table>
<thead>
<tr>
<th>TABLE NO</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>House Price Structure and Target Groups 1998 (Shuid, 2004)</td>
<td>40</td>
</tr>
<tr>
<td>3.1</td>
<td>Rating scale of Average Index</td>
<td>63</td>
</tr>
<tr>
<td>4.1</td>
<td>The number and percentages of respondents</td>
<td>67</td>
</tr>
<tr>
<td>4.2</td>
<td>Respondents’ degree</td>
<td>68</td>
</tr>
<tr>
<td>4.3</td>
<td>Respondent’s profession</td>
<td>69</td>
</tr>
<tr>
<td>4.4</td>
<td>Respondents’ year of experience</td>
<td>70</td>
</tr>
<tr>
<td>4.5</td>
<td>Problems faced by the owners who build houses individually</td>
<td>72</td>
</tr>
<tr>
<td>4.6</td>
<td>Problems faced by housing developers in Sudan</td>
<td>74</td>
</tr>
<tr>
<td>4.7</td>
<td>Factors that motivate buyers to build houses individually</td>
<td>76</td>
</tr>
<tr>
<td>4.8</td>
<td>Factors that motivate people to buy houses from developers</td>
<td>79</td>
</tr>
</tbody>
</table>
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE NO</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Likert scale five measurement of agreement and significance</td>
<td>60</td>
</tr>
<tr>
<td>3.2</td>
<td>Research methodology of the project</td>
<td>65</td>
</tr>
<tr>
<td>4.1</td>
<td>Participant’s gender</td>
<td>68</td>
</tr>
<tr>
<td>4.2</td>
<td>Respondent’s degree</td>
<td>69</td>
</tr>
<tr>
<td>4.3</td>
<td>Respondents’ profession</td>
<td>70</td>
</tr>
<tr>
<td>4.4</td>
<td>Respondents’ year of experience</td>
<td>71</td>
</tr>
<tr>
<td>4.5</td>
<td>Problems faced by the owners who build houses individually</td>
<td>73</td>
</tr>
<tr>
<td>4.6</td>
<td>Problems faced by the housing developers</td>
<td>75</td>
</tr>
<tr>
<td>4.7</td>
<td>Financial factors</td>
<td>77</td>
</tr>
<tr>
<td>4.8</td>
<td>Design related factors</td>
<td>78</td>
</tr>
<tr>
<td>4.9</td>
<td>Factors that motivate buyers to buy houses from developers</td>
<td>80</td>
</tr>
</tbody>
</table>
# LIST OF APPENDICES

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The questionnaire survey form</td>
<td>90</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

1.1 Introduction

A house is a building that functions as a home for humans or other creatures, ranging from simple dwellings such as rudimentary huts of nomadic tribes to complex structures composed of many systems (Shelter Publications, Inc., May 1, 2000).

Living in satisfactory housing conditions is one of the most important aspects of people’s lives. Housing is essential to meet basic needs, such as shelter, but it is not just a question of four walls and a roof. Housing should offer a place to sleep and rest where people feel safe and have privacy and personal space; somewhere they can raise a family. All of these elements help make a house a home. And of course there is the question whether people can afford adequate housing.

The conception of a house as a home, a place of comfort and security, has taken root in many areas of the world, especially as increasing proportions of the population have come to own their houses. This view of shelter reinforces the idea that many other qualities derive from the place where one lays their hat; more than a
roof over one’s head, the home has come to symbolize family, stability, wealth. As the largest single investment for most families, and the driver of demand in enormous sectors of the economy, housing has also played a huge role in the economies of these nations.

Houses that generates income or is otherwise intended for investment purposes rather than as a primary residence. It is common for investors to own multiple pieces of real estate, one of which serves as a primary residence, while the others are used to generate rental income and profits through price appreciation. The tax implications for investment housing are often different than those for residential housing.

Common examples of investment properties are apartment buildings and rental houses, in which the owners do not live in the residential units, but use them to generate on-going rental income from tenants. Those who invest in housing also expect to generate capital gains as property values increase over time.

Theoretically, when we are talking about the housing supply and demand, the market forces should be operated to achieve equilibrium between demand and supply of the products. However, in actual practice and fact, the housing market fails to provide balanced situation between housing demand and supply. There is argument that irresponsiveness of the housing development practice also contributes to the issues of oversupply (Bramley, 1995; Hull, 1997). Currently, demand is always proportional to the increase in population. As population increasing, the number of demand on residential will increase as well. The process of developing and constructing this development cause a big amount of money. (Einsiedel, 1997; Eddy, 2004).
The Ministry of Planning and Urban Development in Khartoum state (capital of the Sudan) creates Housing and Reconstruction Fund in December 2001, but the idea of ready-housing due to the late fifties, and the aim of this experiment is to provide an appropriate and legitimate housing for low-income people have now been developed to include all sectors of society.

Housing and Construction Fund is one of Khartoum state institutions nascent leading enforcement and the Ministry of Planning and Urban Development programs where the Fund is putting ready-housing projects belief in the role of these projects in upgrading to the environment of urban citizens, through the construction of houses of art and engineering Excellent specifications and designs of architectural satisfy all tastes at an economical cost and the ownership of such housing and the premium ranging from 3-12 years depending on the income levels of citizens.

