

**THE RESIDENTIAL SATISFACTION OF THE LOW-  
COST HOUSING IN THE NEW SECOND-TIER CITY OF  
JIANGSU PROVINCE, CHINA**

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**FACULTY OF BUILT ENVIRONMENT  
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COST HOUSING IN THE NEW SECOND-TIER CITY  
OF JIANGSU PROVINCE, CHINA**

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**FACULTY OF BUILT ENVIRONMENT  
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# **THE RESIDENTIAL SATISFACTION OF THE LOW-COST HOUSING IN THE NEW SECOND-TIER CITY OF JIANGSU PROVINCE, CHINA**

## **ABSTRACT**

The residential satisfaction was not only to tell how the current living situation was like, but also to tell from which facets the municipal governments should enhance to improve their expectations of buying homeownerships. However, the current planning of low-cost housing development which was produced in line with the executive form of ‘from top to down’ was not able to achieve what real needs were from the low-income group. There have been very few studies of low-income group’s residential satisfactions with low-cost housing in China. And no study has been done with the relationship between residential satisfaction and four residential components consisting of housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics plus individual and household’s socio-economic characteristics particularly in the latest second-tier city in Jiangsu province. On the basis of the research background, the unresolved critical questions that must be answered were: what are the levels of satisfactions with residential environment between three phases of low-cost housing projects in Xuzhou city and how to improve dwellers’ residential satisfactions? The aim of this research work was to find out and compare the determinants, and to explore those determinants in order to enhance residential satisfactions of Xuzhou’s low-cost houses. An explanatory sequential mixed mode method design was used, and it involved collecting quantitative data first and then explaining the quantitative results with in-depth qualitative data. In the first, quantitative part, the structured questionnaires data were collected from 86, 95, and 80 participants of Xuzhou’s three phases of low-cost houses to assess their residential satisfactions and found out 14 determinants of 1<sup>st</sup> phase, 12 key predictors of 2<sup>nd</sup> phase, and 13 mostly significant variables of 3<sup>rd</sup> phase. The second, qualitative part was conducted as a follow-up to help explain quantitative results that low-cost housing residents wanted a

good social environment and neighbourhood facilities by improving satisfactions of community relationship, resident's workplace, nearest school and bus/taxi station. Moreover, increasing satisfactions of parking facilities, lighting, children's playground, and fitness equipment could improve residents' aspirations of good layout and good maintenance for public facilities. Furthermore, the bad conditions of staircases, corridor, garbage disposal, and lighting brought residents' aspirations of good maintenance for housing units. The bad ventilation and lighting in the bedroom and toilet made residents ask for good structure designs for housing units. In short, those residents finally wanted their houses to be enhanced according to the standard of commodity housing in order to improve their social economic status in China. Accordingly, the residents' current living environment was needed to improve by way of public participation to promote their residential satisfactions based upon the cooperation amongst their own, property companies, and local governments.

**Keywords:** Residential Satisfaction, China's Low-Cost Housing, Xuzhou City, Explanatory Sequential Mixed Mode Method, Public Participation in China's Low-Cost Housing Development

# **THE RESIDENTIAL SATISFACTION OF THE LOW-COST HOUSING IN THE NEW SECOND-TIER CITY OF JIANGSU PROVINCE, CHINA**

## **ABSTRAK**

Kepuasan kediaman bukan sahaja menunjukkan keadaan kehidupan semasa, tetapi juga memberitahu kerajaan perbandaran di mana aspek yang harus ditingkatkan supaya harapan untuk pemilikan rumah dapat dicapai. Walau bagaimanapun, rancangan pembangunan perumahan kos rendah yang dihasilkan sejajar dengan bentuk eksekutif “dari atas ke bawah” tidak dapat mencapai keperluan golongan isi rumah berpendapatan rendah dan sederhana rendah. Terdapat kekurangan dalam kajian mengenai kepuasan kediaman dengan perumahan kos rendah bagi kumpulan berpendapatan rendah di China. Selain itu, tiada kajian dapat dijumpai mengenai hubungan antara kepuasan kediaman dan empat komponen kediaman yang terdiri daripada ciri-ciri unit rumah, perkhidmatan sokongan unit rumah, kemudahan penunjang estet perumahan, dan ciri-ciri kejiranan serta ciri-ciri sosioekonomi individu dan rumah tangga terutamanya dalam bandar berperingkat kedua terkini di wilayah Jiangsu. Berdasarkan latar belakang penyelidikan ini, soalan kritikal yang mesti dijawab adalah: apakah tahap kepuasan dengan persekitaran kediaman antara tiga fasa projek perumahan kos rendah di bandar Xuzhou dan bagaimana kepuasan penduduk penghuni boleh ditingkatkan? Tujuan kerja penyelidikan ini adalah untuk mengetahui dan membandingkan penentu-penentu, dan juga untuk meneroka penentu-penentu tersebut untuk meningkatkan kepuasan kediaman perumahan kos rendah di Xuzhou. Reka bentuk penyelidikan “explanatory sequential mixed mode method design” telah digunakan, dan ia melibatkan pengumpulan data kuantitatif terlebih dahulu sebelum menerangkan hasil kuantitatif dengan data kualitatif yang mendalam. Dalam bahagian pertama, data soal selidik berstruktur telah dikumpulkan dari 86, 95, dan 80 orang peserta di tiga fasa projek perumahan kos rendah di Xuzhou untuk menilai kepuasan kediaman mereka dan kajian ini mendapati 14 penentu fasa 1, 12 prediktor utama pada fasa ke-2, dan 13 pembolehubah bersignifikan

tinggi pada fasa ke-3. Di bahagian kedua, kajian kualitatif telah dijalankan sebagai tindak lanjut untuk membantu menjelaskan hasil kuantitatif bahawa penduduk perumahan kos rendah memerlukan persekitaran sosial dan kemudahan kejiranan yang baik dengan meningkatkan tahap kepuasan perhubungan masyarakat, tempat kerja penduduk, sekolah dan stesen bas/teksi yang terdekat. Lebih-lebih lagi, meningkatkan tahap kepuasan kemudahan tempat letak kereta, lampu, taman permainan kanak-kanak, dan peralatan kecergasan dapat meningkatkan aspirasi penduduk mengenai susun atur yang baik dan penyelenggaraan yang baik untuk kemudahan awan. Selain itu, keadaan tangga, koridor, pelupusan sampah dan pencahayaan yang buruk akan membawa aspirasi penyelenggaraan yang baik bagi unit kediaman. Pengudaraan dan pencahayaan yang buruk dalam bilik tidur dan tandas mengakibatkan penduduk untuk meminta reka bentuk struktur yang baik untuk unit kediaman. Secara ringkasnya, penduduk-penduduk mahu rumah mereka untuk dipertingkatkan mengikut piawaian perumahan komoditi supaya taraf sosial ekonomi di China dapat ditingkatkan. Sehubungan dengan itu, persekitaran hidup semasa penduduk perlu dipertingkatkan melalui cara penyertaan masyarakat supaya kepuasan kediaman mereka dapat diperkenalkan berasaskan kerjasama antara mereka sendiri, syarikat-syarikat harta tanah, dan kerajaan tempatan.

**Keywords:** Residential Satisfaction, China's Low-Cost Housing, Xuzhou City, Explanatory Sequential Mixed Mode Method, Public Participation in China's Low-Cost Housing Development

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## TABLE OF CONTENTS

Abstract .....	iii
Abstrak .....	v
Acknowledgements .....	vii
Table of Contents .....	ix
List of Figures .....	xvi
List of Tables.....	xvii
List of Symbols and Abbreviations.....	xviii
List of appendix.....	xix

### **CHAPTER 1: INTRODUCTION..... 1**

1.1 Research Background .....	1
1.1.1 Residential Satisfaction (RS).....	1
1.1.2 China's Low-Cost Housing (LCH) .....	2
1.1.3 The Significance of RS to China's LCH .....	3
1.2 Problem Statement and Research Gap.....	5
1.2.1 Problem Statement .....	5
1.2.2 Research Gap.....	6
1.3 Research Questions and Objectives.. ..	8
1.4 Research Methodology .....	10
1.5 Research Scope.....	10
1.5.1 Phase 1 of Xuzhou's LCH.....	11
1.5.2 Phase 2 of Xuzhou's LCH.....	12
1.5.3 Phase 3 of Xuzhou's LCH.....	13
1.6 Structure of the Thesis .....	14

### **CHAPTER 2: LITERATURE REVIEW..... 17**

2.1 Introduction.....	17
2.2 Residential Satisfaction .....	17
2.2.1 The Origin of RS .....	17
2.2.2 The Concept of RS .....	21
2.2.3 The Theoretical Model Studying RS.....	25
2.2.3.1 Habitability System .....	25
2.2.3.2 Systemic Model of RS.....	28

2.2.3.3	Mohit et al.'s RS Model .....	30
2.2.3.4	The Components/Variables of Three Models of RS .....	31
2.2.3.5	Conceptual Model with Components of This Research Study .....	39
2.3	RS in Different Contexts of Housing in Different Countries .....	41
2.3.1	Different Factors Affecting RS in Housing .....	41
2.3.2	Separate Assessment of RS in Different Contexts of Housing .....	46
2.3.3	Characteristics of China's LCH .....	48
2.3.4	RS of Public Housing in the Developed and Developing Countries .....	52
2.3.4.1	Factors Affecting RS in Public Housing in Developed Countries .....	54
2.3.4.2	Factors Affecting RS in Public Housing in Developing Countries .....	68
2.3.5	RS in Commodity Housing in Developed and Developing Countries .....	85
2.3.5.1	Four Residential Components and RS .....	85
2.3.5.2	Factors from HUC .....	89
2.3.5.3	Factors from NC .....	89
2.3.5.4	Factors from Individual and Household's Socio-Economic Characteristics .....	90
2.3.6	Factors Concluded in Residential Components and IHSC .....	91
2.4	Data Collection and Data Analysis in Research Methodology of Studying RS .....	93
2.5	Recommendations to Enhance RS ....	96
2.6	Conclusion .....	98
<b>CHAPTER 3: CHINA (XUZHOU)'S LOW-COST HOUSING .....</b>		<b>105</b>
3.1	Introduction .....	105
3.2	China's Low-Income Housing (LCH) .....	105
3.2.1	Recent Studies on RS of China's Low-Income Housing .....	107
3.2.2	Recent Studies on China's Low-Income Housing Policy .....	109
3.3	Xuzhou's LCH .....	110
3.3.1	Economic Level of Development in Second-Tier Cities in China especially Xuzhou .....	110
3.3.2	Xuzhou in General .....	112

3.3.3	Xuzhou to Be Selected Amongst Three New Second-Tier Cities in Jiangsu Province .....	113
3.3.4	Economic Transformation of Xuzhou City .....	116
3.3.5	New Development of Xuzhou and Xuzhou's Economic Growth .....	117
3.3.6	Xuzhou's Urban Transformation.....	122
3.3.7	Xuzhou's LCH .....	124
3.3.7.1	Xuzhou's Housing.....	124
3.3.7.2	Xuzhou's LCH .....	128
3.4	The Significance of RS to China's LCH .....	131
3.5	The Significance of RS to Xuzhou's LCH .....	133
3.6	Conclusion .....	135
<b>CHAPTER 4: METHODOLOGY .....</b>		<b>137</b>
4.1	Introduction.....	137
4.2	Explanatory Sequential Mixed Mode Method.....	137
4.2.1	The Reasons for Mixing Quantitative and Qualitative Methods in a Single Study .....	137
4.2.2	Decisions in Choosing a Mixed Mode Method Design .....	138
4.2.3	Explanatory Sequential Mixed Mode Method .....	139
4.2.4	Prototypical Characteristics of the Explanatory Sequential Design.....	141
4.2.5	Procedures of the Explanatory Sequential Design .....	143
4.3	The Explanatory Sequential Mixed Mode Method Design of this Research .....	145
4.4	Quantitative Phase .....	148
4.4.1	Participants .....	148
4.4.2	Data Collection.....	149
4.4.2.1	Sample Sizes .....	149
4.4.2.2	Structured Questionnaires .....	150
4.4.3	Data Analysis .....	153
4.4.3.1	Method of Regression .....	153
4.5	Qualitative Phase .....	157
4.5.1	Case Selection .....	157
4.5.2	Interview Questions Development .....	158
4.5.3	Data Collection and Analysis .....	158
4.6	Conclusion .....	159

<b>CHAPTER 5: QUANTITATIVE RESULTS .....</b>	<b>161</b>
5.1 Introduction.....	161
5.2 Interpreting Multiple Regression.....	161
5.3 Validity of Conceptual Model .....	162
5.4 The Comparisons of Respondents' IHSC between the Three Phases .....	164
5.5 Residential Satisfaction .....	170
5.5.1 The Comparisons of Four Elements' Satisfactions and RS between the Three Phases .....	170
5.5.2 The Comparisons of the Correlations between RSIndex and Respondents' IHSC between the Three Phases.....	180
5.5.3 The Comparisons of the Determinants between the Three Phases .....	185
5.6 Conclusion .....	190
 <b>CHAPTER 6: QUALITATIVE RESULTS .....</b>	 <b>194</b>
6.1 Introduction.....	194
6.2 Interviewee 1 .....	194
6.2.1 Individual and Household's Socio-economic Characteristics .....	195
6.2.2 Housing Unit Characteristics.....	196
6.2.3 Housing Unit Supporting Services .....	197
6.2.4 Housing Estate Supporting Facilities .....	199
6.2.5 Neighbourhood Characteristics .....	200
6.3 Interviewee 2 .....	202
6.3.1 Individual and Household's Socio-economic Characteristics .....	202
6.3.2 Housing Unit Characteristics.....	203
6.3.3 Housing Unit Supporting Services .....	204
6.3.4 Housing Estate Supporting Facilities .....	205
6.3.5 Neighbourhood Characteristics .....	206
6.4 Interviewee 3 .....	209
6.4.1 Individual and Household's Socio-economic Characteristics .....	210
6.4.2 Housing Unit Characteristics.....	211
6.4.3 Housing Unit Supporting Services .....	212
6.4.4 Housing Estate Supporting Facilities .....	213
6.4.5 Neighbourhood Characteristics .....	214
6.5 Interviewee 4 .....	216
6.5.1 Individual and Household's Socio-economic Characteristics .....	216

6.5.2	Housing Unit Characteristics.....	217
6.5.3	Housing Unit Supporting Services .....	218
6.5.4	Housing Estate Supporting Facilities .....	219
6.5.5	Neighbourhood Characteristics .....	220
6.6	Interviewee 5 .....	222
6.6.1	Individual and Household's Socio-economic Characteristics .....	222
6.6.2	Housing Unit Characteristics.....	224
6.6.3	Housing Unit Supporting Services .....	225
6.6.4	Housing Estate Supporting Facilities .....	225
6.6.5	Neighbourhood Characteristics .....	227
6.7	Interviewee 6 .....	229
6.7.1	Individual and Household's Socio-economic Characteristics .....	229
6.7.2	Housing Unit Characteristics.....	230
6.7.3	Housing Unit Supporting Services .....	231
6.7.4	Housing Estate Supporting Facilities .....	232
6.7.5	Neighbourhood Characteristics .....	233
6.8	Cross Case Analysis and Conclusion .....	235
6.8.1	Individual and Household's Socio-Economic Characteristics .....	241
6.8.2	Housing Unit Characteristics.....	242
6.8.3	Housing Unit Supporting Services .....	244
6.8.4	Housing Estate Supporting Facilities .....	245
6.8.5	Neighbourhood Characteristics .....	246
<b>CHAPTER 7: DISCUSSION .....</b>		<b>248</b>
7.1	Introduction.....	248
7.2	RS in Three Phases of LCH.....	248
7.3	Determinants of RS in Three Phases of LCH.....	263
7.3.1	Good Social Environment and Neighbourhood Facilities.....	264
7.3.1.1	Community Relationship.....	264
7.3.1.2	Local Crime and Accident Situation .....	267
7.3.1.3	Quietness of the Housing Estate.....	270
7.3.1.4	Resident's Workplace and Nearest Bus/Taxi Station.....	271
7.3.1.5	Community Clinic, Nearest General Hospital, and Nearest School.....	273
7.3.1.6	Local Police Station .....	275

7.3.1.7	Nearest Fire Station .....	276
7.3.2	Good Layout and Maintenance for Public Facilities .....	277
7.3.2.1	Open Space .....	277
7.3.2.2	Children's Playground .....	278
7.3.2.3	Parking Facilities .....	280
7.3.2.4	Local Shops .....	281
7.3.2.5	Local Kindergarten .....	282
7.3.3	Good Maintenance for Housing Unit .....	284
7.3.3.1	Drain and Electrical & Telecommunication wiring .....	284
7.3.3.2	Staircases, Corridor, and Garbage Disposal .....	285
7.3.4	Good Structure Design for Housing Unit .....	288
7.3.4.1	Living Room, Dining Area, Bedroom, Toilet, and Drying Area .....	288
7.3.5	More Commoditized LCH .....	294
7.4	Summary of Discussion .....	305
<b>CHAPTER 8: CONCLUSION AND RECOMMENDATIONS .....</b>		<b>306</b>
8.1	Introduction .....	306
8.2	Summary of Findings .....	306
8.2.1	Validated Model and Factors Found in Developed and Developing Countries .....	306
8.2.2	Levels of Satisfaction/Dissatisfaction between the Three Phases .....	309
8.2.3	Determinants between the Three Phases .....	310
8.2.4	Explorations on Determinants between the Three Phases .....	312
8.2.5	Public Participation Model as Recommendation to Improve RS .....	322
8.3	Implications .....	323
8.3.1	Low-Cost Housing Residents, NGO, NPC Deputies .....	323
8.3.2	Local Government and MSOCC .....	325
8.4	Recommendations .....	330
8.4.1	Theory Prepared .....	330
8.4.2	Public Participation in LCH Development Model Proposed .....	331
8.4.3	Public Participation in LCH Development Contributing to Policy .....	337
8.4.3.1	Rational Pricing for LCH .....	337
8.4.3.2	Good Planning for LCH .....	338
8.4.3.3	Good HESF and HUC for LCH .....	338

8.5	Limitations of This Study .....	339
8.6	Future study .....	341
	References .....	344
	List of Publications and Papers Presented .....	356

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## LIST OF FIGURES

Figure 2.1: The Habitability System .....	27
Figure 2.2: Systemic Model of RS .....	30
Figure 2.3: Mohit et al.'s RS Model* .....	31
Figure 2.4: Different Variables in Systemic Model of RS .....	36
Figure 2.5: Mohit et al.'s RS Model with Five Components* .....	39
Figure 2.6 Conceptual Model of This Study .....	40
Figure 2.7 The Ladder of Arnstein.....	97
Figure 3.1: Xuzhou (Nantong, and Changzhou) (Three second-tier cities in Jiangsu Province, China).....	112
Figure 3.2: Three Phases of LCH in Xuzhou .....	128
Figure 4.1: Explanatory Sequential Mixed Mode Method .....	140
Figure 4.2: Flowchart of the Basic Procedures in Implementing an Explanatory Sequential Mixed Methods Design .....	145
Figure 4.3: Research Design .....	147
Figure 8.1 Quantitative & Qualitative Findings Summarised with (LGP: Local Government Policy) .....	313
Figure 8.2 Public Participation in the Full Process of LCH Development .....	333

## LIST OF TABLES

Table 2.1: Selected Attributes of Habitability from the Dwelling .....	32
Table 2.2: Selected Attributes of Habitability from the Environment .....	33
Table 2.3: Selected Attributes of Habitability from the Management .....	33
Table 2.4: Four Dimensions Regarding the Cognitive Aspect .....	34
Table 3.1: Xuzhou City General Statistics .....	114
Table 3.2: Nantong City General Statistics .....	114
Table 3.3: Changzhou City General Statistics .....	115
Table 3.4: Nanjing City General Statistics .....	115
Table 3.5: Xuzhou City Information (2013) .....	122
Table 5.1: The Comparisons of Respondents' IHSC between the Three Phases .....	169
Table 5.2: The Comparisons of Four Elements' Satisfactions and RS between the Three Phases .....	176
Table 5.3: The Comparisons of Spearman's and Pearson's correlation coefficients (r) matrix between RSIndices and Respondents' IHSC between the Three Phases .....	184
Table 5.4: The Comparisons of the Determinants between the Three Phases .....	189
Table 6.1: Themes, Sub-Themes, and Categories across Cases and across Phases .....	236

## LIST OF SYMBOLS AND ABBREVIATIONS

LRH	:	Low-Rent Housing
LCH	:	Low-Cost Housing
LSPH	:	Housing with Limited Size and Price
PRH	:	Public Rental Housing
ECH	:	Economic and Comfortable Housing
HUC	:	Housing Unit Characteristics
HUSS	:	Housing Unit Supporting Services
HESF	:	Housing Estate Supporting Facilities
NC	:	Neighbourhood Characteristics
HUCSIndex	:	Housing Unit Characteristics Satisfaction Index
HUSSSIndex	:	Housing Unit Supporting Services Satisfaction Index
HESFSIndex	:	Housing Estate Supporting Facilities Satisfaction Index
NCSIndex	:	Neighbourhood Characteristics Satisfaction Index
MSOCC	:	Municipal State-Owned Construction Company

## LIST OF APPENDICES

Appendix A: Quantitative Questionnaire.....	357
Appendix B: Definition of Variables.....	365
Appendix C: Qualitative Questionnaire.....	368
Appendix D: Interpreting A Stepwise Method Regression Analysis.....	376
Appendix E: The Comparisons of Variables between the Three Phases.....	445
Appendix F: Paper Presented at Conference.....	459

## **CHAPTER 1: INTRODUCTION**

### **1.1 Research Background**

#### **1.1.1 Residential Satisfaction (RS)**

Since the first author named Onibokun (1974) did his research by using the formula of residential satisfaction assessment on the habitability of a housing project, the residential satisfaction reflected the degree of contentment experienced by an individual or a family with respect to the existing living situation and the residential satisfaction was an index of the level of contentment with the existing residential situation. In the meanwhile, the residential satisfaction was portrayed as the feeling of contentment when people's needs or requirements in the houses were fulfilled.

The residential satisfaction should assess the individuals' conditions of their residential environment with respect to their needs, anticipations and achievements. The difference between inhabitants' actual and anticipated housing and neighbourhood conditions had been making the concept of residential satisfaction more and more conceptualised, i.e. the lower residential satisfaction indicated a lower degree of congruence between inhabitants' actual and anticipated housing and neighbourhood conditions.

In other word, the satisfaction was appeared when the existing residential condition met the inhabitants' expectations. Otherwise, the dissatisfaction was show-up when the existing residential situation did not meet the inhabitants' expected residential condition.

The residential satisfaction was also defined as a criterion which to examine the relationships among the characteristics of the inhabitants in terms of cognitive and behavioural and the characteristics of the environment in terms of physical and social and was an important indicator and architects, developers, planners and policy makers

used in many ways (Amerigo & Aragonés, 1997; Galster, 1985; Galster & Hesser, 2016; Jansen, 2013b; Li & Wu, 2013; Mason & Faulkenberry, 1978; McCray & Day, 1977; Mohit, Ibrahim, & Rashid, 2010; Wu, 2008).

### **1.1.2 China's Low-Cost Housing (LCH)**

In terms of the phrase of 'public housing' popularly used across the world (Fitzpatrick & Stephens, 2008; Hills, 2007; MacLennan & More, 1997; Oxley, 2000; Tsenkova & Turner, 2004), the critical core of the phrase of 'public housing' described the housing tenure which was either purchased from a local government or allocated (leased) from a local authority as a two-kind of 'public housing' system comprising of Low-Cost Housing (LCH) and Low-Rent Housing (LRH) was first-time introduced in China in 1998.

With respect to China's low-cost housing, a lot of previous articles and journals defined this type of housing with the function of social housing and having some characteristics of commodity housing as well such as the partial homeownership shared with the local housing bureau and named as 'Economic Comfortable Housing (ECH)' which was directly translated from Chinese name as 'Jingji Shiyong Fang'.

According to its characteristics and the specific group of people who was targeted, the new name of low-cost housing given by Central Compilation & Translation Bureau of China was more appropriate for it being supposed to provide an economic and comfortable house with certain conditions of homeownership to a medium-low income household.

Therefore, before 1998 called 'public housing' pre-reform era in China had a very recognizable feature with only having two types of housing, i.e. state provision ('public housing') and non-state provision and after 1998 called 'public housing' post-reform era

had much more difficulties in identifying ‘public housing’ from other types of housing such as low-cost housing being not so different from other types of ‘public housing’ and commodity housing.

Moreover, as low-cost housing which was the main type of ‘public housing’ in China before 2007 was not developed and even owned by the local government, only under the supervisory control of local housing bureau, the ‘public housing’ was no longer ‘public’ developed or owned in China so that the phrase of ‘public housing’ in China was already replaced with the name of Low-Income Housing also given by Central Compilation & Translation Bureau of China with very Chinese unique of focusing on the medium-low and low-income households who had problems of having houses in the commodity market (Chen, Yang, & Wang, 2014; *Guowuyuan guanyu jiejie chengshi di shouru jiating zhufang kunnan de ruogan yijian*, 2007; Hu, 2013; Huang, 2012; Jia, 22nd June 2011; Li, 2013).

### **1.1.3 The Significance of RS to China’s LCH**

Those who currently lived at low-cost homes showed a lower housing satisfaction as the locations of those low-cost houses in Chinese cities were far away from city centres and the relatively poor infrastructure provided comparing with commodity houses (Hu, 2013; Huang, 2012). It meant that living at low-cost houses inconveniently and poor infrastructure were talking about the issue of residential satisfaction.

Therefore, the assessment of residential satisfaction with China’s low-cost houses was becoming a key to their decisions on whether they would buy their full homeownership from municipal governments and either they would sell their low-cost houses back to municipal governments or to give their houses over to those who were new applicants for low-cost houses.

The residential satisfaction was not only to tell how the current living situation was like, but also to tell from which facets the municipal governments should enhance to improve their expectations of buying homeownerships.

Besides this, those residents who were living at low-cost houses were underclass and should be given priority to ensuring their basic needs for housing by municipal governments. After all, for them, it was not straightforward to purchase commodity houses by way of selling their low-cost houses on the open market. Then, improving their residential satisfaction with current low-cost houses would make them to feel their basic housing needs being deserved protection. Yet perhaps, they would consider purchasing their full ownership and then to sell and to buy commodity houses by the time when their living conditions would have been improved. As thus, the low-cost houses, to some extent, were about to be brought some certain finical compensation for their buying next houses.

At same time, the assessment of residential satisfaction with low-cost houses was very important to the municipal governments especially Xuzhou, because they not only would be aware of how satisfied the residents felt about their current living conditions and whether those factors had correlations with residential satisfaction, but also would be aware of which factors were predictor factors and which predictor factors would most predict the residential satisfaction.

Hence, the municipal governments would understand how to improve their habitability with the following low-cost houses development from those predictor factors instead of developers' previous experiences in building. In the meantime, the residents would be informed about whether what the municipal governments would deal with those predictor factors were what factors they really concerned about. Then, the



residents would be better cooperating with the municipal governments to enhance their habitability.

## **1.2 Problem Statement and Research Gap**

### **1.2.1 Problem Statement**

With reference to China's low-cost housing's irrational distribution and provision nationwide, the current goal of total amount numbers of low-cost housing was deployed not according to what the geographical layout real required, although the total amount numbers of the low-cost housing-built had been increasing.

Furthermore, the allocation schemes of low-income housing which were made by each city government with their knowledge of the local current housing market gave decisions on how many types of low-income housing and how many units in each type of low-income housing provided for medium-low, low, and lowest-income households. Consequently, the proportion of low-income housing provision was sometimes irrational, for instance, Xuzhou city only built low-cost housing between 2004 and 2009.

To put it in another way, the current planning of low-cost housing development which was produced in line with the executive form of 'from top to down' was not able to achieve what real needs were from the medium-low and low income group of households.

Thus, the improved planning of low-cost housing development which should be made consistently with the executive form of 'from bottom to up' would let city government be aware of the medium-low and low income group of households' real residential needs in order to produce the qualified planning of low-cost housing

development so as to deliver more suitable low-cost housing to medium-low and low income group of citizens.

Not only did residents consider the numbers of affordable housing provided as needed, but quality of affordable housing was also concerned as priority (Gur & Dostoglu, 2011). As what Gur and Dostoglu (2011) emphasized in their studies, to consider all socio-cultural and physical factors would develop many more affordable housing with more habitable and higher-quality environments.

Thus, quantity in low-cost housing construction was not one standard to improve residential satisfaction, the improvement of quality of residential environment was the core.

### **1.2.2 Research Gap**

There have been very few studies of low-income group's residential satisfaction with low-cost housing in China. On exception, Huang and Du (2015) revealed that the increasing of residential satisfaction with Hangzhou public housing depended more on the improvement of neighbourhood characteristics, housing estate public facilities and housing unit characteristics which are taken as significant predictor variables based upon the household survey.

In addition, the increasing of residential satisfaction with Hangzhou public housing depended less on the improvement of public housing allocation scheme, social environment characteristics of neighbourhood and residence comparison which were also taken as significant predictor variables (Huang & Du, 2015).

Especially, neighbourhood characteristics and housing estate public facilities were found to be the main factors that influenced the level of residential satisfaction in Hangzhou low-cost housing. Furthermore, Huang and Du (2015) found that residents

are most satisfied with cheap rental housing (also named Lianzu Fang) among the four types of China's public housing, followed by public rental housing (also named Gongzu Fang) and monetary subsidised housing (HuoBi Buzu Fang), on the contrary, residents were found to be the least satisfied with economic comfortable housing (low-cost housing).

Most recent studies of overall residential satisfaction of China's public housing and public buildings focused on public expectations, quality perceived, public satisfaction, public participation, and improve measures, and even Indoor Environment Quality (IEQ) (Cao et al., 2012; Tian & Cui, 2009).

Furthermore, Tian and Cui (2009) found that the residents, who are living at a public housing in Harbin, north-eastern China, were not satisfied with the layout, appearance, heat ventilation, lighting, transport facilities, children's schools, culture and entertainment facilities.

Given the difficulty of collecting data, fewer studies of low-cost housing have been conducted in developing countries and no study has been done with the relationship between residential satisfaction and four residential components consisting of housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics plus individual and household's socio-economic characteristics particularly in the latest second-tier city in Jiangsu province.

The step-wise method of Multiple-linear regression will be applied to analysing the relative importance of different variables in explaining residential satisfaction.

Little is known about the experience of residential satisfaction from the residents' perspective in China [significant exceptions being Huang and Du (2015), Tian and Cui (2009), Tao, Wong, and Hui (2014), Li and Wu (2013), Fang (2006), Day (2013), Chen,

Zhang, Yang, and Yu (2013), Huang (2012), and Hu (2013)]. In particular, low-income dwellers in China have few opportunities to express their feelings about their living environments especially in the context of government's decisions to increase the numbers of low-income since 2007 based upon assessments of low-income housing's shortages (needs), ownership claims (needs), development mode and cost, and varieties of low-income housing allocation schemes needs, however, none of which consider the level of inhabitants' residential satisfaction of low-income housing in China. As the low-income dwellers in China have few opportunities to talk about their residential satisfactions, this study will implement an explanatory sequential mixed methods design to give their chances to talk by face to face.

Therefore, although the numbers of low-cost housing have been well supplied to some extent in Chinese cities to meet low-income group's basic housing needs, the residential satisfaction and residents' perspectives (cognition & behaviour) have not been addressed appropriately in the process of residential assessment on China's low-cost housing.

### **1.3 Research Questions and Objectives**

On the basis of the research background, the unresolved critical questions here regarding the levels of satisfaction of inhabitants with the housing units and the provided facilities among Xuzhou's three phases of low-cost housing projects should have been addressed:

- i. What are predictors from previous studies about residential satisfactions of public and commodity housing in developed and developing countries?
- ii. What are levels of satisfaction/dissatisfaction perceived by the dwellers with the provisions of housing units characteristics, housing units supporting services, housing estates supporting facilities and

neighbourhood characteristics (collectively known as four components deciding upon the level of residential satisfaction) between the three phases of low-cost housing projects in Xuzhou city?

- iii. What are the determinants/predictor variables that can improve dwellers' residential satisfactions between the three phases of low-cost housing projects in Xuzhou city?
- iv. How to enhance those determinants based upon comparisons between the three phases of low-cost housing projects?
- v. What are the recommendations that could probably enhance Xuzhou's low-cost housing inhabitants' residential satisfaction?

Led by those research questions, this paper is going to investigate these factors related to the inhabitants' residential satisfaction of low-cost housing in China especially in the context of Xuzhou city and examine their roles in the overall residential environment satisfaction process. Thus, the following research objectives have been set for the study:

- i. To identify the predictors from the previous studies about residential satisfactions of public and commodity housing in the developed and developing countries
- ii. To identify and compare the level of residential satisfactions with the overall and the four residential components perceived by the residents between the three phases of low-cost housing projects in Xuzhou city, Jiangsu Province, China
- iii. To find out and compare the key predictors/determinants whose improvements can enhance the inhabitants' residential satisfactions between the three phases of low-cost housing projects in Xuzhou city

- iv. To explore and enhance those determinants based upon comparisons between the three phases of low-cost housing projects
- v. To recommend a development model of low-cost housing which to probably enhance Xuzhou's low-cost housing inhabitants' residential satisfaction

#### **1.4 Research Methodology**

This study will address the residential satisfaction in Xuzhou's low-cost housing projects. An explanatory sequential mixed mode method design will be used, and it will involve collecting quantitative data first and then explaining the quantitative results with in-depth qualitative data. In the first, quantitative part of the study, the structured questionnaires data will be collected from 86, 95, and 80 participants at Xuzhou's three phases of low-cost housing projects to assess their residential satisfactions and will find out of which the individual and household's socio-economic characteristics and residential environment part consisting of four components named housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics will determine their residential satisfactions. The second, qualitative part will be conducted as a follow up to the quantitative results to help explain the quantitative results. In this exploratory follow-up, the tentative plan is to explore the determinants of residential satisfaction at Xuzhou's three phases of low-cost housing projects.

#### **1.5 Research Scope**

Only three phases of low-cost housing projects in Xuzhou had been being currently used as of the date of issue of the questionnaire. The rest of two phases of low-cost housing projects consisted of Phase 4 (which had been completed construction, but was not put into service) and Phase 5 (which was under construction). Besides, the type of

residents who were living there was only one type fulfilled with low-cost housing applicants at that time including household per capita income was less than or equal to 600 RMB, urban residence for over 5 years, household per capita housing floor space below 20 m<sup>2</sup>, and each low-cost housing applicant had no ability to buy a house.

### **1.5.1 Phase 1 of Xuzhou's LCH**

The 1<sup>st</sup> phase of low-cost housing [Chinese name is Yangguang Huayuan, English known as Sunny (Yangguang) Garden (Huayuan)], which is located at North of Guozhuang Road, Yunlong district, was built for resolving housing difficulties of local medium-low income households by municipal party committee and government and was one of the 2004 municipal key projects. The Yangguang Huayuan's development and construction was organised and implemented by Xuzhou Housing Security and Real Estate Management Bureau with the support of local preferential policy.

Moreover, the Yangguang Huayuan whose development was restricted by the construction standard made by Xuzhou Housing Security and Real Estate Management Bureau was actually a policy-supported housing in line with the principal of "affordable and moderately comfortable" to be sold to the urban medium-low income households with housing difficulties.

Furthermore, the planned land was around 8.4 hectare with total floor area of about 100,000 square meters and each built-up area was around between 60 and 80 square meters. This project started on 18<sup>th</sup> June, 2004 and was put into use on 1<sup>st</sup> May, 2005. In general, the Yangguang Huayuan has two main exits located at south and north respectively and one minor exit at east. In Yangguang Huayuan, there are 24 blocks of low-cost house units and another 4 blocks of resettlement house units and there have some basic public facilities such as street lighting, kindergarten, recreation centre, etc. ("The Brief Introduction to Xuzhou's First Phase of Low-Cost Housing," 2012).

### 1.5.2 Phase 2 of Xuzhou's LCH

The 2<sup>nd</sup> phase of low-cost housing [Chinese name is Chengshi Huayuan, English known as City (Chengshi) Garden (Huayuan)], which is located at West of Xiangwang Road next to Jiuli district government and is very close to several parks and scenic spots, was also built for resolving housing difficulties of local medium-low income households by municipal party committee and government and was one of the 2005-2006 municipal key projects. Furthermore, one elementary school, two middle schools, and one local university are not far away from the Chengshi Huayuan which is located at the centre of Jiuli district. Furthermore, the planned land was around 10.2 hectare with almost same total floor area with Phase 1 of about 100,000 square meters and each built-up area was around between 60 and 90 square meters which is a little bigger than Phase 1.

Moreover, the Chengshi Huayuan whose development was also restricted by the construction standard made by Xuzhou Housing Security and Real Estate Management Bureau was actually a policy-supported housing in line with the principal of "appropriate standard, functional, affordable, and convenient and energy-saving" and was sold to the urban medium-low income households with housing difficulties.

This project started in October, 2005 and was put into use in November, 2006. In Chengshi Huayuan, there are 22 blocks of low-cost house units and there have some basic public facilities such as local shops, property management, kindergarten, recreation centre, etc. ("The Brief Introduction to Xuzhou's Second Phase of Low-Cost Housing," 2012).



### 1.5.3 Phase 3 of Xuzhou's LCH

The 3<sup>rd</sup> phase of low-cost housing [Chinese name is Binhe Huayuan, English known as Binhe (Binhe) Garden (Huayuan)] which includes low-cost housing, low-rent housing, and resettlement housing was a project in the public interest to put China's 11<sup>th</sup> five-year plan of housing construction planning into effect in Xuzhou in order to promote municipal party committee and government's social housing security work and was one of the 2007 municipal key projects.

Binhe Huayuan locates in the north of main city and its planned area was 18.67 hectare which is more than two times than Phase 1 and more than 1.5 times than Phase 2 with the total floor area of about 200,000 square meters that is two times than both Phase 1 and Phase 2 and each built-up area was below 90 square meters that is almost same as Phase 1 and Phase 2 for economic purpose.

In terms of the planned area and total floor area being almost two times bigger than both Phase 1 and 2, on one hand, 100 units of low-rent housing were introduced for the first time to enrich Xuzhou's low-income housing programme (but unfortunately, the 100 units of low-rent housing since the completion of August 2008 were all vacant based upon the experience and photos that was taken in June 2014), on the other hand, more resettlement projects were constructed together with low-cost housing projects comparing with the 1<sup>st</sup> phase (2<sup>nd</sup> phase does not have resettlement houses) so that the total floor area increased. In addition to the area being enlarged, whether the residential satisfaction level of the inhabitants living at low-cost housing might have been affected by this mixed living style (1<sup>st</sup> and 2<sup>nd</sup> phases) should be considered.

Moreover, the Binhe Huayuan whose development was also restricted by the construction standard made by Xuzhou Housing Security and Real Estate Management Bureau was also a policy-supported housing according to the same principal as Phase 2

had regarding “appropriate standard, functional, affordable, and convenient and energy-saving” and was sold to the urban medium-low income households with housing difficulties or relocation matters.

In addition, this project was put into use in August, 2008. In Binhe Huayuan, there are 23 blocks of low-cost house units with another 34 blocks of resettlement house units and there have some basic public facilities such as local shops, kindergarten, recreation centre, etc. ("The Brief Introduction to Xuzhou's Third Phase of Low-Cost Housing," 2012).

## **1.6 Structure of the Thesis**

The current chapter presents the research background. It states the research problem and research gap that needs for studying residential satisfaction of China's low-cost housing. Then, it raises the research questions and decides on the research objectives. To achieve the research objectives and answer the research questions will apply a suitable research method to make a research design for this research work. The research scope will focus on Xuzhou's three phases of low-cost housing projects.

**Chapter 2** reviews the residential satisfaction first in terms of the origin, concept, and theoretical models. It deeply studies about three theoretical models with their components and variables. Based on Mohit et al.'s residential satisfaction model, the four residential components and individual background will decide the residential satisfaction index. Then, it is necessary to understand what factors construct each component to affect the residential satisfaction. As residential satisfaction in different contexts of housing in different countries is totally different, those factors related to different types of housing in different countries would be so diverse. Based upon the characteristics of China's low-cost housing, it should review those factors affecting residential satisfaction in public housing in developed and developing countries. At

same time, it should also review the past papers studying on those factors affecting residential satisfaction in commodity housing in developed and developing countries. Furthermore, the type of data and data analysis in studying residential satisfaction should also be reviewed.

**Chapter 3** reviews China's low-income housing and reviews the recent studies on residential satisfaction and policy of China's low-income housing. And then, it introduces the city of Xuzhou in terms of economic transformation, economic growth, and urban transformation and development. Then, it gives a general picture of Xuzhou's three phases of low-cost housing projects. In the meanwhile, it states the significances of studying residential satisfactions of China's low-cost housing especially Xuzhou's low-cost housing.

**Chapter 4** chooses the explanatory sequential mixed mode method to guide this research work based upon the research questions and objectives required. It develops a suitable research design for this current study consisting of QUANTITATIVE part (quantitative emphasis) and qualitative part to deeply explore the answers to the research questions. The quantitative part includes selecting participants, data collection and data analysis. The qualitative part also comprises case selection, interview questions development, data collection and data analysis.

**Chapter 5** gives the quantitative results came from the stepwise regression method. The result will present the comparisons of four elements' satisfactions and residential satisfactions, the correlations between residential satisfaction index and respondents' individual and household's characteristics between the three phases. Then, the result will display the comparisons of the determinants of residential satisfaction indices between the three phases.

**Chapter 6** presents the qualitative results based upon the quantitative findings. It will highlight the answers came from the participants. And then, it will conclude the results using the cross case analysis.

**Chapter 7** integrates the quantitative (Chapter 5) and qualitative (Chapter 6) results to answer the research questions regarding the residential satisfactions in three phases of low-cost housing and determinants of residential satisfactions in three phases of low-cost housing in terms of four residential components and individual and household's characteristics.

**Chapter 8** concludes the findings and indicates the contributions of this study. It develops recommendations for low-cost housing policymakers in Xuzhou based on the findings of this research work. It also concludes the limitations of this study and illustrates the future study.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter was commenced with studies about the concept of residential satisfaction which was the mainly discussed theory in this research work. Then, this research work reviewed the main models to study residential satisfaction in housing. After that, this research work would give a conceptual model to study China's low-cost housing.

As Chinese low-cost housing had the characteristics of commodity housing with the partial homeownership and the characteristics of public housing as well, the factors related to the four components plus the individual backgrounds predicting residential satisfactions of public and commodity housing were discussed in terms of the developed and developing countries in this chapter. Therefore, the related factors would be concluded and form this research work's survey questions in the quantitative part. The research methodology in studying residential satisfaction in previous research works would be discussed as well.

Then, the conclusion of this chapter was drawn upon the discussions about recommendations to enhancing residential satisfaction of low-income housing.

### **2.2 Residential Satisfaction**

#### **2.2.1 The Origin of RS**

Michelson (1966), Onibokun (1974) and Moser (2009) pointed out the previous research works much focused on the urban physical environment that brought the influences on people's social life. However, the people's attitude toward the urban physical environment was not highly paid attention to.

Nevertheless, there were still some authors such as Michelson (1966), Gans (1962); (Gans, 1967, 1982) and Hartman (1963) studying on the relationship of people's social diversities to the urban physical environment.

To challenge the recent research works turning into the studies on the relationship of people's social variables to the urban environment, they claimed that the most concerned question regarding the recent work was which of those social variables such as social status, stage in the life cycle, etc. were mostly connected with variations in the urban environment.

Subsequently, Michelson (1966) concluded that two facets of social diversity in the population such as the value orientations and the nature and extent of social interaction should be seriously taken into account that affected planning physical aspects of the city.

To some extent, the concept of Quality-of-Life could conclude the relationship between people's social variables and the physical urban environment as the Quality-of-Life conceived in two ways such as objective and subjective in which Veenhoven (1996) concluded that the objective Quality-of-Life showed the degree to which the living conditions encountered the noted criterion of the good life, i.e. good health centre, safety in where people lived, etc. and the subjective Quality-of-Life indicated how people enjoyed their life in personal.

In addition, both the objective and subjective Quality-of-Life had the different conditions of measurements which meant the condition of measurement regarding the objective Quality-of-Life was based upon the distinct standard of success that could be applied in everywhere and contrarily, the condition of measurement with regard to the

subjective Quality-of-Life might differ from people to people (Andrews, 1974; Andrews & Withey, 1976).

Therefore, (Onibokun, 1974, 1976); Veenhoven (1996) claimed that the subjective-appraisals often used 'satisfaction' as the judgement to summarise the evaluations on how well someone liked something and then, 'satisfaction' was named as a central criterion for judgement in the subjective Quality-of-Life.

In the meantime, Onibokun (1974) and Philips (1967) agreed upon what Veenhoven (1996) said that any societies had to take some basic pre-requisites into serious considerations such as shelter as Human Nature was to be considered by social welfare and then argued that only providing shelter or places where people could live was not enough as people's mental urges were further required such as people's feeling respect or happy in where they lived. So, the habitability came into notice.

Whereas, Onibokun (1974) and Philips (1967) argued about the habitability that the previous research works were cursory in explaining what the habitability was and what the factors determined it, because the habitability was exceedingly complicated in the light of the habitability varied in relevance to the surrounding circumstances.

Michelson (1970) mentioned in his book named "Man and His Urban Environment", Onibokun (1974) and Bauer (1951) pointed out that the habitability of a housing that seemed like the environment of a "city" was affected not only by the physical facets, but also by social, cultural, behavioural and other facets in the whole societal environmental system. It meant that a habitation which was fulfilled with the requirement from the physical part might not satisfy the needs that the inhabitants required.

Therefore, Onibokun (1974) agreed upon what Bauer (1951) said in "Social Questions in Housing and Community Planning" that the house was the only one that

linking a chain of factors which determined the relative satisfaction of inhabitants with their accommodations.

In terms of satisfaction, the 1960s' research works placed emphasis on the urban physical environment that brought a lot of impacts on people's social life (Michelson, 1966) and (Onibokun, 1974). However, the people's attitude toward the urban physical environment was unfortunately not paid attention to. As a result, the relationship between objective qualities of life and satisfaction was not highly noticed by the authors (Veenhoven, 1996).

In the 1970s, as more and more researchers joined in studying on the relationship between the inhabitants' satisfaction and the urban physical environment, the distinction of satisfaction-variants were found (Gans, 1962, 1967, 1982; Hartman, 1963; Michelson, 1966), in which the first differentiated by objects of satisfaction meant the satisfaction with the habitation elaborating satisfaction with 'life-domains' was distinct from satisfaction with 'life-as-a-whole' (Onibokun, 1974; Philips, 1967; Veenhoven, 1996) and the second differentiated by scopes of evaluation meant the satisfaction with the habitation explaining 'aspect satisfaction' was distinguished from 'overall satisfaction' (Onibokun, 1974; Veenhoven, 1996) and the final one differentiated by ways of appraisal meant that the satisfaction with the habitation applying the 'affective satisfaction' was different from applying the 'cognitive evaluations'.

As the evaluations on the habitability or habitants' satisfaction could not barely rely on the standards of success which meant that the more facilities that the habitation had could not say the habitants' satisfaction got higher, in other words, the Relative Habitability (RH) of a housing or Relative Satisfaction (RS) of inhabitants placed more emphases on the subjective Quality of Life than objective Quality of Life due to the satisfaction as the assessment of the habitability targeting on human beings had to be



defined only in the relative rather than in the absolute sense (Bauer, 1951; Michelson, 1970; Onibokun, 1974; Philips, 1967; Veenhoven, 1996).

In short, the first and second differentiations of satisfaction-variants with the habitation brought by the habitability was exceedingly complicated in the light of the habitability varied in relevance to the surrounding circumstances (Onibokun, 1974; Philips, 1967).

In addition, the final differentiation of satisfaction-variants with the habitation was brought not only by the physical facets, but also by social, cultural, behavioural and other facets in the whole societal environmental system. It meant a full physical part fulfilled habitation might not satisfy the needs that the inhabitants required (Bauer, 1951; Michelson, 1970; Onibokun, 1974).

Furthermore, Veenhoven (1996) claimed that satisfaction with the habitation elaborating satisfaction with 'life-domains' demonstrated the correlation between the average satisfaction with housing and quality of housing measured by the average number of persons per household. As Veenhoven said, that the average satisfaction with housing was becoming higher indicated that the living condition had definitely been improved.

### **2.2.2 The Concept of RS**

Based upon Onibokun's (1974, 1976)'s research studies on the habitability or the satisfaction of tenants in a housing project, the issue regarding residential satisfaction was discussed in considerable empirical studies heretofore, such as (Morris, Crull, & Winter, 1976); Morris, Woods, and Jacobson (1972); (Morris & Winter, 1978) endorsed what McCray and Day (1977) said that the housing satisfaction reflected the degree of contentment experienced by an individual or a family with respect to the existing

housing situation and also claimed that the housing satisfaction was an index of the level of contentment with the existing housing situation.

In the meanwhile, Amerigo and Aragones (1997) talked about the residential satisfaction should assess the individuals' conditions of their residential environment with respect to their needs, anticipations and achievements. That is to say, Mohit et al. (2010) summarised that the residential satisfaction which was portrayed as the feeling of contentment when people's needs or requirements in the houses have been fulfilled.

Hence, Mason and Faulkenberry (1978), Galster and Hesser (2016), Galster (1985), Li and Wu (2013) concluded that the difference between inhabitants' actual and anticipated housing and neighbourhood conditions made the concept of residential satisfaction more and more conceptualised, i.e. the lower residential satisfaction indicated a lower degree of congruence between inhabitants' actual and anticipated housing and neighbourhood conditions.

In other word, the satisfaction was appeared when the existing residential condition met the inhabitants' expectations. Otherwise, the dissatisfaction was show-up when the existing residential situation did not meet the inhabitants' expected residential condition. Therefore, Li and Wu (2013) concluded that the residential expectations or preferences had a profound effect on residential satisfaction.

In addition, based upon what Wu (2008) found that the difference between the current residential situation and inhabitants' expected housing and neighbourhood conditions was scientifically called the have-want divergence, Jansen (2013b) claimed that the housing satisfaction referred the gap between what inhabitants preferred and what inhabitants had. In another word, it is more important that the residents appreciate

what they already had in the current living situations rather than the current living situation is not what they prefer (Jansen, 2013b).

Thus, Amerigo and Aragonés (1997) and Mohit et al. (2010) claimed that the residential satisfaction was also defined as a criterion which to examine the relationships among the characteristics of the inhabitants in terms of cognitive and behavioural and the characteristics of the environment in terms of physical and social. It is also an important indicator and the architects, developers, planners and policy makers use it in many ways (Amerigo & Aragonés, 1997; Mohit et al., 2010).

Furthermore, Weidemann and Anderson (1985), Amerigo and Aragonés (1997), Djebarni and Al-Abed (2000) and Mohit et al. (2010) argued that the residential satisfaction should be categorised into two different groups which were defined according to residential satisfaction being treated as the criterion variable or the dependent variable and the predictor variable or the independent variable.

Moreover, the residential satisfaction being treated as the dependent variable was described as a criterion (Galster & Hesser, 2016; Marans & Rodgers, 1975) or a particular evaluative measure (Marans & Rodgers, 1975; Rent & Rent, 1978) or an assessment tool (Michelson, 1977; Weidemann & Anderson, 1985) whereby the current residential quality or residents' perceptions on their existing housing environment could be measured so as to know whether the current residential environment would be improved (Galster & Hesser, 2016; Marans & Rodgers, 1975; Michelson, 1977; Weidemann & Anderson, 1985). The residential satisfaction could also be a reference regarding which can tell what the quality of housing is (Marans & Rodgers, 1975; Rent & Rent, 1978).

In addition, the residential satisfaction being treated as an independent variable was considered as a predictor (Campbell, Converse, & Rodgers, 1976) or an indicator (Speare, 1974; Varady, 1983) whereby an individual's perceptions of general "quality of life" would be predicted (Andrews, 1974; Andrews & Withey, 1976; Campbell et al., 1976). An individual's behaviour of residential mobility would be indicated so as to know how the housing demands and neighbourhood would be changed then (Speare, 1974; Varady, 1983).

Onibokun (1974); (Onibokun, 1976), Mason and Faulkenberry (1978), Galster (1985), Amerigo and Aragones (1997), Djebarni and Al-Abed (2000), Wu (2008), Mohit et al. (2010), Jansen (2013b), Li and Wu (2013), and Galster and Hesser (2016) concluded that the residential satisfaction has been studied and described as a criterion variable while the residential satisfaction placed more emphases on the subjective Quality-of-Life than objective Quality-of-Life.

As the satisfaction as a determinant of the habitability targeting on human beings, it has to be defined only in the relative rather than in the absolute sense (Bauer, 1951; Michelson, 1970; Onibokun, 1974; Philips, 1967; Veenhoven, 1996). Furthermore, Campbell et al. (1976), Speare (1974), and Varady (1983) concluded that the residential satisfaction was also described as a predictor variable which affecting residential mobility.

In the following part, three theoretical models which intentionally studied the residential satisfaction would be explained in detail with reference to the residential satisfaction was an integrated index which was collectively determined by physical environment factors and individual socio-economic characteristics.

### **2.2.3 The Theoretical Model Studying RS**

From Onibokun (1974), Amerigo and Aragonés (1990, 1997) and Aragonés and Corraliza (1992), to Mohit et al. (2010), (2011), (2012b), and (2015), they proposed their own ways of studying the integrated index of residential satisfaction.

Varady and Preiser (1998) agreed with Onibokun (1974) and Wiesenfeld (1995) on that very few researches talked about organising those relevant variables into an interaction system which was to be studied and seen how those related variables influenced the level of inhabitants' residential satisfactions.

The recent studies on the integrated index of residential satisfaction were firstly described as the housing habitability system by Onibokun (1974), secondly described as the systemic model of residential satisfaction followed by Amerigo and Aragonés (1990) and the latest summarised by Mohit et al. (2010) as the relationship between objective and subjective attributes of residential environment to the determination of residential satisfaction.

Those studies showed that the progress of studying on the integrated index of residential satisfaction got more and more connected factors from the objective and subjective quality-of-life.

#### **2.2.3.1 Habitability System**

With regard to the correlation between the average satisfaction with housing and quality of housing, Onibokun (1974) concluded that many non-physical aspects were involved in assessing the residential satisfaction.

Onibokun (1974) argued that different researches placed different emphases on the social aspects, economic aspects, environmental aspects, psychological and

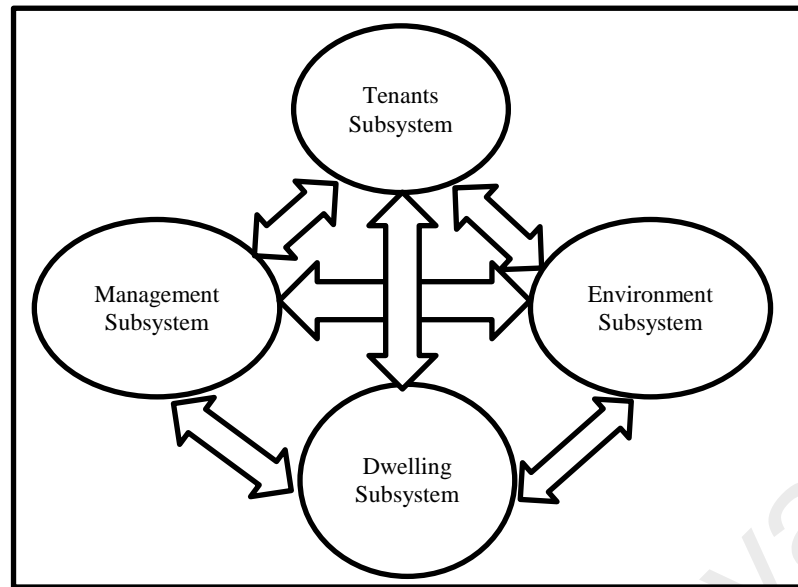
physiological aspects separately which had not yet been an interaction system combining those aspects.

On that point, Onibokun (1974) synthesised all those said aspects in order to examine their correlations. Thus, their collective and individual influencing on consumers' housing satisfactions was to be found.

Onibokun (1974) firstly agreed with Fraser (1969) on that it was significantly important for architects, planners and others who concerned about inhabitants' satisfactions with their housing to propose an appropriate system to study the comprehensive housing habitability. And then, Onibokun (1974) developed the Housing Habitability System which described The Proposed Tenant Dwelling Environment Management Interactive Model to study the comprehensive housing habitability in terms of RHI (Relative Habitability Index of dwelling) and RSI (Relative Satisfaction Index of tenants).

The habitability which was firstly described as a human concept was referred to a type of tenant-dwelling-environment-management interactive model. It produced a type of dwelling as regards to the tenant component of the system in consideration of the tenants' housing needs and expectations Onibokun (1974).

Furthermore, the habitability as a human idea involved four interactive subsystems consisted of the tenant, dwelling, environment and management subsystem. It determined the relative habitability level in terms of relative habitability index of dwelling and relative satisfaction index of tenants (See Figure 2.1, The Habitability System).



**Figure 2.1: The Habitability System**

RHI = Relative Habitability Index (of dwelling)

RSI = Relative Satisfaction Index (of tenants)

Source: The Tenant-Dwelling-Environment-Management Interaction System, Onibokun (1974).

The following parts gave the explanations on the Habitability System through subsystem-by-subsystem. Although the sufficiency of the housing unit was underlined by some researchers as the housing unit was an important component in the housing habitability system with the determinants of the structural quality, the internal space, the housing amenities and the household facilities, the housing unit was argued by some authors, such as Michelson (1970), Onibokun (1974) because the housing unit was not the only element in the housing habitability system which meant that the housing unit was only a subsystem of the whole system (see Figure 2.1).

In addition, with regard to the Housing Habitability System, the environment entity was treated as a subsystem of the whole system. Thus, the variables of the environment interactively brought some negative or positive impacts on the residents' mentality and on residents' satisfaction with the dwelling in the context of the housing unit and the residents both having a lot of contacts with the variables of the environment.

The following subsystem regarding the management, the relative rules and regulations were arranged either by the local Housing & Planning Authorities and the state or the National Housing and Planning Authorities and Ministries or the other arms of the bureaucratic system. Moreover, the relative rules and regulations were implemented by appointed officials in order to guide the administration of the housing unit and also brought some impacts on the inhabitants.

The last one, the most important subsystem or the central focus of the conceptual model of habitability was the inhabitant who received all the suggestions from all other subsystems and had the final decisions on what the habitability was. At the same time, each person whose feeling about the housing habitability was different from the other person's because each person was separated by the living environment.

Therefore, the inhabitant's participation was an indispensable subsystem in the Housing Habitability System. Without inhabitant's participation, the residential satisfaction was hard to be measured because the physical environment could not explain the levels of satisfactions.

#### **2.2.3.2 Systemic Model of RS**

Despite of the fact that the concepts were integratedly gained from the tenant-dwelling-environment-management interaction system created by Onibokun (1974), Amerigo and Aragonés (1990) and Amerigo and Aragonés (1997) mainly focused on analysing each process in the said interaction system, i.e. the cognitive, the affective and the behavioural processes on the basis of a proposed conceptual framework.

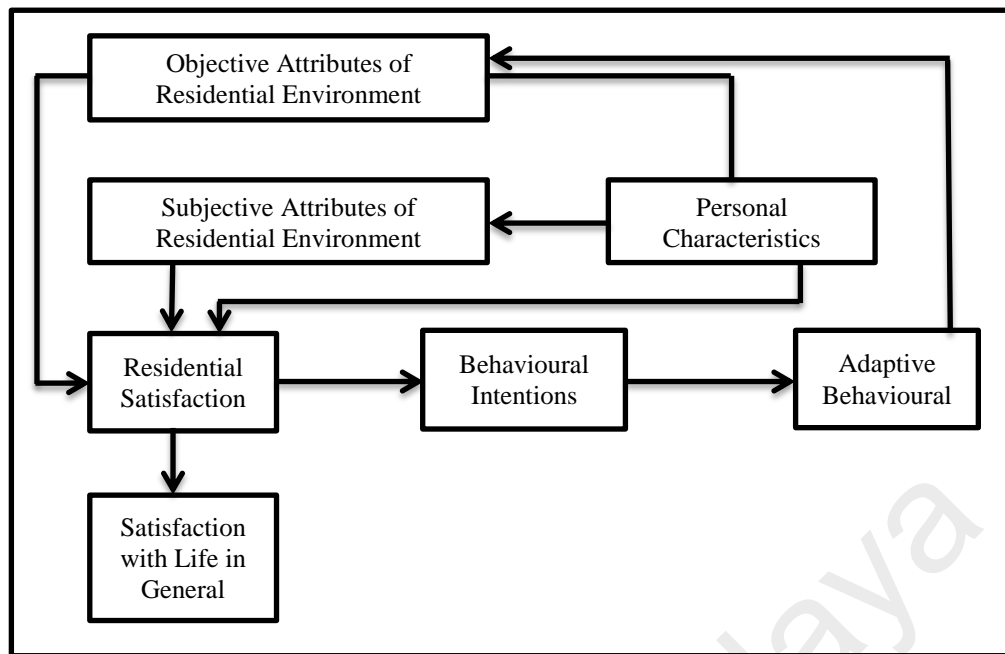
Furthermore, Amérigo's (1990, 1992a) conceptual framework was more detailed than the previous model of residential satisfaction in studying and examining the dynamic interaction between the individual and his/her living condition.



With respect to the residential satisfaction can be a criterion variable or a predictor variable, Amérigo's (1990, 1992a) conceptual framework which was presented in Figure 2.2 showed that the residential satisfaction as the result of this evaluation (as a criterion variable) stated what the individual got the experiences from his/her residential environment and also guided (as a predictor variable) the individual's behaving in consistent with that environment.

Thus, the interaction system in focus of the residential satisfaction started from the objective attributes of the residential environment that were evaluated by the inhabitants in the context of their personal characteristics to become the subjective attributes of residential environment. Besides, some variables in their personal characteristics, such as the inhabitants' social-demographic characteristics affected the inhabitants' levels of residential satisfactions.

In the meanwhile, some variables in the inhabitants' personal characteristics, such as their 'residential quality pattern' (Amérigo, 1990, 1992a) whereby they could compare their existing residential environment with their ideal one affected the level of residential satisfaction directly.



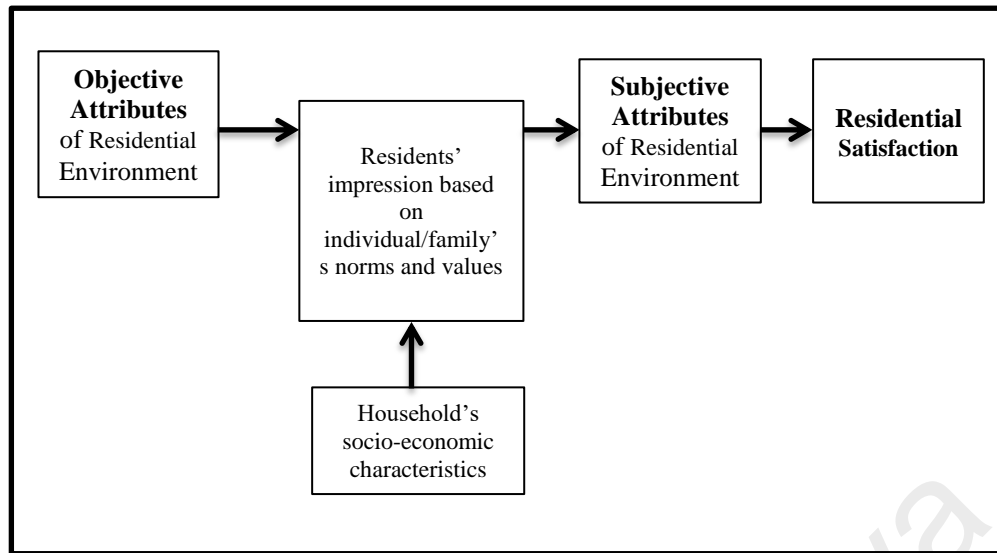
**Figure 2.2: Systemic Model of RS**

Source: Amerigo and Aragonés (1990, 1997) and Aragonés and Corraliza (1992)

### 2.2.3.3 Mohit et al.'s RS Model

The systemic model of residential satisfaction proposed by Américo (1990, 1992a) was the prototype of which Mohit et al. (2010), (2011), (2012b), and (2015) created a conceptual model of residential satisfaction which to assess the level of residential satisfaction. Additionally, Mohit et al. (2010) claimed that the level of residential satisfaction was determined by the relationship between objective and subjective attributes of residential environment.

In Figure 2.3, it showed that the level of residential satisfaction of the inhabitant was determined by the subjective attributes of residential environment which came from the evaluation on the objective attributes of residential environment. In the meanwhile, the inhabitant's evaluation was influenced by the individual and household's socio-economic characteristics.



**Figure 2.3: Mohit et al.'s RS Model\***

\*Relationship between objective and subjective attributes of residential environment to the determination of residential satisfaction

Source: Mohit et al. (2010), (2011), (2012b), and (2015)

#### **2.2.3.4 The Components/Variables of Three Models of RS**

Commencing with the Habitability System to evaluate the level of residential satisfaction of the inhabitants in a Canadian public housing project, several variables from the habitability and non-habitability factors were put into discussions. Those variables were originally from the dwelling subsystem consisting of the type and the quality. The environment subsystem in which the dwelling was located included the physical, psychological, and human factors. The management subsystem comprised the pattern and the type of management.

Thereafter, the 28 variables as the selected attributes of habitability from the dwelling subsystem in terms of the type and the quality were displayed in Table 2.1.

Table 2.2 showed that the 27 variables described as the selected attributes of habitability from the environment subsystem with respect to the physical, psychological, and human factors which were surrounding the dwelling.

Table 2.3 indicated the 19 variables as the selected attributes of habitability from the management subsystem regarding the pattern and the type of management.

**Table 2.1: Selected Attributes of Habitability from the Dwelling**

1. Your bedrooms	15. Clothes closets in this house
2. Your living-room	16. The storage space in your house
3. Your bathroom (s)	17. The hot water supply in this house
4. Your kitchen	18. The brightness or light in this house during the daytime
5. Your dining area	19. The exterior noise transmission
6. Your basement, if any	20. The electric lighting in this house
7. The layout of the rooms, that is, the design in relation to your daily life	21. Heating system in this house
8. The location of the different rooms	22. Space or place for children to play inside this house
9. The colour and the painting of the rooms	23. Space or place for children to study, read, or do their homework
10. The quality of the walls of your house	24. Space or place for other family members to do things on their own
11. The quality of the floor of your house	25. The design and outside appearance of this building
12. The windows in this house	26. The privacy within this dwelling
13. The doors in this house	27. Type of house
14. The stairs, if any, in this house	28. In-home equipment, such as light fixtures, laundry facilities

Source: The Habitability System, Onibokun (1974)

**Table 2.2: Selected Attributes of Habitability from the Environment**

1. The location of schools your children attend	15. The amount of common space you and others in this neighbourhood can use
2. The quality of schools for your children	16. The playground for the children living in this housing project
3. Location of grocery store	17. The nearby recreational facilities for your household and other tenants here
4. Location and quality of other shopping facilities	18. Your privacy from the people around here
5. The public transportation facilities and services in this area	19. Compare the physical condition of this project with private houses around
6. The location of housing relative to distance from your place of work	20. Your neighbourhood's impression of this project with private houses around
7. The distance from your friends and relatives	21. The impression or opinion that people in this city have about your house
8. The design and outside appearance of this housing project	22. The impression or opinion that people at your job have about your house
9. Physical condition and appearance of your neighbourhood	23. How you get along with other tenants living in this project with you
10. The public services available to the people living here	24. How your co-tenants keep up or maintain their compound
11. Parking facilities available to people living here	25. Noise in this area
12. The type of people living in this neighbourhood	26. Air pollution
13. The work done by policemen in this area	27. The reputation of this area
14. The outside "private spaces" that you and your family can use	

Source: The Habitability System, Onibokun (1974)

**Table 2.3: Selected Attributes of Habitability from the Management**

1. The way the management responds to necessary repairs within your house	11. The officials of the Housing Authority do not interfere with my privacy
2. The way the officials of the Housing Authority treat you when they visit your dwelling	12. The superintendent or caretaker of my apartment does not interfere with privacy
3. The way the superintendent or caretaker attached to this project deals with you	13. Tenants are free to arrange their apartments the way they like
4. The manner or the way in which rent is collected from you	14. The general supervision of this project is satisfactory
5. The idea of you providing your own stove and refrigerator	15. The Housing Authority handles my complaints to my satisfaction
6. Facilities provided for you to keep your garbage until it is collected	16. It is easy to get in touch with the management of this project
7. The garbage collection system (pick-up system)	17. Rent paid now
8. The way the houses here are taken care of with regard to cleanliness and sanitation	18. Rent compared with what co-tenants pay
9. The rules which forbid you from doing certain things here	19. Rent compared with what people pay in comparable but privately owned houses
10. The way rules are enforced here	

Source: The Habitability System, Onibokun (1974)

Followed by the systemic model of residential satisfaction, mainly focused on analysing each process in what Onibokun (1974) mentioned about interaction system, i.e. the cognitive, the affective and the behavioural processes. The variables or the

dimensions regarding the cognitive aspect in individual-residential environment interaction were summarised in Table 2.4.

**Table 2.4: Four Dimensions Regarding the Cognitive Aspect**

Three Components	Four Dimensions
The house	A general dimension: the quality or the basic infrastructure A more specific dimension: the overcrowding
The neighbourhood or surrounding	Residential safety
The internal representation of the residential environment	the relationships with neighbours

Source: A Systemic Model of Residential Satisfaction, Amerigo and Aragonés (1990, 1997) and Aragonés and Corraliza (1992)

The above four important dimensions with respect to the cognitive aspect in individual-residential environment interaction respectively showed the three components consisting of the house, neighbourhood, and internal representation of the residential environment.

Furthermore, as Onibokun (1974) talked about the type and the quality regarding the dwelling subsystem, Amerigo and Aragones (1997) concluded that a general and a more specific dimensions regarding the house took the quality or the basic infrastructure and the overcrowding into considerations.

In the meanwhile, the neighbourhood or surrounding as Onibokun (1974) defined the environment subsystem in terms of the physical, the psychological and the human factors was described by Amerigo and Aragones (1997) as an important dimension especially the residential safety.

Besides, what Onibokun (1974) talked about the management subsystem in his interactive model, Amerigo and Aragones (1997) explained the fourth dimension formed by the relationships with neighbours to represent the internal residential environment.

As empirical research focusing on finding out the determinants of residential satisfaction, it criticised that Onibokun's (1974) interactive model of residential satisfaction could not explain well because the variables in three subsystems were not defined well.

Therefore, the approach proposed by Amerigo and Aragonés (1990) (see Figure 2.4) gave a good explanation on the variables in residential satisfaction by taking affective aspect into account. The systemic model of residential satisfaction was established by the objective and subjective attributes, as well as the individual and household's characteristics.

Furthermore, Tognoli (1987) concluded that a lot of variables of residential satisfaction were found from different residential circumstances at different times. However, the problem was how to unify those different variables to challenge Onibokun's (1974) interactive model.

Nonetheless, the approach built upon the objective and subjective attributes within a systemic model of residential satisfaction concluded all variables from different studies to be categorised by two dimensions, i.e. the physical vs. social dimension and the objective vs. subjective dimension (Amerigo & Aragonés, 1997).

Thus, several variables of residential satisfaction which were found from various studies and were categorised by the approach (Amerigo & Aragonés, 1990) were concluded in Figure 2.4 where it showed the different variables of residential satisfaction.

Subjective			
	Degree of maintenance of neighbourhood Appearance of place Apartment evaluation Administration of neighbourhood	Safety Friendship Relationship with neighbours Attachment of residential area Perception of overcrowding Homogeneity	Social
	Physical  Single-family vs multi-family Electricity Noise level	Owner-rented Time living in house Time living in neighbourhood Age Life cycle Presence of relatives in neighbourhood	
Objective			

**Figure 2.4: Different Variables in Systemic Model of RS**

Source: Amerigo and Aragonés (1990, 1997) and Aragonés and Corraliza (1992)

As the relationship between residential behaviour and satisfaction being the focus of the studying, Fishbein and Ajzen (1974) concluded that the inhabitants' behaviours were compliance with their attitudes. It meant that the inhabitants who were satisfied with their residential environment also had positive attitudes towards their residential environment in terms of good relations with neighbours or frequent visits to neighbours, participation in neighbourhood activities, etc.

However, Amerigo and Aragonés (1997) did not support that the inhabitants being satisfied with their residential environment led to the inhabitants' behaviours were compliance with their attitudes.

At the same time, Amerigo and Aragonés (1997) agreed with Jansen (2013a) on that the housing satisfaction referred to the gap between what inhabitants preferred and what inhabitants had, i.e. that inhabitants appreciated what they already had in the current residential situation which was whether good or not was more important than the current living situation was not what they preferred even was good.



And then, some studies argued and gave their interesting findings that the residents who did not make any improvements to the house and did not do anything to improve the surroundings were testified more satisfied than those who already had.

Furthermore, Amerigo and Aragonés (1997) agreed with Bauer (1951); Michelson (1970) and Onibokun (1974) on that a full physical parts fulfilled habitation might not satisfy the needs that the inhabitants required.

They claimed based upon their studies that participation in neighbourhood activities and good relations with neighbours or frequent visits to neighbours were related to a higher level of residential satisfaction of the inhabitants.

Therefore, the level of residential satisfaction of the inhabitants did not have some certain associations with the relationship between attitudes and specific behaviours.

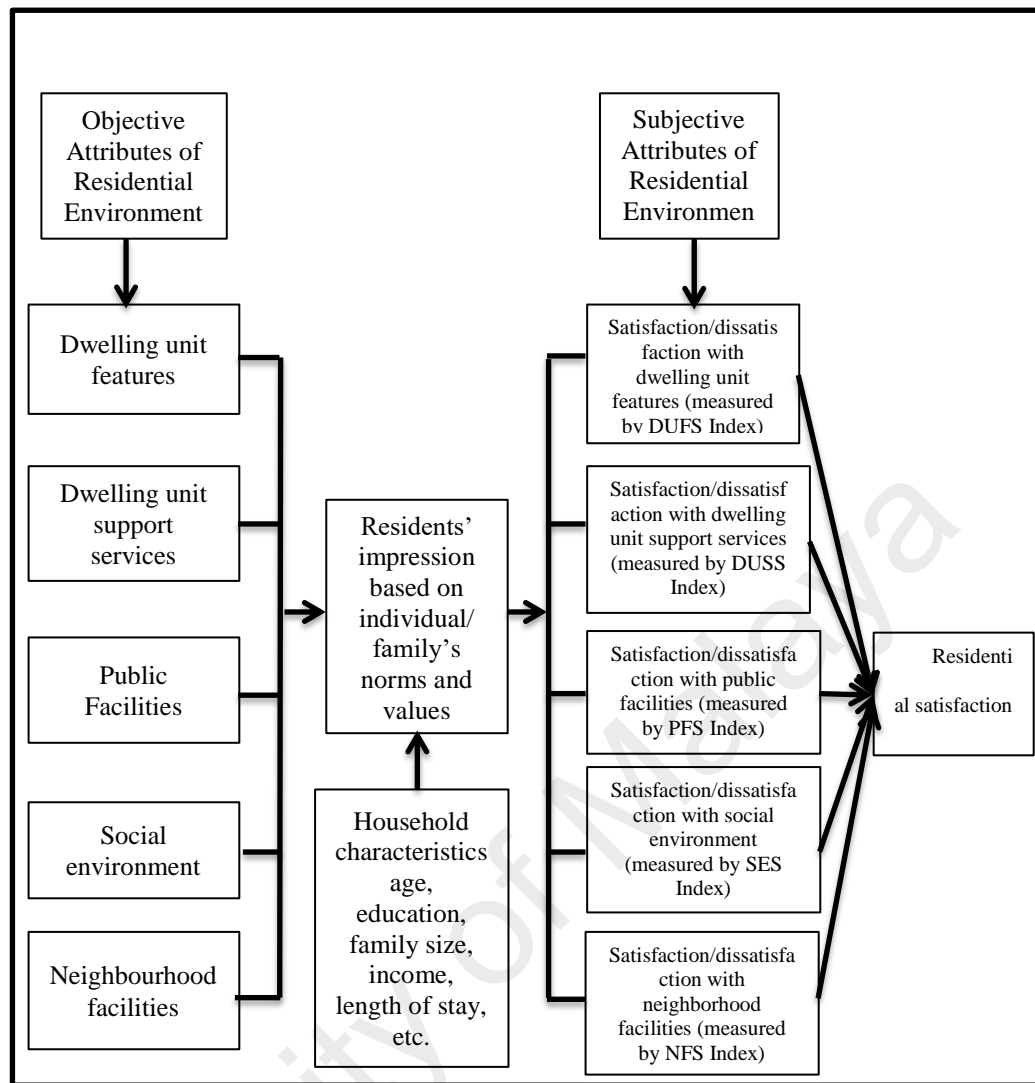
In addition, as residential satisfaction being considered as a criterion variable in this current study, the integrated approach of residential satisfaction was learnt from Mohit et al. (2010), (2011), (2012b), and (2015) whose study about the relationship between objective and subjective attributes of residential environment to determine the residential satisfaction (see Figure 2.5). As a matter of fact, the Mohit et al.'s residential satisfaction model was created on the basis of the components in the interactive model in terms of tenant, dwelling, environment and management subsystems (Onibokun, 1974) and the approach built upon the objective and subjective attributes towards the affective aspect within a systemic model of residential satisfaction (Amerigo & Aragonés, 1997).

Furthermore, those factors/variables in the integrated approach of residential satisfaction were concluded from various studies by Onibokun (1974); Amerigo and Aragonés (1990); Amerigo and Aragonés (1997); Tognoli (1987); Fishbein and Ajzen

(1974); Jansen (2013a); Bauer (1951); Mohit et al. (2010); Michelson (1970). Those variables were shown in Figure 2.5.

Regarding those factors/variables grouped into 5 components, Mohit et al. (2010) claimed that the five components formed the basis of residential satisfaction of the inhabitants based upon the residential satisfaction was a complicated construct of the indices of satisfaction in terms of dwelling unit features, dwelling unit support services, public facilities, social environment and neighbourhood facilities.

Therefore, Mohit et al. (2010); (Mohit & Nazyddah, 2011) put these five components into their conceptual model of residential satisfaction according to what the past researches had done with the residential satisfaction in public housing (see Figure 2.5).



**Figure 2.5: Mohit et al.'s RS Model with Five Components\***

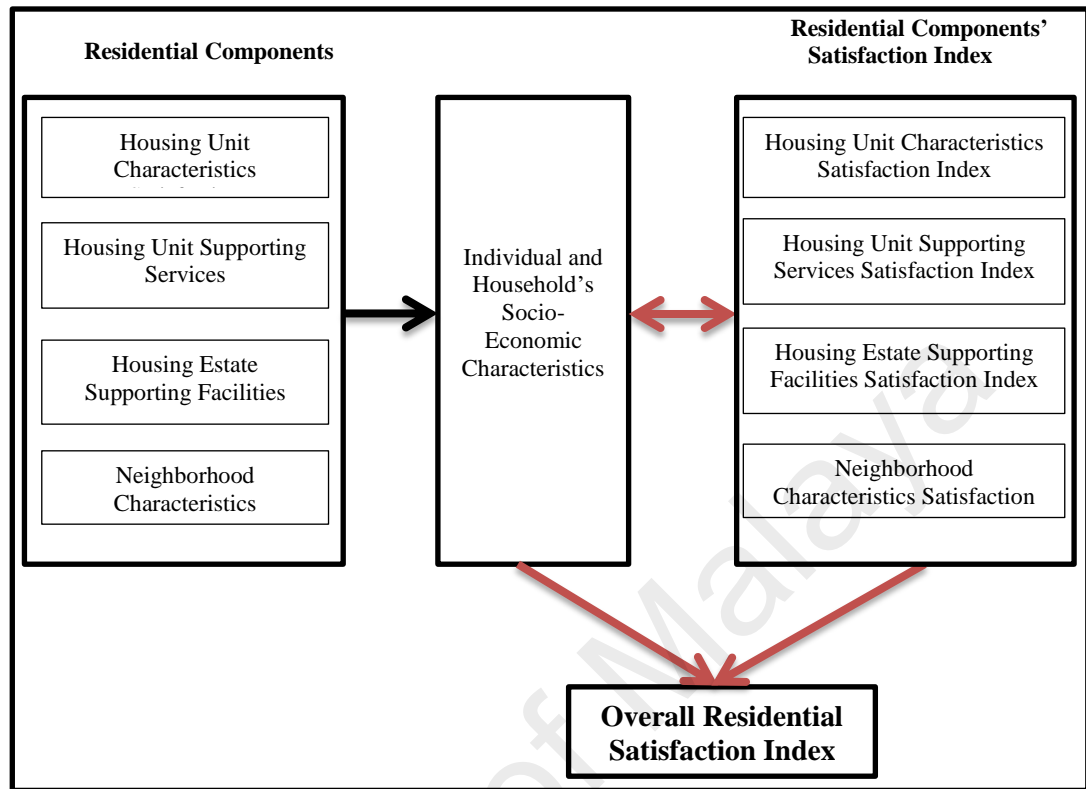
\*Relationship between objective and subjective attributes of residential environment to the determination of residential satisfaction

Source: Mohit et al. (2010), (2011), (2012b), and (2015)

### 2.2.3.5 Conceptual Model with Components of This Research Study

Based upon Ibem and Amole, Posthumus, Bolt, and van Kempen, Huang and Du, and Mohit & Mahfoud (2014), (2014), (2015), and (2015) found that the individual and household's socio-economic characteristics not only had correlations with satisfactions of residential components (Mohit et al.'s model), but also were correlated with the

overall residential satisfaction, this research study which made one conceptual model with components displayed as follows.



**Figure 2.6 Conceptual Model of This Study**

Figure 2.6 illustrated that the residents gave their assessments on the satisfaction levels of four residential components on the basis of their own households' characteristics. And then, the levels of overall residential satisfactions of inhabitants would be revealed based upon the results of satisfactions of four components. At the same time, the environmental situations of four residential components have been affecting residents' social and economic status quo. Thereupon, the current and future living environment has been influencing residents' overall socio-economic statuses.

## **2.3 RS in Different Contexts of Housing in Different Countries**

### **2.3.1 Different Factors Affecting RS in Housing**

Although some authors challenged the conventional usage of households' residential satisfaction such as Galster (1985) introduced 'marginal residential improvement priority' which made the significant differences from households' residential satisfaction, many other authors criticised that the households' residential satisfaction was still used as a guide for housing policy and development.

Assessment of residential satisfaction in different types of housing placed more emphases on the housing orientations and the social values (Hartman, 1963). It was as Francescato, Weidemann, and Anderson (1989); Fraser (1968); Galster (1980); Galster and Hesser (2016) concluded that the relative habitability of dwellings and the users' views on the built environment were applied through the approach of residential satisfaction so as to indicate the compositional and contextual correlations.

Besides, Bechtel and Churchman (2003); Gifford (1987) suggested that the principles of environmental psychology should be applied to analysing those psychological factors that affecting users' views on the residential environment.

Moreover, Adriaanse (2007) not only agreed on Galster and Hesser's (2016) theory of residential satisfaction introducing an integrative and more comprehensive approach to measuring the residential satisfaction, but Adriaanse's (2007) findings elicited that the satisfaction with subdomain 'residential social climate' was the most important component of overall residential satisfaction.

Balestra and Sultan (2013) gave further explanations on that the residential satisfaction was a broad concept which was affected by multidimensional aspects including physical, social and neighbourhood components, as well as the psychological and socio demographic characteristics of the residents.

Balestra and Sultan (2013) explored the relationship between households' residential satisfaction and a number of multidimensional aspects and found that there had a complex relationship between residential satisfaction and housing characteristics consisting of features of neighbourhood, and individual and household's socio-demographic characteristics (e.g. age, gender, education, etc.).

Thus, the most authors gave the same conclusion that understanding those factors was a key to planning a successful and effective housing policy.

Furthermore, many authors found out more factors which more or less affected the residential satisfaction in the context of the different residential environmental situations, such as Al-Homoud (2011) studied how the physical and social neighbourhood attributes influenced the community satisfaction.

In terms of the strongest factors to influence the community satisfaction were socialising and life satisfaction comparing to other factors such as services, policing, safety, traffic, local government, school quality, healthcare facilities, public transportation, and parks, the Badia communities were more affected by social interactions than the physical features and provision of services. Thus, it recommended those planners and decision makers to consider the sociocultural environment in the forthcoming developments in the rural Badia to bring more satisfactions to the local villagers.

Speaking of Turkey, Bekleyen and Korkmaz (2013) found that today's users did not accept the similarities between the modern and traditional living spaces in Sanliurfa city located in south eastern Turkey. Further studies showed that some changes in the design of their houses regarding the spatial location characteristics of neighbourhood brought more satisfaction to the users. In the meanwhile, the setting and characteristics of the settlement were the most concerned.

One more factor described as a crowding issue or inner urban higher-density was brought into studies of the residential satisfaction (Bonnes, Bonaiuto, & Ercolani, 1991). They proposed a contextual approach to the study of crowding. Their study was carried out at a specific urban place (a neighbourhood in Rome) inside a large metropolitan area which had the socio-physical unity and crowding occurs.

Furthermore, on account of the perception of crowding expressed by the residents, their study aimed to investigate the relationship between negative evaluation of social density (crowding) and inhabitants' residential satisfaction. They concluded that there had a strong saliency of the crowding evaluation within the overall residential satisfaction and also within the residents' concerns with the spatio-social openness-closeness of the neighbourhood environment.

Based upon what Bonnes et al. (1991) concluded, Buys and Miller (2012) carried out their study on the predictors of residential satisfaction in inner urban higher-density environments in view of 'negative evaluation of social density (crowding)'.

Although increasing the population density of urban areas was a key policy strategy to sustainable growth, Bonnes et al. (1991), Buys and Miller (2012) found that many residents often viewed higher-density living as an undesirable long-term housing option.

Buyts and Miller (2012) revealed that the specific features of housing unit and neighbourhood that were critical in predicting residential satisfaction in terms of satisfaction with housing unit location, design and facilities, noise, walkability, safety and social environment of housing area and social contacts in the neighbourhood.

Thus, Buyts and Miller (2012) concluded that knowing those factors could help planners and designers during the process of developments and also enhance quality and ensure a lower resident turnover rate. The most important thing was to facilitate acceptance and understanding of high-density living.

The factors moving to the individual characteristics, life quality and other requirements influencing housing and the physical and social features of the environment, Kellekci and Berköz (2006) ascertained that the factors increasing levels of satisfaction varied regarding the demographic and socio-economic structural differences of the users.

The factors that led to satisfaction with housing and residential environment contained so called potential factors which had the influences on the appreciation of dwelling aspects. S. J. Jansen's (2013a) research focused on inhabitants' perceptions of residential quality concerning 23 different dwelling aspects and 2 additional potential factors consisting of preference and experience.

It revealed that residents who lived according to their preferences gave higher appreciation results than residents who did not. Jansen (2013a) considered this kind of result even to be applied to low quality housing.

Furthermore, as household's preference was independent, the residential satisfactions of those households who appreciated their current housing situations based on their experiences were more satisfied than those households who did not.



It was confirmed that the impact of both preference and experience were concluded as an interaction effect in residential satisfaction assessment.

Based upon the positive effect of experience on appreciation was larger in residents who lived in a housing situation that they did not prefer, Jansen (2013a) expected the result to be like that the impact of experience works would decrease the 'gap' in residential satisfaction due to the discrepancy between what residents had and what they wanted.

Berkoz, Turk, and Kellekci (2009) continued with the conclusion drawn in 2006 and to give a further study on specifying those factors which reciprocally influenced residents' location choices and the level of satisfaction in housing and environmental quality.

Moreover, the results turned out that on account of the factors of centrality, accessibility to open areas, accessibility to health institutions, the maintenance of the mass housing environment, satisfaction in recreational areas, satisfaction in the social structure and physical features of the settlement contributed most to predicting residents' location choices at central and peripheral districts in the Istanbul metropolitan area, mass housing users preferred central districts over peripheral ones.

Therefore, Berkoz et al. (2009) declared that mass housing users, who lived in central districts and peripheral areas in Istanbul, Turkey, had to be studied separately.

Moreover, the requirements from their living spaces and their ways of how to look at their residential surroundings which were outstandingly different in the case of location choices would influence the level of residential satisfaction of the mass housing users.

### **2.3.2 Separate Assessment of RS in Different Contexts of Housing**

As some authors did assessments of residential satisfactions in different types of housing with different contexts, they found that the findings were significantly different. Thus, the different types of housing with different contexts should be studied separately (Adriaanse, 2007; Carvalho, George, & Anthony, 1997; Galster & Hesser, 2016; Grinstein-Weiss et al., 2011; Hourihan, 1984; James, 2008; Li & Wu, 2013; McCray & Day, 1977; Mohit & Nazyddah, 2011).

Regarding this point, Adriaanse (2007) found that the findings from a selected sample of 75,034 respondents represented for the population of Dutch residents in 2002 were in a way similar with Galster and Hesser's (2016) findings drawn from analysis of 767 households sampled in Wooster, Ohio that the demographic and socio-economic structural almost similar of the inhabitants were probably supposed to live adjacently.

To elaborate on the inhabitants with almost same background who were probably supposed to live closely, the residential satisfaction should be examined by housing type (Hourihan, 1984). The 381 females disaggregated into four housing subgroups in Cork, Ireland, Hourihan (1984) chose these groups with significant differences in their level of satisfaction, their perception and evaluation of several neighbourhood attributes, and their personal characteristics and at first used a regression model of satisfaction for the entire sample which only explained about 39% of the variation, but it elicited the intergroup differences.

Thus, the separate regression was asked to be introduced to the four groups which explained an average of 51% of the variance in residential satisfaction. Therefore, the residents of public housing and older street-type housing had significant differences both from each other and from persons living in privately-built homes and speculative estates.

Thereby, Grinstein-Weiss et al. (2011) claimed that the relationship between homeownership and neighbourhood characteristics satisfaction amongst low- and moderate-income households should be studied separately.

Grinstein-Weiss et al. (2011) found that most research works on the relationship between homeownership and neighbourhood characteristics satisfaction used nationally representative samples of homeowners and ignored the exclusive experience of low- and moderate-income homeowners.

In terms of subsidised and nonsubsidised renters, James (2008) employed the cross-tabulation analysis on 43,360 households in the 2005 American Housing Survey controlling for subsidised/nonsubsidised renters and found that the subsidised renters showed notably higher satisfaction with their housing unit characteristics and neighbourhood characteristics satisfaction comparing to those nonsubsidised renters with similar spatial location characteristics of neighbourhoods.

Furthermore, McCray and Day (1977) gave a research on comparison of identifying the housing related values, aspirations, and satisfactions between a group of randomly selected low-income rural residents living at private dwellings and a group of randomly selected low-income urban residents living at public housing. Thus, they found that the public housing units provided the residents with the physiological needs, but those deficiencies in environmental factors such as location, community services, and social aspects of the environment frustrated satisfaction of the higher order needs comparing to the private dwellings.

Even Mohit and Nazyddah (2011) claimed that housing satisfaction of Malaysian Selangor Zakat Board (SZB) social housing programme, which was comprised of the transit housing, the individual housing, and the cluster housing, had to be studied

separately in terms of objective measurement and subjective measurement. Accordingly, the Selangor Zakat Board (SZB) would understand what the current situation of each social housing programme was and how to improve its management.

Therefore, the different types of housing with different contexts where the different residents with different demographic and socio-economic structural differences were living should be studied separately.

To assess residential satisfaction in different types of housing, understating the factors was a key to planning successful and effective housing policies.

### **2.3.3 Characteristics of China's LCH**

The characteristics of China's low-cost housing have decided this current research work to review the factors affecting public and commodity housing's residential satisfactions.

Before discussing the residential satisfaction in developed and developing countries, it should be clear about what China's low-cost housing is. In terms of the characteristics that China's socialism had, the definition of China's low-cost housing is certainly different from other countries'.

The Chinese low-cost housing (in Chinese, named Jingji Shiyong Fang or JingShi Fang), before this appellation, most published paper named "economic and comfortable housing, short form as ECH" (Huang, 2012; Huang & Du, 2015).

Now Central Compilation & Translation Bureau of China which had the highest level of decision on English translation of any Chinese official documents in China gave the latest name to this particular type of housing as Low-Cost Housing (LCH) instead of 'affordable housing' or 'economic and comfortable housing' in consideration of its

primary characteristic being as economy, i.e. its price was much lower than the similar commodity housing (Jia, 22nd June 2011).

Admittedly, the affordable housing overseas was literally described as a commodity housing whose targeted customers were medium and medium low-income groups and provided full ownerships to customers (Gur & Dostoglu, 2011; Paris, 2006; Paris & Kangari, 2005; Wang & Murie, 2011).

In the meanwhile, the Low-Cost Housing was the main type of low-income housing [in Chinese, named Baozhang Fang (Jia, 22nd June 2011)] in each city comparing to another two types of low-income housing such as Low-Rent Housing and Public Rental Housing (Huang, 2012).

The LCH was a unique type of housing in China, because in other countries there had two types of low-cost housing named public and private low-cost housing whereby could tell the differentiations in the ownerships of these two types of low-cost housing (Aziz & Ahmad, 2012; Hashim, Samikon, Nasir, & Ismail, 2012; Mohit et al., 2010; Salleh, 2008; Teck-Hong, 2012; Wahi, bin Junaini, & Ieee, 2012).

However, the LCH in China was defined by State Council as an ownership-oriented housing provided by developers on free land allocated by municipal governments and sold by municipal governments to the eligible households at given prices by governments from which developers were permitted to get a 3% profit margin (Guowuyuan guanyu jiejie chengshi di shouru jiating zhufang kunnan de ruogan yijian, 2007).

Accordingly, the LCH actually did not have differences in its ownership in China and its ownership was divided into two parts of which one part belonged to municipal government and another part belonged to resident.