1.2 Problem Statement

Housing for residence one the basic needs to live for every person. It becomes one the most challenges for the government of Sudan is to develop the housing in Sudan and to offer house for every family in Sudan.

In Khartoum (capital of the Sudan), the Ministry of Planning and Urban Development started to make some plans for development of housing for residence by develop big residential housing projects contain 50000 residential unit because more than 90 percent of housing in Sudan is individual housing and now there is a strong need to develop residential housing projects to satisfy all citizens of the Khartoum and also encourage the construction companies to invest in the residential housing projects and also encourage people who want to develop individual housing
for residence by themselves by reducing the land prices for the individuals and also provide funding programs to individuals through the government banks.

But the official policies currently in use in the Sudan are very rigid in nature. They are unresponsive to the different norms of the various traditional societies found in the country. This lack of sensitivity derives from the fact that the policies are based on a positivistic philosophy of planning and urban development which does not allow the specific social and cultural needs of traditional people to be acknowledged. As a result, the application of these policies is causing various serious practical problems and defeating the purposes they were intended to serve. The whole situation in the housing sector calls for the policies based on a more flexible approach.

Also in Sudan in general and in Khartoum specifically, there are major issues affecting the housing for residence regarding to duration of the construction, quality of buildings, cost of construction and the way of construction.

Duration of the construction works has been one of the problems facing the construction developers due to the delaying usually encompasses with the construction in the most countries in the world, even the developing countries suffer from the same problem, but in Sudan the problem is much greater than those countries, for example the normal duration to build normal house (two story house) it takes 12 months but in Sudan normally it takes up to 36 months due to several reasons;

Firstly, there is no enough skill and experienced labors and the most of labors in Sudan have no good education degree, so that now the Ministry of Planning and Urban Development organizing a lot of training programs for the workmanship to help for reducing the building duration and the improve the quality of construction.
Secondly, there is significant delaying affect the construction duration causing by suppliers because sometimes the materials is not available in Sudan and it has to be delivered from outside the Sudan which would lead to significant delaying in construction.

The third reason for delaying in construction in Sudan refer to the rules and regulations which organizing the construction process in Sudan from the Ministry of Planning and Urban Development specially to get approval for the plans and drawings sometimes takes up to 12 months to get the approval of these documents.

Furthermore, the quality is very important in construction project even in the small construction project like individual housing. In Sudan the housing for residence suffer from the poor quality of construction regarding to the standards and the most individuals housing in Sudan constructed without supervision of consultants because the consultants only engage to the design stage of the building because the owners of the houses prefer to reduce the cost than hiring a consultant and the authority does not enforce the supervision of the consultants during the construction stage resulting a low quality of construction and a lot of defects starting to be arise few months after the end of construction.

Also the cost of construction in Sudan is very high in comparison with other countries, normally the two story house in Sudan costs up to 700,00 RM due to the high price of construction materials and equipment and the rate of inflation of the Sudanese economy. And due to the shortage in the skill labours and construction materials sometimes house owners or developers hire foreigner skill labours from the neighbour countries such as Egypt and Ethiopia.

Additional to all of this, there are no clear regulations to check the fitness of the building to be occupied and the matching of the housing to the specification after
finishing the construction work, and also there is no clear regulation according to the
defects after completion of construction work especially in the individual housing.

Also in the most of cases there is no clear legal agreement between the
owners and contractors regarding to the payments and schedule of the work and the
duration of the construction which cause delaying in the payment from the owners
resulting in a significant delay in the construction work.

The last but not the least, the way of construction in Sudan is not proper, most
of Sudanese contractors use the conventional methods of construction due to the high
price of equipment and materials especially in the small projects like individual
housing which affect the quality of the buildings and causing significant delay in the
construction period.

1.3 Aim and Objectives

The main aim of this study is to identify the problems faced by the owners
and developers of the housing in Sudan. The objectives of study are as follow:

1. To investigate the problems faced by the housing owners who build houses
   individually in Sudan.
2. To assess the problems faced by the housing developers in Sudan.
3. To identify the factors that influence house owners to either construct houses
   individually or buy from developers in Sudan.
4. To assess the approval process of the building plans in Sudan.
1.4 Scope of the Study

The study is carried out in Khartoum. The researcher focuses on individual housing and problems faced by owners and developers in housing development process. And additionally, it stresses on the types of house and price range preferred by buyers. The study is carried out based on data collected from the questionnaires.

1.5 Significance of the Study

The substantial increase in the problems of individual housing in Sudan regarding to the high cost of construction and the extension in the duration of the construction and also the poor quality of the housing in Sudan has brought about loss of client confidence in contractors and increasing in the effort of clients in supervising of the construction work. Therefore, there is need to provide a solutions to minimizing construction cost and duration and increase the quality of the construction. This will develop the individual housing in Sudan and will encourage the investors to invest in the individual housing construction projects.
REFERENCES