In terms of the average price of low-cost homes, it was about 50-60% of the average price of all housing during 1998-2006 (Huang, 2012; Huang & Du, 2015).

Meanwhile, comparing to commodity housing which was sold at the open market with “full property rights, such as right of occupancy, the right to extract financial benefits, the right to dispose of the property through resale, and the right to bequeath it to others” (Huang, 2012; Huang & Du, 2015), the LCH which was sold at subsidised prices provided those “eligible so-called applicants” with “partial property rights”, which meant that homeowners only had the right of occupancy and use (Huang, 2012; Huang & Du, 2015).

In that case, it was said that those residents who lived at low-cost houses were not allowed to sell their properties on the open market for profit within the first five years (which might be more than 5 years made by the state-level according to the evaluations on different situations of real estate markets in different city-level, for example, Xuzhou’s city government made a temporary decision on the first 10 years that residents could not sell their houses on open markets (Guowuyuan guanyu jie jue chengshi di shouru jiating zhufang kunnan de ruogan yijian, 2007)).

The reason why the residential satisfaction of China’s low-cost housing needed to be deeply studied was that China’s LCH had two identities which were compiled by Huang (2012) based upon various government’s documents to indicate ownership and subsidies.

In terms of ownership and subsidies, they not only had the differences from other countries’ public and private low-cost housing, China’s commodity housing, and China’s another two types of low-income housing, but also did they have to indemnify households’ residential quality.

Regarding those eligible applicants who were low and middle-income households (before 2007) and after 2007 were low-income households with difficulty in buying house, their residential quality had to be assured and at same time the low-cost housing would bring some certain economic benefits to homeowners.

For those who had full ownerships or planned to purchase ownerships, they not only cared about full ownership, but also further investing money in low-cost houses was their most concerns because the low-cost housing at very least was a profitable investment comparing to other two types of low-income housing with only one housing tenure “rent”.

Meanwhile, when China’s central government at first time introduced low-cost housing to people, the LCH was built in accordance with a type of commodity housing with social security function.

Thus, China’s LCH as a type of commodity housing firstly had the characteristics of commodity housing which meant that it had to fulfil some standards and requirements made by commodity housing. Secondly, it had something economic value on the open market in the near future as the normal commodity housing did have.

Besides, China’s LCH also as a type of low-income housing targeted at low-income households with difficulty in buying house. The selling price was controlled by the municipal government. In addition, the socio-economic characteristics of these specific groups, their basic living needs, and LCH’s practicality would be taken into considerations by the local government (Guowuyuan guanyu jiejie chengshi di shouru jiating zhufang kunnan de ruogan yijian, 2007).

In a word, if China's low-cost houses and residential environment were not satisfied by those homeowners, they probably thought that they should have chosen low-rent houses or public rental houses at the very beginning instead of spending a considerable amount of money in buying low-cost houses with more dissatisfaction of "partial ownerships" as the low-rent housing and public rental housing both did not provide ownerships at the present stage.

Thus, the assessment of residential satisfaction in China's low-cost housing in a way could clearly illustrate what situations those current residents were and what those current residents required. Then, the municipal governments were aware of how to improve their works in order to fulfil those residents' requirements.

Hence, the more factors being assessed made more accurate of residential satisfaction in China's low-cost housing.

Under the guidance of the integrated approach of residential satisfaction mentioned above and on the basis of the characteristics of China's LCH regarding which the municipal governments more focused on its social security than its economic characteristics, the factors which affected residential satisfaction of LCH would be studied from public housing (public low-cost housing, social housing, etc.) and commodity housing (private low-cost housing, all categories of commodity housing, etc. ) in developed and developing countries.

#### **2.3.4 RS of Public Housing in the Developed and Developing Countries**

Heretofore, rivers of ink had been devoted to the research to discuss the factors which affected the overall satisfaction of public housing in developed and developing countries, such as Fauth, Leventhal, and Brooks-Gunn (2004) talked about lifting up the



objective attributes of residential environment could change residents' personal conditions from self-degradation, sociopath into a better condition.

Thereupon, it could change their subjective attributes of residential environment based upon a positive life orientation, which was found by Rent and Rent (1978), that had enormously significant correlations with housing unit characteristics satisfaction.

In their studies, they picked up Yonkers, New York as their case study where the low-income minority families living in public and private housing in high-poverty neighbourhoods had chances via lottery to move to publicly funded attached row-houses in seven middle-class neighbourhoods.

After almost 2 years of observation and interviewing on 173 Black and Latino families who moved and 142 demographically similar families who remained in high-poverty neighbourhoods, Fauth et al. (2004) applied multiple regression analysis and found that the personal conditions of those 173 Black and Latino families were firstly changed more differently than other 142 families in violence and disorder, experience health problems, abuse alcohol, receive cash assistance being reduced heavily.

Furthermore, secondly changing of subjective attributes of residential environment were made by those 173 Black and Latino families in terms of being satisfied with neighbourhood resources comprising garbage collection, recreational facilities, transportation, schools and medical care, experience higher housing quality, and be employed.

Thus, the reason why a considerable number of scholars had been studying about the factors was because they wanted to find out the significant predictor variables of residential satisfaction, whereby the governments could be led to know from which

factor they should pay very close attention to and would do some improvements to enhance the residents' habitability.

For instance, Varady and Preiser (1998) evaluated how this new public housing programme was by way of assessing satisfaction levels of residents. And then, they suggested the municipal government to pay very close attention to these three significantly correlated components containing management, neighbourhood issues, and physical housing conditions.

Amongst these three components, neighbourhood social interaction, tenant involvement policies, and age as predictor variables given by multiple regression analysis would lead the municipal government where to enhance the residential habitability.

#### **2.3.4.1 Factors Affecting RS in Public Housing in Developed Countries**

In developed countries, as diversified types of public housing consisting of public low-cost housing, social housing, national rental housing, and public rental housing, etc. caught the scholars' attention of studying, the scholars should study about which determinants among those factors in different types of public housing affected the residential satisfaction.

##### **(a) *Four Residential Components and RS***

A complicated relationship between residential satisfaction and housing unit characteristics consisting of neighbourhood's features was revealed by applying ordered probit analysis to the result of two household surveys. Furthermore, Balestra and Sultan (2013) presented that individual and household's socio-demographic characteristics, such as age, gender and educational attainment played a secondary role once the housing unit and neighbourhood characteristics were controlled for.

Comparing to Mohit et al.'s (2010), (2011), (2012b), and (2015) five components and Huang & Du's (2015) four components and individual and household's socio-economic characteristics, Nam and Choi (2007) found that three components of satisfaction comprising the residential environment satisfaction, social satisfaction and economic satisfaction determined the residential satisfaction level in Korean national rental houses.

Furthermore, Nam and Choi (2007) found that residential environment satisfaction was highly correlated with three factors such as the house structure, educational environment and the relationship with management staffs.

Meanwhile, the four factors described as the relationship with the neighbours, confidence on the neighbours and reduction of feeling of social exclusion and experience of discrimination were found to be significantly correlated with social satisfaction.

Finally, the four factors containing the appropriateness of rent, management expenses, and opportunity of income creation, and distance to the workplace were critically correlated with economic satisfaction.

At same time, Paris and Kangari's (2005) findings, which were drawn from the analysis to these factors consisting of safety from crime (also see Adriaanse, 2007), housing management, maintenance, and resident similarity amongst housing environment, housing characteristics, and individual and household's socio-economic characteristics, were concluded into three components which affected residential satisfaction of multifamily affordable houses. The component of housing unit support services was the most concerned followed by another two components of neighbourhood social environment and housing unit features.

Referring to their findings, the factors as property management, tenant selection policies, enforcing residential rules, communication with residents, maintenance, quality of building repairs, overall cleanness of property grounds, overall cleanness of the community were classified as the component of housing unit support services which mostly affecting residential satisfaction in multifamily affordable housing in Atlanta.

Followed by satisfactions with quality of the community, residents' perception of safety in their neighbourhood at night and residents' perception of safety at night while inside their units were concluded into the component of social environment and lastly the component of housing unit features talked about two facets consisting of building quality and overall satisfaction with their apartment units.

Learnt from Mohit et al.'s (2010), (2011), (2012b), and (2015) five components and Huang & Du's (2015) four components and individual and household's socio-economic characteristics which had been applied by many scholars to assess the overall residential satisfaction, the factors affecting the residential satisfactions of public and commodity housing in developed and developing countries will be discussed next in accordance with the components of housing unit characteristics (HUC), housing unit supporting services (HUSS), housing estate supporting facilities (HESF), and neighbourhood characteristics (NC), and individual and household's socio-economic characteristics.

They reason why to review these factors determining the residential satisfactions of public and commodity housing from developed and developing countries was that these factors would firstly help this research work to constitute the questionnaire. In addition, this research work's findings would be discussed with those previous studies about developed and developing countries' public and commodity housing satisfactions so that the Xuzhou's local government could learn from the revisions.

(b) *Factors from Housing Unit Characteristics (HUC)*

The discussion commenced with the component of HUC comparing to other three components, because the houses where people lived and on which people relied were more obviously important than the rest of components which were not always 24 hours securing your living satisfaction.

James (2008) employed the cross-tabulation analysis on 43,360 households in the 2005 American Housing Survey controlling for subsidised/nonsubsidised renters and found that the subsidised renters had higher satisfactions with their housing unit characteristics comparing to nonsubsidised renters with similar spatial location characteristics of neighbourhoods.

Then, James (2008) suggested by analysing 488,302 AHS-Metropolitan samples taken between 1985 and 2004 that decreasing the size and the age of the subsidised housing structures rather than increasing the proportion of subsidised housing could significantly improve the residential satisfaction of subsidised residents in the metropolitan area.

A cumulative logit analysis being applied by James (2007) on 7,206 rented multifamily units found that bathroom, garage/carport, or balcony were highly significantly correlated with tenants' satisfaction.

Likewise, a group of 5,170 units undergoing modifications from 1997 to 2005 were analysed and revealed that renters' satisfaction was apparently positively correlated with the addition of a bathroom or central air conditioning, followed by the addition of a balcony, other room, dishwasher, or garage/carport having a lower degree of positive correlation with renters' satisfaction.

On the other hand, James (2007) affirmed that renters' satisfaction was noticeably negatively correlated with violation of space separation by noise intrusion through walls, floors, or ceilings. Furthermore, James (2007) found a bit difference from the result of the tracking period which was that other amenities such as a fireplace, disposal, or dishwasher had no statistically significant correlation with tenants' satisfaction.

(c) ***Factors from Housing Unit Supporting Services (HUSS)***

Furthermore, the discussion moved to the component of HUSS which was the secondly considerable issue, because residents would better know whether those property management services provided by non-profit organisations directly such as some government agencies were more convenient or those services provided by private management companies were more expedient.

As a matter of fact, the public housing residents did not really concern who would provide services, but they truly concerned whether those services provided were inexpensive and convenient.

As is often the case, the non-profit organisations such as government agencies who were in charge of property management services of public housing were delighted to sign the contract with those private management companies when they were under the pressure from municipal government and local housing authorities such as some regulations of affordable housing, tenant turnover and vacancy rates having to be decreased, and the physical building structure had to be maintained.

In addition, the non-profit organisations had several problems of managing affordable houses such as meeting financial and budgeting constraints just like what the US did with property management services in affordable housing in Atlanta, Georgia.

However, whether the private management company could supply good property management services for residents who lived at Defoors Ferry Manor, a non-profit multifamily affordable housing community that was owned by Atlanta Mutual Housing Association, Paris (2006) found that the residents were least satisfied with convenience as the high turnover rate in property management staff resulted in the high frequent new-coming staffs who were not familiar with residents' current living situations.

Thus, based upon China's low-cost housing had its unique characteristics consisted of social and commodity housing, their property management services should be provided by some government agencies in order to deliver cheap and convenient services to low-cost housing residents.

(d) ***Factors from Housing Estate Supporting Facilities (HESF)***

Furthermore, the discussion moved to the component of HESF which was the thirdly considerable issue. However, not so many scholars were found to be interested in studying this component in developed countries' public housing.

The tenants who lived in public housing projects in certain areas of Canada severely felt dissatisfied with the lack of open space, playgrounds, and private yards (Onibokun, 1974).

(e) ***Factors from Neighbourhood Characteristics (NC)***

The Neighbourhood characteristics component was comprised of social environment and spatial location characteristics (Dekker, de Vos, Musterd, & van Kempen, 2011). Grinstein-Weiss et al. (2011) asserted that neighbourhood characteristics satisfaction index had an exceedingly significant correlation with overall quality of life.

Thus, most western authors gave the explicit answer that the component of neighbourhood characteristics should be paid more attention by the municipal government, than other components, such as housing unit characteristics, housing unit supporting services, and housing estate supporting facilities when they were dealing with residential satisfaction (Adriaanse, 2007; Amerigo & Aragonés, 1990; Dekker et al., 2011); Dennis Lord and Rent (1987); (Fauth et al., 2004; Fried, 1973; Fried & Gleicher, 1961; Galster & Hesser, 2016; Grinstein-Weiss et al., 2011; HaSeongKyu, 2006; Kleit, 2001a, 2001b; Onibokun, 1974; Rent & Rent, 1978; Varady & Preiser, 1998).

Rent and Rent (1978), interviewed how these 257 respondents living at 33 different low-income housing estates throughout South Carolina felt about their residences and found that the level of neighbourhood characteristics satisfaction was much lower than housing unit characteristics satisfaction.

As the component of neighbourhood characteristics had more complicated factors/variables comparing to the other three components when assessing residential satisfaction in any types of residences, Onibokun (1974) not only agreed with Rent and Rent (1978) on paying more attention on neighbourhood characteristics, Onibokun (1974) also gave very detailed explanations on which factors in neighbourhood characteristics to make the tenants who living at public housing projects in certain areas of Canada dissatisfied.

The public transportations linking the main shopping centres and recreational areas to the location of the public housing projects were not adequate and efficient. Moreover, high levels of noise and high probability of interference from neighbours generated by many large-sized households on a small piece of property mainly made the tenants feel dissatisfied.



Furthermore, the bad image of public housing projects which was sometimes created by the tenants or sometimes was imagined by outside residents had perpetuated a stereotyped bad image in the minds of the public, and thus, it also made the tenants feel dissatisfied with living in this environment (Onibokun, 1974).

With respect to the small and privately managed subsidised housing estates in Charlotte, North Carolina, which had been built dispersedly since 1976 when those large and publicly owned projects were built centrally between 1950s and 1960s, it was found by way of interviewing 160 residents in eight dispersed public housing projects that the residents did not care about the issue of spatial location characteristics of neighbourhoods, however, the residents were clearly satisfied with an improvement over previous residences in terms of the quality of the dwelling unit and feeling at home in the neighbourhoods (Dennis Lord & Rent, 1987; James, 2008).

However, as a matter of fact, the change from living centrally into living dispersedly actually brought some implications on residents in terms of they were separated from former neighbourhoods of friends, relatives, and often jobs. As they moved into the scattered-site public housing projects, the different locations of public housing projects had different social-spatial characteristics of the neighbourhoods with their different levels of residential satisfaction (Dennis Lord & Rent, 1987; James, 2008).

Moreover, some social-spatial characteristics of the neighbourhoods amongst these eight scattered-site public housing projects were found to win residents' high level of satisfaction with access to school and presence of "good people". On the contrary, some social-spatial characteristics of the neighbourhoods lost residents' satisfaction and made the noblest differences regarding access to public transportation, shopping and jobs.

In terms of the relocation, (Fried, 1973); Fried and Gleicher (1961) at first strongly agreed with Dennis Lord and Rent (1987) and Varady and Preiser (1998) on that public housing had to be built centrally, not dispersedly.

However, (Fried, 1973); Fried and Gleicher (1961) claimed that it was not substantiated that public housing could resolve relocation problems which meant the public housing was the only part of urban renewal planning, because most residents were overwhelmingly satisfied with where they lived before than relocated area in terms of the close associations maintained among the local people and strong sense of identity to the local places.

Likewise, Varady and Preiser (1998) did a comparative research about whether Public Housing Authorities raising satisfaction levels of residents by means of pursuing a scattered-site policy or revitalising existing central projects.

Then, the cross-tabular analysis was employed to the results of 211 residents of the Cincinnati Metropolitan Housing Authority family housing by telephone interviewing and indicated that residents chose revitalising existing central neighbourhoods instead of choosing scattered-site neighbourhoods.

The fact of the matter was to resolve relocation problems should pay very attention to these two elements consisting of localised social networks and a sense of belonging which to combine into the context of the residential area (Amerigo & Aragonés, 1990; Fried, 1973; Fried & Gleicher, 1961).

In addition, Adriaanse (2007) strongly followed what (Amerigo & Aragonés, 1990; Fried, 1973); Fried and Gleicher (1961) found and claimed that the satisfaction with residential social climate was the most significant factor based on multivariate analysis

to the result of 75,034 respondents representing the population of Dutch residents in 2002.

Furthermore, both Amerigo and Aragonés (1990) and Varady and Preiser (1998) agreed and applied the multiple regression analysis to the results of 447 housewives living at council housing in Madrid, 211 respondents living at scattered-site public houses in Cincinnati, and 257 respondents of 33 different low-income houses in South Carolina and found the similar answers which were that attachment to the neighbourhood (a sense of belonging, social inclusion) and relationships with neighbours (more neighbourhood social interaction, more tenant involvement, and more friendly to neighbours) to a certain extent could explain the greatest variance in residential satisfaction and also promoted satisfaction levels of residents.

Except for Dennis Lord and Rent (1987) claimed that the spatial location characteristics of neighbourhood was more important when the residents moved to eight dispersed public housing estates in Charlotte, North Carolina, however, they were clearly satisfied with social environment characteristics of neighbourhoods, such as feeling at home in new neighbourhoods.

HaSeongKyu (2006) firmly agreed with Fried (1973); (Fried & Gleicher, 1961; Varady & Preiser, 1998) on that most residents were tremendously satisfied with where they lived before than relocation area with respect to close associations maintained amongst the local people and strong sense of identity to the local places.

Furthermore, Kleit (2001b) and Kleit (2001a) admitted the fact that the personal conditions with self-degradation, sociopath of those 173 Black and Latino families who moved into publicly funded attached row-houses in seven middle-class neighbourhoods

for almost two years had been greatly reduced in terms of violence and disorder, experience health problems, and abuse alcohol.

In terms of those 173 Black and Latino families gradually got more satisfied with neighbourhood public facilities including garbage collection, recreational facilities, transportation, schools and medical care, Kleit (2001b) and Kleit (2001a) claimed that the residents living at dispersed public houses surrounded by non-poor households knew their more diverse neighbours with greater diverse social networks so that they could enjoy varied sources of information.

On the contrary, HaSeongKyu (2006) agreed with what Fauth et al. (2004) found that those 173 Black and Latino families were lower frequency of informal socialisation with their new neighbours than those 142 demographically similar families who remained in high-poverty neighbourhoods continued with their higher frequency of communications with their neighbours.

At the same time, Kleit (2001a) and Dennis Lord and Rent (1987) claimed that residents lived at dispersed public houses in Washington, DC, such as single- and multi-family houses and public townhouses which were located in rich areas felt less enthusiastically close to their neighbours than their counterparts who lived at small clusters of public housing.

Simultaneously, Galster & Hesser and Adriaanse's (2016) and (2007) findings concluded HaSeongKyu's (2006) discussions that those respondents' satisfaction ratings were more strongly tied to the similarity of neighbours so that social exclusion existed amongst these sorts of high-low income mixed-groups and social mixing residences.

Regarding this, HaSeongKyu's (2006) study was a pioneer of elaborating the causes and consequences brought by social exclusion which had been happening between residents who lived in public rental housing estates and residents who lived in surrounding non-public housing in Korea.

Furthermore, the relationship between social exclusion and residential satisfaction in public rental houses and surrounding non-public houses was analysed via interviewing with household heads and field surveys and found that residents living at public houses adjacent to non-public housing had a strong feeling of social exclusion.

Thus, it came out from a reason that was explained by Onibokun (1974) about the bad image of public housing projects which was sometimes created by the tenants or was imagined by outside residents had perpetuated a stereotyped bad image in the minds of the public.

Moreover, the feeling of residential exclusion and discrimination were two predictor variables found by HaSeongKyu (2006) which were significantly correlated with residential satisfaction of inhabitants in public housing and adjacent to non-public housing.

Accordingly, the number of residents who opposed to social mixing residence was much higher than the number of residents who supported social mixing residence (HaSeongKyu, 2006).

Regardless of low-income residents living in high-poverty neighbourhoods had chances via lottery, or were subsidised by 'tenant-based' assistance programmes aimed at decentralising poverty to move to middle-class or non-poor neighbourhoods, all kinds of above mentioned poverty residence decentralising only employed the changes of spatial locations characteristics of neighbourhoods so that it neglected that the residents'

social networks were changed since they were (not) forced to be relocated to somewhere else.

Although the changes of spatial locations characteristics of neighbourhoods brought some improvements in the quality of the housing unit, housing supporting services, and housing estate supporting facilities, the residents were still considered as the new neighbours in the housing area where they did not have such a sense of belonging due to the social exclusion being as the main factor of social environment characteristics of neighbourhoods existed and critically affected satisfaction levels of residents and their communications with non-poor neighbourhoods (Dennis Lord & Rent, 1987; Fauth et al., 2004; Fried, 1973; Fried & Gleicher, 1961; HaSeongKyu, 2006; Kleit, 2001a).

Thereupon, to solve social exclusion could be done by municipal government to minimise the problems of social-mixed residences within the same community. In the meantime, it could be fixed by NGOs by way of promoting social capital such as social networks, norms, and social trust which were considerable important to the poor people.

The social capital could be taken as an asset which was used by the poor people to facilitate coordination and communication for mutual understanding between poor and non-poor neighbourhoods so as to enhance social inclusion (HaSeongKyu, 2006; Kleit, 2001b).

(f) ***Factors from Individual and household's Socio-Economic Characteristics***

Varady and Preiser (1998) found that the age as one of predictor variables determined satisfaction levels of Cincinnati Metropolitan Housing Authority family housing residents.

Moreover, Rent and Rent (1978) found in their study of low-income housing neighbourhood satisfaction in 33 different housing estates by interviewing 257 residents in South Carolina that the length of residence had no relationship with neighbourhood satisfaction, however, the short period of staying in length of residence had very significant correlation with housing unit characteristics satisfaction.

Before talking about homeownership, the issue of the “right to housing” of the low- and moderate-income groups was the criteria of the provision of public housing, however, some disturbing situations circumscribed some certain degree of the “right to housing” so as to affect residential satisfaction.

In Hong Kong, the five different dimensions which were concluded by Yung and Lee (2012) consisting of the “right to sufficient housing”, the “right to affordable housing”, the “right to enjoy” one’s housing without indiscriminate interference, freedom from the threat of indiscriminate forced eviction, and “the right of choice” were essential to the satisfaction of the “right to housing”.

However, although the provision of public rental housing in Hong Kong almost protected the “right to housing” of the low-income residents, the high-density buildings and crowding situation fairly restricted the levels of satisfaction in the “right to enjoy housing” and the “right to privacy” (Yung & Lee, 2012).

Since the policymakers were interested in promoting homeownership amongst low and moderate income groups of households in US over the past two decades, Rent and Rent (1978) and Grinstein-Weiss et al. (2011) found that the homeownership was not only significantly correlated with the housing unit characteristics satisfaction, but also was a significant predictor variable to determine the neighbourhood characteristics

satisfaction. In another word, promoting homeownership amongst low- and moderate-income households could improve their levels of residential satisfaction.

#### **2.3.4.2 Factors Affecting RS in Public Housing in Developing Countries**

Mohit and Azim (2012b) found that a majority of the residents living at the public housing in Hulhumalé were only slightly satisfied.

Furthermore, Mohit et al. (2010) and Mohit and Nazyddah (2011) had the same conclusion that the residents, who lived at newly designed public low-cost housing in Kuala Lumpur and lived at three types of low-cost housing in Selangor State, Malaysia, were moderately satisfied with their housing units.

Moreover, both the mean satisfaction score of 3.21 calculated on 452 household-heads and 61% of the respondents respectively living at nine public housing estates and 10 public houses in urban areas of Ogun State, Southwest Nigeria revealed that the residents were generally satisfied (Ibem & Amole, 2013b; Ibem, Opoko, Adeboye, & Amole, 2013).

On the contrary, Ibem and Aduwo (2013) highlighted that the respondents were generally dissatisfied with their housing conditions in Ogun State, Nigeria.

Zanuzdana, Khan, and Kraemer (2013) found that rural residents, who were with 90% house ownership, were much more satisfied with their housing situation comparing to urban slum dwellers in Dhaka, Bangladesh.

##### **(a) *Four Residential Components and RS***

Berkoz et al. (2009) discovered that these components including housing unit characteristics, housing estate supporting facilities, social environment characteristics of neighbourhood, and spatial location characteristics of neighbourhood were found to be



significantly correlated with residents' requirements and satisfactions in planned mass housing areas at central and peripheral districts in the Istanbul metropolitan area.

Furthermore, Wahi et al. (2012) agreed with Berköz et al. (2009) and found the answer given by the low cost house owners residing in Kuching, Sarawak, East Malaysia about that the component of HUSS had the most principally correlation with low-cost housing owners' residential satisfactions.

The correlation between HUC and spatial location characteristics of neighbourhood which was same as the correlation between HUSS and social environment characteristics of neighbourhood had a low degree of positive correlation with respect to one newly designed public low-cost housing estate in Sungai Bonus, Kuala Lumpur, Malaysia (Mohit et al., 2010).

On the other hand, Mohit and Nazyddah (2011) found that satisfactions with HUC in Malaysian Selangor State cluster, individual and transit houses were positively correlated with HUSS, HESF, and social environment characteristics of neighbourhoods only in individual and transit houses. Conversely, the satisfactions with HUC in all housing types had no correlation with spatial location characteristics of neighbourhoods.

Besides, the satisfactions with HUSS in all social housing programmes of Malaysian Selangor State were found to be positively correlated with HESF and social environment characteristics of neighbourhoods as well as spatial location characteristics of neighbourhoods only in individual and transit houses.

Likewise, the satisfactions with HESF of all social housing programmes in Selangor State had positive correlations with social environment characteristics of neighbourhoods as well as spatial location characteristics of neighbourhoods only in cluster and transit houses.

Otherwise, the satisfactions with social environment characteristics of neighbourhoods were not found any correlations with spatial location characteristics of neighbourhoods amongst Malaysian Selangor State social housing programmes (Mohit & Nazyddah, 2011).

The residential satisfaction indices of public housing both in Kuala Lumpur and Hulhumalé, and Selangor State individual and transit houses were found to be exceedingly positively correlated with social environment characteristics of neighbourhood and HUC (Mohit & Azim, 2012a, 2012b); Mohit et al. (2010); (Mohit & Nazyddah, 2011).

In terms of the HUC, Ibem et al. (2013) found that the privacy and sizes of living and sleeping areas were significantly correlated with the level of satisfaction of residents living at nine previously-built public housing estates in Ogun State, Nigeria.

Contrariwise, satisfaction levels of inhabitants in Selangor State cluster housing had a low degree of positive correlation with social environment and housing unit features (Mohit & Nazyddah, 2011).

Furthermore, HUSS and HESF indices were also found to be highly positively correlated with residential satisfaction indices of public low-cost housing in Kuala Lumpur, Selangor State cluster, individual and transit houses (Mohit et al., 2010; Mohit & Nazyddah, 2011).

By comparison, HUSS and HESF indices were found to be a bit poorly positively correlated with residential satisfaction indices of public housing estates in Hulhumalé (Mohit & Azim, 2012a); Mohit and Azim (2012b).

Furthermore, Ibem et al. (2013) discovered that the availability of water and electricity in the buildings did not have much more significant correlations with the level of satisfaction of residents living at public housing estates in Ogun State, Nigeria.

Moreover, comparing to the spatial location characteristics of neighbourhood indices had low degree of positive correlations with residential satisfaction indices of public low-cost housing in Kuala Lumpur and Selangor State individual houses (Mohit et al., 2010; Mohit & Nazyddah, 2011), the neighbourhood facilities indices were highly positively correlated with overall Selangor State cluster and transit houses satisfaction indices (Mohit & Nazyddah, 2011).

At same time, the relationship between the physical characteristics of the residence and residents' satisfaction undoubtedly presented that 62 percent of the physical characteristics of the residences were significantly correlated with residents' satisfaction and determined the level of residential satisfaction and simultaneously guided the housing architects and administrators to know what kinds of specific skills and actions to maximise more satisfactory housing provisions to low-income and medium-income public housing residents (Ilesanmi, 2010).

Furthermore, once the residential satisfaction was proposed to be used as a guideline for planning a housing area to settle the middle-income population in Medan city, Indonesia, Aulia and Ismail (2013); (Byrnes-Schulte, Lichtenberg, & Lysack, 2003) identified the criterion of residential satisfaction not only comprised housing design, public facilities, and housing location which were belonged to the physical satisfaction criteria, but also included social interaction, security, and housing tenure which were classified into the non-physical criteria.

Aziz and Ahmad (2012) not only agreed upon Aulia & Ismail's (2013) findings that assessing the conditions of low-cost housings in Malaysia mostly employed the residential satisfaction as a measurement marked by low-cost housing residents, but also Aziz and Ahmad (2012) suggested combining some more new factors according to environment-behaviour studies consisting of appropriation, attachment and identity to supplement the comprehensive attributes of residential satisfaction measurement.

Thus, Ibem and Amole (2013a) asserted that to improve residential satisfaction in the OGD Workers' housing estate in Abeokuta, Ogun State, Nigeria could be enhanced by providing good housing design and management practices, good access to basic services and social infrastructure and more numbers of bedrooms in the housing units.

What Ibem and Aduwo (2013) and Mohit and Nazyddah (2011) found were utterly distinct from what Ukoha and Beamish (1997) and Mohit et al. (2010) found at that the residents living at public housing estates in Ogun state and Malaysian Selangor state were highly satisfied with HUC.

Furthermore, 452 respondents living at 10 newly-constructed public housing estates in urban areas of Ogun State Southwest Nigeria showed their satisfactory with their HUC (Ibem & Amole, 2013b). The residents living at public housing estates in Hulhumalé were slightly satisfied with physical space within the housing unit due to the respectively several factors caused low level of residential satisfaction consisting of toilets, size and condition of washing and drying area, and number of electrical sockets (Mohit & Azim, 2012b).

In contrast, Kaitilla (1993) found that urban households living at public housing in West Taraka, the city of Lae, Papua New Guineans were severely dissatisfied with their HUC. Furthermore, the reasons of their being significantly dissatisfied with houses were

because of the sizes of houses, number of rooms and living/dining areas, lack of storage space, and poorly lay out and badly designed kitchen, toilet, and bathroom facilities.

Moderately satisfied by the 100 respondents living at single-storey cluster housing and another 100 respondents living at Selangor State individual houses were feeling the same way as 452 household heads living at public housing in Ogun State and 102 respondents in Kuala Lumpur were slightly satisfied with HUSS (Ibem & Aduwo, 2013; Mohit et al., 2010; Mohit & Nazyddah, 2011).

Moreover, satisfaction level of public housing estates in Hulhumalé was generally higher for service provided within the housing unit except for cleaning services for corridors and staircases, street lighting, garbage collection.

In contrast, the residents from public houses in Ogun State were unfortunately found to be dissatisfied with HUSS (Ibem & Amole, 2013b). Furthermore, the respondents living at transit houses were dissatisfied with HUSS as well due to the effects of lift and lift lobby, firefighting and cleanliness of drains (Mohit & Nazyddah, 2011). Moreover, the 1,089 federal employees represented 19,863 public housing units living in Abuja also expressed dissatisfied with housing management (Ukoha & Beamish, 1997).

The situation of housing estate supporting facilities and infrastructural facilities in public low-cost housing in Kuala Lumpur, Selangor State individual houses and even in nine previously-built and ten newly-constructed public housing estates in Ogun State made the respondents feel slightly satisfied or even dissatisfied (Ibem & Aduwo, 2013; Ibem & Amole, 2013b; Mohit et al., 2010; Mohit & Nazyddah, 2011).

Furthermore, those respondents who lived in urban slums and rural areas in Dhaka, Bangladesh showed their low satisfaction with HESF especially in education and health services (Zanuzdana et al., 2013).

On the contrary, Mohit and Nazyddah (2011), Mohit and Azim (2012b), and Mohit and Zaiton (2012) asserted that the respondents living at Selangor State transit houses, the respondents living at public housing estates in Hulhumalé, and the respondents living at Selangor State cluster houses showed highly satisfied with public facilities within the housing area.

With respect to the cultural background in Yemeni society, Djebarni and Al-Abed (2000) interviewed 180 occupants living at the three low-income public housing schemes in Sanaa, Yemen and found that the component of neighbourhood characteristics had noteworthy correlation with the level of residential satisfaction of inhabitants. Thus, the factor of privacy was mostly correlated with NC satisfaction.

The residents living at public housing estates in Hulhumalé were slightly satisfied with the social environment within the housing area due to one factor of security level within the housing area causing low level of residential satisfaction (Mohit & Azim, 2012a); Mohit and Azim (2012b).

However, the respondents living at Selangor State transit houses expressed marginally moderate level of satisfaction with social environment due to effects of noise level and crime situation, and even the public housing respondents both living in Ogun State and Kuala Lumpur were feeling dissatisfied with social environment characteristics of neighbourhood (Ibem & Aduwo, 2013; Mohit et al., 2010; Mohit & Nazyddah, 2011).

On the other hand, the respondents living at Selangor State cluster housing had moderate level of satisfaction with social environment and the respondents living at Selangor State individual houses even had moderately high level of satisfaction with social environment (Mohit & Nazyddah, 2011).

Moreover, the respondents living at public housing in Abuja showed satisfied with the neighbourhood facilities (Ukoha & Beamish, 1997). Almost, the public housing respondents both living in Ogun State and Kuala Lumpur as well as the respondents living at Selangor State transit houses were slightly satisfied with spatial location characteristics of neighbourhood as the location of transit houses being within the Malaysian Selangor State urban area (Ibem & Aduwo, 2013; Mohit et al., 2010; Mohit & Nazyddah, 2011).

In addition, Ibem and Amole (2013b) also found that residents living at public housing estates in urban areas of Ogun State were satisfied with spatial location characteristics of neighbourhood. Contrariwise, the respondents both living at Selangor state cluster and individual houses were dissatisfied with neighbourhood facilities by inadequacy of provision of public transport facilities, such as distance to fire station, as well as LRT and taxi stations in cluster housing type and distance to work place and town centre in individual housing type respectively (Mohit & Nazyddah, 2011).

Moreover, the respondents living in rural areas and urban slums in Dhaka, Bangladesh were reported of dissatisfaction with spatial location characteristics of surrounding neighbourhood especially in the distance and convenience of clinic or general hospital (Zanuzdana et al., 2013).

(b) ***Factors from HUC***

Mohit et al. and Mohit & Azim's (2010) and (2012b) conclusions were that the high and moderate beta coefficients of the models highlighted the necessities of exploring residential satisfactions in specific housing units characteristics comprising dry area, bedroom-1, socket points, bedroom-3 as well as dining space.

Moreover, Mohit and Nazyddah's (2011) conclusion was that the high and moderate beta coefficients of the models underlined the essential of exploring residential satisfactions in specific housing units characteristics including kitchen space, socket points and Dry area.

Furthermore, the increasing of subjective life satisfaction in public houses in Ogun State and the improving of performance of the buildings in meeting residents' needs and expectations in nine previously-built public housing also in Ogun State, Nigeria depended more on the enlarging the size of main activity areas in HUC (Ibem & Amole, 2013b; Ibem et al., 2013).

In the meanwhile, Ibem and Aduwo (2013) gave the similar answer which was like what Mohit et al. (2010), Mohit and Nazyddah (2011), Mohit and Azim (2012b), and Mohit and Zaiton (2012) gave was that satisfactions with sizes of living and sleeping areas in the residences as predictor variables contributed most to predicting residential satisfaction of public housing.

Furthermore, Ibem et al. (2013) claimed that the type and aesthetic appearance of housing were the most predominant factors that determined the level of residential satisfaction of inhabitants in public housing in Ogun State.

(c) ***Factors from HUSS***

The result of examining the accessibility of services provisions to the public housing estates in urban centres in Ogun State turned out that accessibility to refuse bins, treated water, electricity and drainage was poor, although the accessibility to human waste disposal system might satisfy the most residents (Ibem, 2013).



Moreover, Ibem and Amole (2013b) found that housing services mostly predicted their subjective life satisfaction in public housing estates in urban areas of Ogun State.

Mohit et al. and Mohit & Nazyddah's (2010) and (2011) conclusions illustrated that the high and moderate beta coefficients of the models predicted that cleanliness of garbage house and garbage collection were major predictor variables of residential satisfaction of public low-cost housing in Kuala Lumpur and also the minor predictor variables of residential satisfactions in Selangor State individual, cluster, and transit housing.

Furthermore, the satisfactions with cleanliness of drains, the lift lobby, and street lighting, contributed moderately to predicting residential satisfactions of Selangor State cluster, individual, and transit housing (Mohit & Nazyddah, 2011), but the satisfaction with street lighting contributed most to residential satisfaction of Selangor State individual type of housing.

Moreover, Mohit and Azim (2012b) and Mohit and Zaiton (2012) explicated that the moderate beta coefficient of the model highlighted the necessities of exploring residential satisfaction in specific HUSS, such as cleaning services for corridors and staircases.

Thus, Ibem and Aduwo (2013) and Ibem and Amole (2013b) explained that satisfaction of management of the public housing estates contributed most to predicting residential satisfaction in public housing estates in Ogun State, Southwest Nigeria.

(d) ***Factors from HESF***

The increasing of residential satisfaction in the newly designed public low-cost housing estates in Kuala Lumpur depended more on the improvement of perimeter roads (Mohit et al., 2010).

Likewise, Mohit and Nazyddah (2011) illustrated that the high beta coefficients of the models predicted that public phone and pedestrian walkways were the major predictor variables of residential satisfaction of Selangor State cluster and transit housing. And then, the satisfactions with parking facilities, pedestrian walkways, and the multi-purpose hall contributed moderately to residential satisfactions of Selangor State cluster, individual, and transit housing.

However, Mohit and Azim (2012b) and Mohit and Zaiton (2012) considered the factor of kindergarten as a predictor variable to determining the residential satisfaction in public housing in Hulhumalé.

(e) ***Factors from NC***

Berköz et al. (2009) claimed that the factors of centrality, accessibility to open areas, accessibility to health institutions, and satisfaction in recreational areas contributed most to predicting residents' location choices at central and peripheral districts in the Istanbul metropolitan area. Thus, the mass housing users preferred central districts over peripheral ones.

Mohit and Nazyddah (2011) mentioned that the public housing respondents living at Selangor State transit houses were satisfied with spatial location characteristics of neighbourhood because of the location of transit houses being within the urban area of Malaysian Selangor State.

Accordingly, Ibem et al. (2013) asserted that to increase the performance of Ogun State's public housing in meeting users' needs and expectations depended more on enriching location choices. It evidently turned out how important the location of living area was for residents.

Moreover, the respondents living at planned mass housing in Istanbul metropolitan area constantly considered the location as the top priority beyond the rest of physical characteristics of housing.

Thus, the location critically affected the level of residential satisfaction of the inhabitants in terms of various public facilities provided within the housing area, social environment characteristics of neighbourhood differences amongst the different places, and spatial location characteristics of neighbourhood various among the diverse locations.

Therefore, Berköz et al. (2009) asserted that the accessibility was one grave component to influence both residential satisfactions of respondents living in central and outlying districts. In other words, it was suggested that the development of public transport systems in peripheral districts being bettered should improve the quality of social and physical infrastructure of sub centres and the competence of accessibility in outlying areas. Accordingly, the demand of housing located in the proposed suburban areas, the housing users both who lived in central and suburban districts would prefer to choosing to live in suburban areas.

Both James (2001) and Ibem and Aduwo (2013) agreed on Mohit et al.'s (2010) conclusion, which was that the high beta coefficients of the model predicted that residential satisfaction in three renovated buildings and public housing in Kuala Lumpur

and Ogun State could be enhanced through improving the management of security control.

Furthermore, Mohit and Nazyddah (2011) brought out that the moderate beta coefficient of the model gave weight to the prerequisites of discovering residential satisfaction of Selangor State transit housing in specific neighbourhood characteristics, such as the noise level.

The Healthcare facilities and public transportation were found to have moderate or less influences on community satisfaction in As-Salhiyyah in the northern Badia of Jordan (Al-Homoud, 2011).

Moreover, Ibem (2013) reported that the respondents living at public housing estates in urban centres confirmedly elucidated that the accessibilities to public transport services, educational, shopping centres, recreational and healthcare were inadequate.

Furthermore, Zanuzdana et al. (2013) interpreted that satisfaction with the reachability of medical care contributed most to predicting residential satisfaction of urban slums and rural areas in Dhaka, Bangladesh in the context of a complex relationship between housing satisfaction and the quality of basic neighbourhood facilities.

In the meantime, satisfaction with distance to shopping centre contributed moderately to predicting residential satisfaction of the newly designed public low-cost housing estates in Kuala Lumpur (Mohit et al., 2010).

In addition, Mohit and Nazyddah (2011) expounded that the moderate beta coefficient of the models accentuated the essentials of investigating residential

satisfactions of Selangor State cluster and transit housing in specific neighbourhood characteristics, such as distance to police station.

Moreover, the increasing of residential satisfactions in Selangor state cluster, individual, and transit housing depended more on the increasing numbers of market, school and the workplace (Mohit & Nazyddah, 2011).

In terms of a study carried out by Al-Homoud (2011) found in the village of As-Salhiyyah in the northern Badia that socialising and life satisfaction as being part of social environment characteristics of neighbourhood contributed most to predicting community satisfaction comparing to (safety), traffic, school quality, healthcare facilities, public transportation, and parks as being parts of spatial location characteristics of neighbourhood doing moderately or less.

Furthermore, it was explained that the community satisfaction was due to reasonably high because of Badia communities being more profoundly motivated by social interactions (community relationship) originating from kinship relations than by housing attributes in spite of the fact that the physical environment of residential situation was low in quality.

(f) ***Factors from Individual and Household's Socio-Economic Characteristics***

i. **Factors from IHSC Correlated with Each Residential Component**

Berkoz et al. (2009) found in the Istanbul metropolitan area, there evidently proved interactions between the individual and household's characteristics of respondents and HUC, HESF, and social-spatial characteristics of neighbourhoods.

Satisfaction with HUC of public low-cost housing in Kuala Lumpur was found to be positively correlated with race, whereas it was discovered to be negatively correlated

with the household size, i.e. 28.4% of respondents with large (6p+) families were not satisfied with the size of housing unit (Mohit et al., 2010).

Thus, Ibem and Aduwo (2013) concluded that the sizes of living and sleeping areas in the residences should be paid very attention to according to how many people they lived together.

In the same way, the satisfaction with HUSS was also found to be positively correlated with residents' floor levels (Mohit et al., 2010).

Besides that, respondents' length of residency and employment type had positive correlations with HESF, yet the satisfaction with HESF was found to be negatively correlated with residents' previous housing types.

Likewise, respondents' age and marital status had negative correlations with social environment characteristics of neighbourhood satisfaction which was, in contrast, positively correlated with floor levels (Mohit et al., 2010).

#### ii. IHSC Correlated with (Determining) Residential Satisfaction

Kellekci and Berköz (2006) asserted that the perspectives on satisfaction of HUC, HUSS, HESF, and social-spatial characteristics of neighbourhood given by the residents were certainly influenced by the residents' individual and household's characteristics and other requirements.

Furthermore, the higher income, higher age, and a smaller family, higher education, being female and being an owner of a housing were found to be highly associated with higher satisfaction with housing in population of urban slums and rural areas in Dhaka, Bangladesh (Zanuzdana et al., 2013).

Moreover, Mohit et al. (2010) found that the age, marital status, and previous residence were negatively correlated with the overall housing satisfaction, however, there were positive correlations of residential satisfaction with respondents' race, employment type, floor level.

Thus, Kellekci and Berköz (2006) finally ascertained that the differences in residents' individual and household's characteristics must have made those residential components factors be distinct.

James (2001) found that the age of residents who lived at three renovated buildings had a significant relationship with their residential satisfaction calculated by a Pearson correlation.

In addition, the factor and categorical regression analysis to the result of randomly selected 156 household heads indicated that respondents' educational attainment, employment sector, gender and age were found to be predictors contributing most to foretelling the residential satisfaction in the OGD workers' housing estate in Abeokuta (Dekker et al., 2011; Ibem & Amole, 2013a).

Mohit and Azim (2012b) and Mohit and Zaiton (2012) agreed with Mohit et al. (2010) on that there was a significant positive correlation of the overall satisfaction in public housing estates in Hulhumalé and public low-cost housing estates in Kuala Lumpur with the respondents' length of residency. On the other hand, Mohit & Azim's (2012b) conclusions diverged from what Mohit et al. (2010) drew from their study in terms of the family size being negatively significantly correlated with residential satisfaction in Malaysian public low-cost housing comparing to being positively in Hulhumalé.

The factor of income had a negatively significant correlation with residential satisfaction (Mohit & Azim, 2012b), whereas Mohit et al. (2010) claimed that the variable of income had a nonsignificant correlation with the overall housing satisfaction and the additional factor of gender did not have any correlation with residential satisfaction as well.

Furthermore, Ibem and Amole (2013b) concluded that the high beta coefficient of the model underlined the essential of exploring residents' satisfaction with life in Ogun State's public housing estates in specific individual and household's characteristics consisting of income, marital status, and housing delivery strategy (participation of users in housing delivery process).

Mohit and Azim (2012b) and Mohit and Zaiton (2012) did the correlation analysis to the result given by 100 households living at public housing estates in Hulhumalé and found that the type of tenure had a positively significant correlation with residential satisfaction, i.e. the tenure influenced the overall housing satisfaction, whereas the owners were lower levels of satisfaction comparing to tenants.

Moreover, Ibem and Amole (2013b) found that the high beta coefficient of the model highlighted the essential of exploring the subjective life satisfaction of residents of public housing in Ogun State urban areas in Nigeria in specific individual and household characteristics such as tenure.

As mentioned earlier, the characteristic of Chinese low-cost housing was unique in the case of it simultaneously having characteristics of public housing and commodity housing to meet the needs of Chinese eligible low-income citizens.



In effect, as Chinese low-cost housing predominantly had the function of public housing, those factors affecting the level of residential satisfaction of inhabitants living at public houses in developed and developing countries were concluded above in terms of four residential elements/components and individual and household's socio-economic characteristics.

Furthermore, another characteristic of Chinese low-cost housing was from the commodity housing. In the next paragraph, in which those following factors affecting the level of residential satisfaction of dwellers living at commodity houses in developed and developing countries were summarised, would enrich this current assessment on Chinese low-cost housing from only studying about the factors affecting public housing's satisfactions

### **2.3.5 RS in Commodity Housing in Developed and Developing Countries**

Vera-Toscano and Ateca-Amestoy (2008) claimed that residential satisfaction was affected by inhabitant's individual and household's characteristics, housing characteristics, neighbourhood attributes, and social interactions.

Furthermore, Carvalho et al. (1997) concluded that the residents who lived in an Exclusive Condominium in Brazil were highly satisfied with their unique spatial differentiation of residential environment that was surrounded by walls or fences, and was access-controlled by their-trusted security guards, and was also located in a strategic place.

#### **2.3.5.1 Four Residential Components and RS**

Sirgy and Cornwell (2002) indicated that satisfaction with the physical features affected both neighbourhood satisfaction and housing satisfaction in terms of activation of community spaces, activation of community programmes, activation of participation

in the community, and activation of ecological living and design in the high-rise and high-density apartment complexes in Korea (Cho & Lee, 2011).

Furthermore, the correlation analysis was employed to the relationship between the four components of living programmes and the level of residential satisfaction of inhabitants and found by Cho and Lee (2011) that the community spaces, community programmes, and participation in the community had significantly positive correlations with the overall residential satisfaction.

Furthermore, Hong (2004) found that the satisfaction of sense of community was significantly positively correlated with satisfaction of residential management services and satisfaction of common spaces. At same time, the satisfaction of sense of community was found to be an important component to notably affect the level of residential satisfaction of inhabitants living at high-rise mixed-use residential building constructed at the end of 1990s in Korea.

A social survey with questionnaire from 178 subjects collected by the snow ball sampling showed that the factors of fitness space and business service were found to be substantially positively correlated with the level of satisfaction of residential management services (Hong, 2004).

In addition, the factors of swimming pool, and shower and sauna facilities had drastically positive correlations with the level of satisfaction of common spaces for residents living at high-rise mixed-use residential building in Korea (Hong, 2004).

Regarding the current situations of people living at private low-cost housing in fast-growing state of Penang and less-developed state of Terengganu in Malaysia and people living at commodity houses in Guangzhou and Beijing, China, Salleh (2008) and Wong and Siu (2002) assessed their levels of residential satisfactions by way of the factor

analysis and the Perceived Environmental Quality Scale (PEQS) applied to those components comprising HUC, HUSS, and neighbourhood facilities and environment.

As a result, the satisfaction levels of HUC and HUSS provided by the private housing developers were found to be overall higher than the satisfaction levels of neighbourhood facilities and environment due to the profit-motivated private developers only providing poor public transportation, shortage of children playgrounds, car parks, security and disability facilities, and absence of community halls which also determined the level of residential satisfaction of inhabitants living at private low-cost housing projects in Penang and Terengganu in Malaysia (Salleh, 2008).

On the contrary, Wong and Siu (2002) found that the satisfaction level of neighbourhood quality was profoundly higher than the satisfaction level of housing unit quality in commodity housing in Guangzhou and Beijing due to Chinese money and carelessness-motivated private developers, who were almost same as Malaysian private developers, did badly in lack of privacy, the insufficient lighting, and ventilation of housing units.

Comparing to neighbourhood quality which was mostly provided by municipal level of urban planning and construction, its satisfaction level was certainly higher than housing unit quality in Guangzhou and Beijing's commodity houses (Wong & Siu, 2002).

Moreover, the residents living at commodity housing in Guangzhou and Beijing were also dissatisfied with the management of housing estates provided by the private property management corporations.

Pertaining to Malaysian middle-class city residents currently preferring to living at high-rise condominiums than their traditional-way of living at terrace housing, Mohit and Zaiton (2012) found that the 100 respondents residing in older ( $>10$  years) high-rise condominiums showed dissatisfied with HUSS and housing estate neighbourhood facilities and management as compared with another 100 respondents living at younger ( $<10$  years) high-rise condominiums.

In addition, the Spearman correlation analysis applied to these 200 respondents both living at older ( $>10$  years) and younger ( $<10$  years) high-rise condominiums indicated that all factors from three components of satisfaction consisting of HUC, HUSS, and housing estate neighbourhood facilities and management had more significantly positive correlations with the overall housing satisfaction in the older ( $>10$  years) as compared with the younger ( $<10$  years) due to the age differences.

Thus, the housing estate neighbourhood facilities and management should be urged to be improved to enhance residential satisfaction both in older and younger. Otherwise, the current over 40% of respondents living at older high-rise condominiums showed that a certain proportion of residents were planning to move.

Mohit and Zaiton (2012) also did a continuous research regarding double-storey terrace housing which was considered as popular housing type among the middle-income people living in urban areas indicating that the design brought about the increasing of crime rate and also brought some effects on the level of residential satisfaction.

And then, the results of each 110 randomly selected residents in Taman Sri Rampai (TSR) and Taman Keramat Permai (TKP) in Greater Kuala Lumpur came out of the descriptive and inferential analyses given by Mohit and Zaiton (2012) to indicate that

the levels of residential satisfaction were mostly low with HUC, HUSS, and social environment characteristics of neighbourhood as compared with residential satisfaction levels being high with housing estate public facilities.

Furthermore, the level of satisfaction was high with neighbourhood facilities in TKP. However, the satisfaction with neighbourhood facilities was moderate in TSR.

#### **2.3.5.2 Factors from HUC**

Carvalho et al.'s (1997) findings based upon a structured questionnaire used for collecting their residential assessments elaborated that the increasing of subjective life satisfaction in one exclusive condominium in Brazil depended more on the improvement of unique housing unit characteristics, which was taken as a substantial predictor variable.

#### **2.3.5.3 Factors from NC**

The high beta coefficients of the model was concluded by Carvalho et al. (1997) to emphasize on the essentials of exploring residential satisfactions of Brazilian exclusive condominiums in specific neighbourhood characteristics consisting of location and safety.

As above mentioned regarding what some authors found in terms of neighbourhood characteristics in public housing in the developed and developing countries, some factors from social environment characteristics of neighbourhood went into maintaining more attention than other factors from spatial location characteristics of neighbourhood, such as community relationship depending upon residents involvement and social inclusion, quietness counting on interference from neighbours and noise level of housing estate, and crime and accident situations being depended on how many times

and how serious (McClure, Schwartz, & Taghavi, 2015; Mohit & Mahfoud, 2015; Tan, Zhou, Li, & Du, 2015; Wang, Zhang, & Wu, 2015).

What it amounted to, then, was that the neighbourhood influenced various aspects of life satisfaction. In effect, Dittmann and Goebel (2010) found that neighbourhood with socioeconomic status had a principally positive correlation with residents' life satisfaction.

Moreover, the individual gap between a person's economic status and the status of the neighbourhood also was primarily positively correlated with individual well-being (Dittmann & Goebel, 2010). Furthermore, the increasing of their respective residential environment in a representative sample of private households in Germany depended more on the improvement of social networks, which was taken as a substantial predictor variable.

However, in the context of neighbourhood and housing types characterised by distinctive built-environment features and socio-occupational mixes caused by the transition from a socialist centrally-planned economy to a socialist market economy, Li, Zhu, and Li (2012) found that even though locally social networks were mostly weaker in commodity housing areas in Guangzhou, the inhabitants showed their higher level of satisfaction with community attachment due to the gated community bringing about very minimal influences on community attachment.

#### **2.3.5.4 Factors from Individual and Household's Socio-Economic Characteristics**

As a matter of fact, the resident's ownership status was principally concerned, nonetheless housing ownership was still very meaningful to the household when the inhabitants lived in those areas mixed with commodity and public houses (Vera-Toscano & Ateca-Amestoy, 2008).

Furthermore, Vera-Toscano and Ateca-Amestoy (2008) found that the fact of being a renter surrounded by owners did not feel more satisfied with their housing, and in the meanwhile, the individuals' housing satisfaction was negatively affected by the fact of being an owner surrounded by renters.

As a result, the residents of commodity housing surrounded by public housing were less likely to feel satisfied with their commodity houses, specifically, what it amounted to, then, was that the intensity of social interaction did not bring about higher level of individual housing satisfaction amongst residents who lived in the mixed residential environment due to the higher social relations did not provide other things equally.

What is more, even though the property value was found to be positively related to housing satisfaction, Vera-Toscano and Ateca-Amestoy (2008) found in their case of Spain that the property value was not very significantly affecting individual's housing satisfaction.

Then, something happened which put the matter beyond all doubt, because the composite commodity housing to give the high and increasing price to the existing owners as an investment good was much more noteworthy than whether to bring about more or less housing satisfaction to users.

### **2.3.6 Factors Concluded in Residential Components and IHSC**

In a word, those factors/predictors determining residential satisfaction which had been reviewed from the studies about residential satisfactions of public and commodity housing in developed and developing countries would be concluded as below.

#### **(a) *Housing Unit Characteristics (HUC)***

In HUC, there were seven key factors that should be more concerned such as living room, dining area, master bedroom, bedroom, kitchen, toilet, and balcony. Those factors

which were mentioned above had several interior characteristics affecting their satisfaction levels in terms of size, location, ceiling height, ventilation, daylighting, and power sockets.

**(b) *Housing Unit Supporting Services (HUSS)***

With respect to HUSS, the literature strongly suggested these two factors consisting of drain and electrical & telecommunication wiring which talking about the supporting services provided within the housing unit. The situations of drain and wiring of when moving into the room and the maintenance after moving into affected each factor's satisfaction level.

Furthermore, in terms of the supporting services provided around the housing unit, the numbers of firefighting equipment and training course for how to use firefighting equipment decided upon the satisfaction level of firefighting equipment. Moreover, the numbers and brightness determined the satisfaction level of street lighting. The size, location, lighting, and cleanness decided on the satisfaction levels of staircases and corridor. In addition, the garbage collection and management of garbage (house) determined the satisfaction level of garbage disposal.

**(c) *Housing Estate Supporting Facilities (HESF)***

Regarding HESF, the factors were concluded from the studies about residential satisfactions of public and commodity housing in developed and developing countries such as open space, children's playground, parking facilities, perimeter road, pedestrian walkways, and local shops. Their satisfactions were affected by each number, condition, location, and cleanness.



(d) *Neighbourhood Characteristics (NC)*

Speaking of NC divided by social environment and spatial location characteristics of neighbourhood, the residents' involvement and social exclusion decided upon the satisfaction level of community relationship. Furthermore, the levels of neighbourhood noise and crowd noise from open space determined the satisfaction level of quietness of housing estate. The frequency of occurrence, and seriousness decided on the satisfaction level of local crime and accident situations. In addition, the number of security guards and frequency of security patrols determined the satisfaction of local security control.

In terms of the spatial location characteristics of neighbourhood, the factors which were discussed previously consisted of resident's workplace, nearest general hospital, local police station, nearest fire station, and urban centre. Their satisfaction levels were determined by the distance from each housing area to each outside destination and convenience of arriving over the destination.

(e) *Individual and Household's Socio-Economic Characteristics (IHSC)*

There were ten factors correlated with the four residential components (HUC, HUSS, HESF, and NC) and overall residential satisfaction of each housing area such as gender, age, educational attainment, marital status, household size, occupation sector and type, household's monthly net income, floor level, and length of residence.

## **2.4 Data Collection and Data Analysis in Research Methodology of Studying RS**

Except for the studies about the theoretical model and factors of residential satisfaction, the types of data and data analyses in previous studies' research methodologies are also needed to pay very close attention to.

In the context of the quantitative research methodology had been applied in mostly previous studies about assessment of residential satisfaction, Li and Wu (2013) criticised the national data which Corrado, Corrado, and Santoro (2013) used could not fulfil satisfactory answers to which were challenged by those very localised and conditional questions with respect to the characteristics of satisfaction and attachment assessed by a cognitive judgement and an affective evaluation.

Thus, Galster (1987) commented on the empirical studies of residential satisfaction should be studied by household type and should make allowance for non-linear relationship between residential context and their associated levels of satisfaction.

Moreover, Galster (1987) applied a multivariate regression analysis of residential satisfaction to the result of various levels of a 1980 sample of Minneapolis homeowners and found that the results strongly support for the studies of residential satisfaction being disaggregated by household type and non-linear relationship being taken into considerations.

The scientific and reliable results of residential satisfaction would not be only depended on the collected data, but also be relied on the scientifically statistical methods (Li & Wu, 2013; Lu, 1999).

Lu (1999) and Howley (2009) criticised that the regression models should be used conditionally where they required data with low multi-collinearity. The reliability of their results depended more upon which method of regression models that the author would apply to according to what type of dependent variable was.

In addition, Lu (1999) reinvestigated the effects of housing unit, neighbourhood, and individual and household characteristics on individuals' satisfaction with residential environment by using ordered logit models to analyse the data drawn from the

American Housing Survey to get the results which to resolve the discrepancies caused by the regression models in which the nature of independent variables making sure to be consistent with the nature of dependent variables would bring more exact results.

In his case, it was concluded that the ordered logit models was more applicable than the most widely available method of regression models under this kind of situation when the ordinal nature of the dependent variables representing satisfaction which were not a single category attributes such as continuous and non-continuous and were inconsistent with a single category attribute of independent variables such as continuous would damage the final results by using regression technique (Lu, 1999).

In addition, in spite of the result that indicated the actual effects of the variables supported the earlier findings in previous literature, the significant differences between the results from the ordered logit models and regression models were found due to residential satisfaction was a complicated theory/concept/paradigm affected by a variable amount of housing environmental and individual and household socio-demographic variables/factors.

However, Permentier, Bolt, and van Ham (2011) considered that a lot of authors only arguing about which kind of statistical method would apply to what kind of data to get the different results were not enough. Permentier et al. (2011) strongly suggested using the subjective and objective assessments on neighbourhood satisfaction that would bring the whole picture to the residents. Thus, the assessments made both by the local residents and by the outside people would comprehensively indicate where to improve their neighbourhood satisfaction.

## **2.5 Recommendations to Enhance RS**

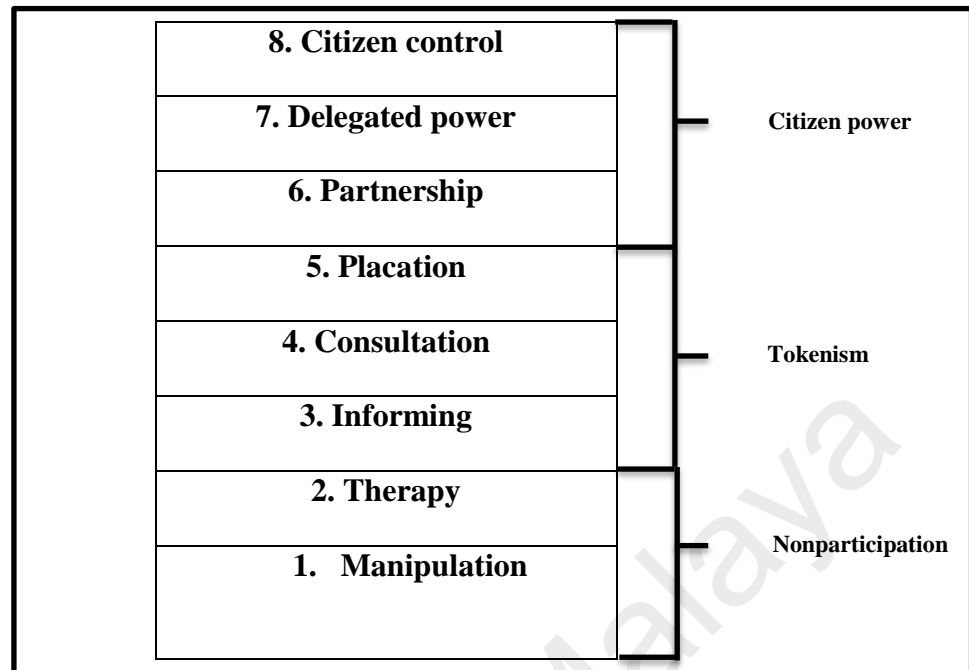
As the determinants were found by different authors in their studies about residential satisfactions of public and commodity housing in developed and developing countries, each local government was suggested to follow those determinants as policy implications to enhance their residential satisfactions of public and commodity housing.

On the downside, the determinants only talked about which facet had been currently and mostly affecting their residential satisfactions and only suggested these improvements of determinants to the local government when they improved the current living conditions or planned to build a new public housing.

Apart from this, some authors such as Sheng, Grillo et al., Liang & Fang, Ammar et al., and Li (1990), (2010), (2012), (2013), and (2013) strongly recommended the public participation among the citizens, developers, and local authorities to enhance the inhabitants' residential satisfactions during the public housing development process.

Guided by those determinants which told of residents' most concerns about residential environment, the public participation in the public housing development process would pay very close attention to the residents' requirements.

According to 'a ladder of citizen participation' (Arnstein, 1969) (See Figure 2.7) explaining the different levels of participation from non-participation to citizen control, Arnstein (1969) described the public participation as a deliberative process in which the citizens, NGOs, and government delegates got involved in negotiating for their own interests to make a final policy.



**Figure 2.7 The Ladder of Arnstein**

Source: Arnstein (1969, p. 217)

Macnaghten & Jacobs, Cleaver, Poindexter, Webler et al., Barton et al., and Davy (1997), (1999), (1999), (2001), (2005), and (2006) applied Arnstein's 'a ladder of citizen participation' (Arnstein, 1969) to analyse the development process of public housing. Poindexter (1999) and Barton et al. (2005) concluded Arnstein's (Arnstein, 1969) ladder into three levels of participations in the development process of public housing such as access to information, consultation, and active engagement by way of dialogue and partnership. And then, they found that the European countries encouraged their citizens to actively get engaged in the public housing development by means of sharing their understandings of issues and solutions instead of only giving and taking views in the consultation part.

However, some authors from Asia especially China, such as Sheng, Liang & Fang, Ammar et al., and Li (1990), (2012), (2013), and (2013) argued that some countries still manipulated the whole process of public housing development without any participations. At same time, they also argued that China's local government informed the citizens and asked for their consultations in the current situation of China's low-cost housing development according to China's regulations of low-cost housing development. Unfortunately, just like Arnstein's ladder of citizen participation described the second stage of participation as placation or tokenism, China should increase the citizen's power in the partnership with the local government to carry out a dialogue in which they would negotiate for their more interests during the development process of low-cost housing (Li, 2013; Liang & Fang, 2012).

## **2.6 Conclusion**

Under the conduct of residential satisfaction employed as a criterion to assess the residential environment of housing, Onibokun (1974) firstly introduced the Habitability System to study the components of residential satisfaction in terms of dwelling, environment, management, and tenants subsystems in order to calculate the exact residential satisfaction index.

Amerigo and Aragonés (1990, 1997) and Aragonés and Corraliza (1992) continued studying the processes of residential satisfaction based upon those components given by Onibokun (1974) in order to make the concept of residential satisfaction have more practicability in different contexts of housing.

At the same time, Mohit et al. (2010), (2011), (2012b), and (2015) concluded Amerigo & Aragonés and Aragonés & Corraliza's (1990, 1997) and (1992) findings on the basis of Onibokun's (1974) model, and proposed and validated their conceptual

model of residential satisfaction applied to assessing the residential satisfactions in public & private low-cost housing and commodity housing.

Accordingly, the four components which were drawn on the basis of three models talked about the housing unit characteristics (HUC), housing unit supporting services (HUSS), housing estate supporting facilities (HESF), and neighbourhood characteristics (NC).

Fewer studies of low-cost housing have been conducted in developing countries and very little have been done with the relationship between residential satisfaction and four components plus individual and household's socio-economic characteristics except for Lane and Kinsey (1980), McCrea, Stimson, and Western (2005), Kang and Lee (2007), Hipp (2009), Lovejoy, Handy, and Mokhtarian (2010), Dekker et al. (2011), Ibem and Amole (2013b), Ibem and Amole (2014), and Posthumus et al. (2014) even did not include all components.

Lane and Kinsey (1980) found that the individual and household's socio-economic characteristics was less important determinant of residential satisfaction than housing characteristics. On the contrary, Dekker et al. (2011) claimed that the individual and household's socio-economic characteristics was more important determinant of residential satisfaction than housing unit characteristics.

Posthumus et al. (2014) analysed the collected data from four Dutch cities and found that those residents with low incomes were less satisfied with their homes. Dekker et al. (2011) discovered that the number of children was found to be negatively correlated with residential satisfaction. However, McCrea et al. (2005) reported that the factor of gender of respondents in urban living in Brisbane-South East Queensland had no correlation with residential satisfaction.

Furthermore, Lane & Kinsey, Hipp, and Dekker et al.'s (1980), (2009), and (2011) findings showed that the owners were more satisfied with residential satisfaction than the renters. Thus, McCrea et al.'s (2005) findings about satisfaction with home ownership as an essential predictor variable contributed most to predicting satisfaction of housing in the Brisbane-South East Queensland region. However, the duration of stay was found to be negatively correlated with residential satisfaction (Dekker et al., 2011).

Posthumus et al. (2014) asserted that housing delivery strategy contributed most to predicting residential satisfaction with life in public houses. In the meanwhile, Ibem and Amole (2013b) and Ibem and Amole (2014) suggested that public housing developers should encourage the participation of users in housing delivery process with the intention of enhancing the subjective life satisfaction in public housing in Ogun State, Southwest Nigeria.

Unfortunately, Hipp (2009) found that single-parent households, and social or physical disorder had negative correlations with neighbourhood satisfaction and even the crime had a significantly negative effect on satisfaction.

Accordingly, Kang and Lee (2007) claimed that the increasing of surveillance opportunity through the adjustments of night lighting interval to decide the visual accessibility about the habitats, the improvement of type of alley and housing layout from the street, and even the decreasing of non-housing proportion in urban residential area had significant correlations with controlling vandalism and vehicles-related crime victimisation. In addition, the level of fear of crime was found to be negatively correlated with the social network reinforcement by way of interaction and participation (Kang & Lee, 2007).



Furthermore, McCrea et al. (2005) and Kang and Lee (2007) claimed that to increase neighbourhood and residential satisfaction of residents living in the Brisbane-South East Queensland region depended more on the improvement of neighbourhood interaction especially for the older people. At same time, Turkoglu's (1997) studies about the more tenant involvements, more neighbourhood social interactions and more activations of participations in the community would bring along the higher residential satisfactions.

Turkoglu (1997) and Varady and Carrozza (2000) simultaneously criticised that the housing ventilation affected the level of residential satisfaction of planned and squatter environments in Istanbul. Posthumus et al. (2014) found that the resident's satisfaction with the size of main activity areas in housing units and housing services and management of the housing estates contributed most to predicting residential satisfaction with life in public houses.

In addition, Varady & Carrozza's (2000) studies about 1,300 residents living in CMHA housing presented a higher level of satisfaction with Neighbourhood Characteristics. Furthermore, Lovejoy et al. (2010) pointed out that to increase neighbourhood satisfaction both in traditional and suburban neighbourhoods in eight California neighbourhoods depended more on the improvements of innovative neighbourhood designs in the features of attractive appearance and perceived safety of neighbourhoods. On the contrary, the features such as parking, yards, and school quality were not found to contribute to predicting neighbourhood satisfaction (Lovejoy et al., 2010).

Therefore, with reference to Ibem and Amole, Posthumus, Bolt, and van Kempen, Huang and Du, and Mohit & Mahfoud (2014), (2014), (2015), and (2015) argued that the individual backgrounds had correlations with satisfactions of residential components (Mohit et al.'s model) and the overall residential satisfactions as well, this research

study made one conceptual model with four residential components and individual and household's socio-economic characteristics.

On the basis of characteristics of Chinese low-cost housing, the factors in each four components plus the individual background which would be appeared as questions in the questionnaire of the quantitative part were suggested by those determinants found from the studies about residential satisfactions in public and commodity houses in developed and developing countries.

In a word, residential satisfaction of public housing in the western context, the element of neighbourhood characteristics (social and spatial characteristics of neighbourhood) was found to be more influencing the level of residential satisfaction of inhabitants such as the public transportations linking the main shopping centres and recreational areas to the location of the public housing projects were not adequate and efficient. Moreover, high levels of noise and high probability of interference from neighbours generated by many large-sized households on a small piece of property mainly made the tenants feel dissatisfied.

The residential satisfaction of public housing in the developing countries, except for the element of neighbourhood characteristics being the mostly concerned by the residents, the housing estate supporting facilities was the second component about that the residents concerned in terms of perimeter roads, pedestrian walkways, parking facilities, public phone, multi-purpose hall, and kindergarten. In addition, the components of housing unit supporting services and characteristics were also important due to the factors of electricity, water, cleanliness of drains, cleaning services for corridors and staircases, garbage disposal, street lighting, living room, dining space, bedroom, dry area, kitchen space, and socket points affected residential satisfactions of inhabitants.

However, the factors determining residential satisfaction of commodity housing in developed and developing countries would also be taken into considerations based upon Chinese low-cost housing having another characteristic of commodity housing. Some of those factors affecting residents' satisfactions were entirely different from public housing such as a unique design for housing in terms of type and appearance, location and safety, and gated community increasing community attachment. What is more, the composite commodity housing to give the high and increasing price to the existing owners as an investment good was much more noteworthy than whether to bring along more or less housing satisfaction to users.

Despite the different factors from public and commodity housing in developed and developing countries, the same feeling that the residents had regarding living in the mixed residences was not satisfied especially the public housing residents were still considered as the outsiders in the mixed housing area where they did not have such a sense of belonging due to the social exclusion existed and critically affected satisfaction levels of residents and their communications with non-poor neighbourhoods, although the mixed residence brought some improvements in the quality of neighbourhood public facilities.

In addition, in spite of the factors of gender, age, education, income, family size, marital status, employment type, floor level, previous residence, length of residency, and housing delivery strategy affecting residential satisfaction, the ownership was concerned by all residents from public and commodity housing in developed and developing countries. In particular, promoting homeownership amongst low- and moderate-income households could improve their levels of residential satisfaction.

After conclusion about the factors, the data collection and data analysis in previous studies were discussed. Finally, this chapter was concluded with Arnstein's 'A Ladder of Citizen Participation' as a basic model applied to many recommendations for enhancing residential satisfactions in low-income/public housing developments.

University of Malaya

## **CHAPTER 3: CHINA (XUZHOU)'S LOW-COST HOUSING**

### **3.1 Introduction**

This chapter would be divided by two parts consisted of China's low-income housing and Xuzhou's low-cost housing. It began with the elaborations on types of China's low-income housing and would discuss about those recent studies on residential satisfaction and policy of China's low-income housing. Next, Xuzhou's low-cost housing would be elaborated in terms of Xuzhou's economic status in Jiangsu province, Xuzhou's economic and urban transformations, Xuzhou's housing status quo, and three phases of low-cost housing projects in Xuzhou. It would discuss the significance of residential satisfaction applied to assessing residential satisfactions of China's (Xuzhou)'s low-cost housing.

### **3.2 China's Low-Income Housing (LCH)**

With respect to the social housing whose accessibility was controlled by the local authority by means of the diverse allocation rules (Aziz & Ahmad, 2012; Chen, Stephens, & Man, 2013; Fitzpatrick & Stephens, 2008; Hills, 2007; MacLennan & More, 1997; Oxley, 2000; Tsenkova & Turner, 2004), the low-income housing in China was defined to provide social security housing aimed at facilitating those whom had troubles in having places to live. The local government put some limits on the purchaser, the standard of the construction, and the selling price or the standard of rental in order to protect those different medium-low, low, and lowest-income groups of citizens (Chen, 2016; Chen et al., 2014; Chen, Zhang, et al., 2013; Huang, 2012; Wang & Murie, 2011).

The post-reform public housing projects in China for medium-low, low, and lowest-income groups of citizens consisted of urban low-rent housing (LRH), urban low-cost housing (LCH), house with limited size and price (LSPH), public rental housing (PRH) (Wang & Murie, 2011).

In terms of the ownership and allocation, the LRH is owned and allocated directly by local housing bureau, on the contrary, the other three types of low-income housing are built and delivered by property developers under the supervisory control of municipal housing bureau. Thus, it was easy to understand why the central government was urgent to introduce the low-cost housing to medium-low income group of households as 'predominant' type amongst four types of low-income housing because the LCH was designed to be a fast way to deal with homeownership and sold at below-market price to local eligible households comparing to low-rent and public rental housing only for renting (Chen, 2016; Wang & Murie, 2011).

However, as the homeownership acquired by way of purchasing low-cost housing was more competitive than the homeownership acquired by purchasing the commodity housing, a lot of commodity housing developers, who were designated by the municipal governments to develop the low-cost housing, criticised about the sale price being restricted and only earned 3% profit margin, and also covered the construction cost in spite of the land of low-cost housing scheme was freely allocated to developers. Therefore, they wanted to quit developing low-cost housing (Chen, 2016).

In the meanwhile, under the situation of a lot of commodity housing developers being not intended to do so, some cities like Xuzhou and Changzhou established a municipal state-owned development company directly led by the respective mayor of Xuzhou and Changzhou and only developed the projects related to low-cost and low-rent houses. The local governments did not want the commodity housing developers to get involved in the low-cost housing development. In addition, the medium-low income group of households in some first-, second-, and third-tier cities, who were not able to purchase the commodity houses, were targeted by low-cost housing to let them have homeownerships. Xuzhou is such an example.

The LCH [named in Chinese “Jingjixing Shiyong Fang” (‘Jingjixing’ translated into English as ‘the price of housing is lower than the current price of commodity housing’ and ‘Shiyong’ as ‘affordable and comfortable’ and ‘Fang’ as ‘housing’)] is built for selling to medium-low income residents with a certain paying capability at government guided price.

In terms of LCH was defined as a commodity housing with the characteristics of social security, it had economic and applicable attributes. The economic attribute of LCH reflected that the pricing of low-cost housing was comparatively moderate which was seasoned with medium-low income households’ housing affordability. The applicable attribute of LCH indicated that it placed emphases on the effectiveness of housing by way of housing design and the standard construction.

In terms of the dwelling space of LCH, it was strictly controlled as medium-small sized housing construction within 80 square meters and the small-sized dwelling space was controlled within 60 square meters.

In addition, this group of people with medium-low income had a certain ability-to-pay or the prospective ability-to-pay and besides, they possessed the limited home ownership which would be owned after 5 years’ purchasing (which was actually conditioned according to each municipal government, e.g. the ownership of Xuzhou’s low-cost housing had not been fully purchased since they moved in 2005).

### **3.2.1 Recent Studies on RS of China’s Low-Income Housing**

Little is known about the experience of residential satisfaction from the residents’ perspective in China. In particular, the low-income dwellers in China have few opportunities to express their feelings about their living environments especially in the context of government’s decisions to increase the numbers of low-income housing since

2007 based upon assessments of low-income housing's shortages, ownership claims, development mode and cost, and varieties of low-income housing allocation schemes needs, however, none of which considered the level of inhabitants' residential satisfaction of low-income housing in China.

There have been very few studies about medium-low and low-income groups' residential satisfactions with low-income housing in China. On exception, Tian and Cui (2009) found that the residents, who lived at a public housing in Harbin, north-eastern China, were not satisfied with the layout, appearance, heat ventilation, lighting, transport facilities, children's schools, and culture and entertainment facilities.

Moreover, Huang and Du (2015) revealed that the increasing of residential satisfaction of Hangzhou's public housing depended more on the improvement of neighbourhood characteristics, housing estate public facilities and housing unit characteristics. It depended less on the improvement of public housing allocation scheme, social environment characteristics of neighbourhood and residence comparison.

In addition, Huang and Du (2015) found that the residents were most satisfied with cheap rental housing among the four types of China's public housing, followed by public rental housing and monetary subsidised housing, on the contrary, residents were found to be the least satisfied with economic comfortable housing.

Fang (2006) assessed the level of residential satisfaction of original residents living in four redeveloped inner-city neighbourhoods of Beijing at different time periods in the past 15 years. An overall level of residential satisfaction across all four neighbourhoods was found to be low on the basis of a questionnaire survey conducted in Beijing and the size of housing unit and length of staying were found to be significantly correlated with residential satisfaction.



### **3.2.2 Recent Studies on China's Low-Income Housing Policy**

Tao et al. (2014) found that the effects of institutional factors were not significant in improving residential satisfaction of migrant workers in Shenzhen, China who lived at overcrowded rental housing with poor conditions. As a matter of fact, understanding current residents' perspectives on informal settlements villages are better than straightforward demolitions to improve their residential satisfaction and neighbourhood quality (Li & Wu, 2013).

In point of fact, as it was very essential to shed light on people's diversified residential preferences, demands, perceptions and evaluations of their residential environments, Fang, Ge and Hokao, Haliloglu Kahraman (2006), (2006), and (2008) and (2013) asserted that better understanding of people's characteristics of residential preferential patterns, residential choice factors and residential satisfaction for local governments would adjust their housing policies to adapt residents' constantly diversified housing needs.

Under the backdrop of rapid socio-economic development in China bringing about social inequalities in various areas especially the differences in residents' satisfactions, Chen, Zhang, et al. (2013) found that the residential situation of a higher proportion of low-income group were not only less satisfied with their lower rate of homeownership than high-income group, but they were also less satisfied with their residential environments than high-income group due to their residential environments had less liveable neighbourhoods and smaller housing spaces in Dalian, China.

Thus, Chen, Zhang, et al. (2013) suggested that the sufficient provisions of low-income and low-rent housing together with a strict implementation of income criteria to be qualified for applying subsidised housing would be helpful to reduce residential disparities between low-income and high-income groups.

### **3.3 Xuzhou's LCH**

#### **3.3.1 Economic Level of Development in Second-Tier Cities in China especially Xuzhou**

Almost one-third of global economic outputs were produced by only around one-eighth of global population who were from the world's 123 largest metropolitan areas that were grouped into the seven types of global cities consisting of global giants, Asian anchors, emerging gateways, factory China, knowledge capitals, American middleweights, and international middleweights (Trujillo & Parilla, 2016).

According to Trujillo & Parilla's (2016) research, the 22 second- and third-tier Chinese cities grouped in the Factory China type including Chinese manufacturing hubs were pointed out that increasing their global engagement and their local economy mainly relied on export-intensive production such as Xuzhou, Nantong, and Changzhou. Furthermore, their diversely geographical locations indicated their varieties of industrial transformations in terms of the cities from the same region showing almost same such as the cities of Xuzhou, Nantong, and Changzhou locating on China's east coast indicating differently from the cities locating at the inland regions and at the Pearl River Delta region.

Compared to other six types of global cities, the type of Factory China had been growing most fast in terms of their population, GDP, GDP per capita, output, and employment. Thus, the cities like Xuzhou, Nantong, and Changzhou with other 19 cities not only brought a lot of changes to their local citizens and governments, i.e. from 2000 to 2015 the GDP per capita had been increased five times from \$2500 to \$12,000, but they also changed the global middle class structure (Schuurman & He, 2013; Trujillo & Parilla, 2016).

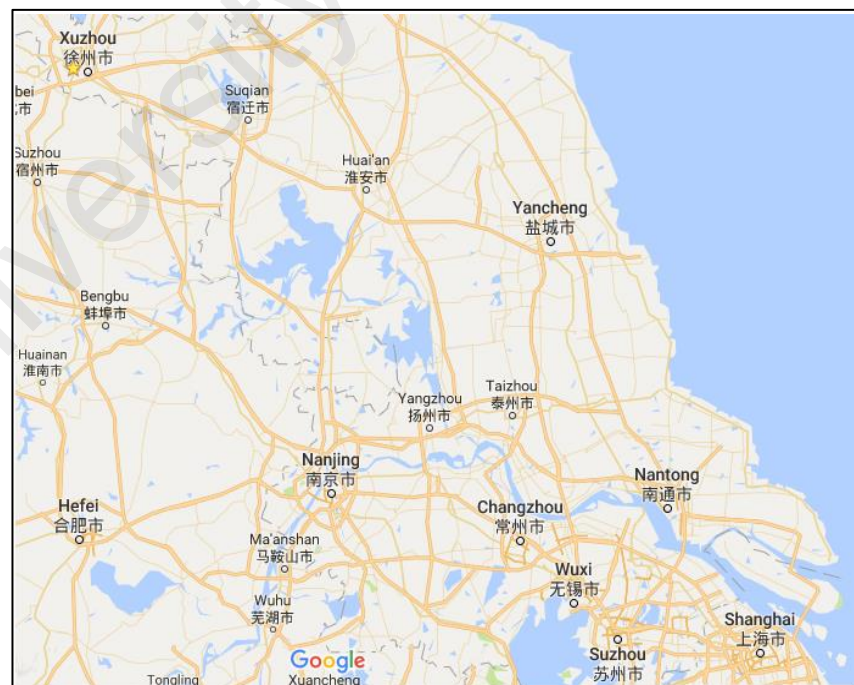
Furthermore, from the year 2000 to the year 2015, the manufacturing sector had been becoming their advantage to connect the global economy day by day and to link the domestic to the international (to become international manufacturing supply chains) such as Caterpillar and Golden Concord Holdings Limited (GLC) in Xuzhou with the productions from only 30% of their GDP to around 40% of total output, for instance, around 500 foreign companies (Schuurman & He, 2013) located and operated businesses in Xuzhou Economic and Technological Development Zone (1992) which was the national level for foreign investment. Then, the utilised foreign direct invest (FDI) in Xuzhou city had risen 26.6% up to US\$ 1.5 billion in 2013 ("Xuzhou Major Economic Indicators (2013)," 2013), and FDI per capita from 2009 to 2015 had risen to \$164 (Trujillo & Parilla, 2016).

Thus, Trujillo and Parilla (2016) concluded that the 22 second- and third-tier Chinese cities with only 25% of Chinese population made one-third of China's total productions. However, the city like Xuzhou has to pay a painful price for highly polluting the water, air, and soil during the process of industrialisation and due to the use of coal as fuel for heavy industry development (Schuurman & He, 2013). Hence, Xuzhou's city government had already made a decision on the industrial transformation from the heavy industry to the light industry. Furthermore, the strict environmental policies that were introduced by Xuzhou's city government strictly standardised the companies' behaviours and the protecting environment special funds that were kept in Xuzhou's city government's annual budget used for solving the problems of pollution (Schuurman & He, 2013).

### 3.3.2 Xuzhou in General

The Xuzhou city (Figure 3.1), which is located in the upper north-western part of Jiangsu province (Ma, Qiu, Li, Shan, & Cao, 2013) that is an east coastal province of China, is connected to another two big provinces, i.e. Shandong and Anhui provinces and is probably located halfway between Beijing and Shanghai.

Furthermore, Xuzhou city is the largest city of the Huaihai Economic Region amongst more than 30 cities from 4 provinces consisting of Jiangsu, Shandong, Henan, and Anhui. In terms of Xuzhou's critically and economically strategic location since ancient times, it is one of China's most renowned transportation hubs with the bases of water, land, and railway transportations and is leading economic growth of Huaihai Economic Region. Moreover, Xuzhou city also is a member of Yangtze Delta Economic Region (Geng, Long, & Chen, 2016) to easily connect with southern Jiangsu, Shanghai and Zhejiang provinces.



**Figure 3.1: Xuzhou (Nantong, and Changzhou) (Three second-tier cities in Jiangsu Province, China)**

Source: Google Map

### **3.3.3 Xuzhou to Be Selected Amongst Three New Second-Tier Cities in Jiangsu Province**

The reasons why Xuzhou city was selected as an example of new second-tier cities to study residential satisfaction of low-cost housing were because the first of the 2<sup>nd</sup> largest registered population ("The Data of Sampling Survey on 1% population of Xuzhou in 2015," 2016; Trujillo & Parilla, 2016) in Jiangsu province having 8.66 million (Table 3.1) until 2015 comparing to Nanjing (which is the capital city of Jiangsu province) having 8.245 million (Table 3.4) by the year 2015 (Cui, Geertman, & Hooimeijer, 2016; "The Data of Sampling Survey on 1% population of Nanjing in 2015," 2016; Trujillo & Parilla, 2016) and comparing to Nantong (which is another new second-tier city) having 7.357 million (Table 3.2) and comparing to Changzhou (which is another new second-tier city) only having 4.727 million (Table 3.3) by the year 2015 ("The Data of Sampling Survey on 1% population of Changzhou in 2015," 2016; Trujillo & Parilla, 2016).

Secondly, Xuzhou city had the 2<sup>nd</sup> largest area (Total area is 14,296 km<sup>2</sup> consisting of prefecture-level 11,259 km<sup>2</sup> and urban 3,037 km<sup>2</sup>) (Ma et al., 2013) which was bigger than Nanjing city (Total area 6,598 km<sup>2</sup>) (Cui et al., 2016) and was also bigger than Nantong city (Total area 8,544 km<sup>2</sup>), and of course, was much bigger than Changzhou (Total area is 6,256.68 km<sup>2</sup> consisting of prefecture-level 4,384.58 km<sup>2</sup> and urban 1,872.1 km<sup>2</sup>).

In terms of regional GDP, Xuzhou city was quite similar with Changzhou city at \$149,682 million (Table 3.1) to \$147,281 million (Table 3.3), but was slightly lower than Nantong city at \$169,781 million (Table 3.2) and was very different from Nanjing city with \$271,934 million (Nanjing is the first-tier city) (Table 3.4) (Trujillo & Parilla, 2016).

**Table 3.1: Xuzhou City General Statistics**

Xuzhou, China			
Type: Factory China			
		Ranks	
Metric	Value	Overall	Within type
Population (Ths),2015	8,660	33/123	8/22
GDP (millions PPP\$), 2015	\$149,682	93	19
GDP per capita (PPP\$), 2015	\$17,284	116	19
GDP per worker (PPP\$), 2015	\$85,697	77	14
GDP growth (ann.), 2000-2015	+12.6%	20	15
GDP per capita growth (ann.), 2000-2015	+12.8%	2	2
GDP per worker growth (ann.), 2000-2015	+5.9%	25	17
Traded sector productivity diff., 2015	N/A	N/A	N/A
FDI per capita, 2009-2015	\$164	116	17
University research impact, 2010-2013	N/A	N/A	N/A
Patents per 1,000 inhabitants, 2008-2012	0.00	122	21
Venture capital per capita (Ths.), 2006-2015	N/A	N/A	N/A
Higher educational attainment (%)	4.6	120	20
Air passengers, 2014	2,166,020	116	17
Internet speed (Mbps), 2014	33.3	39	2

Source: Trujillo and Parilla (2016)

**Table 3.2: Nantong City General Statistics**

Nantong, China			
Type: Factory China			
		Ranks	
Metric	Value	Overall	Within type
Population (Ths),2015	7,357	45/123	15/22
GDP (millions PPP\$), 2015	\$169,781	77	13
GDP per capita (PPP\$), 2015	\$23,079	104	13
GDP per worker (PPP\$), 2015	\$109,576	40	4
GDP growth (ann.), 2000-2015	+12.7%	19	14
GDP per capita growth (ann.), 2000-2015	+12.8%	1	1
GDP per worker growth (ann.), 2000-2015	+6.5%	22	15
Traded sector productivity diff., 2015	N/A	N/A	N/A
FDI per capita, 2009-2015	\$405	99	12
University research impact, 2010-2013	N/A	N/A	N/A
Patents per 1,000 inhabitants, 2008-2012	0.00	117	16
Venture capital per capita (Ths.), 2006-2015	\$0.01	94	7
Higher educational attainment (%)	6.0	117	18
Air passengers, 2014	2,049,895	117	18
Internet speed (Mbps), 2014	25.0	75	8

A rank of 1 indicates the largest value in the group of metro areas being compared

Source: Trujillo and Parilla (2016)

**Table 3.3: Changzhou City General Statistics**

Changzhou, China			
Type: Factory China			
		Ranks	
Metric	Value	Overall	Within type
Population (Ths),2015	4,727	71/123	21/22
GDP (millions PPP\$), 2015	\$147,281	94	20
GDP per capita (PPP\$), 2015	\$31,155	86	6
GDP per worker (PPP\$), 2015	\$66,988	99	18
GDP growth (ann.), 2000-2015	+12.5%	22	16
GDP per capita growth (ann.), 2000-2015	+10.8%	18	14
GDP per worker growth (ann.), 2000-2015	+5.3%	28	18
Traded sector productivity diff., 2015	N/A	N/A	N/A
FDI per capita, 2009-2015	\$1,386	40	2
University research impact, 2010-2013	N/A	N/A	N/A
Patents per 1,000 inhabitants, 2008-2012	0.00	119	18
Venture capital per capita (Ths.), 2006-2015	\$0.01	95	8
Higher educational attainment (%)	10.0	105	10
Air passengers, 2014	3,889,019	112	15
Internet speed (Mbps), 2014	33.5	38	1

A rank of 1 indicates the largest value in the group of metro areas being compared

Source: Trujillo and Parilla (2016)

**Table 3.4: Nanjing City General Statistics**

Nanjing, China			
Type: Factory China			
		Ranks	
Metric	Value	Overall	Within type
Population (Ths),2015	8,245	37/123	14/28
GDP (millions PPP\$), 2015	\$271,934	43	12
GDP per capita (PPP\$), 2015	\$32,983	81	6
GDP per worker (PPP\$), 2015	\$78,121	85	5
GDP growth (ann.), 2000-2015	+12.5%	21	6
GDP per capita growth (ann.), 2000-2015	+10.3%	26	7
GDP per worker growth (ann.), 2000-2015	+6.7%	20	5
Traded sector productivity diff., 2015	+255.7%	5	5
FDI per capita, 2009-2015	\$1,386	39	9
University research impact, 2010-2013	8.5%	82	9
Patents per 1,000 inhabitants, 2008-2012	0.41	63	3
Venture capital per capita (Ths.), 2006-2015	\$0.05	69	7
Higher educational attainment (%)	22.1	81	9
Air passengers, 2014	27,263,988	63	12
Internet speed (Mbps), 2014	34.5	34	2

Source: (Trujillo & Parilla, 2016)

### **3.3.4 Economic Transformation of Xuzhou City**

With the development of transformation from the old economic model to the new economic model across the country of China, i.e. the single-pattern of only state-owned companies operating in the ‘market’ under the national guidance were transforming to the coexistence of diversified-owned companies operating in the market economy, all state-owned enterprises around the country were doing bankruptcy liquidation to achieve the outcome of the planned economy transforming to the market economy. For instance, in February of 1992, the city government of Xuzhou announced to reform the recruitments and distributions of personnel systems of State-Owned-Enterprises (SOEs), i.e. the employees’ lifelong labour contract from SOEs were terminated which meant that the employees of SOEs were fired when their performances were not satisfied by SOEs’ managers, hence, their salaries got along with efficiency and performance of the company. Accordingly, this was the first time of China’s central government to start State-Owned-Enterprises reforms from the lowest level of employees of SOEs since Chinese economic reform of 1978.

In the case of social security had not been established in each city when the city government of Xuzhou reformed and shut down the state-owned companies, a large number of ‘laid-off’ workers had been eliminated by the society because they had not learnt too much knowledge about working skills during the period of their working at state-owned companies on account of no competition in state-owned companies’ working environment.

Furthermore, this previous much secured working environment in their work units blocked employees from learning about outside world from one side; another side was that the employees were lazy about learning new things as they thought they had a never-loss job.



As a result, when the reform came suddenly, they were pushed into the market and they could not survive especially for the poorest and lowest levels of workers who even did not have places to live in. Furthermore, this unprecedented situation led to a series of social crises such as some ‘laid-off’ workers eventually committing suicide when they did not have a way to go. Taking Xuzhou Sock Factory which was a state-run company to go bankruptcy liquidation more early than others, a lot of people were forced to lose their jobs to become the group of ‘laid-off’ workers who were considered as the lowest level of society at that time.

As the above mentioned in terms of the social security had not been established in Xuzhou, the ‘laid-off’ workers were neglected by the society during the process of the planned economy transforming to the market economy and were left behind at that time. No matter in terms of their ages or their financial advantages, they did not have any chances of re-starting their businesses. Eventually, the ‘laid-off’ workers had to become a member of who relied on the minimum subsistence in Xuzhou and they had to pay their pension insurance by their own until the age of retirement, and of course, a certain numbers of ‘laid-off’ workers were still staying with their parents at their parents’ work units’ distribution houses during the process of this research investigation in Xuzhou.

### **3.3.5 New Development of Xuzhou and Xuzhou’s Economic Growth**

After the establishment of the basic economic system in China that the diversified ownership economy was coexistence as the public ownership was the main body, the industrialisation development around China had been enhanced and the urbanisation process had also been developing so fast. Xuzhou is such an example.

Along with Xuzhou city's resources exhaustion gradually since 1990s, Xuzhou city had been facing some critically serious problems at that time such as the structure of industry was quite simplified, urban function was not strong enough, and ecological environmental degradation.

In terms of the real situations of Xuzhou, Xuzhou's city government proposed to develop with respects to the industrial transformation, urban transformation and ecological transformation with the support of National Development and Reform Commission and the provincial government.

Through the constant efforts, Xuzhou had been changing the previous of a single-industrial-structure in terms of enlarging food and agricultural products processing industry represented by Xuzhou Weiwei Group that bringing along the development of green agricultural industry and organic food industry in terms of the principal farming products consisting of rice, wheat, fruit, cotton, oil seed, etc. instead of the traditionally agricultural economy model so as to boost Xuzhou's process of urbanisation from rural area to urban area at the same time ascribed to the new agricultural development mode that can free a lot of traditional farmers from their traditional land.

Thus, the city's economy formerly dominated by the agricultural income had been changed into only 3% of the Xuzhou city's GDP until 2015 ("The Statistical Bulletin of National Economy and Social Development of Xuzhou 2015," 2016). It indicated that some certain numbers of modern farmers moved into the urban area as the traditionally agricultural economic model only relying on the productivity of the land had been changed into the new modern of agricultural economic model with the improvements of new agricultural technology. Thus, it showed a new strength getting involved with the urbanisation process to bring a lot of pressures to medium-low income group of local residents, because the price of housing had been pushed up by them.

In terms of the urbanisation process, the housing demands had been increasing sharply in a short time and the housing prices had been boosting as well. As more and more housing construction projects, Xuzhou's construction machinery industry had been enhancing such as Xuzhou Construction Machinery Group (XCMG) led this area around China even around the world. Thus, the numbers of local skilled workers had been getting larger and larger compared with those 'laid-off' workers who did not have much more skills during the period of their working under the old economic model (Cui et al., 2016).

With regard to the fast growing economic sector like new energy, Golden Concord Holdings Limited (GLC) is the world's leading manufacturer of high quality photovoltaic material in terms of Xuzhou GLC Photovoltaic Power Co., Ltd being current one of China's largest solar farms. Furthermore, Xuzhou GLC carried out a national new level of project to bring a lot of significant economic and environmental benefits to the local market. Accordingly, the available positions of new jobs attracted high- and medium-talented applicants across the Jiangsu province and beyond. Moreover, as the migratory talented workers more and more moved into Xuzhou city, they had been bringing a lot of prosperities to Xuzhou's real estate market. In terms of their salaries were quite satisfied paid by those big local and international companies in Xuzhou, the local housing developers were engaged in medium-high and high-end commodity housing developments to meet their housing needs. In the meanwhile, the migratory talented workers brought too much pressure on the local medium-low households who prepared to buy commodity houses.

With respect to the featured industries developing comprised of the new modern agricultural economic model, construction industry, new energy industry, and real estate, the logistics industry, of course, got improved so fast not only on account of

Xuzhou's economically strategic geographical-location but also ascribed to all economic sectors got boosted. For instance, with the development of Chinese electronic commerce, a lot of courier companies were emerged and the numbers of local sorting stations had also been increasing. Therefore, a certain number of unemployed, lower-educated, and previous 'laid-off' workers joined as couriers to deliver Taobao goods and they could earn fairly good wages. The electronic commerce not only created locally numerous young entrepreneurs, but also created a great deal of working opportunities for unemployed, lower-educated, and previous 'laid-off' workers. Thus, some certain percentages of local businessmen and businesswomen doing businesses by electronic commerce and some certain percentages of local people doing as couriers had already increased their purchasing power for commodity housing compared to when they got laid off.

According to the above mentioned, Xuzhou city government had already promoted the industrial transformation in terms of accelerating the transformation from the old industrial bases to the modern industrial and commercial city.

In the process of transformation, the new-type industrialisation based upon the mergers and acquisitions about that Xuzhou city government always mentioned was to transform and promote Xuzhou's traditional industries such as Xuzhou Weiwei Group in order to covert the industrial structure from heavy-industry to light-industry by means of the implementation of technological innovation.

Furthermore, the new-type industrialisation was also asked to develop hi-tech industries in order to stimulate the industry level from low to high by way of increasing the investments in science and technology to building an innovation platform for studying on the elements of innovation in order for enhancing scientific research abilities. Xuzhou GLC Photovoltaic Power Co., Ltd is such an example.

In terms of the shortages of each industry in Xuzhou, the industrial chain should be extended so as to increase job opportunities such as Xuzhou's logistics industry. Moreover, the new-type industrialisation was asked to develop like Jinshanjiao development zone which was the earliest and the most comprehensive industrial park with full function and full equipment where the industrial distribution would be changed from dispersed allocation to be put together, i.e. the same industry sector could meet their suppliers at the same time in this industrial park in order to adjust the industrial structure and enlarge the industrial scale.

Therefore, in terms of the process of Xuzhou's economic transformation increasing the local GDP, Table 3.5 indicated that the GDP of Xuzhou annually rose 12.6% from 2000 to 2015 and the GDP per capita of Xuzhou annually grew 12.8% from 2000 to 2015 (Trujillo & Parilla, 2016). As Xuzhou's economic developments mainly relied on the equipment manufacturing, food processing and new energy, the industrial output and the food processing had achieved RMB 275.73 billion and RMB 245.8 billion in 2013, respectively ("Xuzhou Major Economic Indicators (2013)," 2013). Thus, the value-added output from the industry sector was reported to take up 47.8% (Table 3.5) of Xuzhou's GDP in 2013 which meant that the industry sector had contributed the most in the past ("Xuzhou Major Economic Indicators (2013)," 2013).

For instance, the established companies in Xuzhou such as Xuzhou Construction Machinery Group (XCMG) which was founded in 1989 and is leading China's construction machinery production and supplying and another top state-owned mining group named Xuzhou Mining Group which was established in 1880s and is playing a major role in eastern China's coal production and supplying, had achieved RMB 1.51 billion net profit and RMB 26.99 billion sales revenue for XCMG in 2013 and had

achieved 20 million tons annually coal production capacity for Xuzhou Mining Group until 2013.

What is more, the main export products comprising of construction materials electronic and mechanical products, base metals and products and agricultural products that were produced by those established companies in Xuzhou had gained US\$ 4900 million in 2013 (Table 3.5). Therefore, the revenue of Xuzhou's city government got increased.

**Table 3.5: Xuzhou City Information  
(2013)**

Land Area (km <sup>2</sup> )	11,258
Population (million)	8.59
GDP (RMB billion)	443.58
<b>GDP Composition</b>	
Primary Industry (Agriculture)	9.70%
Secondary Industry (Industry & Construction)	47.80%
Tertiary Industry (Service)	42.50%
GDP Per Capita (RMB)	51,714
Unemployment Rate	2.14%
Fixed Asset Investment (RMB billion)	309.01
Actually Utilised FDI (USD million)	1,500
Total Import & Export (USD million)	6,290
<b>Export (USD million)</b>	<b>4,900</b>
Import (USD million)	1,390
Sales of Social Consumer Goods (RMB billion)	147.36

Source: Xuzhou Economic and Social Development Report 2013 ("Xuzhou Major Economic Indicators (2013)," 2013)

### 3.3.6 Xuzhou's Urban Transformation

When Xuzhou's government revenues had been remaining stably increasing from 2000-2015 (Trujillo & Parilla, 2016), the city government decided to carry forward the urban transformation from the resource-based city to the regional central city.

As Xuzhou not only is the country's major integrated transportation hub but also is the central city in the Huaihai Economy Region, Xuzhou kept optimising urban spatial

structure to enhance urban functions in order to strengthen city's public appeal and influence when promoting the urban transformation.

Since the urbanisation movement going fast from 2000 in Xuzhou, with the objectives of Xuzhou's city government of making a very dynamic and liveable city, the city government had been expanding the area of the city urban by increasing the numbers of districts instead of counties in order for a lot of migrant workers from the following counties and villages coming and working in Greater Xuzhou so as to boost Xuzhou's economy.

In terms of a liveable city and the requests from those migrant workers (not so many from other cities due to the large number of Xuzhou's population) regarding the increasing of housing numbers and residential environment, the city government had been restructuring the shanty towns, urban villages, and old quarters since 2000 to constantly improve their residential environment which were the medium-low and low-income local residents and migrant workers' choices for living, however, this group of migrant workers from Xuzhou's following counties and villages was not kind of big comparing to most migrant workers coming to Xuzhou for doing their own businesses due to Xuzhou city previously having a certain number of 'laid-off' workers to do those low-required jobs. As a result, those migrant workers actually promoted Xuzhou's real estate development and drove up local housing price (Cui et al., 2016; "Xuzhou Major Economic Indicators (2013)," 2013; "Xuzhou Transformation and Development Practices," 2016).

With the city government's constant efforts, the old industrial bases of Xuzhou got revitalised by promoting ecological transformation in which a lot of ecological rehabilitation projects were carried out such as devoting more efforts to comprehensively controlling mining subsidence and reclaiming the industrial and

mining wasteland. Hence, the ecological environment of Xuzhou had been greatly improved comparing to the year of 2000 so that the housing price would be increased rationally ("The Data of Sampling Survey on 1% population of Xuzhou in 2015," 2016; "Xuzhou Major Economic Indicators (2013)," 2013; "Xuzhou Transformation and Development Practices," 2016).

On the whole, after Xuzhou city's urban transformation and city's functions being considerably improved, the issue of social security especially housing security gradually entered into city government's attention when the local citizens inclusive of migrant workers had been constantly buying housing for their own using and investing so as to increase the housing price three times between 2005 and 2016 (Chen, 2016; "The Data of Sampling Survey on 1% population of Xuzhou in 2015," 2016; Trujillo & Parilla, 2016; "Xuzhou Transformation and Development Practices," 2016). Consequently, the local medium-low income citizens, most of who were 'laid-off' workers, low-educated, and aged, had a lot of pressures of buying housing since 2000 ("Xuzhou Transformation and Development Practices," 2016).

### **3.3.7 Xuzhou's LCH**

#### **3.3.7.1 Xuzhou's Housing**

In terms of Chinese economic transformation since the late 1990s bringing about the termination of welfare housing provision in 1998 and Chinese housing commodification since the late 1990s, the people's social values had been changed on account of a certain number of workers were laid off and at the same time they had no capabilities of buying new houses when some SOEs did not provide staff quarters to all of their employees. At the time of either buying their staff quarters or buying commodity housing under the context of no more welfare housing provision, the low-income housing programmes were just introduced to those who were laid-off workers or medium-low or low-income



urban citizens and did not have staff quarters to live at and were not afford to buy new commodity houses.

Furthermore, the role of housing reshaped Chinese social welfare system from just giving a basic living need based upon the urban welfare housing system which was implemented until the early 1990s when Chinese housing was not taken as a commodity to giving an exchange value of commodity housing (purchased from free market or purchased from local governments not from private developers such as low-cost housing) and a basic living need (allocated/leased from local governments such as low-rent housing) based on free market system and low-income housing programmes system.

In another word, the Chinese public housing (low-income housing) not only had changed itself from a state-owned to private homeownership (either purchased from free markets or purchased from local governments) since 1998 (Chen et al., 2014), but it had also significantly reshaped the local welfare system in China especially in terms of the urban housing security system that was taken as an importantly indispensable element in Chinese social security system.

In terms of the urban welfare housing system, it impeded Chinese commodity housing development, because the state-provision housing which was freely delivered to SOEs' workers made them reluctant to purchasing the market housing. Furthermore, as the demand for the market housing was relatively low, the numbers of commodity housing developers were very limited and all of them were state owned developers. Thus, the serious problem of housing shortage was around China not only because of the limit numbers of commodity housing developers but also the costs of development that were very high for SOEs. Accordingly, the welfare housing system actually halted Chinese economic development (Chen, 2016; Chen et al., 2014; "Full text: Report on

China's economic, social development plan," 2015; Stephens, 2010; Wang & Murie, 1999; Wang & Murie, 2011; Wu, 1996).

With regard to the medium-low and low-income households in less-developed countries like China, Chinese government were recommended to devote to the low-income housing programmes which were officially introduced in 1998 as a critical solution to improving each local social security system especially the urban housing security system.

As Chen et al. (2014) concluded that the role of low-income housing is playing critically significant during all industrialised countries' doing urbanisation process, Xuzhou was that kind of industrialised city with the industry sector leading its industrial GDP growth at 14-17% annually between 2009 and 2013 (Schuurman & He, 2013) and faced the urbanisation process which was brought by the new modern agricultural economy, industry and construction, and new energy and real estate in terms of some certain numbers of modern farmers moving into the urban area, the more and more migratory talented workers moving into Xuzhou city, and some certain percentages of local businessmen and businesswomen doing businesses by electronic commerce and some certain percentages of local people doing as couriers.

However, the continuously increasing housing price brought a lot of changes to people's normal lives and to city government's welfare system, although Xuzhou did very well in enlarging the urban housing stock (Schuurman & He, 2013; "The Statistical Bulletin of National Economy and Social Development of Xuzhou 2015," 2016; "Xuzhou Major Economic Indicators (2013)," 2013; "Xuzhou Transformation and Development Practices," 2016). Consequently, the people of Xuzhou had been totally changed with their ways of looking at this city and the changes of Xuzhou had been always reshaping their social values. Furthermore, those social forces and trends had

been leading to Xuzhou's social structure changing where a broadening polarity between different tenures and different groups produced by Xuzhou's housing market after Xuzhou's housing commodification of the late 1990s made a severe housing affordability crisis to such an extent amongst the group of medium-low and low-income urban citizens that formed rapidly declines of Xuzhou's social stabilities ("The Data of Sampling Survey on 1% population of Xuzhou in 2015," 2016; Liu, Song, & Liu, 2016; Schuurman & He, 2013; "The Statistical Bulletin of National Economy and Social Development of Xuzhou 2015," 2016; Trujillo & Parilla, 2016; "Xuzhou's Annual GDP," 2015; "Xuzhou Transformation and Development Practices," 2016). At the time of either buying their staff quarters or buying commodity housing in Xuzhou, unfortunately, some 'laid-off' workers did not have the staff quarters to buy and medium-low and low-income people did not have more capabilities of buying new houses.

With respect to the social pressures and corresponding to Chinese central government calling on each local government to promote the low-income housing programmes that was a necessary instrument to satisfy those medium-low and low-income urban households' basic housing needs and were considered as the most essentially for Chinese long-term development strategy in terms of promoting Chinese urbanisation stably and promoting Chinese urban development sustainably, in 2004 the Xuzhou's first low-cost housing programme was just introduced to those who were 'laid-off' workers or medium-low or low-income urban citizens and did not have staff quarters to live and were not afford to buy new commodity houses under Xuzhou's new economic transformation.

### 3.3.7.2 Xuzhou's LCH



**Figure 3.2: Three Phases of LCH in Xuzhou**

Source: Xuzhou Bureau of Land and Resources

#### (a) Phase 1

The 1<sup>st</sup> phase of low-cost housing [Chinese name is Yangguang Huayuan, English known as Sunny (Yangguang) Garden (Huayuan), Figure 3.2], which is located at North of Guozhuang Road, Yunlong district, was built for resolving housing difficulties of local medium-low income households by municipal party committee and government and was one of the 2004 municipal key projects. The Yangguang Huayuan's development and construction was organised and implemented by Xuzhou Housing Security and Real Estate Management Bureau with the support of local preferential policy.

Moreover, the Yangguang Huayuan whose development was restricted by the construction standard made by Xuzhou Housing Security and Real Estate Management

Bureau was actually a policy-supported housing in line with the principal of “affordable and moderately comfortable” to be sold to the urban medium-low income households with housing difficulties.

Furthermore, the planned land was around 8.4 hectare with total floor area of about 100,000 square meters and each built-up area was around between 60 and 80 square meters. This project started on 18<sup>th</sup> June, 2004 and was put into use on 1<sup>st</sup> May, 2005. In general, the Yangguang Huayuan has two main exits located at south and north respectively and one minor exit at east. In Yangguang Huayuan, there are 24 blocks of low-cost house units and another 4 blocks of resettlement house units and there have some basic public facilities such as street lighting, kindergarten, recreation centre, etc. ("The Brief Introduction to Xuzhou's First Phase of Low-Cost Housing," 2012).

(b) *Phase 2*

The 2<sup>nd</sup> phase of low-cost housing [Chinese name is Chengshi Huayuan, English known as City (Chengshi) Garden (Huayuan), Figure 3.2], which is located at West of Xiangwang Road next to Jiuli district government and is very close to several parks and scenic spots, was also built for resolving housing difficulties of local medium-low income households by municipal party committee and government and was one of the 2005-2006 municipal key projects.

Furthermore, one elementary school, two middle schools, and one local university are not far away from the Chengshi Huayuan which is located at the centre of Jiuli district.

Furthermore, the planned land was around 10.2 hectare with almost same total floor area with Phase 1 of about 100,000 square meters and each built-up area was around between 60 and 90 square meters which is a little bigger than Phase 1.

Moreover, the Chengshi Huayuan whose development was also restricted by the construction standard made by Xuzhou Housing Security and Real Estate Management Bureau was actually a policy-supported housing in line with the principal of “appropriate standard, functional, affordable, and convenient and energy-saving” and was sold to the urban medium-low income households with housing difficulties.

This project started in October, 2005 and was put into use in November, 2006. In Chengshi Huayuan, there are 22 blocks of low-cost house units and there have some basic public facilities such as local shops, property management, kindergarten, recreation centre, etc. ("The Brief Introduction to Xuzhou's Second Phase of Low-Cost Housing," 2012).

(c) *Phase 3*

The 3<sup>rd</sup> phase of low-cost housing [Chinese name is Binhe Huayuan, English known as Binhe (Binhe) Garden (Huayuan), Figure 3.2] which includes low-cost housing, low-rent housing, and resettlement housing was a project in the public interest to put China's 11<sup>th</sup> five-year plan of housing construction planning into effect in Xuzhou in order to promote municipal party committee and government's social housing security work and was one of the 2007 municipal key projects.

Binhe Huayuan locates in the north of main city and its planned area was 18.67 hectare which is more than two times than Phase 1 and more than 1.5 times than Phase 2 with the total floor area of about 200,000 square meters that is two times than both Phase 1 and Phase 2 and each built-up area was below 90 square meters that is almost same as Phase 1 and Phase 2 for economic purpose.

In terms of the planned area and total floor area being almost two times bigger than both Phase 1 and 2, on one hand, 100 units of low-rent housing were introduced for the first time to enrich Xuzhou's low-income housing programme (but unfortunately, the 100 units of low-rent housing since the completion of August 2008 were all vacant based upon my own experience and photos that I took in June 2014), on the other hand, more resettlement projects were constructed together with low-cost housing projects comparing with the 1<sup>st</sup> phase (2<sup>nd</sup> phase does not have resettlement houses) so that the total floor area increased. In addition to the area being enlarged, whether the residential satisfaction level of the inhabitants living at low-cost housing might have been affected by this mixed living style (1<sup>st</sup> and 2<sup>nd</sup> phases) should be considered.

Moreover, the Binhe Huayuan whose development was also restricted by the construction standard made by Xuzhou Housing Security and Real Estate Management Bureau was also a policy-supported housing according to the same principal as Phase 2 had regarding "appropriate standard, functional, affordable, and convenient and energy-saving" and was sold to the urban medium-low income households with housing difficulties or relocation matters.

In addition, this project was put into use in August, 2008. In Binhe Huayuan, there are 23 blocks of low-cost house units with another 34 blocks of resettlement house units and there have some basic public facilities such as local shops, kindergarten, recreation centre, etc. ("The Brief Introduction to Xuzhou's Third Phase of Low-Cost Housing," 2012).

### **3.4 The Significance of RS to China's LCH**

According to Hu's (2013) research, it enlightened that the homeownership status in urban China had a great positive effect on both resident's housing satisfaction and overall happiness. It followed that the existing residents at low-cost housing in urban

China were paying very close attention to when and how they could buy their full homeownership.

However, those who currently lived at low-cost homes showed a lower housing satisfaction as the locations of those low-cost houses in Chinese cities were far away from city centres and the relatively poor infrastructure provided comparing with commodity houses (Hu, 2013; Huang, 2012). It meant that living at low-cost houses inconveniently and poor infrastructure were talking about the issue of residential satisfaction.

Thereby, the assessment of residential satisfaction with China's low-cost houses was becoming a key to their decisions on whether they would buy their full homeownership from municipal governments and either they would sell their low-cost houses back to municipal governments or to give their houses over to those who were new applicants for low-cost houses.

In spite of this, as the existing residents in low-cost houses were still expecting their houses to be sold later on the open market at much higher prices comparing with their buying prices, the residential satisfaction was not only to tell how the current living situation was like, but also to tell from which facets the municipal governments should enhance to improve their expectations of buying homeownerships.

Besides this, those residents who were living at low-cost houses were underclass and should be given priority to ensuring their basic needs for housing by municipal governments. After all, for them, it was not straightforward to purchase commodity houses by way of selling their low-cost houses on the open market. Then, improving their residential satisfaction with current low-cost houses would make them to feel their basic housing needs being deserved protection. Yet perhaps, they would consider



purchasing their full ownership and then to sell and to buy commodity houses by the time when their living conditions would have been improved. As thus, the low-cost houses, to some extent, were about to be brought some certain financial compensation for their buying next houses.

### **3.5 The Significance of RS to Xuzhou's LCH**

In the context of this reality, once their living conditions were not satisfied, the residents would illegally rent in private for commercial purposes while they chose to live in rental houses with better living environment (some cases happened in Xuzhou).

What seemed more exaggerated in Xuzhou, some residents already had rented another houses and lived there, but they still held their occupancy of low-cost houses and used for commercial purposes and also they did not want to sell back to the local government within the first ten years. Even some residents already illegally sold their low-cost houses in private before not having full homeownership at negotiated prices under very conditional situation (some cases were exposed on local government's website) (by June 2015 interviewing closed, Xuzhou had not officially given any announcements regarding when they could buy their full homeownership of low-cost houses).

As a result of their non-legal effect and illegal renting or selling, it not only affected my field survey about residential satisfaction with low-cost houses in Xuzhou from who were the real households of these low-cost houses to how many exactly the number of real households were living around, but also was it challenging the exit mechanism of Chinese low-cost houses particular in Xuzhou.

In terms of the exit mechanism in low-cost housing, it said when the residents' family income reached to a certain level whereby they could afford to buy commodity houses, they should quit living at low-cost houses and municipal governments had top priority of buying back their partial homeownership rather than their further purchasing another part of ownership (Guowuyuan guanyu jiejie chengshi di shouru jiating zhufang kunnan de ruogan yijian, 2007).

Unfortunately, as the time of low-cost houses going to open market not being confirmed in Xuzhou and the exit mechanism not being perfectly applied to the human conditions which meant that residents' real family income was quite hard to get, the municipal government of Xuzhou had been ordering to build more low-cost houses to meet the demands. Nevertheless, the vacancy rate of low-cost houses in Xuzhou had been going higher year after year, because new-built low-cost houses were expensive and located much far away from the city centre.

Thus, the assessment of residential satisfaction with low-cost houses was very important to the municipal governments especially Xuzhou, because they not only would be aware of how satisfied the residents felt about their current living conditions and whether those factors had correlations with residential satisfaction, but also would be aware of which factors were predictor factors and which predictor factors would most predict the residential satisfaction.

Hence, the municipal governments would understand how to improve their habitability with the following low-cost houses development from those predictor factors instead of developers' previous experiences in building. In the meanwhile, the residents would be informed about whether what the municipal governments would deal with those predictor factors were what factors they really concerned about. Then, the

residents would be better cooperating with the municipal governments to enhance their habitability.

### **3.6 Conclusion**

The post-reform public housing projects in China for medium-low, low, and lowest-income groups of citizens consisted of urban low-rent housing (LRH), urban low-cost housing (LCH), house with limited size and price (LSPH), public rental housing (PRH). The low-cost housing was a 'predominant' type amongst four types of low-income housing because the LCH was designed to be a fast way to deal with homeownership and sold at below-market price to local eligible households.

The factors which were suggested by the recent studies on residential satisfaction of China's low-income housing have already increased the total numbers of independent variables and also increased the accuracy of residential satisfaction index of China's low-cost housing. Together with the previous factors found in public and commodity housing's residential satisfactions studies in developed and developing countries, the factors of housing layout, appearance, heat ventilation, lighting, transport facilities, children's schools, and culture and entertainment facilities were suggested to be added onto the questionnaire.

Xuzhou city was selected as an example of new second-tier cities to study residential satisfaction of low-cost housing, because it had the 2<sup>nd</sup> largest registered population and the 2<sup>nd</sup> largest area in Jiangsu Province, and its regional GDP was quite big in the new second-tier cities.

With Xuzhou's economic transformation and growth bringing Xuzhou's urban transformation and development, the needs of Xuzhou's low-cost housing became more and more necessary to deal with those medium-low and low-income citizens' living

problems. With the introductions of Xuzhou's three phases of low-cost housing projects provided, it was easy to understand the research subjects before going to the next chapter of methodology.

University of Malaya

## **CHAPTER 4: METHODOLOGY**

### **4.1 Introduction**

This chapter started with elaborating the reasons why this research work would choose the explanatory sequential mixed mode method for this current research design. In light of the explanatory sequential method required, the quantitative part would prepare the participants, collect the data, and then analyse the data. The result which would be found from the quantitative part would make the questions of qualitative part. Furthermore, the qualitative part would prepare the case selection, interview development, collect the data, and then analyse the data for further deeply answering the research questions.

### **4.2 Explanatory Sequential Mixed Mode Method**

This study adopted the mixed methods, no matter which is the fixed or emergent or combining both fixed and emergent mixed methods design, aimed to further and deeply account for the research questions with reference to one method is normally considered not adequate when doing a social and behavioural research (Clark & Creswell, 2011, p. 54; Creswell, 2014; Fowler Jr, 2013; Johnson & Onwuegbuzie, 2004; Knight & Ruddock, 2009; Morse, 2003; Tashakkori & Teddlie, 2010).

#### **4.2.1 The Reasons for Mixing Quantitative and Qualitative Methods in a Single Study**

As Clark & Creswell's (2011) suggestion of having at least one well-defined reason to carry out the mixed methods research, Bryman (2003); (Bryman, 2006, 2007; Bryman, 2015; Bryman, Becker, & Sempik, 2008; Bryman & Cramer, 1994; Lewis-Beck, Bryman, & Liao, 2003) concluded 16 reasons for mixing the quantitative and qualitative methods in a single study such as triangulation, offset, completeness, process, different research questions, explanation, unexpected results, instrument

development, sampling, credibility, context, illustration, improving the usefulness of findings, discover, diversity of views, and building upon quantitative and qualitative findings in short based upon 5 reasons given by Greene (2006); (Greene, 2007; Greene, Caracelli, & Graham, 1989; Johnson, Onwuegbuzie, & Turner, 2007) and also cited by Clark and Creswell (2011) talking about triangulation, complementarity, development, initiation, and expansion.

Thus, the reason why this study chose to mix quantitative and qualitative methods was because the research problems and questions which had already decided the mixed methods research design required to be answered by way of complementarity, explanation, and illustration of mixed methods. At this point, the illustration gave further conclusions on the complementarity and explanation that using qualitative data to further help explain, elaborate, enhance, clarify, and illustrate the quantitative findings as (Bryman, 2015); Clark and Creswell (2011); (Creswell, 2014; Fowler Jr, 2013) described as putting “meat on the bones” of “dry” quantitative findings.

#### **4.2.2 Decisions in Choosing a Mixed Mode Method Design**

After clarifying the reasons why this study chose to use the mixed research methods, Bryman (2015); (Clark & Creswell, 2011; Creswell, 2014; Knight & Ruddock, 2009; Tashakkori & Teddlie, 2010) strongly recommended four key decisions composed of interaction, priority, timing, and mixing whereby this study chose one kind of mixed methods design to guide this study in order to better answer those research questions.

As those examples given by Clark and Creswell (2011); (Creswell, 2014) to illustrate what kind of study should pick up what kind of mixed methods design to be guided, this study’s research problems and questions required a mixed methods design of the quantitative and qualitative research methods being mixed before the final interpretation which included a direct interaction between the quantitative and qualitative components

that mixed during the data collection in light of the sequential timing based upon a quantitative priority in which a greater focus was placed upon the quantitative methods and the qualitative methods were used as a supportive role.

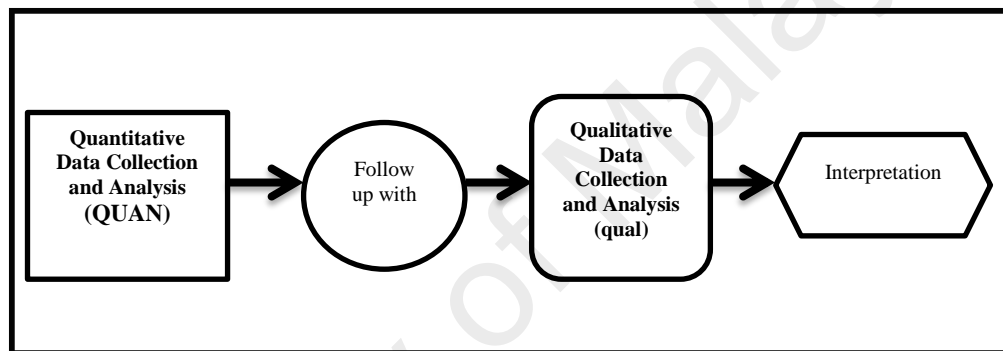
With respect to the timing covering the whole process of the quantitative and qualitative components not only the process of data collection, the sequential timing occurred in this study when implementing to collect and analyse the quantitative data first and then to employ the interviews to answer the qualitative research questions designed by the quantitative results. In terms of the quantitative and qualitative components mixing during data collection, Clark and Creswell (2011); (Creswell, 2014; Greene, 2008) suggested using a strategy to connect where the results of the quantitative component built on to the collection of the qualitative data such as this study gained the quantitative results that would lead to the subsequent collection of qualitative data in a second component.

Accordingly, this mixing connection occurred in this study between the quantitative and qualitative in terms of using the results of the quantitative component to specify the research questions, to select participants, to shape the collection of data, and to develop the data collection protocols in the qualitative component.

#### **4.2.3 Explanatory Sequential Mixed Mode Method**

Some authors strongly suggested researchers to carefully pick up one typology-based mixed mode method research design amongst the six major mixed methods inclusive of a rigorous framework and persuasive logic to give a direction on the implementation of the quantitative and qualitative research methods to ensure the resulting design would be a high quality one.

The explanatory sequential mixed mode method design (displayed in Figure 4.1) was employed in this study with two distinct interactive components where this study started with the quantitative research component as the priority of collecting and analysing the quantitative data in order to firstly give a general conclusion of this study's research problems and questions and this study then applied the subsequent qualitative research component that was designed in light of the first quantitative component results to develop the collected and analytical results to help to explain the initial quantitative results in more detail.



**Figure 4.1: Explanatory Sequential Mixed Mode Method**

Source: Creswell (2014, p. 220)

In terms of the name of the ‘explanatory sequential design’ mixed methods, the second component of qualitative data which was “sequentially” produced following the instructions made by the first component of quantitative data “explains” the initial quantitative component results in greater detail.

Furthermore, with respect to the prototypical version of the explanatory sequential mixed methods design, Morse, Tashakkori & Teddlie, Clark & Creswell, Fowler, Creswell, and Bryman (2003), (2010), (2011), (2013), (2014), and (2015) claimed that this study was a strong quantitative-orientated mixed methods research.



However, they also reminded that the challenges for using the explanatory sequential mixed methods were to identify and determine what kinds of quantitative results would be further explored and explained by the second component, qualitative research in order to better answer this study's research questions.

#### **4.2.4 Prototypical Characteristics of the Explanatory Sequential Design**

The explanatory design was redefined as a qualitative follow-up approach on the basis of the qualitative method as a second part or a follow-up tactic purposefully and detailedly explaining the initial results that were produced by the quantitative method. Furthermore, the purpose of the qualitative follow-up approach was to explicate quantitative determinants (or nonsignificant predictors) and less representative or small group of population values results by way of the qualitative data collected under guide of the quantitative results to purposefully select the interviewees regarding their characteristics.

In terms of this study not only assessed the relationships with quantitative data but also explained the reasons or the details behind the quantitative results, the explanatory sequential design should be the most suited on account of its typical paradigm foundation changing and shifting from part one of postpositivist to part two of constructivist in line with the development process of this study. Furthermore, these research problems and objectives of this study were more quantitatively-oriented (postpositivist orientations) and those important independent variables were ready to measure the dependent variable by way of the questionnaire instrument and then assess the quantitative data by the stepwise-method multiple regression engineered by SPSS.

However, the typical paradigm foundation of the explanatory sequential design asked the researcher to change the earlier phase of postpositivist orientations into the perspectives of constructivism while doing in-depth evaluations through interviews at

the second stage (the qualitative phase). In this way, the explanatory sequential design required more time for a second round of collecting the qualitative data amongst the earlier group of participants who did their quantitative surveys to answer the newly qualitative questions that were developed in the light of the quantitative results and couldn't be settled by the previous data.

The explanatory sequential design had three main challenges as follows:

- The way of implementing two parts of analyses (Quantitative & qualitative) took much longer time
- The way of selecting quantitative results (which was considered as designing the objectives of the qualitative part for) i.e. picking up the significant results and strong predictors
- The way of selecting participants (interviewees) i.e. from the same earlier groups of participants for the best explanations to the quantitative part and even this whole research study with reference to the household's socio-economic characteristics' differences and interviewees who varied on the key determinants

At all events, the many strengths of the explanatory sequential design made this mixed-method research study more focused on fulfilling this whole research objective and more easily comprehended.

Thus, the explanatory sequential design's two-stage structure by giving two separated methods and collecting two separated data definitely gave more convenient for those single researchers to implement instead of a research team. In the meanwhile, a strong quantitative-orientated design not only made it more easily to write for researchers, but also made it more easily understood for the readers.

#### **4.2.5 Procedures of the Explanatory Sequential Design**

Furthermore, the explanatory sequential design procedures (displayed in Figure 4.1) about which Creswell (2014) gave more details in his book guided this research work. Speaking of the explanatory sequential design, a lot of authors had something in common saying that it was the most easy-understanding and typical comparing to other mixed methods designs.

In terms of this study procedures customised by the explanatory sequential design, it should start with the quantitative element (Quantitative part in Figure 4.2) in order to answer the proposed (quantitative) research questions/to fulfil the expected (quantitative) research objectives by means of the stepwise-method regression approach. To achieve the results of the quantitative part firstly identified the samples by the stratified random sampling and collected structured questionnaires and finally assessed the data by descriptive statistics, correlation statistics, and stepwise-method multiple regression analysis.

Moreover, the results of the quantitative part facilitated and redefined the selection of interviewees amongst those earlier groups of participants for the qualitative part.

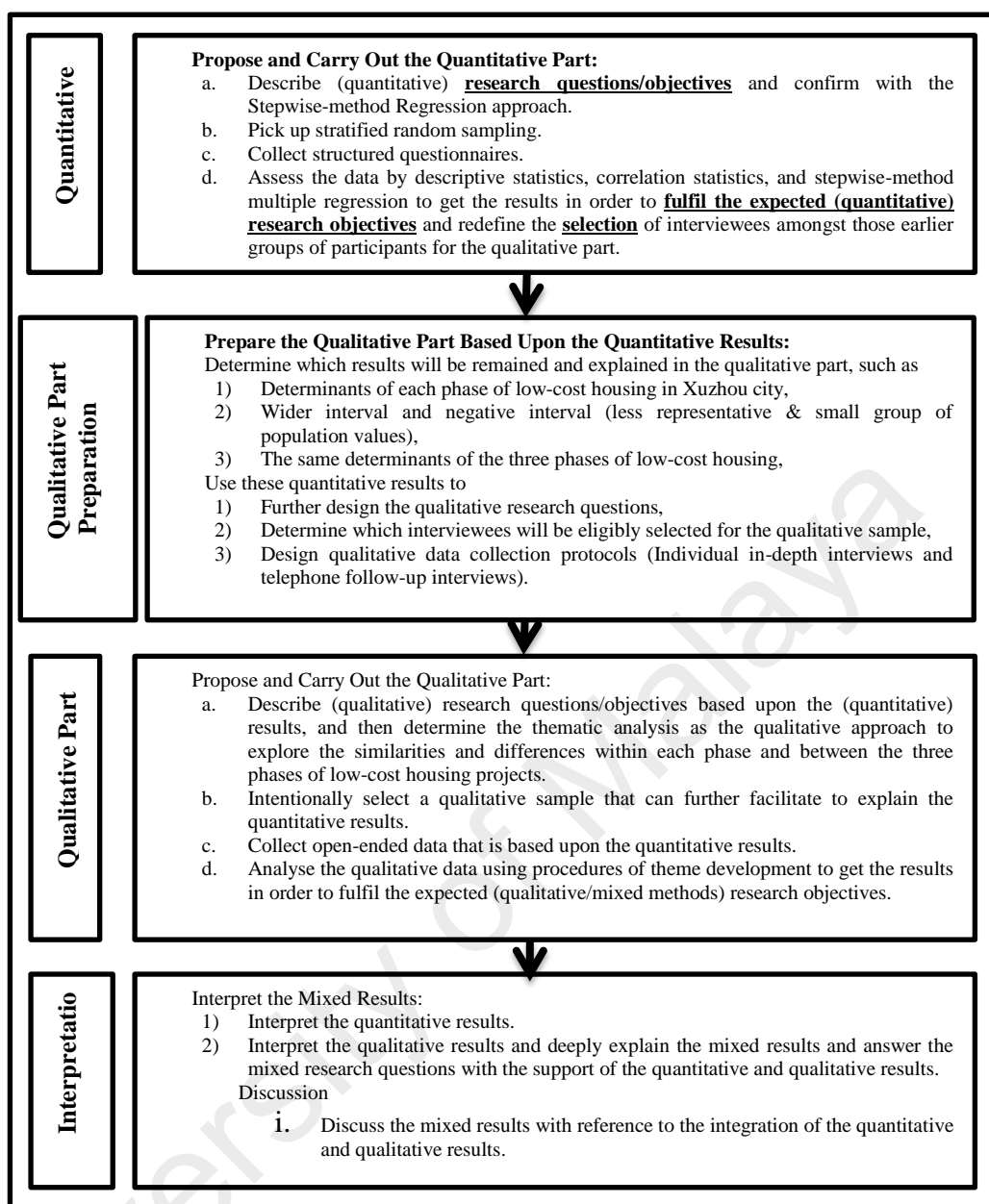
In terms of the qualitative part preparation which was about to give the direction of the second part of the qualitative and further mixed analysis according to the qualitative part counting on the quantitative results, firstly identified the determinants of each phase of low-cost housing in Xuzhou city, wider interval and negative interval indicating less representative and small group of population values, and the same determinants of the three phases of low-cost housing, and secondly used these quantitative results to further design the qualitative research questions and to determine which interviewees were eligibly selected for the qualitative sample and to design

qualitative data collection protocols using individual in-depth interviews and telephone follow-up interviews.

As for the qualitative part, it began with proposing the qualitative part by describing the qualitative research questions/objectives based upon the quantitative results and determining the thematic analysis as the qualitative approach to explore the determinants within each phase and between the three phases of low-cost housing projects.

Moreover, to fulfil the expected qualitative/mixed methods research objectives intentionally selected a qualitative sample that could further facilitate to explain the quantitative results at the beginning of implementing the qualitative part and collected open-ended data that depended on the quantitative results and finally analysed the qualitative data using procedures of theme development to get the results in order to fulfil the expected (qualitative/mixed methods) research objectives.

In regard to the final stage of the interpretations, interpreted the quantitative results firstly and interpreted the qualitative results then and further deeply explained the mixed results and answered the mixed research questions with the support of the quantitative and qualitative results. Moreover, it further discussed the mixed results with reference to the integration of the quantitative and qualitative results to fulfil this research study's final purpose.



**Figure 4.2: Flowchart of the Basic Procedures in Implementing an Explanatory Sequential Mixed Methods Design**

Source: Clark and Creswell (2011, p. 84)

### 4.3 The Explanatory Sequential Mixed Mode Method Design of this Research

This current research studied the issue of residential satisfaction in housing. Building upon five major components determining residential satisfaction such as individual and household's socioeconomic characteristics, housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics, this research chose to study the residential satisfaction of medium-low

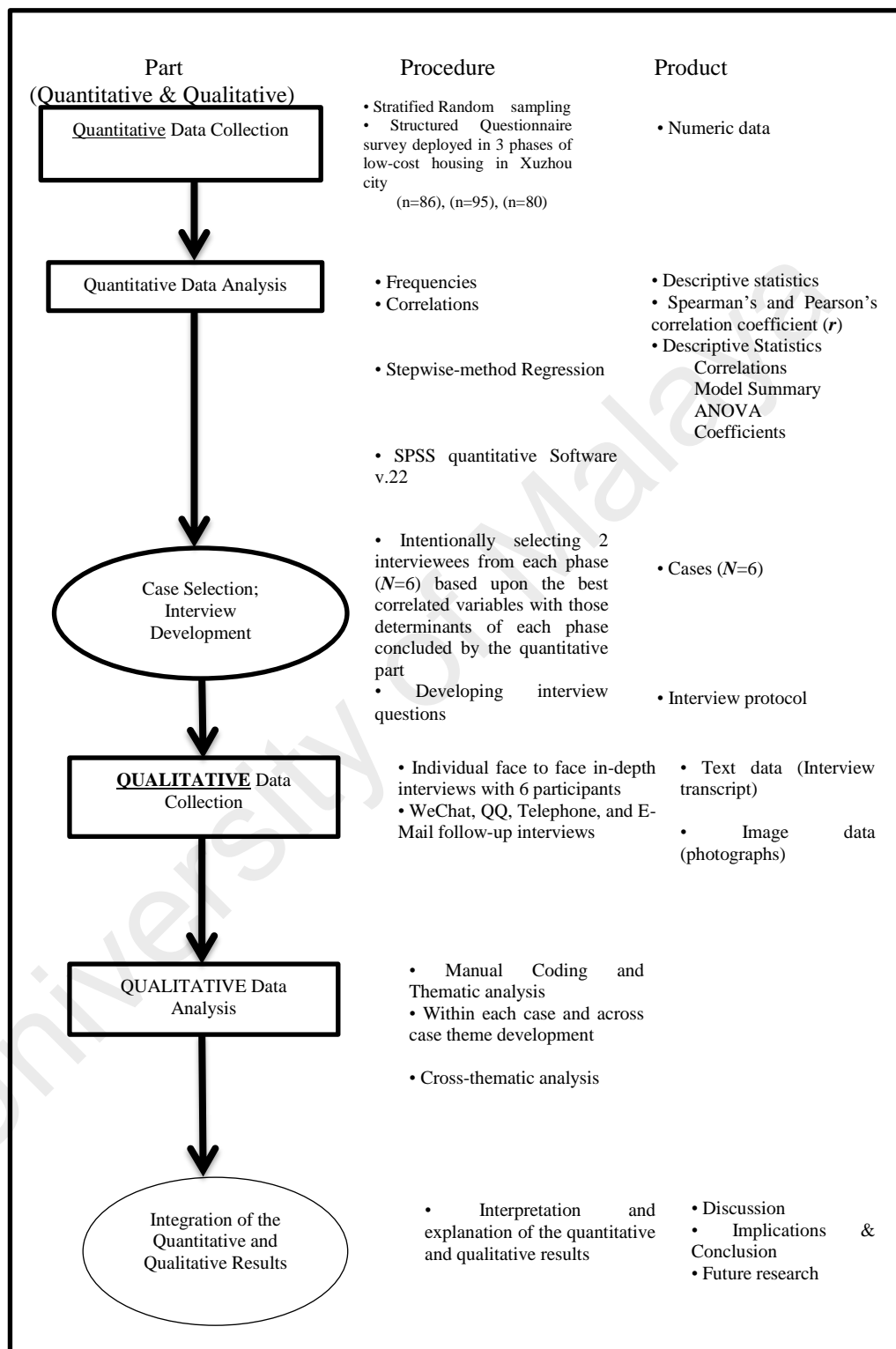
and low income residents in the first three phases of low-cost housing projects in Xuzhou city, Jiangsu province, China.

Since most authors found that only one method (either quantitative or qualitative research method) was not enough to give a full explanation to complex situations such as residential satisfactions in those three phases of low-cost housing projects, the quantitative data and results firstly presented a general answer to the research question and the qualitative data and results explored the six participants' views on their residential satisfactions in more depth.

In terms of the quantitative part was prioritised as QUAN → qual = explain significant factors, the second part, qualitative concentrated on in-depth analysis on the results gained from the quantitative part. As the explanatory sequential mixed methods design lent itself to this current research study (displayed in Figure 4.3), it required this research work to implement two distinct stages consisting of the first part of collecting and analysing quantitative data and the second part of collecting and analysing qualitative data which was asked by the explanatory sequential mixed methods design to facilitate further explanations on the initial quantitative results. In terms of the main objectives of this research work, they required to find out the key predictors/determinants whose improvements could enhance the residential satisfaction level of the medium-low and low income residents in those three phases' low-cost housing projects and to deeply discover those respondents' views on these key predictors/determinants by interviewing six participants in the second part, qualitative research.

In the discussion part, the explanatory sequential mixed methods design asked to discuss the outcome of the entire study based upon the integration of the quantitative

and qualitative results. Accordingly, this research work implemented two parts with a quantitative wing firstly.



**Figure 4.3: Research Design**

Source: The Present Author Adopted from Clark and Creswell (2011), Ivankova and Stick (2006)

## **4.4 Quantitative Phase**

### **4.4.1 Participants**

The target respondents in this study were all permanent residents who were living at these three phases of low-cost housing projects in Xuzhou city. Those residents, who had their permanent living rights, had already illegally rented out or sold their houses to other people and they had rented better commodity houses outside (A lot of cases happened, but only few cases were disclosed).

In terms of the criteria for selecting the participants, he or she was a permanent resident living at a low-cost housing project at first and he or she was more cooperated without any pressures based upon our country's special circumstances.

In terms of the stratified random sampling which was strongly recommended by a lot of authors (Bulsara, 2015; Huang & Du, 2015; Mertens et al., 2016; Mohit & Mahfoud, 2015; Xi & Hanif, 2016) being aimed at this sort of studies such as residential satisfaction, neighbourhood cohesion, etc. to find samples for data collection, the local residents of the three phases of low-cost houses in Xuzhou city were stratified in accordance with blocks in order to make sure the sample could represent each block's condition. Accordingly, refer to their having 24 blocks of low-cost house units and another 4 blocks of resettlement house units in Yangguang Huayuan (1<sup>st</sup> Phase of Low-Cost House Project in Xuzhou city), every block of low-cost house units must be involved in participants selection to ensure the residents had same opportunity to be selected i.e. at least 3 households were selected from each block of low-cost house units in Yangguang Huayuan.

By that analogy, at least 4 households were selected from each block of 22 blocks in Chengshi Huayuan (2<sup>nd</sup> Phase of Low-Cost House Project in Xuzhou city), and at least 3 households were selected from each block of 23 blocks of low-cost house units with



another 34 blocks of resettlement house units in Binhe Huayuan (3<sup>rd</sup> Phase of Low-Cost House Project in Xuzhou city). In addition, in the case of floor levels that all low-cost housing projects in Xuzhou had a standard with 6 floors distributed as 1-2 (lower level), 3-4 (middle level), and 5-6 (upper level), the way of selecting the respondents mainly came from the lower and upper levels followed the results from most previous studies indicating that residents who lived at lower and upper levels felt dissatisfied with their residential environment (Djebarni & Al-Abed, 2000; Ibem & Amole, 2013a, 2013b; Mohit & Azim, 2012a, 2012b; Mohit et al., 2010; Mohit & Mahfoud, 2015; Mohit & Nazyddah, 2011), in other words, floor level as a predictor affected residential satisfaction to some extent.

#### **4.4.2 Data Collection**

##### **4.4.2.1 Sample Sizes**

Furthermore, in the light of the sample sizes on that most authors had reached an agreement in a way to borrow the mathematical formula from Yamane 1967, who explained how to probably calculate the numbers (Hamersma, Tillema, Sussman, & Arts, 2014; Huang & Du, 2015; Ibem & Amole, 2014; Mohit & Mahfoud, 2015; Tao et al., 2014; Xi & Hanif, 2016), a sample of 86 households (n=86) from 1<sup>st</sup> phase, a sample of 95 households (n=95) from 2<sup>nd</sup> phase, and a sample of 80 households (n=80) from 3<sup>rd</sup> phase were selected from different total numbers of low-cost housing households living in those three phases of low-cost housing projects with a total of 879 low-cost house units (N=879) with other almost 200 resettlement house units of Yangguang Huayuan, a total of 1189 low-cost house units (N=1189) of Chengshi Huayuan, and a total of 733 low-cost house units (N=733) with other almost 800 resettlement house units of Binhe Huayuan.

Furthermore, each sample size represented 9.8%, 8%, and 10% of each total housing population respectively with an assumed 90% confidence level denoting that the results are guaranteed not to diverge more than  $\pm 10\%$  in 90 out of 100 repetitions of the survey. Here is the equation.

$$n = \frac{N}{1 + N \times (e)^2}$$

According to (Hamersma et al., 2014; Huang & Du, 2015; Ibem & Amole, 2014; Mohit & Mahfoud, 2015; Tao et al., 2014; Xi & Hanif, 2016)'s publications, they defined “ $n$ ” is the sample size of the selected household, “ $N$ ” is the total number of households in each phase, and “ $e$ ” is the acceptable sampling error which is normally 0.1.

#### **4.4.2.2 Structured Questionnaires**

The reason why using a structured questionnaire and interview to get a great deal of information from the respondents was because most authors considered this type of collecting data from the medium-low and low income residents was most efficient than other ways particularly in China as China's local media was not very keen on investigating the details of residents' lives in low-cost housing projects and the municipal government only managed those low-cost housing projects from macroscopic aspect, and the most important reason was that the residents who were living in those low-cost housing projects were medium-low and low income groups showing very low interests and motivations when being interviewed and confidently believing that they had already been ignored by the local government and any forms of interviews with questionnaires were not worth trying (Hamersma et al., 2014; Huang & Du, 2015; Ibem & Amole, 2014; Mohit & Mahfoud, 2015; Tao et al., 2014; Xi & Hanif, 2016).

Furthermore, this research developed and managed a structured survey to interviewees that measured 47 predictor variables (see p.358-365 & p.366-368) constructed by individual and household's socio-economic characteristics and residential environment part consisting of four components named HUC, HUSS, HESF, and NC to determine the level of residential satisfactions of the inhabitants living in those three phases of low-cost housing projects.

Moreover, the individual and household's socio-economic characteristics contained gender, age, educational attainment, marital status, household size, occupation sector, occupation type, household's monthly net income, floor level, length of residence, and main means of transportation.

In this current research, the level of housing satisfaction were measured by using a 5 point Likert scale, i.e. "1" = very dissatisfied; "2" = dissatisfied; "3" = slightly satisfied; "4" = satisfied; "5" = very satisfied. Those 36 variables came from residential components would calculate the residential satisfaction index according to Onibokun, Mohit et al. and Mohit & Mahfoud's (1974), (2010) and (2015) formulas (see Equation 4.1). The RSI (Residential Satisfaction Index) of an inhabitant living at low-cost housing with one residential component displayed as a percentage which was calculated by the sum of the inhabitant's real scores about one component divided by the maximum scores of this component. Here is the equation.

$$RSI_C = \frac{\sum_{i=1}^N y_i}{\sum_{i=1}^N Y_i} \times 100 \text{ (Equation 4.1) (Onibokun, 1974, p. 192) and (Mohit et al., 2010, p. 22)}$$

Where  $RSI_C$  is the Residential Satisfaction Index of an inhabitant with one Residential Component; C implies one of the four residential components; N refers to the number of variables selected for scaling under C;  $y_i$  refers to the real score by an

inhabitant on the “i”<sup>th</sup> variable;  $Y_i$  implies the maximum possible score that variable “i” could have.

Furthermore, the overall residential satisfaction of an inhabitant living at low-cost housing displayed as a percentage which was calculated by the sum of the inhabitant’s real scores about all four residential components divided by the maximum scores of all components.

Here is the equation.

$$RSI_{4c} = \frac{\sum_{i=1}^{N_1} h_i + \sum_{i=1}^{N_2} s_i + \sum_{i=1}^{N_3} f_i + \sum_{i=1}^{N_4} n_i}{\sum_{i=1}^{N_1} H_i + \sum_{i=1}^{N_2} S_i + \sum_{i=1}^{N_3} F_i + \sum_{i=1}^{N_4} N_i} \times 100 \text{ (Equation 4.2)}$$

Where  $RSI_{4c}$  is the residential satisfaction index of an inhabitant with the overall residential environment (four components);  $N_1$ ,  $N_2$ ,  $N_3$  and  $N_4$  refer to the number of variables selected for scaling under each component of residential environment, while  $h_i$ ,  $s_i$ ,  $f_i$ , and  $n_i$  represent the real score by an inhabitant on the “i”<sup>th</sup> variable in the component;  $H_i$ ,  $S_i$ ,  $F_i$ , and  $N_i$  imply the maximum possible scores that variable “i” could have in the *Housing unit characteristics*, *housing unit supporting Services*, *housing estate supporting Facilities* and *Neighbourhood characteristics*, respectively.

In addition, these 47 variables (36 variables from residential components plus 11 variables from individual background) were used as independent variables to find out the determinants which predicting each phase’s residential satisfaction.

The data collection from participants face to face took place at those three phases of low-cost housing projects between April 12<sup>th</sup> and June 20<sup>th</sup>, 2014. The questionnaires were printed in Chinese and the survey was conducted by Chinese.

#### 4.4.3 Data Analysis

The responding residents, who came from those three phases of low-cost housing projects, put their thoughts on these questionnaires and the assessments of residential satisfaction were measured respectively and analysed and compared together.

Afterwards, to fulfil the quantitative objectives applied SPSS quantitative software v.22 to analyse the collected data from three phases and then got the first set of result came from the descriptive statistics of respondents' individual and household's socio-economic characteristics of three separated phases of low-cost housing projects and compared with each other.

With regard to the correlations between each phase of respondents' individual and household's socio-economic characteristics and each phase of four components' satisfaction indices and the total of residential satisfaction index, this research applied correlation analysis with Spearman's and Pearson's correlation coefficient ( $r$ ) on the collected data to find out more details in these three separated phases of low-cost housing projects.

In addition to the frequencies and correlations, the most important analysis upon here which was applied to determine the key predictors of each phase of low-cost housing project was the stepwise-method regression.

##### 4.4.3.1 Method of Regression

###### (a) *Hierarchical (blockwise entry)*

Field (2009, 2013) found that predictors are selected based upon past research in hierarchical regression and the order of entering the predictors into the model is decided by the experimenter in accordance to known predictors (from past research) being firstly entered into the model in order of their importance in predicting the outcome and then

any new predictors can be added into the model by either all in one go in one of stepwise methods or in hierarchical manner, i.e. the new predictor which is considered to be the most important is entered firstly.

(b) ***Forced entry***

Forced entry (mentioned in SPSS as Enter) is a method like hierarchical method depending on good theoretical models for selecting predictors and forces all predictors to be entered into the model simultaneously, but what's the difference from the hierarchical method is no order of variables' entering (Field, 2009). What's more, Field (2009, 2013) agreed with some researchers on that this method is the only appropriate method for theory testing.

(c) ***Stepwise methods vs. Hierarchical and Forced entry methods***

Field (2009, 2013) criticized that comparing with stepwise methods being influenced by random variation in the data which results in rarely giving replicable results if the model is retested, hierarchical and forced entry methods of regression could take advantage of random sampling variation to derive the slight differences in variables' semi-partial correlation deciding on which predictors should be included, however, these slight statistical differences might contrast significantly with the theoretical importance of a predictor to the model and also could result in the danger of over-fitting (having too many variables in the model that essentially make little contribution to predicting the outcome) and under-fitting (leaving out important predictors) the model.

Consequently, for this reason stepwise methods are best avoided. In addition, the forward, backward and stepwise methods all come under the general heading of stepwise methods, because stepwise methods counted on the computer selecting variables dependent on a purely mathematical criterion (Field, 2009).

Furthermore, as the model based upon what past research told was from a sound theoretical literature available, Field (2009, 2013) suggested to apply SPSS stepwise methods to predicting the outcome (dependent variable) based on the selected meaningful variables (independent variables) in the model.

(d) *Stepwise methods*

i *Forward method*

The forward method is defined that searches for the predictor out of the available variables that best predicts the dependent variable by selecting the highest simple correlation with the dependent variable (Field, 2009).

Simply put, if the first predictor can explain 40% of the variation in the dependent variable, there is still 60% left unexplained. Next step, the computer, which is not interested in the 40% that has been already explained, searches for the second predictor that can explain the biggest part of the remaining 60% by selecting the variable with the largest semi-partial correlation with the outcome from measuring of each remaining predictor that can explain how much new variance in the dependent variable as the criterion (Field, 2009).

Moreover, as the predictor is proved that significantly contributes to the predictive power of the model by explaining the most new variance is added to the model, it is retained and another predictor is considered.

ii *Backward method*

Field (2009, 2013) claimed that the backward method is the opposite of the forward method by virtue of the computer begins by placing all predictors in the model and then

calculating the contribution of each one in accordance with the significance value of the t-test for each predictor.

In addition, if a predictor meets the removal criterion which is made of either an absolute value of the test statistic or a probability value for that test statistic, in other words, if it is not making a statistically significant contribution to how well the model predicts the dependent variable, this predictor is removed from the model and then the model is re-estimated for the remaining predictors and the contribution of the remaining predictors needs to be reassessed as well (Field, 2009).

### *iii Stepwise method*

As forward selection based upon that one predictor significantly improves the ability of the model to predict the outcome, then this predictor is retained in the model and the computer searches for a second predictor according to whose semi-partial correlation with the dependent variable is the largest in the remaining predictors, Z. G. Li and Wu (2013) fully agreed with Field (2009, 2013) on that forward selection is more likely than backward elimination to exclude predictors and Z. G. Li and Wu (2013) published their journal regarding residential satisfaction in China's informal settlements by using "forward" stepwise regression in SPSS with the purpose of decreasing the impacts of data collinearity by starting with no predictors and then adding them in order of significance in order to eventually identify the significant predictors as the "determinants" of the regression.

Nevertheless, the recent authors such as Tao et al. (2014), Huang and Du (2015), Mohit and Mahfoud (2015), Cui et al. (2016), Galster and Hesser (2016), Xi and Hanif (2016) published their journals regarding residential satisfaction in housing by using the stepwise method selection. Those authors verified what Field's (2009) comments were



correct about the stepwise method in SPSS not only having the advantage of what the forward method had, the stepwise method also having the regression equation constantly reassessed to see whether any redundant predictors could be removed when each time a predictor was added to the equation, a removal test was made of the least useful predictor. Thus, the stepwise method regression is the most suitable for this research.

Accordingly, with reference to the conceptual model concluded in the chapter 2, the stepwise-method regression based upon the figures from descriptive statistics, correlations, model summary, ANOVA, and coefficients fulfilled the final objective of quantitative phase to identify the key predictors of each phase of low-cost housing project to determine its residential satisfaction such as the 14 determinants of 1<sup>st</sup> phase, the 12 key predictors of 2<sup>nd</sup> phase, and the 13 mostly significant variables of 3<sup>rd</sup> phase.

## **4.5 Qualitative Phase**

### **4.5.1 Case Selection**

Before the second, qualitative phase was carried out, the first, quantitative phase had been completed. And then the process of case selection for the in-depth interview mainly depended upon the quantitative results especially those key predictors/determinants of each phase of low-cost housing produced by the stepwise-method regression.

Using the quantitative results of the inclusions of determinants and other variables best correlated to the determinants concluded at p.446-459 indicating the comparisons between the three phases of low-cost housing, within the earlier groups of participants in answering the questionnaires, this research intentionally identified and selected 6 interviewees (2 per phase of low-cost housing) fulfilled with the requirements from determinants in terms of the respondents' individual and household's socio-economic

characteristics and implemented 6 in-depth interviews regarding their personal experiences in living at these three phases of low-cost housing and their personal views about the current and future plan of low-cost housing. Two females and four males agreed to participate.

#### **4.5.2 Interview Questions Development**

With regard to the main objective of the qualitative part was to explore the results generated by the stepwise regression analysis, the content of the interview questions was circling round the quantitative results from the first part to facilitate this research in deeply understanding the similarities and differences amongst the six participants regarding their residential satisfactions (qualitative questionnaire, see p.366-373).

There were five open-ended questions more focused upon the quantitative results which actually covered the five components including individual and household's socio-economic characteristics, housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics to significantly affect residential satisfaction.

There was one more open-ended question which was not a part of the quantitative results might have affected inhabitants' housing satisfactions such as the six participants' considerations on how to enhance the residential satisfaction of Xuzhou's current and future low-cost housing.

#### **4.5.3 Data Collection and Analysis**

The way of data collection for the qualitative part was suggest by a lot of authors (Babbitt, Burbach, & Pennisi, 2015; Bryman, 2015; Bulsara, 2015; Creswell, 2014; Mertens et al., 2016) that it used direct and indirect ways such as 1-on-1 face to face interviews with a manual protocol as a very popular direct way to better explore those

key predictors/determinants mentioned in the quantitative results and social networking software like WeChat and QQ, telephone, and e-mails as many familiar indirect-ways to collect qualitative data in China. The data collection from participants face to face took place at those three phases of low-cost housing projects during June to July of 2015. The questionnaires were printed in Chinese and the interviews were conducted by Chinese.

The qualitative analysis used a manual coding and thematic analysis to develop the themes within case and across cases and used the cross thematic analysis to find out the similarities and differences between the six participants.

#### **4.6 Conclusion**

In a word, the reason why this study chose to mix quantitative and qualitative methods was concluded as the research problems and questions had already decided the mixed methods research design. At this point, the illustration gave further conclusions on the complementarity and explanation that using qualitative data to further help explain, elaborate, enhance, clarify, and illustrate the quantitative findings.

The explanatory sequential mixed mode method design was employed in this study with two distinct interactive components where this study started with the quantitative research component as the priority of collecting and analysing the quantitative data in order to firstly give a general conclusion of this study's research questions and this study then applied the subsequent qualitative research component that was designed in light of the first quantitative component results to develop the collected and analytical results to help to explain the initial quantitative results in more detail.

Followed by the research design, the quantitative part was concluded by the stepwise-method regression based upon the figures from descriptive statistics, correlations, model summary, ANOVA, and coefficients fulfilled the final objective of

quantitative phase to identify the key predictors of each phase of low-cost housing project to determine its residential satisfaction such as the 14 determinants of 1<sup>st</sup> phase, the 12 key predictors of 2<sup>nd</sup> phase, and the 13 mostly significant variables of 3<sup>rd</sup> phase.

In addition, the qualitative part was concluded by a manual coding and thematic analysis to develop the themes within case and across cases. The conclusion of qualitative part would be drawn by the cross thematic analysis to find out the similarities and differences between the six participants from Xuzhou's three phases of low-cost housing projects.

## CHAPTER 5: QUANTITATIVE RESULTS

### 5.1 Introduction

This chapter began with the explanations of the validities of three models. Then, the result of quantitative part would be explained in terms of the comparisons of respondents' individual and household's socio-economic characteristics between the three phases and residential satisfaction. Regarding the residential satisfaction, the research questions would be answered roughly in terms of the comparisons of four elements' satisfactions and residential satisfactions and the determinants of residential satisfaction indices between the three phases.

### 5.2 Interpreting Multiple Regression

“...Things to note are: (1) I have rounded off to 2 decimal places throughout (3 decimal places also can be accepted); (2) for the standardized betas there is no zero before the decimal point (because these values cannot exceed 1) but for all other values less than 1 the zero is present; (3) the significance of the variable is denoted by an asterisk with a footnote to indicate the significance level being used (if there is more than one level of significance being used you can denote this with multiple asterisks, such as  $*p < .05$ ,  $**p < .01$ , and  $***p < .001$ ); and (4) the  $R^2$  for the initial model and the change in  $R^2$  (denoted as  $\Delta R^2$ ) for each subsequent step of the model are reported below the table” (Field, 2009, p. 252).

The result of interpreting multiple-regression was concluded at p.377-445.

### 5.3 Validity of Conceptual Model

With reference to the results given by SPSS and explained in p.377-445, the conceptual model mentioned in Chapter 2 has already been tested and validated by Adjusted  $R^2$ .

According to Field (2009) and Field (2013) described the adjusted  $R^2$  as a measurement of how well the Phase 1's model generalized, the value of adjusted  $R^2$  (.726 see Equation 5.1) is similar to the value of  $R^2$  (.811 see p.377-445) indicating that the cross-validity of this model is good.

Stein's formula to the  $R^2$  can understand its likely value in different samples

$$\text{adjusted } R^2 = 1 - \left[ \left( \frac{n-1}{n-k-1} \right) \left( \frac{n-2}{n-k-2} \right) \left( \frac{n+1}{n} \right) \right] (1 - R^2) \text{ (Equation 5.1)}$$

Stein's formula was given in equation and can be applied by replacing  $n$  with the sample size (86) and  $k$  with the number of predictors (14), as follows,

$$\begin{aligned} \text{adjusted } R^2 &= 1 - \left[ \left( \frac{86-1}{86-14-1} \right) \left( \frac{86-2}{86-14-2} \right) \left( \frac{86+1}{86} \right) \right] (1 - 0.811) \\ &= 1 - [(1.197)(1.200)(1.011)](0.189) \\ &= 1 - 0.274 \\ &= 0.726 \end{aligned}$$

Thus, the adjusted  $R^2$  value (.774/.726) of the model indicated that 77.4/72.6% of the variance in residential satisfaction index had been explained by the model. The tolerance values of the coefficients of predictor variables are well over 0.22/0.27 ( $1 - \text{adjusted } R^2$ ) and this indicated the absence of multicollinearity between the predictor variables of the model.

Furthermore, the value of adjusted  $R^2$  (.671 see Equation 5.2) is similar to the value of  $R^2$  (.752 see p.377-445) indicating that the cross-validity of Phase 2's model is good.

$$\text{adjusted } R^2 = 1 - \left[ \left( \frac{n-1}{n-k-1} \right) \left( \frac{n-2}{n-k-2} \right) \left( \frac{n+1}{n} \right) \right] (1 - R^2) \text{ (Equation 5.2)}$$

Stein's formula was given in equation and can be applied by replacing  $n$  with the sample size (95) and  $k$  with the number of predictors (12), as follows,

$$\begin{aligned} \text{adjusted } R^2 &= 1 - \left[ \left( \frac{95-1}{95-12-1} \right) \left( \frac{95-2}{95-12-2} \right) \left( \frac{95+1}{95} \right) \right] (1 - 0.752) \\ &= 1 - [(1.146)(1.148)(1.010)](0.248) \\ &= 1 - 0.329 \\ &= 0.671 \end{aligned}$$

Thus, the adjusted  $R^2$  value (.715/.671) of the model indicated that 71.5/67.1% of the variance in residential satisfaction index had been explained by the model. The tolerance values of the coefficients of predictor variables are well over 0.28/0.32 ( $1 - \text{adjusted } R^2$ ) and this indicated the absence of multicollinearity between the predictor variables of the model.

Finally, the value of adjusted  $R^2$  (.731 see Equation 5.3) is similar to the value of  $R^2$  (.815 see p.377-445) indicating that the cross-validity of Phase 2's model is good.

$$\text{adjusted } R^2 = 1 - \left[ \left( \frac{n-1}{n-k-1} \right) \left( \frac{n-2}{n-k-2} \right) \left( \frac{n+1}{n} \right) \right] (1 - R^2) \text{ (Equation 5.3)}$$

Stein's formula was given in equation and can be applied by replacing  $n$  with the sample size (80) and  $k$  with the number of predictors (13), as follows,

$$\begin{aligned}
\text{adjusted } R^2 &= 1 - \left[ \left( \frac{80 - 1}{80 - 13 - 1} \right) \left( \frac{80 - 2}{80 - 13 - 2} \right) \left( \frac{80 + 1}{80} \right) \right] (1 - 0.815) \\
&= 1 - [(1.197)(1.2)(1.013)](0.185) \\
&= 1 - 0.269 \\
&= 0.731
\end{aligned}$$

Thus, the adjusted  $R^2$  value (.779/.731) of the model indicated that 77.9/73.1% of the variance in residential satisfaction index had been explained by the model. The tolerance values of the coefficients of predictor variables are well over 0.22/0.26 ( $1 - \text{adjusted } R^2$ ) and this indicated the absence of multicollinearity between the predictor variables of the model.

#### 5.4 The Comparisons of Respondents' IHSC between the Three Phases

The individual and household's characteristics of respondents from Xuzhou's three phases of low-cost housing were displayed in Table 5.1.

First of all, speaking of the each factor from Table 5.1, it was mostly appeared in a lot of studies on medium-low or low-income inhabitants living at low-cost housing. In respect of the results illustrated in Table 5.1, they indicated that the respondents in three phases of low-cost housing chose the same option from each of factors such as gender, marital status, household size, and occupation sector. For instance, amongst respondents from phase one to phase three of low-cost housing, it apparently presents that they were all dominantly by male (59.3% comparing to 40.7% female, 69.5% comparing to 30.5% female, and 65.0% comparing to 35.0% female, respectively). Referring to marital status and household size, most of respondents coming from three phases were married (86%, 92.6%, and 65%, respectively) with 3 people in one family (54.7%, 60%, and 58.8%, respectively) and with 2 people in one family more or less the same in their responses (33.7%, 37.9%, and 25.0%, respectively) comparing to no respondent with 5 people and above in their family across the three phases and the minor percentage taken



by one family with 1 people in all three residential areas indicating 8.1%, 2.1%, and 11.3% and only 3.5% and 5% of respondents from phase 1 and 3 had 4 people in one family with zero percentage from phase 2.

Moreover, in regard of occupation sector, the great majority of the respondents were working in private business sector (58.1%, 52.6%, and 60.0%, correspondingly) comparing to the very low percentage of the respondents' working in the government (4.7%, 3.2%, and 0.0%, respectively). The rest of numbers of respondents across these three phases were almost distributed on average by working in the State-Owned Enterprise SOE (18.6%, 13.7%, and 18.8% respectively) and in the Collective-Owned Enterprise COE (14.0%, 27.4%, and 17.5%). However, only a tiny minority of respondents who had their own business took 4.7%, 3.2%, and 3.8% respectively.

In regard to age, a high proportion of respondents in phase 2 and 3 were between age 51 and 60 (29.5% and 30.0%) followed by phase 1 (26.7%), while the majority of the respondents in phase 1 were between age 41 and 50 (38.4%) followed by phase 2 (28.4%). In terms of the age group of above 60, the respondents from phase 3 had a large amount (27.5%) followed by phase 2 (23.2%) and phase 1 (15.1%). In addition, the proportion of respondents from two age groups of 31-40 and 21-30 had almost the same percentages' distribution across the three phases.

In view of educational attainment, the respondents living in these three phases of low-cost housing shared some similarities in the great number of residents with junior and senior middle school education background (61.7%, 42.1%, and 47.6%, respectively). On the other hand, the highest education level of the respondents with diploma (32.6%) was living in phase 2. Not surprisingly, the number of respondents with higher level of education background such as bachelor degree or master degree or even higher were relatively low at 9.3%, 10.6%, and 7.6%, respectively.

Accordingly, it was straightforward to reflect on their occupation type which they chose for making a living. In terms of the above-mentioned occupation sector that the respondents were mostly working in private (business) sector, the numbers of occupation type displayed in Table 5.1 indicated that most of the respondents (39.5%, 38.9%, and 33.8%, respectively) were employed to do services or operation that were considered as the very basic and repetitive jobs in Chinese occupation type of segmentation. In addition to that, the occupation type of others such as some jobs paid by daily-settlement (no fixed contract), retired, and laid-off/unemployed comprised a relatively high proportion (27.9%, 41.1%, and 37.5%, respectively) of the respondents' employment status at the same time. On the contrary, the smallest numbers (9.3%, 2.1%, and 12.5%, respectively) of respondents were employed to do management or professional jobs and the numbers (23.3%, 17.9%, and 16.3%, respectively) of the respondents doing as a technical & administrative support had a bit higher than the numbers of the respondents doing management or professional works.

In this manner, the factors of educational attainment, occupation sector and occupation type comparatively affect the residents' monthly net income of their families at certain degree, for example, what a comparatively large percentage of the respondents (36.0%) of phase 1 earned monthly net income of their households is between RMB 2,000 (US\$294) and 3,999 (US\$588), followed by 31.4% whose monthly net incomes were between 4,000 (US\$588) and 5,999 (US\$882).

In the meantime, majority of the respondents (58.9% and 58.8%) of phase 2 and 3 also made between 4,000 (US\$588) and 5,999 (US\$882) of monthly income of each of their family. In addition to the two ranges from RMB 2,000 to RMB 3,999 and from RMB 4,000 to RMB 5,999, certain proportions of respondents (19.8%, 23.2%, and

16.3%, respectively) earned monthly net income between RMB 6,000 (US\$882) and RMB 7,999 (US\$1,176).

In contrast, the proportions of the highest monthly income in these respondents (0.0%, 2.1%, and 0.0%, respectively) across the three phases were hardly to see. In addition, the proportions of the lowest monthly income in phase 2 and 3 were very low in the same manner (1.1% and 2.5%). However, in phase 1, there still had 12.8% of residents with the lowest monthly income, i.e. RMB 0 and 1,999 (US\$294).

With reference to the factor of main means of transportation, based upon the results of the age, occupation sector and type, and monthly income given by the respondents across the three phases, it is not hard to see that the residents mainly relied on using bus and riding bicycle as their main means of transportations.

Furthermore, the majority of the respondents (58.1% and 46.3%) from phase 1 and 2 went outside by bus, while the majority of those (51.6%) in phase 2 went outside by cycling, followed by 34.7% who went outside by bus as well. Likewise, the percentages (36.0% and 38.8%) of going outside by cycling were more enough in phases 1 and 2.

In contrast, it (Table 5.1) was reported that most of respondents were not afford to buy and to use cars as their main means of transportation (4.7%, 2.1%, and 1.3%, respectively) to go outside throughout the three phases. Moreover, very few of residents (1.2%) from phase 1 chose to go outside by foot, while the certain proportions of residents (11.6% and 13.8%) from phase 2 and 3 preferred to walk on foot. In respect of the fair result that has been achieved by nearly covering the respondents who were living in all floor levels from all of block units, Table 5.1 showed that the proportion of floor levels were almost distributed on average with a bit difference in which the larger percentages of respondents from phase 1 living on the 5<sup>th</sup> and 6<sup>th</sup> floor (24.4% and

24.4%), the bigger group of respondents from phase 2 living on the 5<sup>th</sup> floor (24.2%), while the bigger proportion of respondents from phase 3 staying on the 1st floor (23.8%). In terms of length of residence, it is along with when they were moving into their new houses since the three projects completed in different periods.

Thus, the majority of residents in each project had been living more than 7 years, but less than 9 years (90.7%), more than 5 years, but less than 7 years (82.1%), and more than 3 years, but less than 5 years (88.8%).

University of Malaya

**Table 5.1: The Comparisons of Respondents' IHSC between the Three Phases**

3 Phases of Low-cost housing	Phase 1 (Yangguang Huayuan)	Phase 2 (Chengshi Huayuan)	Phase 3 (Binhe Huayuan)
Individual and Household characteristics	n = 86 (%)	n = 95 (%)	n = 80 (%)
Gender			
Male	51 (59.3)	66 (69.5)	52 (65.0)
Female	35 (40.7)	29 (30.5)	28 (35.0)
Age			
Age21-30	7 (8.1)	8 (8.4)	3 (3.8)
Age31-40	10 (11.6)	10 (10.5)	16 (20.0)
Age41-50	33 (38.4)	27 (28.4)	15 (18.8)
Age51-60	23 (26.7)	28 (29.5)	24 (30.0)
Above Age60	13 (15.1)	22 (23.2)	22 (27.5)
Educational attainment			
Primary School	7 (8.1)	14 (14.7)	17 (21.3)
Junior Middle School	20 (23.3)	21 (22.1)	17 (21.3)
Senior Middle School	33 (38.4)	19 (20.0)	21 (26.3)
Diploma	18 (20.9)	31 (32.6)	19 (23.8)
Bachelor Degree	7 (7.0)	7 (7.4)	5 (6.3)
Master Degree and above	2 (2.3)	3 (3.2)	1 (1.3)
Marital status			
Single	6 (7.0)	5 (5.3)	1 (1.3)
Married	74 (86.0)	88 (92.6)	65 (81.3)
Widowed/Divorced	6 (7.0)	2 (2.1)	14 (17.5)
Household size			
1 people	7 (8.1)	2 (2.1)	9 (11.3)
2 people	29 (33.7)	36 (37.9)	20 (25.0)
3 people	47 (54.7)	57 (60.0)	47 (58.8)
4 people	3 (3.5)	0 (0.0)	4 (5.0)
5 people and above	0 (0.0)	0 (0.0)	0 (0.0)
Occupation sector			
Government	4 (4.7)	3 (3.2)	0 (0.0)
State-Owned Enterprise (SOE)	16 (18.6)	13 (13.7)	15 (18.8)
Collective-Owned Enterprise (COE)	12 (14.0)	26 (27.4)	14 (17.5)
Private business	50 (58.1)	50 (52.6)	48 (60.0)
Own business	4 (4.7)	3 (3.2)	3 (3.8)
Occupation type			
Management & Professional	8 (9.3)	2 (2.1)	10 (12.5)
Technical & Administrative Support	20 (23.3)	17 (17.9)	13 (16.3)
Services & Operation	34 (39.5)	37 (38.9)	27 (33.8)
Others	24 (27.9)	39 (41.1)	30 (37.5)
Monthly net income of Household			
RMB0 - 1,999	11 (12.8)	1 (1.1)	2 (2.5)
RMB2,000 - 3,999	31 (36.0)	14 (14.7)	18 (22.5)
RMB4,000 - 5,999	27 (31.4)	56 (58.9)	47 (58.8)
RMB6,000 - 7,999	17 (19.8)	22 (23.2)	13 (16.3)
Above RMB8,000	0 (0.0)	2 (2.1)	0 (0.0)
Floor level			
1 <sup>st</sup> Floor	10 (11.6)	11 (11.6)	19 (23.8)
2 <sup>nd</sup> Floor	8 (9.3)	15 (15.8)	14 (17.5)
3 <sup>rd</sup> Floor	11 (12.8)	18 (18.9)	16 (20.0)
4 <sup>th</sup> Floor	15 (17.4)	11 (11.6)	11 (13.8)
5 <sup>th</sup> Floor	21 (24.4)	23 (24.2)	13 (16.3)
6 <sup>th</sup> Floor	21 (24.4)	17 (17.9)	7 (8.8)

**Table 5.1, continued**

3 Phases of Low-cost housing	Phase 1 (Yangguang Huayuan)	Phase 2 (Chengshi Huayuan)	Phase 3 (Binhe Huayuan)
Individual and Household characteristics	n = 86 (%)	n = 95 (%)	n = 80 (%)
Length of Residence			
<=3 years	0 (0.0)	0 (0.0)	7 (8.8)
>3, <=5 years	0 (0.0)	17 (17.9)	71 (88.8)
>5, <=7 years	8 (9.3)	78 (82.1)	2 (2.5)
>7, <=9 years	78 (90.7)	0 (0.0)	0 (0.0)
Main Means of Transportation			
By Cycling (Electric Bicycle/Bicycle)	31 (36.0)	49 (51.6)	31 (38.8)
By Driving	4 (4.7)	2 (2.1)	1 (1.3)
By Bus	50 (58.1)	33 (34.7)	37 (46.3)
By Foot	1 (1.2)	11 (11.6)	11 (13.8)

Source: Field Survey (2014-2015)

## 5.5 Residential Satisfaction

### 5.5.1 The Comparisons of Four Elements' Satisfactions and RS between the Three Phases

There were 36 variables displayed in Table 5.2 determining the levels of four elements satisfactions which to further influence the overall residential satisfactions throughout the three phases of low-cost housing.

In terms of the last three lines of Table 5.2 displaying those three phases of respondents' levels of satisfactions with residential environment, the respondents of Yangguang Huayuan (Phase 1) whose average residential satisfaction was 64.397% [which was perceived as the moderate level of satisfaction due to the proportion of respondents with moderate level of satisfaction was large (87.2%)] had almost the same answer with the respondents of Binhe Huayuan (Phase 3) whose average residential satisfaction was 62.845% [the proportion of respondents with moderate level of satisfaction was quite big (77.5%)].

However, the respondents of Chengshi Huayuan (Phase 2) were dissatisfied [56.947% which was perceived as the low level of satisfaction due to the proportion of respondents with low level of satisfaction was large (87.4%)] with their overall residential environment.

In terms of the four elements' satisfactions which determine the overall residential satisfaction, the respondents of Yangguang Huayuan, Chengshi Huayuan, and Binhe Huayuan shared some similarities in evaluating the satisfaction of housing unit characteristics in their corresponding projects with the highest average satisfaction among four elements (69.257%, 61.519%, and 66.792%, respectively), followed by 65.233%, 58.008%, and 62.259% which presented the satisfaction levels of housing unit supporting services in respective project, and followed by 62.841% and 55.564% which were the satisfaction levels of neighbourhood characteristics in Yangguang and Chengshi Huayuan, and followed by 62.137% and 54.441% which indicated the lowest average satisfaction of housing estate supporting facilities comparing to other three elements' satisfactions in Yangguang and Chengshi Huayuan.

On the contrary, the lowest average satisfaction (61.723%) was given by the respondents from Binhe Huayuan (Phase 3) to neighbourhood characteristics comparing to Binhe Huayuan's other three elements, whereas, when they evaluated housing estate supporting facilities, the satisfaction index (61.867%) was a little bit better than neighbourhood characteristics' satisfaction index (61.723%).

Pertaining to satisfactions indices of four elements throughout three phases of low-cost housing, with the exception of satisfaction index with housing unit characteristics (61.519%) Chengshi Huayuan (Phase 2) had three elements with low level of satisfactions in terms of housing unit supporting services, neighbourhood

characteristics, and housing estate supporting facilities and the rest of two phases (Phase 1 and 3) had all moderate level of satisfactions with four elements.

In terms of the proportions of respondents from each element across three phases of low-cost housing, the proportion of respondents with moderate level of satisfaction was the highest (74.4%, 57.9%, and 77.5%, respectively) in housing unit characteristics across three phases followed by 70.9% in neighbourhood characteristics of Phase 1, while 37.9% in housing unit supporting services of Phase 2, while 61.3% in housing estate supporting facilities of Phase 3, and followed by 66.3% in housing unit supporting services of Phase 1, while 25.3% and 57.5% in neighbourhood characteristics of Phase 2 and 3, and followed by 58.1% and 22.1% in housing estate supporting facilities of Phase 1 and 2, while 50.0% in housing unit supporting services of Phase 3.

In addition, the percentage of respondents with low level of satisfaction is the largest (40.7% and 74.7%) in housing estate supporting facilities of Phase 1 and 2, while 42.5% in housing unit supporting services of Phase 3, followed by 29.1%, 73.7%, and 42.5% in neighbourhood characteristics of all phases, and followed by 25.6% and 61.1% in housing unit supporting services of Phase 1 and 2 while 36.3% in housing estate supporting facilities of Phase 3, and followed by 16.3%, 40.0%, and 18.8% in housing unit characteristics of all phases.

With respect to the ratio of respondents with very low and high levels of satisfaction that need to be especially concerned, the proportion of respondents with very low level of satisfaction is none (0.0%) in housing unit characteristics and any percentage of respondents with very low level of satisfaction did not appear across four elements in Phase 1 (Table 5.2).



Moreover, the percentage of respondents with very low level of satisfaction is 2.5% in housing unit supporting services of Phase 3 while the other two phases of low-cost housing did not have any percentage of respondents with very low level of satisfaction in this element. Furthermore, 3.2% and 1.3% of respondents of Phase 2 and 3 were very dissatisfied with housing estate supporting facilities and another 1.1% of respondents of Phase 2 were very dissatisfied with neighbourhood characteristics as well. Nevertheless, the proportion of respondents of Phase 1 with high level of satisfaction is large (9.3%) in housing unit characteristics followed by 3.8% of respondents of Phase 3 and 2.1% of respondents of Phase 2. Furthermore, respondents with high level of satisfaction are high (8.1%) in housing unit supporting services followed by 5.0% of respondents of Phase 3 and (1.1%) of respondents of Phase 2.

In addition to that, 1.3% of respondents of Phase 3 were satisfied and very satisfied with housing estate supporting facilities followed by 1.2% of respondents of Phase 1, and none of respondents of three phases were satisfied or very satisfied with neighbourhood characteristics.

With reference to 3.2% and 1.3% of respondents of Phase 2 and 3 feeling very dissatisfied with housing estate supporting facilities, and 2.5% of respondents with very low level of satisfaction in housing unit supporting services of Phase 3 and another 1.1% of respondents of Phase 2 being very dissatisfied with neighbourhood characteristics as well, the habitability indices on the level of satisfaction indicated that both 58.1% and 38.8% of respondents from Phase 1 and 3 were very dissatisfied with parking facilities that was significantly correlated with the element of housing estate supporting facilities ( $r = .351^{**}$  and  $.421^{**}$ , respectively), followed by 22.1 % of respondents from Phase 2 revealing very low level of satisfaction with children's

playground that is significantly correlated with the element of housing estate supporting facilities ( $r = .418^{**}$ ).

Furthermore, 19.8 % of respondents from Phase 1 perceived very low level of satisfaction with corridor that is significantly correlated with the element of housing unit supporting services ( $r = .526^{**}$ ), followed by 18.8 % of respondents from Phase 3 with very low level of satisfaction with garbage disposal that is significantly correlated with the element of housing unit supporting services ( $r = .481^{**}$ ), and followed by 14.7 % of respondents from Phase 2 with very low level of satisfaction with firefighting equipment that is significantly correlated with the element of housing unit supporting services ( $r = .290^{**}$ ).

Moreover, very low level of satisfactions were perceived by 34.9%, 32.6% and 25.0% of respondents from Phase 1, 2 and 3 with nearest general hospital that is only significantly correlated with the element of neighbourhood characteristics of Phase 2 ( $r = .388^{**}$ ), and is insignificantly correlated with neighbourhood characteristics of Phase 1 and 3 ( $r = \text{positive}$ ).

In terms of resident's workplace, quietness of housing estate, and urban centre, 31.6% of respondents living in Phase 2, 29.1% of respondents of Phase 2, and 17.5% of respondents from Phase 3 showed their very low level of satisfactions with insignificant correlations with the element of neighbourhood characteristics.

With regard to the low level of satisfactions with factors across four elements, the habitability indices on the level of satisfaction indicated that both 61.6% and 46.3% of respondents from Phase 1 and 3 were dissatisfied with children's playground that was significantly correlated with the element of housing estate supporting facilities ( $r = .324^{**}$  and  $.375^{**}$ , respectively), followed by 48.4 % of respondents from Phase 2 with

low level of satisfaction with open space that was significantly correlated with the element of housing estate supporting facilities ( $r = .562^{**}$ ), and followed by 30.0% of respondents of Phase 3 being dissatisfied with local kindergarten with significant correlation coefficients ( $r = .279^*$ ).

Regarding the factors being correlated with housing unit supporting services element, low level of 45.3% of respondents (Phase 2)' satisfaction was perceived with their electrical & telecommunication wiring with significant positive correlation coefficient ( $r = .413^{**}$ ), followed by 32.6% of respondents of Phase 1 with low level of satisfaction with staircases ( $r = .451^{**}$ ) and followed by 30.0% of respondents of Phase 3 with low level of satisfaction with street lighting ( $r = .439^{**}$ ).

Relating to the factors being correlated with the element of neighbourhood characteristics, satisfaction with the convenience from their living to their workplaces indicates low habitability perceived by 52.3% of respondents of Phase 1 with insignificant correlation, followed by 47.4% of respondents of Phase 2 with low level of satisfaction with nearest bus/taxi station ( $r = \text{positive}$ ), and followed by 42.5% of respondents of Phase 3 with low level of satisfaction with local police station ( $r = .266^*$ ).

In terms of the factors being correlated with housing unit characteristics element, 46.3% of respondents of Phase 2 were dissatisfied with toilet with significant correlation coefficient ( $r = .269^{**}$ ), followed by 30.2% of respondents of phase 1 with low level of satisfaction with kitchen ( $r = .623^{**}$ ), and followed by 23.8% of respondents of phase 3 with significant correlation coefficient ( $r = .315^{**}$ ).

**Table 5.2: The Comparisons of Four Elements' Satisfaction and RS between the Three Phases**

<i>Satisfaction with</i>	$\Delta_{\text{Very Low}}$ (%)	$\Delta_{\text{Low}}$ (%)	$\Delta_{\text{Moderate}}$ (%)	$\Delta_{\text{High}}$ (%)	Habitability Index (%)	SD	Pearson ( <i>r</i> )
<sup>†</sup> Three Phases of Low-cost Housing							
<i>Living room</i>							
Phase 1	10.5	16.3	33.7	39.5	69.418	20.338	.592**
Phase 2	11.6	25.3	48.4	14.7	62.702	16.655	.649**
Phase 3	16.3	13.8	33.8	36.3	65.125	23.420	.269*
<i>Dining area</i>							
Phase 1	12.8	15.1	29.1	43.0	70.813	24.128	.606**
Phase 2	17.9	29.5	42.1	10.5	57.789	18.300	.653**
Phase 3	13.8	13.8	27.5	45.0	67.459	24.103	.497**
<i>Master bedroom</i>							
Phase 1	5.8	15.1	26.7	52.3	76.007	20.225	.355**
Phase 2	8.4	15.8	53.7	22.1	67.123	16.750	.393**
Phase 3	11.3	3.8	37.5	47.5	74.749	20.594	.379**
<i>Bedroom</i>							
Phase 1	7.0	17.4	25.6	50.0	72.403	19.333	.552**
Phase 2	6.3	18.9	53.7	21.1	65.229	15.939	.609**
Phase 3	6.3	20.0	37.5	36.3	69.500	18.173	.352**
<i>Kitchen</i>							
Phase 1	10.5	30.2	34.9	24.4	61.939	19.272	.623**
Phase 2	9.5	28.4	47.4	14.7	62.315	16.142	.554**
Phase 3	13.8	23.8	38.8	23.8	62.959	20.902	.315**
<i>Toilet</i>							
Phase 1	10.5	24.4	38.4	26.7	65.890	19.210	.297**
Phase 2	17.9	46.3	26.3	9.5	53.930	17.225	.269**
Phase 3	11.3	27.5	32.5	28.8	64.458	19.151	.339**
<i>Drying area</i>							
Phase 1	10.5	11.6	47.7	30.2	68.333	19.170	.367**
Phase 2	9.5	23.2	54.7	12.6	61.544	16.848	.559**
Phase 3	15.0	17.5	43.8	23.8	63.292	19.635	.609**
<sup>†</sup> <b>Housing Unit Characteristics Satisfaction Index (7)</b>							
Phase 1	0.0	16.3	74.4	9.3	69.257	9.894	1.000
Phase 2	0.0	40.0	57.9	2.1	61.519	8.862	1.000
Phase 3	0.0	18.8	77.5	3.8	66.792	8.215	1.000

**Table 5.2, continued**

<i>Satisfaction with</i>	$\Delta_{\text{Very Low}}$ (%)	$\Delta_{\text{Low}}$ (%)	$\Delta_{\text{Moderate}}$ (%)	$\Delta_{\text{High}}$ (%)	Habitability Index (%)	SD	Pearson ( <i>r</i> )
<sup>†</sup> Three Phases of Low-cost Housing							
<i>Drain</i>							
Phase 1	9.3	17.4	25.6	47.7	69.419	21.494	.393**
Phase 2	6.3	27.4	35.8	30.5	62.947	17.678	.303**
Phase 3	12.5	16.3	32.5	38.8	65.750	23.045	.612**
<i>Electrical &amp; Telecommunication wiring</i>							
Phase 1	4.7	14.0	15.1	66.3	76.395	21.470	.420**
Phase 2	11.6	45.3	28.4	14.7	55.053	18.843	.413**
Phase 3	16.3	16.3	27.5	40.0	66.500	26.053	.654**
<i>Firefighting equipment</i>							
Phase 1	9.3	23.3	50.0	17.4	59.767	18.660	.227*
Phase 2	14.7	37.9	36.8	10.5	52.947	18.955	.290**
Phase 3	17.5	21.3	45.0	16.3	56.125	20.837	.402**
<i>Street lighting</i>							
Phase 1	9.3	30.2	43.0	17.4	60.465	20.053	.327**
Phase 2	11.6	28.4	44.2	15.8	57.684	18.010	.587**
Phase 3	15.0	30.0	35.0	20.0	59.000	23.090	.439**
<i>Staircases</i>							
Phase 1	16.3	32.6	23.3	27.9	61.105	24.751	.451**
Phase 2	9.5	32.6	34.7	23.2	60.684	18.887	.540**
Phase 3	17.5	28.8	27.5	26.3	60.875	24.427	.386**
<i>Corridor</i>							
Phase 1	19.8	19.8	15.1	45.3	66.570	24.773	.526**
Phase 2	14.7	37.9	29.5	17.9	55.789	19.342	.479**
Phase 3	16.3	20.0	31.3	32.5	64.438	22.920	.467**
<i>Garbage disposal</i>							
Phase 1	16.3	22.1	27.9	33.7	62.907	24.632	.513**
Phase 2	9.5	24.2	46.3	20.0	60.947	18.627	.473**
Phase 3	18.8	17.5	30.0	33.8	63.125	25.734	.481**
<sup>†</sup> <b>Housing Unit Supporting Services Satisfaction Index (7)</b>							
Phase 1	0.0	25.6	66.3	8.1	65.233	9.301	1.000
Phase 2	0.0	61.1	37.9	1.1	58.008	8.216	1.000
Phase 3	2.5	42.5	50.0	5.0	62.259	11.732	1.000

**Table 5.2, continued**

<i>Satisfaction with</i>	$\Delta_{\text{Very Low}}$ (%)	$\Delta_{\text{Low}}$ (%)	$\Delta_{\text{Moderate}}$ (%)	$\Delta_{\text{High}}$ (%)	Habitability Index (%)	SD	Pearson ( <i>r</i> )
<sup>†</sup> Three Phases of Low-cost Housing							
<i>Open Space</i>							
Phase 1	8.1	14.0	62.8	15.1	65.988	17.453	.329**
Phase 2	9.5	48.4	38.9	3.2	54.158	14.779	.562**
Phase 3	6.3	21.3	52.5	20.0	66.313	18.362	.461**
<i>Children's Playground</i>							
Phase 1	12.8	61.6	11.6	14.0	53.140	18.630	.324**
Phase 2	22.1	44.2	26.3	7.4	50.053	18.328	.418**
Phase 3	16.3	46.3	25.0	12.5	53.563	18.947	.375**
<i>Parking facilities</i>							
Phase 1	58.1	11.6	12.8	17.4	46.105	24.691	.351**
Phase 2	22.1	36.8	30.5	10.5	51.316	18.119	.348**
Phase 3	38.8	15.0	22.5	23.8	53.500	25.450	.421**
<i>Perimeter road</i>							
Phase 1	7.0	51.2	23.3	18.6	59.477	19.251	.455**
Phase 2	6.3	36.8	46.3	10.5	58.789	14.870	.490**
Phase 3	12.5	28.8	35.0	23.8	62.313	21.873	.540**
<i>Pedestrian walkways</i>							
Phase 1	20.9	15.1	46.5	17.4	59.244	20.730	.372**
Phase 2	17.9	33.7	35.8	12.6	54.211	17.615	.404**
Phase 3	22.5	16.3	36.3	25.0	59.438	22.628	.332**
<i>Local Shops</i>							
Phase 1	5.8	11.6	29.1	53.5	76.163	21.125	.376**
Phase 2	9.5	29.5	47.4	13.7	59.579	16.172	.461**
Phase 3	8.8	17.5	25.0	48.8	72.063	22.399	.501**
<i>Local Kindergarten</i>							
Phase 1	5.8	24.4	30.2	39.5	70.814	20.592	.241*
Phase 2	21.1	47.4	20.0	11.6	50.158	19.136	.494**
Phase 3	7.5	30.0	26.3	36.3	66.625	21.784	.279*
<i>Fitness Equipment</i>							
Phase 1	20.9	17.4	16.3	45.3	66.163	24.789	+
Phase 2	13.7	25.3	48.4	12.6	57.263	18.332	.244*
Phase 3	20.0	27.5	18.8	33.8	61.125	24.675	.441**
<sup>†</sup> Housing Estate Supporting Facilities Satisfaction Index (8)							
Phase 1	0.0	40.7	58.1	1.2	62.137	6.860	1.000
Phase 2	3.2	74.7	22.1	0.0	54.441	7.256	1.000
Phase 3	1.3	36.3	61.3	1.3	61.867	9.226	1.000

**Table 5.2, continued**

<i>Satisfaction with</i>	$\Delta_{\text{Very Low}}$ (%)	$\Delta_{\text{Low}}$ (%)	$\Delta_{\text{Moderate}}$ (%)	$\Delta_{\text{High}}$ (%)	Habitability Index (%)	SD	Pearson ( <i>r</i> )
<sup>+</sup> Three Phases of Low-cost Housing							
<i>Community Relationship</i>							
Phase 1	8.1	18.6	41.9	31.4	66.163	19.169	.311**
Phase 2	14.7	6.3	48.4	30.5	63.684	18.740	.406**
Phase 3	8.8	22.5	42.5	26.3	63.250	19.859	.384**
<i>Quietness of housing estate</i>							
Phase 1	29.1	43.0	14.0	14.0	46.744	21.279	+
Phase 2	16.8	29.5	44.2	9.5	52.842	18.661	.565**
Phase 3	21.3	30.0	23.8	25.0	55.750	24.119	.296**
<i>Local Crime situation</i>							
Phase 1	4.7	19.8	15.1	60.5	76.163	22.553	.367**
Phase 2	7.4	23.2	51.6	17.9	60.211	16.630	.505**
Phase 3	8.8	22.5	26.3	42.5	69.125	23.395	.257*
<i>Local Accident situation</i>							
Phase 1	3.5	9.3	32.6	54.7	76.744	19.849	.326**
Phase 2	6.3	21.1	47.4	25.3	62.947	18.899	.367**
Phase 3	2.5	18.8	25.0	53.8	75.625	20.918	.348**
<i>Local Security control</i>							
Phase 1	7.0	11.6	55.8	25.6	66.744	17.180	+
Phase 2	10.5	35.8	43.2	10.5	54.632	16.873	.370**
Phase 3	8.8	16.3	53.8	21.3	62.375	16.932	.272*
<i>Resident's Workplace</i>							
Phase 1	14.0	52.3	19.8	14.0	51.744	19.232	+
Phase 2	31.6	42.1	20.0	6.3	44.632	16.810	+
Phase 3	17.5	40.0	28.8	13.8	53.250	20.362	+
<i>Community Clinic</i>							
Phase 1	10.5	11.6	32.6	45.3	67.907	20.644	.213*
Phase 2	12.6	17.9	32.6	36.8	62.842	20.663	.473**
Phase 3	11.3	16.3	27.5	45.0	67.250	22.388	.383**
<i>Nearest General Hospital</i>							
Phase 1	34.9	39.5	10.5	15.1	47.209	21.944	+
Phase 2	32.6	42.1	13.7	11.6	46.421	19.782	.388**
Phase 3	25.0	36.3	17.5	21.3	52.625	22.878	+
<i>Local Police Station</i>							
Phase 1	8.1	45.3	17.4	29.1	59.767	21.854	.335**
Phase 2	13.7	26.3	50.5	9.5	56.421	16.368	.385**
Phase 3	13.8	42.5	22.5	21.3	57.750	22.103	.266*
<i>Nearest School</i>							
Phase 1	9.3	39.5	12.8	38.4	64.884	26.110	.436**
Phase 2	11.6	24.2	45.3	18.9	57.474	18.848	.446**
Phase 3	11.3	35.0	27.5	26.3	59.625	22.583	+
<i>Local Market</i>							
Phase 1	10.5	26.7	14.0	48.8	68.488	26.724	.286**
Phase 2	6.3	31.6	35.8	26.3	61.053	18.989	.269**
Phase 3	10.0	23.8	25.0	41.3	65.125	22.558	.345**
<i>Nearest Fire Station</i>							
Phase 1	9.3	16.3	52.3	22.1	63.372	18.059	+
Phase 2	8.4	32.6	42.1	16.8	57.895	17.619	.386**
Phase 3	10.0	23.8	42.5	23.8	61.875	19.297	.232*

**Table 5.2, continued**

<i>Satisfaction with</i>	Very Low (%)	Low (%)	Moderate (%)	High (%)	Habitability Index (%)	SD	Pearson ( <i>r</i> )
† Three Phases of Low-cost Housing							
<i>Nearest Bus/Taxi Station</i>							
Phase 1	20.9	33.7	12.8	32.6	59.302	26.603	.225*
Phase 2	13.7	47.4	30.5	8.4	50.947	17.869	+
Phase 3	16.3	28.8	18.8	36.3	61.875	24.188	.369**
<i>Urban Centre</i>							
Phase 1	12.8	23.3	25.6	38.4	64.535	22.889	.243*
Phase 2	26.3	46.3	20.0	7.4	45.895	17.166	.420**
Phase 3	17.5	32.5	25.0	25.0	58.625	22.656	+
† Neighbourhood Characteristics Satisfaction Index (14)							
Phase 1	0.0	29.1	70.9	0.0	62.841	5.478	1.000
Phase 2	1.1	73.7	25.3	0.0	55.564	6.817	1.000
Phase 3	0.0	42.5	57.5	0.0	61.723	5.960	1.000
* Residential Satisfaction Index							
Phase 1	0.0	12.8	87.2	0.0	64.397	3.957	—
Phase 2	0.0	87.4	12.6	0.0	56.947	2.728	—
Phase 3	0.0	22.5	77.5	0.0	62.845	3.816	—

Note: †: Three Phases of Low-cost Housing, i.e. Phase 1 = Yangguang Huayuan; Phase 2 = Chengshi Huayuan; Phase 3 = Binhe Huayuan.

Δ: Range of the level of satisfaction (i.e. very low = 20-39; low = 40-59; moderate = 60-79; high = 80-100) stem from the level of housing satisfaction measured by a five-point Likert scale, i.e. 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly satisfied; 4 = satisfied; 5 = very satisfied.

†: Four elements of Residential Satisfaction, i.e. housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics.

\*: Residential Satisfaction Index of the Low-cost Housing.

\*. Correlation is significant at the 0.05 level (2-tailed). \*\*. Correlation is significant at the 0.01 level (2-tailed).

"0" = Non-correlation; "+" = Positive correlation, but Non-significant; "-" = Negative correlation, but Non-significant.

Source: Field Survey (2014-2015)

### 5.5.2 The Comparisons of the Correlations between RSIndex and Respondents' IHSC between the Three Phases

The Table 5.3, which presented the comparisons of Spearman's and Pearson's correlation coefficients (*r*) matrix between residential satisfaction indices (four elements' satisfaction indices) and respondents' individual and household socio-economic characteristics between the three phases, indicated that both residential satisfaction indices of Yangguang Huayuan (Phase 1) and Binhe Huayuan (Phase 3) were highly positively correlated with housing unit supporting services satisfaction index, with correlation coefficient (*r*) values of .628\*\* and .582\*\*, respectively, and followed by residential satisfaction index of Phase 2 having the highest positive correlation (*r* = .422\*\*) with neighbourhood characteristics satisfaction index comparing to other three elements' indices within Phase 2.



Furthermore, the residential satisfaction indices of Phase 1, 3, and 2 had considerably higher positive correlations ( $r = .572^{**}$ ,  $.457^{**}$ , and  $.363^{**}$ , respectively) with housing unit characteristics satisfaction index, neighbourhood characteristics satisfaction index, and housing estate supporting facilities satisfaction index than the same residential satisfaction indices having positive correlations ( $r = .554^{**}$ ,  $.449^{**}$ , and  $.352^{**}$ , respectively) with neighbourhood characteristics satisfaction index, housing estate supporting facilities satisfaction index, and housing unit supporting services satisfaction index.

At last, the residential satisfaction index of Phase 1 had a relatively lower positive correlation ( $r = .355^{**}$ ) with housing estate supporting facilities satisfaction index, and followed by both residential satisfaction indices of Phase 3 and Phase 2 having comparatively lower positive correlations ( $r = .319^{**}$  and  $.268^{**}$ , respectively) with housing unit characteristics satisfaction index.

In terms of the correlations between the elements, Table 5.3 indicated that only housing unit characteristics satisfaction index of the Phase 2 had lower negative correlations ( $r = -.227^{*}$  and  $-.330^{**}$ ) with housing estate supporting facilities satisfaction index and neighbourhood characteristics satisfaction index comparing to a negative correlation ( $r = -.418^{**}$ ) of housing unit supporting services satisfaction index with neighbourhood characteristics satisfaction index. In addition to that, the rest of correlations between the elements across three phases had positive and negative correlations, but insignificant ones (It indicated that there were less collinearity in these variables).

With respect to the correlations between the respondents' individual and household socio-economic characteristics and residential satisfaction indices, Table 5.3 indicated the longer the respondents of the Phase 2 lived, the more satisfied with residential environment that they felt [with correlation coefficient ( $r$ ) value of .206\*].

Moreover, the more choices on main means of transportation were provided to the respondents of the Phase 3, they felt more satisfied with residential environment [with correlation coefficient ( $r$ ) value of .362\*\*]. On top of that, the rest of correlations between the respondents' individual and household socio-economic characteristics and residential satisfaction indices throughout three phases had positive and negative correlations, but insignificant ones.

In terms of the correlations between the respondents' individual and household characteristics and each element index of residential environment, Table 5.3 illustrated that the respondents' ages and occupation type had positive correlations [with correlation coefficient ( $r$ ) values of .272\* and .234\*, respectively] with housing estate supporting facilities satisfaction index of Phase 1 which, on the other hand, decreased with the increases in household sizes, decreased with the promoting in residents' occupation sector, and decreased with the increases in their incomes [with correlation coefficient ( $r$ ) values of -.275\*, -.260\*, and -.230\*, respectively].

Moreover, neighbourhood characteristics satisfaction index of Phase 1 declines with the increases in respondents' ages [with correlation coefficient ( $r$ ) value of -.227\*]. However, neighbourhood characteristics satisfaction index of Phase 3 increased with the increase in choices about the main means of transportation provided to the respondents [with correlation coefficient ( $r$ ) value of .232\*].

Apart from this, the rest of correlations between the respondents' individual and household characteristics and each element index of residential environment throughout three phases had positive and negative correlations, but insignificant ones.

Therefore, with reference to the above mentioned results, the respondents' individual and household socio-economic characteristics such as marital status and main means of transportation were positively correlated with residential satisfaction indices throughout three phases of low-cost housing which, however, declined with the increases in household sizes, promoting in residents' occupation sector, and increases in their incomes.

Furthermore, the residential satisfaction indices of Phase 1 and 2 had negative correlations with the respondents' gender which, however, was positively correlated with residential satisfaction index of Phase 3. Moreover, the older the respondents of Phase 2 and 3 were, they felt more satisfied with residential environment, in contrast, the older the respondents from Phase 1 were, the less satisfied with residential environment that they felt. What is more, the higher educated the respondents of the Phase 2 and 3 received, the less satisfied with residential environment that they felt, on the contrary, the higher educated the respondents of the Phase 1 received, they felt more satisfied with residential environment.

In the way of respondents' occupation type, it has positive correlations with residential satisfaction indices of Phase 2 and 3, while the same respondents' attribute is negatively correlated with residential satisfaction index of Phase 1. In the case of floor level, the higher floor level the respondents of the Phase 2 and 3 lived on, the less satisfied with residential environment that they felt, on the other hand, the higher floor level the respondents of the Phase 1 lived on, they felt more satisfied with residential environment.

**Table 5.3: The Comparisons of Spearman's and Pearson's correlation coefficients (r) matrix between RSIndices and Respondents' IHSC between the Three Phases**

Variables	HUCS Index	HUSSS Index	HESFS Index	NCS Index	Gender	Age	Educational attainment	Marital Status	Household size	Occupation sector	Occupation type	Income	Floor Level	Length of Residence	Main Means of Transportation
3 phases															
Housing Unit Characteristics Satisfaction (HUCS) Index															
Phase 1	1.000	+	+	+	-	-	+	-	+	-	-	-	-	-	+
Phase 2	1.000	+	-.227*	-.330**	+	+	+	+	-	-	-	-	-	+	-
Phase 3	1.000	+	-	-	+	-	+	-	+	+	-	+	+	-	+
Housing Unit Supporting Services Satisfaction (HUSSS) Index															
Phase 1	+	1.000	+	+	-	-	+	+	0.000	-	-	-	+	+	+
Phase 2	+	1.000	+	-.418**	-	-	+	+	+	+	-	-	-	+	+
Phase 3	+	1.000	-	-	+	+	-	+	-	-	+	-	+	-	+
Housing Estate Supporting Facilities Satisfaction (HESFS) Index															
Phase 1	+	+	1.000	-	-	.272*	-	+	-.275*	-.260*	.234*	-.230*	+	+	-
Phase 2	-.227*	+	1.000	-	-	-	+	-	+	+	+	-	+	-	+
Phase 3	-	-	1.000	-	+	+	-	+	-	-	+	-	-	+	+
Neighbourhood Characteristics Satisfaction (NCS) Index															
Phase 1	+	+	-	1.000	-	-.227*	+	+	+	+	-	+	+	-	+
Phase 2	-.330**	-.418**	-	1.000	-	+	-	-	-	-	+	+	-	+	+
Phase 3	-	-	-	1.000	-	-	+	+	-	-	+	-	+	-	.232*
Residential Satisfaction Index															
Phase 1	.572**	.628**	.355**	.554**	-	-	+	+	-	-	-	-	+	-	+
Phase 2	.268**	.352**	.363**	.422**	-	+	-	+	-	-	+	-	-	.206*	+
Phase 3	.319**	.582**	.449**	.457**	+	+	-	+	-	-	+	-	-	-	.362**

Notes: \*. Correlation is significant at the 0.05 level (2-tailed). \*\*. Correlation is significant at the 0.01 level (2-tailed). "0" = Non-correlation; "+" = Positive correlation, but Non-significant; "-" = Negative correlation, but Non-significant.  
Significant Variables definitions: Age (1 = age21-30, 2 = age31-40, 3 = age41-50, 4 = age51-60, 5 = above age60); Household size (1 = 1 people, 2 = 2 people, 3 = 3people, 4 = 4 people, 5 = 5 people and above); Occupation Sector (1 = Government servant, 2 = State-Owned Enterprise (SOE), 3 = Collective-Owned Enterprise (COE), 4 = Private business, 5 = Own business); Occupation Type (1 = Management & Professional, 2 = Technical & Administrative Support, 3 = Services & Operation, 4 = Others); Income = Monthly net income of Household (1 = RMB 0-1,999, 2 = RMB 2,000-3,999, 3 = RMB 4,000-5,999, 4 = RMB 6,000-7,999, 5 = above RMB 8,000); Length of Residence (1 = <=3 years, 2 = >3, <=5 years, 3 = >5, <=7 years, 4 = >7, <=9 years); Main Means of Transportation (1 = By Cycling (Electric Bicycle/Bicycle), 2 = By Driving, 3 = By Bus, 4 = By Foot)

Source: Field Survey (2014-2015)

In addition to that, the longer the respondents of the Phase 1 and 3 lived, the less satisfied with residential environment that they felt, however, the respondents of the Phase 2 felt in completely different ways from respondents of Phase 1 and 3.

### **5.5.3 The Comparisons of the Determinants between the Three Phases**

In terms of the dependent and independent variables of this study, each phase of low-cost housing's residential satisfaction index, which was defined as one or only one dependent variable of this study delivering the analyses of the determinants, was worked out by means of the total scores of the 36 residential satisfaction variables divided by the sum of actual scores on the 36 variables and was displayed as a percentage that was also a continuous variable with normal distribution. Furthermore, the algorithm of the residential satisfaction index was stemmed from the calculation of habitability index introduced by Onibokun (1974); (Onibokun, 1976).

As the above mentioned, the multiple linear regression analysis was defined as the best way for this social experiment study to explain variations in each phase of residential satisfaction index due to assessing the simultaneous effects of the 36 variables from the four elements of residential environment measured by the respondents with their own different individual variations (the additional 11 personal attributes of respondents' individual and household socio-economic characteristics) from their own each three phases of low-cost housing based upon their perceptions of their own living experiences along with the previous literature review that mentioned about the total of residential satisfaction variables plus respondents' individual and household characteristics might have influenced residential satisfaction.

In terms of a multiple linear regression model, it assessed to determine the best linear combination of the 36 residential environment variables from HUC, HUSS, HESF, and NC plus the 11 personal attributes for predicting each phase of the overall residential satisfaction.

As a result, Table 5.4, which presented the comparisons of the determinants of residential satisfaction indices between the three phases of low-cost housing in Xuzhou city, indicated that the combination of predictor (independent) variables of each phase of low-cost housing significantly predicted the respective residential satisfaction, with  $F(14, 71) = 21.741, p < .001$ ,  $F(12, 82) = 20.669, p < .001$ ,  $F(13, 66) = 22.405, p < .001$ , respectively, with all 14 determinants, 12 key predictors, and 13 determinants separately and significantly contributing to the each prediction of residential satisfaction.

In respect of those determinants from each phase to predicting residential satisfaction of each phase of low-cost housing, in general the separate regression on the three phases of low-cost housing drew the conclusion that the three phases of low-cost housing had the same determinants and the diverse ones to contribute each phase of residential satisfaction.

Furthermore, Table 5.4 indicated that the residents of three phases simultaneously raised one fact that to improve satisfactions with corridor and local shops could enhance residential satisfactions over there together with other determinants. Furthermore, the residents of Phase 1 and 2 were simultaneously very concerned about the improvements of satisfactions with bedroom and the nearest schools. Meanwhile, the residents of Phase 1 and 3 were much concerned about the enhancements of satisfactions with open space and the floor level, for instance, the residents of Phase 1 who lived on the 5<sup>th</sup> floor were more satisfied than those who lived on the 2<sup>nd</sup> floor, and similarly, the residents

who lived on the 3<sup>rd</sup> floor were more satisfied than those who lived on the 4<sup>th</sup> floor in Phase 3.

Nevertheless, Xuzhou's local authority should pay very attention to enhancing residents' satisfactions with local kindergarten and children's playground that were the common determinants to improving residential satisfactions of Phase 2 and 3.

Furthermore, the main means of transportation was one of key predictors also to significantly determine the residential satisfactions of Phase 2 and 3. The explanation for the group of residents of Phase 2 who went outside frequently by foot were found to be more satisfied than those who went outside frequently by driving might be that everyday using private cars must be costly for the low-cost residents due to their medium-low level of income and the faraway distance from their Phase 2 to down town, and might be that the surrounding facilities such as farmer's market, mini supermarket, and some restaurants were not varieties, but could fulfil residents' daily demands.

Moreover, with the same variable (main means of transportation) to significantly affect residential satisfaction of Phase 3, however, the different explanation from Phase 2 saying was given to an answer to the group of residents of Phase 3 who went outside frequently by cycling seemed to be less satisfied than those who went outside frequently by driving which was probably stemmed from the residents' income being higher and the geographic location of Phase 3 being better compare to Phase 2, and the parking areas being built larger than Phase 2.

In regard to the rest of determinants of three phases of low-cost housing, Table 5.4 indicated that the satisfactions with the dining room, drain, resident's workplace, and community clinic had the most impact on residential satisfaction of Yangguang Huayuan, and the satisfactions with the nearest general hospital and Yangguang

Huayuan's parking facilities, and the floor level (2<sup>nd</sup> floor vs. 5<sup>th</sup> floor) had the moderately impact, whereas the satisfaction with the garbage disposal had less impact on Yangguang Huayuan's residential satisfaction.

Moreover, the predictor of occupation type was significant to Yangguang Huayuan's residential satisfaction. This further denoted that the explanation for the small group of residents of Phase 1 whose occupation type with management & professional appeared to be less satisfied than those whose occupation type with others such as some jobs paid by daily-settlement (no fixed contract), retired, and laid-off/unemployed might be that the income level of residents with management & professional was far more earned than residents with others such as some jobs paid by daily-settlement (no fixed contract), retired, and laid-off/unemployed so as to make them ask for more from the existing low-cost housing, on the contrary, the main characteristics of low-cost housing were to fulfil the basic needs not high-end needs (not based upon market-driven) of medium-low income residents such as farmer's market, mini supermarket, and some restaurants that were not varieties, but could fulfil medium-low income residents' daily demands.

Furthermore, the satisfactions with the local crime situation, staircases, drying area, nearest bus/taxi station, and local accident situation contributed the most to predicting Chengshi Huayuan's residential satisfaction, and the main means of transportation (by driving vs. by foot) contributed moderately to predicting the residential satisfaction.

Finally, the satisfactions with the electrical & telecommunication wiring, corridor, quietness of housing estate, Binhe Huayuan's children's playground and Binhe Huayuan's open space had the most impact and the satisfactions with the police station, nearest fire station, local kindergarten, local shops, living room, community relationship, and main means of transportation (by driving vs. by cycling) had the



moderately impact, whereas the floor level (4<sup>th</sup> floor vs. 3<sup>rd</sup> floor) had less impact on the Binhe Huayuan's residential satisfaction index.

**Table 5.4: The Comparisons of the Determinants between the Three Phases**

Phase 1 Yangguang Huayuan						
Determinants	Unstandardized Coefficients		Standardized Coefficients	<i>t</i> -statistic	Significance	
	<i>B</i>	Std. Error	<i>Beta</i>			
(Constant)	33.121	2.098		15.790	.000	<i>P</i> < .001
Bedroom	.072	.012	.350	5.935	.000	<i>P</i> < .001
Dining	.051	.009	.309	5.567	.000	<i>P</i> < .001
Nearest Schools	.058	.009	.383	6.620	.000	<i>P</i> < .001
Yangguang Huayuan's Parking facilities	.027	.009	.168	2.951	.004	<i>P</i> < .01
Drain	.038	.010	.205	3.778	.000	<i>P</i> < .001
#Floor level (2 <sup>nd</sup> Floor vs. 5 <sup>th</sup> Floor)	1.596	.502	.174	3.180	.002	<i>P</i> < .01
Community Clinic	.037	.010	.194	3.546	.001	<i>P</i> < .001
Resident's Workplace	.043	.012	.207	3.684	.000	<i>P</i> < .001
Corridor	.038	.009	.239	4.278	.000	<i>P</i> < .001
Nearest General Hospital	.036	.011	.197	3.256	.002	<i>P</i> < .01
#Occupation type (Others vs. Management & Professional)	-1.590	.768	-.117	-2.070	.042	<i>P</i> < .05
Yangguang Huayuan's Open Space	.034	.013	.150	2.686	.009	<i>P</i> < .01
Local Shops	.026	.011	.140	2.445	.017	<i>P</i> < .05
Garbage disposal	.023	.009	.141	2.476	.016	<i>P</i> < .05

Dependent Variable = Yangguang Huayuan's Residential Satisfaction Index (RSIndex)  
 Note: *d.f.* = 14, *F* = 21.741 (*p* < .001), Adjusted *R*<sup>2</sup> = .774, #:dummy variable

Phase 2 Chengshi Huayuan						
Determinants	Unstandardized Coefficients		Standardized Coefficients	<i>t</i> -statistic	Significance	
	<i>B</i>	Std. Error	<i>Beta</i>			
(Constant)	29.312	1.897		15.452	.000	<i>P</i> < .001
Local Crime situation	.075	.010	.456	7.172	.000	<i>P</i> < .001
Staircases	.055	.009	.379	5.909	.000	<i>P</i> < .001
Local Kindergarten	.037	.009	.260	4.123	.000	<i>P</i> < .001
Nearest Schools	.051	.009	.352	5.742	.000	<i>P</i> < .001
#Main Means of Transportation (By Driving vs. By Foot)	1.505	.483	.177	3.114	.003	<i>P</i> < .01
Bedroom	.035	.011	.205	3.314	.001	<i>P</i> < .01
Local Shops	.045	.010	.265	4.529	.000	<i>P</i> < .001
Local Accident situation	.035	.009	.240	3.814	.000	<i>P</i> < .001
Drying area	.049	.010	.304	5.080	.000	<i>P</i> < .001
Nearest Bus/Taxi Station	.039	.009	.254	4.333	.000	<i>P</i> < .001
Chengshi Huayuan's Children's Playground	.031	.009	.209	3.449	.001	<i>P</i> < .001
Corridor	.021	.008	.146	2.511	.014	<i>P</i> < .05

Dependent Variable = Chengshi Huayuan's Residential Satisfaction Index (RSIndex)  
 Note: *d.f.* = 12, *F* = 20.669 (*p* < .001), Adjusted *R*<sup>2</sup> = .715, #:dummy variable

**Table 5.4, continued**

Phase 3 Binhe Huayuan						
Determinants	Unstandardized Coefficients		Standardized Coefficients	<i>t</i> -statistic	Significance	
	<i>B</i>	Std. Error	<i>Beta</i>			
(Constant)	34.113	2.219		15.374	.000	<i>P</i> < .001
Quietness of housing estate	.043	.009	.272	4.707	.000	<i>P</i> < .001
Corridor	.061	.010	.367	6.171	.000	<i>P</i> < .001
Electrical & Telecommunication Wiring	.059	.008	.402	7.013	.000	<i>P</i> < .001
Binhe Huayuan's Children's Playground	.048	.011	.240	4.343	.000	<i>P</i> < .001
<sup>#</sup> Main Means of Transportation (By Driving vs. By Cycling)	-1.321	.470	-.170	-2.810	.007	<i>P</i> < .01
Binhe Huayuan's Open Space	.043	.012	.208	3.669	.000	<i>P</i> < .001
Local Shops	.033	.010	.196	3.389	.001	<i>P</i> < .01
Community Relationship	.033	.011	.173	3.014	.004	<i>P</i> < .01
Local Kindergarten	.034	.010	.197	3.571	.001	<i>P</i> < .001
Local Police Station	.036	.010	.207	3.627	.001	<i>P</i> < .001
Nearest Fire Station	.042	.012	.214	3.625	.001	<i>P</i> < .001
Living room	.028	.009	.171	3.037	.003	<i>P</i> < .01
<sup>#</sup> Floor level (4 <sup>th</sup> Floor vs. 3 <sup>rd</sup> Floor)	1.182	.589	.125	2.007	.049	<i>P</i> < .05

Dependent Variable = Binhe Huayuan's Residential Satisfaction Index (RSIndex)

Note: *d.f.* = 13, *F* = 22.405 (*p* < .001), Adjusted *R*<sup>2</sup> = .779, <sup>#</sup>: dummy variable

## 5.6 Conclusion

The stepwise method was finally chosen to analyse the data collected from the quantitative part based upon it had the advantage of selecting the most useful predictors. Furthermore, the three models came from the conceptual model had been validated by stepwise method.

The comparisons of respondents' individual and household's socio-economic characteristics between the three phases were concluded that the respondents in three phases of low-cost housing chose the same option from each of factors such as gender, marital status, household size, and occupation sector.

Moreover, in regard of occupation sector, the great majority of the respondents were working in private business sector (58.1%, 52.6%, and 60.0%, correspondingly) comparing to the very low percentage of the respondents' working in the government (4.7%, 3.2%, and 0.0%, respectively).

With respect to age, a high proportion of respondents in phase 2 and 3 were between age 51 and 60 (29.5% and 30.0%) followed by phase 1 (26.7%), while the majority of the respondents in phase 1 were between age 41 and 50 (38.4%) followed by phase 2 (28.4%).

In view of educational attainment, the respondents living at these three phases of low-cost housing shared some similarities in the great number of residents with junior and senior middle school education background (61.7%, 42.1%, and 47.6%, respectively).

The numbers of occupation type indicated that most of the respondents (39.5%, 38.9%, and 33.8%, respectively) were employed to do services or operation that were considered as the very basic and repetitive jobs in Chinese occupation type of segmentation.

In this manner, the factors of educational attainment, occupation sector and occupation type comparatively affect the residents' monthly net income of their families at certain degree, majority of the respondents (58.9% and 58.8%) of phase 2 and 3 also made between 4,000 (US\$588) and 5,999 (US\$882) of monthly income of each of their family.

With reference to the factor of main means of transportation, based upon the results of the age, occupation sector and type, and monthly income given by the respondents

across the three phases, it is not hard to see that the residents mainly relied on using bus and riding bicycle as their main means of transportations.

The comparisons of four components' satisfactions and residential satisfactions between the three phases were concluded that the respondents of Phase 1 whose average residential satisfaction was 64.397% which was perceived as the moderate level of satisfaction had almost the same answer with the respondents of Phase 3 whose average residential satisfaction was 62.845%. However, the respondents of Phase 2 were dissatisfied (56.947% which was perceived as the low level of satisfaction) with their overall residential environment.

The comparisons of the determinants of residential satisfaction indices between the three phases were concluded that the combination of predictor (independent) variables of each phase of low-cost housing significantly predicted the respective residential satisfaction, with  $F(14, 71) = 21.741, p < .001$ ,  $F(12, 82) = 20.669, p < .001$ ,  $F(13, 66) = 22.405, p < .001$ , respectively, with all 14 determinants, 12 key predictors, and 13 determinants separately and significantly contributing to the each prediction of residential satisfaction.

The residents of three phases simultaneously raised one fact that to improve satisfactions with corridor and local shops could enhance residential satisfactions. Furthermore, the residents of Phase 1 and 2 were simultaneously very concerned about the improvements of satisfactions with bedroom and the nearest schools. Meanwhile, the residents of Phase 1 and 3 were much concerned about the enhancements of satisfactions with open space and the floor level.

Nevertheless, Xuzhou's local authority should pay very attention to enhancing residents' satisfactions with local kindergarten and children's playground that were the common determinants to improving residential satisfactions of Phase 2 and 3. Furthermore, the main means of transportation was one of key predictors also to significantly determine the residential satisfactions of Phase 2 and 3.

University of Malaya

## **CHAPTER 6: QUALITATIVE RESULTS**

### **6.1 Introduction**

The continued analysis of each case and across six cases from three phases further explored the quantitative results which covered the five themes determining the participants' residential satisfactions in these three phases of low-cost housing in terms of individual and household's socio-economic characteristics, housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics. The following description of each case involved his/her comments on these five themes in detail emphasizing on the quantitative results.

### **6.2 Interviewee 1**

Interviewee 1 was 45 years old and she had a sweet family with her husband and one son. At her age, most people chose to work after graduation from senior middle school. In terms of the chances of entering universities being very low, most people, like her, chose to work so early as to reduce the burden of her parents' as much as she could.

With the development of China, more and more high educated people joined in different sectors and their wages had been being increased recently. Comparing to them, she said: "As I had my abundant experiences in selling products in private companies, I have more diversified ways of treating customers and more techniques of leading a sales team."

Although she worked hard in a private company, her monthly income was still medium-low due to she could not easily find a job in local government, in any state-owned enterprises, and even in any collective-owned companies with her secondary school's certificate. In the meantime, she was not capable of running her own business under the current increasingly competitive market environment.

Besides, with the housing price in Xuzhou soaring in recent years, she could not afford to buy a new commodity house. Instead, she was eligible to apply a set of low-cost house at that time and she lived at Yangguang Huayuan (1<sup>st</sup> Phase of low-cost housing in Xuzhou) for almost 9 years. Block 22 was where she lived at and she lived on the 5<sup>th</sup> floor. In her daily life, she used an electric bicycle as her main means of daily transportation.

#### **6.2.1 Individual and Household's Socio-economic Characteristics**

Interviewee 1's residential satisfaction in Yangguang Huayuan was positively affected by the floor level (2<sup>nd</sup> floor vs. 5<sup>th</sup> floor) and she said: "My experience told me that living on the higher floor level can stay away from the crowd noise and the rubbish left at the housing estate."

Moreover, for those who were using electric bicycles and cars for the main means of transportation, Interviewee 1 requested: "We need a proper parking place where we can leave our electric bicycles and cars freely and never worry about bicycles lost and where to park my car."

On the other hand, Interviewee 1's residential satisfaction in Yangguang Huayuan was negatively affected by the occupation type (others vs. management & professional) and she gave an explanation: "Since those eligible households moved into Yangguang Huayuan in 2005 and 2006, some households have been changing too much in these almost 10 years regarding their occupations and income through their efforts. And then, the higher position of occupation that they will achieve and they have more dissatisfaction with their living environment, for example, people like me, when I applied for a low-cost housing, I only wanted a place to live at that time. However, with my lots of efforts put on work, my occupation type has been changing from a normal saleswoman to a sales manager."

After that, only wanting a place to live has not been satisfying me a lot and I need the current living environment to be enhanced so as to fulfil my current requirements.” In terms of improving the current living environment, Interviewee 1 said: “As the local government said the low-cost housing project was firstly to fulfil the basic housing needs of the medium-low and low income group of people and also to provide the half housing ownership to residents requiring all residents cannot sell their houses within 5 or 10 years and cannot purchase their left housing ownership from the local government as well, the low-cost housing finally will be a commodity housing with a full housing ownership.

For the residents who want to purchase the left housing ownerships in order to sell to change a new house, the current living environment of Yangguang Huayuan is their main concerns about how much more they can sell to the second-hand housing market. In addition, for the most residents, like me, really want our living environment to be improved and the housing ownerships are comprehensively important because of not selling to change new houses (most of residents are still cannot afford to buy new commodity houses), but fully owning houses and selling later.”

### **6.2.2 Housing Unit Characteristics**

Interviewee 1's residential satisfaction in Yangguang Huayuan was positively affected by the bedroom and dining area, i.e. she said: “Compared to the master room, the bedroom is slightly smaller than the master room and the location is not facing south which means that the bedroom is not a well ventilated and bad lighting.

In addition, there has fewer power sockets in the bedroom, for instance, my son is studying while using a computer in winter and he cannot use a heater simultaneously.



Speaking of the dining area, it has a proper location in this house with an appropriate size and it is a well-ventilated especially during spring and summer when we have lunch together and we can feel a lovely breeze throughout the whole dining area, of course, the whole living room as well because it is connected with each other. Moreover, it has a good lighting; however, it unlikely has fewer power sockets, either.”

Regarding the drying area which was importantly mentioned in the 2<sup>nd</sup> phase of low-cost housing, Interviewee 1 answered: “The drying area in the low-cost housing is actually a balcony which has a proper space with a well-ventilated design and a good lighting. Unfortunately, the same problem with other areas had is lack of power sockets.”

Referring to the living room which was significantly mentioned in the 3<sup>rd</sup> phase of low-cost housing, Interviewee 1 also commented on the living room, such like “The living room also has a proper location, just like the dining area, and has an appropriate size with a well-ventilated design throughout the house. In addition to the good lighting that the living room has, the problem of fewer power sockets also troubles me a lot.”

Additionally, Interviewee 1 added some words on the toilet, she said: “In spite of how bad the ventilation and the very limited numbers of power sockets are, the very small size and very bad lighting make me very inconvenient all the time.”

### **6.2.3 Housing Unit Supporting Services**

In terms of housing unit supporting services, Interviewee 1’s residential satisfaction was positively affected by the corridor, drain, and garbage disposal. Interviewee 1 said: “The space of corridor is quite narrow between neighbours. And then, it is quite noisy. Sometimes when we had a lunch on Saturday or Sunday, we can hear many noises from the corridor, probably from the children’s playing, the couple’s arguments, etc.

Furthermore, the corridor is unclean because we don't very often clean by ourselves and the cleaner from the property management company don't frequently clean, either. By contrast, the lighting of corridor is not bad, it is good."

Interviewee 1 continued talking: "The drain in this house was good when we moved in. After that, the drain was plugged several times and we called the staff from the maintenance department and they came to fix. It is a normal thing (I think)."

Regarding the garbage disposal, Interviewee 1 said: "Although the rubbish left at the designated garbage can is collected in time and most time disposed efficiently, the rubbish left at the corridor is not collected immediately (but I think, most residents have to take these responsibilities of disposing their left corridor's rubbish and have to bring it down to the designated garbage can)."

Referring to the staircases which were importantly mentioned in the 2<sup>nd</sup> phase of low-cost housing as the determinant, Interviewee 1 commented on it like "The space of the staircases is quite narrow, for instance, we cannot carry a big luggage concurrently. The lighting condition is satisfied, however, the clean condition is not very good." Moreover, she added: "The number of stairs in each floor is different from the other and each floor has its unique numbers of stairs. Besides, that each stair has its own height which is different from others will easily result in people's falling down."

Referring to the electrical & telecommunication wiring (fixed-line telephone, television, and internet) which was importantly mentioned in the 3<sup>rd</sup> phase of low-cost housing as the determinant, Interviewee 1 answered: "The wiring in this house was normal when we moved in. After that, we called the staff from the maintenance department to install more power sockets for us since the numbers of power sockets in

this house are very few. But they refused to do it according to their procedures (I understand that, it is normal).”

#### **6.2.4 Housing Estate Supporting Facilities**

In terms of housing estate supporting facilities, Interviewee 1’s residential satisfaction was positively affected by the parking facilities (electric bicycle/bicycle/car), open space, and local shops, Interviewee 1 responded: “...I am so mad about the parking place because of its very limited space. Last time, one of my friends visited me and she got no place to park her car and then she left her car at the bicycles’ parking place. After supper, we found a very long scratch on her car side maybe due to her car occupied their bicycles’ parking places. Moreover, it is very common here that the parking place is diversely filled with cars and bicycles. Then, the condition is very bad and chaotic. In addition, the parking place is not clean. Thus, only increasing the space of parking place is not enough and enhancing the quality of parking facilities management is very urgent to do.”

Interviewee 1 responded to my asking regarding the open space by saying that “The open space has a very good location, which is located at the centre of Yangguang Huayuan, and it has an enough space with a good condition and it is quite clean. However, sometimes some electric bicycles and small cars park at the open space and disturbed people’s daily life.”

With respect to the local shops, Interviewee 1 said: “The locations of local shops are very strategically surrounded the whole Yangguang Huayuan with a large numbers of diverse shops.”

Interviewee 1 responded to my asking regarding the local kindergarten as the determinant from the 2<sup>nd</sup> and 3<sup>rd</sup> phases by saying that: “There are two kindergartens located in this housing area and their conditions are very good and at the same time they are well maintained and very clean.”

Referring to the children’s playground which was importantly mentioned in the 2<sup>nd</sup> and 3<sup>rd</sup> phases of low-cost housing as the determinant, Interviewee 1 commented: “Comparing to the open space, the children’s playground has a limited space and a not-bad condition and also it is clean. Moreover, its location is quite good which is connected with fitness equipment area. When the children are playing around, their parents never feel dull because they can do exercises at the fitness equipment area while they are watching what their children are doing right there.”

#### **6.2.5 Neighbourhood Characteristics**

Speaking of the neighbourhood characteristics, the factors of the nearest school, resident’s workplace, community clinic, and the nearest general hospital positively determined Interviewee 1’s residential satisfaction, as she said: “A lot of schools such as the elementary school, the junior middle school, and even the senior middle school all are around here within one kilometre. To go to those schools are very convenient.” She added: “For my workplace around 12 kilometres, it is very long distance and is not convenient.” Moreover, she talked about the community clinic and she said: “To go to community clinic (if you had small physical problems) is not far from here and is quite convenient.” Comparing to the community clinic, the nearest general hospital was commented by Interviewee 1 like: “The distance from here to the nearest general hospital is not very far and you can easily get a public bus to go there.”

Referring to the local crime situation as the determinant which was most significantly mentioned in the 2<sup>nd</sup> phase of low-cost housing, Interviewee 1 highlighted and said: “The local crime and accident situations are both very bad such as stealing electric bicycles, car accidents, etc. The frequencies of happening in terms of crime and accident are very high. We urgently need a professional property management team to control it.”

In terms of the nearest bus/taxi station positively determining the 2<sup>nd</sup> phase’s residential satisfaction, Interviewee 1 said: “...It is not convenient to get a public bus to go to downtown and it is not near to the bus/taxi station.”

The quietness of the housing estate positively determining the 3<sup>rd</sup> phase’s residential satisfaction, Interviewee 1 commented: “The noise came from the open space is I can tolerate because the place where I am staying is far from there, but the noise came from the corridor made by the neighbours made me sometimes feel crazy.” Moreover, regarding the local police station which is the determinant from the 3<sup>rd</sup> phase, Interviewee 1 said: “The local police station is very near here and is very convenient to go to.” With respect to the community relationship that is the determinant from the 3<sup>rd</sup> phase, Interviewee 1 said: “With my references, there is no social exclusion and most residents are willing to involve all activities arranged by the community committee.” When we talked about the nearest fire station which is the determinant from the 3<sup>rd</sup> phase, Interviewee 1 was getting angry and claimed: “We are quite far away from the fire station and it is totally inconvenient. This is not the key point; by the way, the most important thing in here is we don't have any firefighting equipment. You cannot imagine when we had a big fire...we...how to do...”

### **6.3 Interviewee 2**

Interviewee 2 was 47 years old and he had a family with his wife and his daughter, 22 years old. It is easy to tell that he is an honest man. He is working at a private company as an assembly worker. He said: “I did not like to study since I was a boy. I finished my junior middle school and I went to a factory to work. After the state-owned company commercialised, I went to a private company and worked there until today. I am an ordinary person and I don't need too much and my household's monthly income is under 4000 RMB. Happiness is very important for me.” Interviewee 2 lived on the 1<sup>st</sup> floor and he lived at Yangguang Huayuan for almost 9 years. He used a bicycle to go to work and go shopping.

#### **6.3.1 Individual and Household's Socio-economic Characteristics**

Interviewee 2's residential satisfaction in Yangguang Huayuan was positively affected by the floor level and he explained: “My experiences teach me not to choose the first floor again if I have another chance to buy a new commodity house. Although living on the first floor brings me a lot of conveniences and joys such as no need to climb higher floors and we have a small yard (each first floor house has one small yard) to use for enjoying the breeze and cool during spring and summer, sometimes living on the lower floor level is mostly affected by the smelling of garbage and crowd noise comparing to living on the higher floor level.”

For those who were using bicycles and cars for the main means of transportation, Interviewee 2 complained: “People who are living in Yangguang Huayuan are not so rich enough to use cars and everyday worry about where can park their cars. We understand this Yangguang Huayuan is not a high-end housing property which cannot provide a lot of car parks for us. On the contrary, the electric bikes and bicycles are our main means of transportations and a lot of people accuse of the electric bikes and new

bikes losses in this housing area. So I think this housing estate needs to build more space for car parking and more proper parking facilities management skill.”

Interviewee 2 thought that the people with higher position in their jobs living in this area were not more satisfied with the people with lower position, because he said: “The social exclusion existing between residents with high position and residents with low position of occupations in this housing area results in the residents with higher position in their occupations accusing of the behaviours of lower position of residents. However, the majority living in this area is the residents with medium-low and low position in their occupations who ignore what the residents with high position in their occupations accuse of and they are happier than them.”

Referring to the housing ownership, Interviewee 2 had his plan and he said: “The reason why I look at the housing ownership is very important to me is because I am planning to change a new commodity house after my daughter will get married soon and I can use the dower money and another amount of money that I sold my current house, and my savings together to buy a new cheaper apartment. That’s why I need this house ownership immediately.”

### **6.3.2 Housing Unit Characteristics**

Interviewee 2 thought the improvements of the bedroom and dining area could enhance his residential satisfaction of Yangguang Huayuan and he said: “The bedroom, comparing to the whole size of this house, is slightly smaller and has a bad location with a bad lighting and bad ventilation. My daughter lives at that room and it seems okay to her regarding the numbers of power sockets because the time she spends on works is much more than the time she stays at home...ha-ha...it is enough for her, I think...”

Interviewee 2 continued saying: “The size of the dining area is lovely, but the location is improper connected with the living room which I don't like because Chinese traditional culture teaches us eating and entertaining should be separated and they are conflicted each other. The lighting is good, but the ventilation is not enough and the numbers of power sockets are enough for me.”

Regarding the drying area which was highlighted in the 2<sup>nd</sup> phase of low-cost housing, Interviewee 2 replied: “The drying area in my house has a plenty space with good ventilation and a good lighting and the numbers of power sockets are very enough when my wife is ironing clothes.”

With respect to the living room which was highlighted in the 3<sup>rd</sup> phase of low-cost housing, Interviewee 2 said: “As I just commented on the dining area, the size of the living room is very good, but the location is improper connected with dining area. The living room is like the dining area with not good ventilation, but the lighting is good by the way. For me, the numbers of power sockets are just enough for using.”

### **6.3.3 Housing Unit Supporting Services**

In terms of housing unit supporting services, Interviewee 2 claimed that the improvements of the corridor, drain, and garbage disposal could enhance his residential satisfaction and he said: “...The space of corridor is just enough for normal using and the lighting condition is good and the cleanness that we maintain is so far good.”

With respect to the drain, Interviewee 2 wanted to say more words on that: “When I moved into this house, many kinds of problems came from this drain system. I tried to fix it by myself, but I failed. And then, I called someone from the property management to come and fix, but the result is not good enough. It is very headache...”



Interviewee 2 gave some comments on the garbage disposal like that: “The rubbish that we left at the garbage can is collected on time, but the garbage house is sometimes not cleaned thoroughly and the smelling sometimes is blown by the wind into the lower floor of houses such as my house.”

Referring to the factor of staircases which was highlighted in the 2<sup>nd</sup> phase of low-cost housing as the determinant, Interviewee 2 said: “Except for not clean, the space of the staircases is just enough for using and the lighting is good.”

With respect to the factor of the electrical & telecommunication wiring (fixed-line telephone, television, and internet) which was highlighted in the 3<sup>rd</sup> phase of low-cost housing as the determinant, Interviewee 2 gave a high comment on it: “When we moved into this house, all wiring is under good condition and during my stay we called the staff from the maintenance department twice to come over to fix those small problems and the experiences were good.”

#### **6.3.4 Housing Estate Supporting Facilities**

In terms of housing estate supporting facilities, the factors such as the parking facilities (electric bicycle/bicycle/car), open space, and local shops positively determined Interviewee 2’s residential satisfaction. To illustrate, he said: “As I answered the previous question regarding the main means of transportation, except for the cleanliness of parking area, the space and the condition are all dissatisfactions, for example, the space is very limited for cars and the bicycles are parking everywhere and it is very chaotic.”

Interviewee 2 continually pointed out: “The open space is not very enough space, but has a good condition and a good location; by the way, it is also clean. However, when the open space is fully filled with many different facilities to attract a lot of residents,

the many noises from the open space are going to the lower floor level of houses such as my house and I feel very noisy especially Saturday and Sunday and I cannot take a nap after Saturday and Sunday's lunch."

In terms of the local shops, Interviewee 2 explained: "...the numbers of local shops are okay and their locations are normal..."

Interviewee 2 responded to my asking regarding the local kindergarten as the determinant from the 2<sup>nd</sup> and 3<sup>rd</sup> phases by saying that: "The kindergarten, actually we have two kindergartens in Yangguang Huayuan, both are okay with environment and location and the cleanness is good."

Referring to the children's playground which was importantly mentioned in the 2<sup>nd</sup> and 3<sup>rd</sup> phases of low-cost housing as the determinant, Interviewee 2 replied: "The space for children's playing in Yangguang Huayuan is not very big, but the environment and cleanness are good. On the contrary, the location is very bad which is connected with the perimeter road. It will probably bring some accidents by the residents' riding their bicycles on the perimeter road."

#### **6.3.5 Neighbourhood Characteristics**

In terms of the neighbourhood characteristics, Interviewee 2's residential satisfaction was positively affected by the nearest school, resident's workplace, community clinic, and the nearest general hospital. Furthermore, Interviewee 2 explained: "A lot of schools surrounding this area within 2 kilometres are very convenient to reach there because this district is quite maturing filled with a lot of education institutes." Interviewee 2 continually said: "...the community clinic is also convenient and it is not far from here." On the contrary, Interviewee 2 criticised: "...However, my workplace from here is around 18 kilometres because this Yangguang Huayuan constructed for the

medium-low and low income group of people having a unit of low-cost housing or a unit of resettlement housing under a certain kind of municipal subsidies especially for the low-cost housing is therefore located far away from the downtown due to the land cost. Most people are working in the downtown (I am also), therefore, it is a very long distance for my riding a bicycle to go to work and it is not convenient.” Moreover, he added: “The nearest general hospital from here is around 7 kilometres and I think it is not convenient, am I right?”

With respect to the local crime situation and local accident situation which positively determined the 2<sup>nd</sup> phase’s residential satisfaction, Interviewee 2 said: “To more illustrate this kind of situation happening in Yangguang Huayuan, let me give you a real example. I had lost three bikes within one month, so how do you think of the safety in Yangguang Huayuan? Regarding the accident situation, there are a lot of kindergarten kids and pupils running everywhere after school, a lot of accidents are happening in this period of time by the electric bicycles colliding with cars. Thus, the situation is very bad with medium frequency of occurrence. This needs to be controlled by either district government or our own strength such as residents’ involvements (public participation) to form a community defence team to protect ourselves.”

In the 2<sup>nd</sup> phase, the nearest bus/taxi station also positively determined their residential satisfaction. Interviewee 2 said: “Comparing to taking a bus to go to work, I choose riding a bicycle in spite of having some risks of losing bicycles. It is still convenient comparing to taking a bus and the nearest bus/taxi station is not that near enough, i.e. around 1.5 kilometres from here.”

Interviewee 2 responded to how to look at the factor of quietness of the housing estate which positively determining the 3<sup>rd</sup> phase’s residential satisfaction by saying that “...So many noises not only came from the corridor (neighbours) but also came from

the open space trouble me a lot especially Saturday and Sunday afternoon when I was on lunch break, it is so annoying.” Interviewee 2 had few words about the local police station “...it is near here and we can see they are doing patrolling several times per day...” On the contrary, Interviewee 2 talked a bit more about the factor of the nearest fire station, such like “In spite of how far between the nearest fire station and Yangguang Huayuan is, in fact, the distance is actually quite far from here, there is no such a piece of firefighting equipment and firefighting prevention equipment assembled in this housing area. How dangerous it is, we don't have any methods to prevent a fire happening and we don't have any solutions to put out a fire (if we had a big fire) except for calling 119 (Chinese fire emergency call). I have been so frustrated.” Interviewee 2 went on with some stern words on the community relationship “(Maybe this is only my experience), there has a strong social exclusion existing in this housing area between the low-income group and the medium-income group, for example, the medium-income group of residents who is not satisfied with the current living environment, but, has no money to buy a new commodity housing dislikes the low-income group of residents in terms of their behaviours such as some activities and their ways of lives. Furthermore, they stay away from any activity involvements and they try their best to avoid any connections in this housing area, for instance, they park their cars very far away from their bicycles because they worry about any scratches made by them can trigger their quarrelling and they don't want any arguments with them and they thought finally they had no money to pay for repairing, therefore, they chose to stay far and far away from them and they don't want any troubles with them. Some activities arranged by the community committee force them to take part; the whole process is no talking between these two groups of residents. I am one of them who are low-income group of residents, but I understand what the medium-income group of residents think. Nevertheless, I don't like this kind of situation happening in this housing area.”

#### **6.4 Interviewee 3**

Interviewee 3 was 49 years old and he had a lovely family with his wife and his son, 23 years old. It was unfortunate for him to have a cancer of the liver in 2011. Luckily he did a successful operation in 2013 and at the same time, he was away from work for illness. Before 2011, his body had not been in good condition for many years and he only could do what he was capable of. Thus, his wage was very low. Nevertheless, he was constantly saying he was a lucky man over and over again when I was interviewing him. He said: "...apparently, having such a disease is a kind of misfortune for me. But, I am so lucky. When I first time was aware of my body was not as good as before in 2006, I was working at a collective-owned company and I lived with my wife and my son in the factory's dormitory (I bought this dormitory during Chinese housing commercialisation in the end of 1990s). I thought I would be fired due to my physical condition. Fortunately, I could continue staying at the company and continue working. The company did not fire me, instead, arranged me to do some light works because they thought that I needed money more than others to pay for the medication. In 2007, (I am lucky), when the 2<sup>nd</sup> phase of low-cost housing opened for applying, I was eligible, but I don't have money, even I sold that factory's dormitory. After that, my whole siblings gave me money to pay for the 2<sup>nd</sup> phase of low-cost housing plus my own money from the selling of that factory's dormitory (not too much due to the many years of using and the small-sized house), I feel I am lucky. I have been working at this company since I graduated from the senior middle school. Additionally, many thanks go to our government to launch this low-cost housing programme which although has some problems that cannot satisfy all residents, it can fulfil some people's housing needs." Interviewee 3 lived on the 2<sup>nd</sup> floor, block 13, and he lived at Chengshi Huayuan (the 2<sup>nd</sup> phase of low-cost housing in Xuzhou city) for almost 6 years. Since he had a cancer

of the liver, his eyesight had been falling for a long time, most of his time he walked around by foot and he also took bus to do some shopping.

#### **6.4.1 Individual and Household's Socio-economic Characteristics**

Interviewee 3's residential satisfaction in Chengshi Huayuan was positively affected by the main means of transportation (by driving vs. by foot) and he explained: "Living in Chengshi Huayuan is very convenient for the age of retiring to go to local market by foot because the local market is the right at the entrance of this housing estate. I can see a lot of retired residents including me to go to the local market for daily shopping. On the other hand, the public transportation has to be enhanced immediately according to the current situation is that only one shuttle bus going to the downtown takes around one hour single-trip and the waiting period between two shuttle buses is around 20-25 minutes. For those who are driving to work, the parking facilities in Chengshi Huayuan are very poor and the parking area is also overlapped with the children's playground. You can see a lot of quarrelling regarding the parking facilities.

Regarding whether the occupation type affects residents' housing satisfactions, Interviewee 3 said: "Different people with different occupation types have their different aspirations of housing satisfactions. No matter how different, the basic living requirements have to be achieved or fulfilled."

In terms of the factor of floor level affecting residents' housing satisfactions, Interviewee 3 replied: "People who are living on the different floors have different feelings, even living on the same floor but living in the opposite unit (it is standard: there are two units in each floor) probably has a different feeling about it, but the physical design (it is the standard: the basic design for the low-cost housing in the 2<sup>nd</sup> phase is the same) bringing to residents, I think, is the same basically."

A lot of residents concern about their homeownership, Interviewee 3 said: “My experience told me that enjoy the present and leave your worries behind you. The homeownership is every resident living in Chengshi Huayuan wants, but the time when we can purchase another half of homeownership from the local government is decided by the local government based upon the law of local market economy. Thanks our central government for having this low-cost housing programme to give me a chance to live at a bigger house.”

#### **6.4.2 Housing Unit Characteristics**

Interviewee 3’s residential satisfaction in Chengshi Huayuan was positively influenced by the drying area, he said: “The size of the drying area is too small and no wind passes through so that the washed clothes are not easy to dry up. Moreover, the numbers of power sockets are enough. However, the lighting there is bad.”

Continually with bedroom also determining Interviewee 3’s residential satisfaction, he responded: “...for the whole house, the bedroom seems to be slightly smaller and its location is not good without any ventilation...the lighting is also not good...”

Regarding the dining area which was importantly mentioned in the 1<sup>st</sup> phase of low-cost housing, Interviewee 3 answered: “The first thing related to the dining area is the improper location which is badly connected with kitchen. This house does not have a real kitchen which means that the kitchen is located at the balcony and after balcony is the dining area. The size of ‘kitchen’ is very small and not well ventilated. After cooking, the cooking oil fume goes to the dining area where we are having a meal. As the size of the dining area is small and not well ventilated, the cooking oil fume in the dining area does not easily volatilise. By the way, the lighting is not good. The numbers of power sockets are enough.”

Referring to the living room which significantly determined the 3<sup>rd</sup> phase's residential satisfaction, Interviewee 3 commented: "The living room is very big. However, the location like the dining area is improper due to being influenced by that kitchen especially when doing cooking. Moreover, it also is not well ventilated and has a bad lighting. The numbers of power sockets are just enough for using.

In terms of the toilet, Interviewee 3 was a bit emotional and said: "The toilet is the worst part in this house due to its very small size, very bad location, no ventilation, and it is very dark without turning on the lamp.

#### **6.4.3 Housing Unit Supporting Services**

In terms of the staircases positively determining Interviewee 3's residential satisfaction, he said: "The staircases and corridor are quite narrow and there is no single lamp at all. The staircases and corridor are cleaned once a week. They are not clean."

Referring to the drain as the determinant which positively determined the 1<sup>st</sup> phase's residential satisfaction, Interviewee 3 responded: "The drain was not good when we moved in. After that, frequently changing Chengshi Huayuan's property management company has been bringing a lot of troubles in maintenance. Therefore, they are dealing with the bad maintenance."

The factor of garbage disposal also significantly determining the 1<sup>st</sup> phase's residential satisfaction, Interviewee 3 answered: "...they come and clean the garbage in time and most of time they clean thoroughly. Sometimes they don't..."

With respect to the electrical & telecommunication wiring (fixed-line telephone, television, and internet) which was one of determinants in the 3<sup>rd</sup> phase of low-cost housing, Interviewee 3 complained: "When we moved into the new house, the quality of



wiring was not so good. The maintenance due to they changed the property management company frequently is also not good.”

#### **6.4.4 Housing Estate Supporting Facilities**

The factor of local shops drew people’s attention in the 2<sup>nd</sup> phase of low-cost housing and was one of key predictors to determine Interviewee 3’s residential satisfaction. He said: “The numbers of local shops are usual. However, the location is so bad conflicted with Chengshi Huayuan’s open space which is affecting residents’ after-dinner walk in some way.”

Furthermore, Interviewee 3 commented on the local kindergarten such like “...comparing with other kindergartens located in the urban area, Chengshi Huayuan kindergarten is very normal with normal condition because those good teachers definitely go to urban area to teach there and here the teachers mostly come from the surrounding countryside...the sanitary condition is good...”

The children’s playground positively determined Interviewee 3’s residential satisfaction, he replied: “...most space of the children’s playground is occupied by the parking facilities in Chengshi Huayuan to cause a danger to those children who are playing at the so-called children’s playground...of course...the space is reduced and the condition is very complicated with the conflictions involved with the parking issues and is not clean...”

In terms of the parking facilities (electric bicycle/bicycle/car) positively determining the 1<sup>st</sup> phase’s residential satisfaction, Interviewee 3 pointed out: “...like above mentioned, the parking facilities (area) in Chengshi Huayuan had conflicts with the children’s playground and with the fitness equipment (area) as well. In addition, there is no special lamps installed at the parking area and only has the aid of the street lighting

to light up the parking area. The parking area is very limited space without any car park facilities and most of time cars and bicycles are mixed together to park there. It is very chaotic...and it is not clean at all...”

Regarding the open space determining the 1<sup>st</sup> phase and 3<sup>rd</sup> phase’s residential satisfactions, Interviewee 3 said: “As I said (just now) regarding the local shops occupying a lot of spaces from the open space, its space is not big enough for residents’ leisure and the condition is not so good and is not clean as well. The most important thing that has to be concerned is the lighting problems. In the evening, very few lamps are working. I think it is very dangerous especially people like me does not have a good eyesight.”

#### **6.4.5 Neighbourhood Characteristics**

The local crime situation in Chengshi Huayuan drew a lot of residents’ attention and also determined Interviewee 3’s residential satisfaction, he said: “The main crime happening in Chengshi Huayuan is the bicycle-stealing, for instance, last month one milkman stopped his electric tricycle at the front of Block 13 and he distributed the milk from door to door. After one block’s distribution, he found his electric tricycle was stolen with the left undelivered milk missing. Only around 10 minutes in the early morning, the whole thing is stolen. I don't think this thing is premeditated by someone. It happened randomly. Thus, you can see how bad the local crime situation is...this thing happens quite often, but not very often...”

The nearest school to Chengshi Huayuan was not near said by Interviewee 3 and this factor affected 2<sup>nd</sup> phase’s residential satisfaction a lot. Wang said: “Sending children to the nearest school is a big headache for most parents living in Chengshi Huayuan because of the long distance with around 5 kilometres and the lack of public transportation. No matter how good or bad the school is, going to school cannot be a

difficult thing basically. Actually, the quality of the nearest school is of course not good.”

Interviewee 3 complained regarding the bus/taxi station “...the bus/taxi station is not only far from here, but only one shuttle bus passes by and the waiting time is around 20-25 minutes and very few taxies wait over there. Besides, from home to the bus/taxi station, more than 1 kilometre, takes around 10 minutes or more. The time of the last shuttle bus is before 6 pm. After 6 pm you only can take a taxi or ride a bicycle back home. It is expensive to take a cab because of the long distance from the downtown. So, you only have one choice left to ride a bicycle...”

After talking about the bus/taxi station, Interviewee 3 forgot telling one more thing and he said: “Many accidents happened at near the bus/taxi station because the location of Chengshi Huayuan is far away from the urban area and the cars pass by at high speed. Thus, the accident situation is bad...it is not very often to happen...”

The factor of the resident’s workplace positively determined the 1<sup>st</sup> phase’s residential satisfaction, Interviewee 3 said: “...it is a long distance with 12 kilometres from home to my working place (after I had an operation, I retired and opened a kiosk) and it is not convenient to reach there...” Luckily, there has a new and fully equipped community clinic (hospital) around Chengshi Huayuan, and Interviewee 3 said: “...it is very and very convenient for me to take medication at the nearby community clinic...actually that is not a clinic...I think...it is a hospital with fully equipment and it is very clean...” On the contrary, Interviewee 3 said: “...the nearest general hospital is very far and very inconvenient...”

With respect of the quietness of the housing estate, Interviewee 3 said: "...it is very normal about the quietness in Chengshi Huayuan..." Furthermore, he commented on the local police station "It is not far and is convenient." With respect to the nearest fire station, Interviewee 3 said: "It is far from the fire station to Chengshi Huayuan and we don't have the firefighting equipment..." Talking about the community relationship, Interviewee 3 said: "The residents here are more active involvement and we don't have a feeling of social exclusion..."

## **6.5 Interviewee 4**

Interviewee 4 was 50 years old and he had an ordinary family with his wife and his son, 25 years old. He went to work directly after completing his senior middle school and now he worked at a private company as an after-sale service supervisor and his currently monthly income made him quite satisfactory. Interviewee 4 lived on the 4<sup>th</sup> floor, block 18, and he lived at Chengshi Huayuan for almost 6 years. He rode an electric bicycle to go to work daily.

### **6.5.1 Individual and Household's Socio-economic Characteristics**

In the light of the factor of the main means of transportation (by driving vs. by foot) as one of determinants predicted Interviewee 4's residential satisfaction in Chengshi Huayuan, he illustrated: "As the location of Chengshi Huayuan is quite far away from the urban area, a lot of residents take bus to go to work or send their children to school. However, here is the only one shuttle bus and each shuttle you have to wait is around 30 minutes. Accordingly, I abandoned taking a bus instead of using an electric bicycle to go to work. Unfortunately, on account of the long distance between my workplace and Chengshi Huayuan, my electric bike only can run a single way on a single charge. In addition, the parking place in Chengshi Huayuan is very limited and is not well managed causing a lot of electric bicycles stolen and some cars being scratched. On the

contrary, I think a lot of the retired residents are enjoying their lives, for instance, they don't need to go to the urban area for shopping because here we have a relative big local market in which a lot of fresh vegetables are supplied by the neighbouring villages. The distance is very near around 200 metres, so they walk there and in the meantime, they also can do exercises...”

According to the factor of floor level positively affecting the 1<sup>st</sup> and 3<sup>rd</sup> phases' residential satisfactions, Interviewee 4 said: “Except for the top floor and the first floor, the others are almost same because the top floor is very cold during winter and is very hot during summer and the first floor has a lot of mosquitoes during summer and the smelly garbage is blown into the house during summer.”

Although the factor of occupation type negatively influenced the residential satisfaction of Yangguang Huayuan, Interviewee 4 replied: “...different occupation types could not affect residents' housing satisfactions too much in Chengshi Huayuan...”

Interviewee 4 said: “Comparing with these mentioned factors, what most residents concern about is the homeownership. We need the full homeownership for the next purchase of the second commodity housing.”

### **6.5.2 Housing Unit Characteristics**

Interviewee 4's residential satisfaction in Chengshi Huayuan was positively affected by the drying area, he said: “The design of drying area in Chengshi Huayuan comparing to Yangguang Huayuan and Binhe Huayuan (3<sup>rd</sup> Phase) is very bad with its limited size and it's no ventilation. Besides, the lighting is not good. The numbers of power sockets are enough for daily use.”

Li continually talked about the bedroom “Comparing with the 1<sup>st</sup> phase, the quality of bedroom in the 2<sup>nd</sup> phase is not good such as its smaller size, and a western exposure location causing a bad lighting and no ventilation; and cold in winter and hot in summer. The worst thing is due to the location of bedroom is facing west the wooden furniture has already gone mouldy. Additionally, the numbers of power sockets are not enough.”

Regarding the dining area positively determining the 1<sup>st</sup> phase’s residential satisfaction, Interviewee 4 said: “The size of the dining area is not big and the location is not satisfied due to its bad lighting and bad air flow. In addition, fewer power points make me dissatisfied as well.”

With respect of the living room which significantly determined the 3<sup>rd</sup> phase’s residential satisfaction, Interviewee 4 said: “It is better than the dining area basically due to its good size. However, the location is also not satisfied to bring lighting and ventilation problems. The numbers of power sockets are fewer.”

Speaking of the toilet, Interviewee 4 said: “The toilet has a lot of problems, for example, it has a very small size and is located at a small corner without any ventilation and the lighting is very bad. The worst toilet (I think) belongs to the first floor house, i.e. the water closet is sometimes clogged and it overflows.

### **6.5.3 Housing Unit Supporting Services**

Regarding housing unit supporting services, Interviewee 4 gave a same comment on the staircases and corridor. He said: “Both staircases and corridor are quite narrow and don't have any lamps at all. In addition, these two places are very dirty.”

In terms of the drain in Chengshi Huayuan, Interviewee 4 said: “It has not been good since I moved into this house...” On the contrary, the electrical & telecommunication wiring (fixed-line telephone, television, and internet) was different like Interviewee 4 said: “...the electrical wiring has been okay since I lived here...” Furthermore, he commented on the garbage disposal such as “...they leave the garbage can uncleaned and never clean thoroughly...”

#### **6.5.4 Housing Estate Supporting Facilities**

Although the factor of the local shops as one of the determinants affected the 2<sup>nd</sup> phase’s residential satisfaction, Interviewee 4’s commentary was very ordinary, such like “...the numbers of local shops are sufficient...the locations are okay...surrounding the living area...” Furthermore, the commentary on the local kindergarten was almost same as the comment on the local shops, i.e. Interviewee 4 said: “...in light of our current situation, it is nearly impossible that a good kindergarten will open a new branch here unless the local government will assign a good kindergarten or even more good elementary school, junior middle school, and senior middle school to be opened here...therefore, the current local kindergarten is a normal one with normal condition and it is clean (by the way)...”

Interviewee 4’s residential satisfaction was positively affected by the children’s playground, he said: “...the priority thing related to the children’s playground is to install more lamps as soon as possible for their safety consideration. Secondly, the space is not big enough for them and the condition is very complicated. Thirdly, the cleanness is another issue which has to be paid more attention to...”

In terms of the parking facilities (electric bicycle/bicycle/car), Interviewee 4 said: “The lighting is the priority which has to be considered. The current lighting is from the street lamp. It is very weak. Secondly, the space of parking area is very limited for car

and bicycle especially for car. Thirdly, the condition is not good and very chaotic. Lastly, it is not clean.”

In regard to the open space, Interviewee 4 said: “The space is not big enough for residents’ recreations and the condition is not satisfied. The lack of lighting also has to be paid attention to because a lot of people are dancing in the evening and their safety is the priority. And the cleanness has also to be paid attention to...”

#### **6.5.5 Neighbourhood Characteristics**

How to improve the local crime and accident situation of Chengshi Huayuan were what a lot of residents concerned about. Interviewee 4 said: “To enhance the safety and prevent the accident happening should ask all residents to join together and work together in order to protect each other. ‘Know your neighbours to prevent the crime’ is a very good slogan. Furthermore, to improve the public participation can bring down the rate of crime and accident happening. However, the current local crime and local accident situation is not good, such as bicycle stealing, burglary, car and electric bicycle accident, etc. Actually the frequency of occurrence is often, but not very often.”

As the factor of the nearest school positively and significantly determining the 2<sup>nd</sup> phase’s residential satisfaction, the reason was explained by Interviewee 4: “...as I mentioned regarding the kindergarten, due to the location of Chengshi Huayuan couldn't attract any high-qualified teachers, a lot of kids are trying their best to enter those key senior middle schools (before senior middle school, the kids cannot enter different districts’ elementary and junior middle schools, they must enter the nearest schools) which mostly locate at urban areas. Therefore, the distance from here to those good senior schools are very far and very inconvenient. Comparatively speaking, the nearest schools to Chengshi Huayuan are relatively near (but still not near) around 4 kilometres.



Moreover, it is not convenient to go there due to the condition of local public transportation is seldom.”

The factor of the nearest bus/taxi station positively determined Interviewee 4’s residential satisfaction, he said: “As I mentioned previously, here is the only one shuttle bus and each shuttle you have to wait is around 30 minutes. The numbers of taxies waiting at the bus/taxi station are quite few (the taxi driver knows those residents who live here are medium-low income group of people and very seldom take taxies). Furthermore, from home to the bus/taxi station is a very long way took around 8-10 minutes. It is very inconvenient.”

As the factor of the resident’s workplace positively determined the 1<sup>st</sup> phase’s residential satisfaction, Interviewee 4 said: “It has around 20 kilometres from home to my working place and it is not convenient to reach there due to the very limited means of transportation, i.e. only one shuttle bus and very few taxies. For me, I take an electric bike to go to work and I leave the battery at the office for charging while I am working. If I don’t come home directly, I won’t use this electric bike because it cannot reach home on one single charge. What a pity...”

A lot of facilities were criticised by Interviewee 4, but he gave a high comment on the community clinic. He said: “We have a very good community clinic; actually I think it is a (community) hospital, it is very near and it has a lot of doctors and the condition is very comfortable. On the contrary, if some residents must go for emergencies, this (community) hospital does not have an emergency department and they have to go to the nearest general hospital which is around 20 kilometres away from here. It is very far and inconvenient.”

Referring to the quietness of the housing estate, Li said: “It is a very normal condition in Chengshi Huayuan. We can hear the noises from the open space and from our neighbours as well. It is very normal for this price of housing without sound-proofing walls (I think)...”

With respect to the local police station, Li said: “It is not far from here around 3 kilometres and reach there easily. However, we have a police station around here, but we still have some certain numbers of crimes and accidents. That is my curiosity.” On the contrary, Interviewee 4 said: “Chengshi Huayuan is very far away from the fire station. Besides, we don't have the firefighting equipment to prevent and to put out a fire. It is very dangerous for us.”

Regarding the community relationship in Chengshi Huayuan, Interviewee 4 said: “I hope that residents’ more involvements and more public participations will better prevent the occurrence of crimes and will better decrease accident rates.

## **6.6 Interviewee 5**

Interviewee 5 was 53 years old and he had a family with his wife and his daughter, 25 years old. He previously had been working at a state-owned company for around 30 years since he graduated from the senior middle school. As the company did downsizing in 2009, he was laid off. And then, until now he has been working at another state-owned enterprise as a temporary worker. Therefore, his payment is not very high. Interviewee 5 lived on the 2<sup>nd</sup> floor, block 54, and he lived at Binhe Huayuan (3<sup>rd</sup> phase of low-cost housing) for 3 years. He daily used an electric bike to go to work.

### **6.6.1 Individual and Household’s Socio-economic Characteristics**

With respect of the factor of main means of transportation (by driving vs. by cycling) negatively affecting Interviewee 5 residential satisfaction in Binhe Huayuan, he

expounded his opinion “Most residents who are riding bicycles to go to work or to go shopping are not satisfied due to the distance between the downtown and Binhe Huayuan is quite far. Secondly, they don't have enough savings for buying cars and they envy those people who have cars. They do believe that driving to work or somewhere is a very happy thing. Thirdly, due to few shuttle buses stop at this station, they have only one choice left here which is to ride bicycles to workplaces.”

Interviewee 5 responded to my asking regarding the factor of floor level (4<sup>th</sup> floor vs. 3<sup>rd</sup> floor) positively affecting his residential satisfaction by saying: “Those residents who are living on the top floor and on the first floor are mostly not satisfied due to the top floor is very cold in winter and is very hot in summer and the first floor is very easy to get dirty, and especially in summer has a lot of flies and mosquitoes. Accordingly, residents living on the middle floors are more satisfied, such as 3<sup>rd</sup> floor and 4<sup>th</sup> floor...”

Interviewee 5 responded to my asking referring to the factor of occupation type negatively influencing the residential satisfaction of Yangguang Huayuan by saying: “...I don't think it is happening in Binhe Huayuan. Different people have different occupation types, but more affecting their residential satisfactions is the living environment itself...” Interviewee 5 continued saying: “The homeownership is a probably main issue which affecting residents' housing satisfactions to some extent. As for me, I need my full homeownership as soon as possible so that I can sell this house to buy the next one. The good thing is that the price of the current houses that we bought was much lower than the commodity housing market and even later we have to pay the land transfer fund to the local government, we definitely make some money. So we can use the extra money to pay the next commodity house with better living conditions.”

### 6.6.2 Housing Unit Characteristics

Interviewee 5's residential satisfaction in Binhe Huayuan was positively affected by the living room, he said: "The most satisfaction place in the housing unit is the living room which has an appropriate size space and a proper location. However, it is not good in ventilation and lighting. In addition, the numbers of power sockets are just enough for using."

Referring to the bedroom determining the 1<sup>st</sup> and 2<sup>nd</sup> phases' residential satisfactions, Interviewee 5 said: "Comparing with the master bedroom, it is slightly smaller one with a normal location. The ventilation is not as good as the master bedroom has due to the direction of facing. The lighting is normal and the numbers of power sockets are shortage." In the meantime, the 1<sup>st</sup> phase's residential satisfaction was positively affected by the dining area, Interviewee 5 said: "The size of the dining area is not big. Not just this, the location is improper which is badly closer to the toilet. The ventilation is not good with a bad lighting. Fortunately, the numbers of power sockets are just enough for using."

The drying area was significantly highlighted in Chengshi Huayuan, Interviewee 5 responded: "...the drying area has an appropriate space with a well-ventilated design and a good lighting. Yet amazingly, there has no power socket in this area..."

Moreover, Interviewee 5 also commented on the toilet, he said: "The size is very normal. The bad location which is very near to the dining area troubles me (maybe some people think it is normal, but I do mind). The ventilation design and the lighting are all bad. In addition, it is very inconvenient for using any electrical devices in the toilet such as hair dryer, heater, etc. due to only one power socket installed in the toilet."

### **6.6.3 Housing Unit Supporting Services**

In terms of housing unit supporting services, Interviewee 5's residential satisfaction was positively affected by the electrical & telecommunication wiring (fixed-line telephone, television, and internet) and corridor. Interviewee 5 said: "The wiring in this house was normal when we moved in. After that, I wanted to install more power sockets, but I failed and called the staff from the property management company to help me install more power sockets. Their services are normal..." With respect to the corridor, Interviewee 5 complained: "The corridor is quite narrow and is unclean. There has no lighting at all. Sometimes, many noises from neighbours disrupt our rests."

Referring to the drain and garbage disposal determining the 1<sup>st</sup> phase's residential satisfactions, Interviewee 5 said: "The drain in this house was normal when we moved in. The maintenance is normal as well." Interviewee 5 complained about the garbage disposal "...one block's garbage collection spot is at the children's playground and brings a lot of troubles to the children. In general, most of the time they clean the garbage can in time, but they never clean thoroughly..."

Referring to the staircases which were significantly highlighted in the 2<sup>nd</sup> phase of low-cost housing, Interviewee 5 said: "The space of the staircases is just enough for using. However, there has no single lamp at all. In addition, it is very unclean."

### **6.6.4 Housing Estate Supporting Facilities**

As the factor of children's playground positively determined Interviewee 5's residential satisfaction, he replied: "The space of children's playground is not big with a bad location. One block's garbage collection spot is at the children's playground causing the condition not clean and not satisfied and bringing a lot of troubles to children at same time. The most important thing is the lighting issue which currently uses the street lamps to light up the area of children's playground. As a result, due to the

defects and shortages of street lamps only can light up very small area of children's playground. Thus, we need a specific lighting only for the children's playground and then it can enhance children's safety there."

With respect of the open space positively determining Interviewee 5's residential satisfaction, he responded: "...it is not a very big place with a normal location. The condition is not good with the lighting problems which have been lying on the table for a long time due to the property management companies have been being changed frequently...by the way...it is not clean at all...in addition, the numbers of fitness equipments comparing with Yangguang and Chengshi Huayuan are much fewer...we need more fitness equipments...due to our open space is very limited comparing with Yangguang Huayuan's, we need more recreation places where we can have chats with friends and play chess with friends..."

In terms of the factor of local kindergarten significantly affecting the 3<sup>rd</sup> phase's residential satisfaction, Interviewee 5 said: "The local kindergartens are very normal comparing with those kindergartens located in the city centre which have a lot of good teachers. The conditions are also very normal because the small number of enrolment decides upon their small amount of investment. Luckily, these local kindergartens are well maintained and very clean."

With reference to the local shops which significantly determined Interviewee 5's residential satisfaction, he said: "The location of local shops is very bad because they are located at the first floor of the first row of the houses. And then, many noises came from those shops disturb residents especially who are living on the second floor in those same blocks. Except for these shops, we need more diversified shops."

Regarding the problem of parking facilities (electric bicycle/bicycle/car) seriously affecting Yangguang Huayuan's residential satisfaction, Interviewee 5 responded: "The parking space in Binhe Huayuan is very enough and the condition of parking facilities is very good. The parking area is clean."

#### **6.6.5 Neighbourhood Characteristics**

Apart from some local shops locating at the first floor of the first row of the houses affecting the quietness of the housing estate, Interviewee 5 continually explained: "Many noises come from our neighbours such as children's playing and fighting, couple's quarrelling, and sound of television, etc. The noise came from the open space is normal."

Regarding the local police station which influencing 3<sup>rd</sup> phase's residential satisfaction, Interviewee 5 said: "The nearest police station is quite far from here around 10 kilometres and is not convenient."

Comparing with the 1<sup>st</sup> and 2<sup>nd</sup> phases regarding the nearest fire station which significantly determined Interviewee 5's residential satisfaction, he said: "We are far away from the fire station and it is absolutely inconvenient. In addition, all three phases don't have any firefighting equipments. It is very dangerous."

In terms of the community relationship (community committee-residents/social cohesion/social harmony) significantly determining Interviewee 5's residential satisfaction, he responded: "...according to my knowledge, there is no social exclusion and most residents are willing to involve all activities arranged by Binhe Huayuan's community committee..."

With respect to the factor of the nearest school which positively determined 1<sup>st</sup> and 2<sup>nd</sup> phases' residential satisfactions, Interviewee 5 said: "A lot of schools such as the elementary school, the junior middle school, and even the senior middle school all are not far from here around 4 kilometres. It is convenient to go to those schools."

Referring to the factor of resident's workplace determining the 1<sup>st</sup> phase's residential satisfaction, Interviewee 5 said: "From my workplace to home is about 2.5 kilometres and it is convenient to go there."

The factor of community clinic which positively determining the Yangguang Huayuan's residential satisfaction, Interviewee 5 said: "...going to community clinic is very convenient and the community clinic is nearby..." Comparing with the community clinic, the nearest general hospital was complained by Interviewee 5 "The distance from here to the nearest general hospital is not very far around 6 kilometres. However, it is not convenient to get there due to the numbers of shuttle buses are quite few."

With respect to the local crime and local accident situation as the determinants which significantly predicted the Chengshi Huayuan's residential satisfaction, Interviewee 5 said: "The local crime and local accident situations are both very bad such as stealing, car accidents, etc. The frequencies of happening in terms of crime and accident are not very high, but quite high. Therefore, a professional property management team is immediately needed to manage it."

In terms of the nearest bus/taxi station positively affected the Chengshi Huayuan's residential satisfaction, Interviewee 5 said: "...it is not far to get to the bus/taxi station and it is convenient to get a public bus to go to downtown. However, the numbers of shuttle buses are still not many; we need more buses to come here..."



## **6.7 Interviewee 6**

Interviewee 6 was 52 years old and she got divorced when her daughter was 8 years old. Now she lived with her daughter, 26 years old, with her parents as well. She retired from a state-owned company and now she worked at a private company as a janitor. On account of her educational attainment only finished junior middle school, her monthly income is not high. Interviewee 6 lived on the 1<sup>st</sup> floor, block 56, and she lived at Binhe Huayuan for 3 years. She daily used a bicycle to go to work.

### **6.7.1 Individual and Household's Socio-economic Characteristics**

With respect to the factor of main means of transportation (by driving vs. by cycling) negatively determining Interviewee 6's residential satisfaction in Binhe Huayuan, she said: "...riding a bicycle to my workplace is a terrible thing especially in winter and summer...driving to workplaces is better and Binhe Huayuan has a lot of places where you can park your car comparing to Yangguang and Chengshi Huayuan...riding a bicycle to my workplace is at very least better than taking a bus to my workplace because there is no one bus to go directly to my company, even if there only has around 3 kilometres between Binhe Huayuan and my workplace. Thus, very few shuttle buses coming and stopping at this station is another very serious problem currently..."

In addition, Interviewee 6 residential satisfaction was positively affected by the factor of floor level (4<sup>th</sup> floor vs. 3<sup>rd</sup> floor), she explained: "...living on the first floor like me is convenient for the aging people such as my parents to walk into the house though, the house on the first floor is quite easy to get dirty and in summer the garbage smell floated into the room by wind, and a lot of mosquitoes and flies easily got into the room during summer. Similarly, the feeling of living on the top floor is not good either, because in summer the whole ceiling was burnt in the sun all day long and in winter it was very cold...if the local government allows me to choose again, I will definitely

choose 3<sup>rd</sup> floor...because the 3<sup>rd</sup> floor is not high and stays away from that smell and the flies as well...”

With respect to the factor of occupation type which negatively affected Yangguang Huayuan’s inhabitants’ residential satisfaction, Interviewee 6 said: “...in my experience, those people with higher positions at companies are more difficultly to get satisfied. On the contrary, people with lower positions at companies like me, are more easily to get satisfied because I need fewer...”

#### **6.7.2 Housing Unit Characteristics**

Ms Interviewee 6’s residential satisfaction in Binhe Huayuan was positively affected by the living room, she said: “There are two places in this house with which I am so satisfied such as the living room and kitchen. The living room’s space is good and its location is quite nice. Due to its location, the ventilation is good and the lighting is good as well during the day. The numbers of power sockets are just enough for using.

With reference to the factor of bedroom which positively determined Yangguang and Chengshi Huayuan’s residents’ housing satisfactions, Interviewee 6 said: “...comparing with the living room, the size of bedroom is normal and the location is normal with the normal ventilation and normal lighting. The numbers of power sockets are enough for using...”

The factor of dining area positively influenced Yangguang Huayuan’s residents’ housing satisfaction, Interviewee 6 said: “...on account of the four people having each meal together at the dining area, the space seems quite narrow with an improper location. The dining area is well ventilated and has a good lighting. However, the numbers of power sockets are very few.”

The factor of drying area positively affected Chengshi Huayuan's inhabitants' residential satisfaction, Interviewee 6 said: "The drying area has a proper size of space and its ventilation design is also good and it has a good lighting. But... no power socket at all..."

With respect to the toilet, Interviewee 6 said: "...the size is very normal. The location is normal with a normal ventilation design. The lighting is good. There has only one power socket which is very few and very inconvenient."

### **6.7.3 Housing Unit Supporting Services**

Interviewee 6's residential satisfaction was positively affected by the electrical & telecommunication wiring (fixed-line telephone, television, and internet), she said: "The wiring in this house was normal when we moved in. After that, their maintenance services are also normal."

Referring to the corridor which determined Interviewee 6's residential satisfaction, she said: "...the corridor is quite narrow. It is unclean and has no lighting at all. In summer, sometimes the big smell from the garbage floats into the corridor and affects our daily life..."

With reference to the drain and garbage disposal determining the 1<sup>st</sup> phase's residents' housing satisfactions, Interviewee 6 said: "The drain in this house was normal when we moved in. After that, their maintenance services are also normal." Interviewee 6 continually said: "...generally speaking, most of the time they clean the garbage can in time, however, due to they never clean thoroughly, the big smell from the garbage is affecting the corridor during summer..."

With reference to the staircases affecting the 2<sup>nd</sup> phase's residents' housing satisfactions, Interviewee 6 said: "...the space of the staircases is just enough for using. It is unclean and has no lighting at all. Moreover, according to my experience (a lady in medium height), each staircase is high for me (fortunately, I live on the first floor) and I think, is high for those aging people either. In addition, a lot of people in similar with my height and a lot of children will have this similar problem as well..."

#### **6.7.4 Housing Estate Supporting Facilities**

The factor of children's playground positively determined Binhe Huayuan's inhabitants' residential satisfaction, Interviewee 6 commented: "The space is not big enough for this whole Binhe Huayuan's children with a bad location. The condition is not good due to a lot of weeds in children's playground. In addition, the lighting problems directly bring along the safety issues while the children were playing in the evening. We need a special lighting only for the children's playground."

The factor of open space predicted Interviewee 6's residential satisfaction, she said: "...like children's playground, it is not big enough for the whole Binhe Huayuan's residents who are mainly relocated households and the location is normal. The condition is also like the children's playground with full of weeds and is not clean. The most important thing is the lighting problems which are related to the safety issues. As a lot of residents take a walk or dance at the open space after dinner, it is very dangerous without lighting in the evening. We need the local government to enhance the condition of open space in order to improve residents' quality life."

Interviewee 6's residential satisfaction was positively affected by the local kindergarten, she said: "...comparing with the kindergartens in Chengshi Huayuan, (I think) Binhe Huayuan's kindergartens are well maintained and have good conditions. However, comparing with other kindergartens located at the commodity housing areas,

Binhe Huayuan's kindergartens are far more behind. Thus, in general, (I think) the local kindergartens are very normal..."

With reference to the local shops which significantly determined Binhe Huayuan's residents' housing satisfactions, Interviewee 6 responded: "...the local shops are very normal providing our daily use. However, the price of commodities that you are selling is not cheap. You'd better buy commodities at some hyper markets which are located at the city centre. As we are actually poor family, every single dollar that we spent is countable. So, sometimes, we are going to hyper market instead of our local shops to buy a lot of commodities in order to save some money. Comparing with the long distance to the city centre, we care more about the price of commodity."

With reference to the factor of parking facilities (electric bicycle/bicycle/car) significantly affecting Yangguang Huayuan's residential satisfaction, Interviewee 6 responded: "...we have two parking lots for motor vehicles and three parking areas for bicycles and electric bicycles...it is very enough. The conditions are good and quite clean."

#### **6.7.5 Neighbourhood Characteristics**

Interviewee 6's residential satisfaction was significantly affected by the quietness of the housing estate, she said: "As I live on the first floor, I hear many noises not only come from our neighbours but also come from the open space such as children's playing, the shouts of vendors, neighbourhood chatting voices, and the quarrelling..."

With respect to the local police station that influencing Binhe Huayuan's residents' housing satisfaction, Interviewee 6 responded: "The distance between local police station and Binhe Huayuan is quite far around 8 kilometres. It is not convenient to get there." Interviewee 6 continually said: "The distance between the nearest fire station

and Binhe Huayuan is quite far around 6 kilometres. It is not convenient. (According to my knowledge)...all three phases don't have any firefighting equipments. We urgently require local government to play its role to solve this problem as soon as possible.”

With respect of the community relationship (community committee-residents/social cohesion/social harmony) that influencing Binhe Huayuan's residents' housing satisfaction, Interviewee 6 responded: “There is no social exclusion in Binhe Huayuan and most residents are willing to involve all activities. In contrast, people who live at the commodity houses (just opposite Binhe Huayuan) look down upon us and sometimes have conflicts with each other, for example, as that condominium which is quite expensive with fully equipped has two outdoor swimming pools, the residents from Binhe Huayuan went there to go swimming in summer. In the beginning, they did not get blocked by their security. After their security received their own residents' complaints, they started to block them. The complaints are more about the numbers of people from outside coming and swimming are getting bigger and bigger and they are not wearing swimsuits, and most their children are naughty and noisy. Thereafter, between the residents from Binhe Huayuan and the residents from the condominium has had a lot of conflicts.”

With reference to the factor of the nearest school which positively determined Yangguang and Chengshi Huayuan's residents' housing satisfactions, Interviewee 6 said: “A lot of schools are not far from here around 4 kilometres. It is convenient to go to those schools.”

Most residents from Yangguang Huayuan concerning about the conveniences of going to their workplaces, Interviewee 6 said: “...it is about 3 kilometres from here to my workplace, I think it is a medium distance, and it is convenient for me to get there...”

Interviewee 6 talked about the community clinic and she said: “The community clinic is very near and very convenient to get there.” On the contrary, the nearest general hospital was commented by Interviewee 6 “The distance from here to the nearest general hospital is very far around 10 kilometres and it is inconvenient to get there.”

According to two factors of the local crime and local accident situation significantly determining Chengshi Huayuan’s residents’ housing satisfactions, Interviewee 6 said: “The frequencies of crime and accident happening are quite high particularly during afternoon and evening. The local crime and accident situations are both very bad. Accordingly, we urgently require local government to play its role to resolve this problem as soon as possible.”

Regarding the nearest bus/taxi station positively affecting residential satisfaction of Chengshi Huayuan, Interviewee 6 said: “...it is not very far (around 2 kilometres) to get to the bus/taxi station. However, it is inconvenient to get a public bus to go to downtown due to the numbers of shuttle buses are still not many. We need more shuttle buses to come and stop here.”

## **6.8 Cross Case Analysis and Conclusion**

Five themes which together determined the participants’ residential satisfactions in these three phases of low-cost housing projects and were examined in the quantitative part (see tables 5.2 and 5.3 in Chapter 5) appeared in the analysis across six cases from three phases: individual and household’s socio-economic characteristics, housing unit characteristics, housing unit supporting services, housing estate supporting facilities, and neighbourhood characteristics. The following table 6.1 illustrated the similarities and differences in talking about those themes between the six participants and across

three phases of low-cost housing in terms of the similarities and differences in sub-themes and categories.

**Table 6.1: Themes, Sub-Themes, and Categories across Cases and across Phases**

Themes, Sub-Themes	Yangguang Huayuan (1 <sup>st</sup> Phase)		Chengshi Huayuan (2 <sup>nd</sup> Phase)		Binhe Huayuan (3 <sup>rd</sup> Phase)	
	Interviewee 1 (F)	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6 (F)
<b>Individual and Household's Socio-Economic Characteristics</b>						
Occupation Type	The higher position of occupation and the lower satisfaction	Social exclusion existing between residents with higher position and residents with lower position of occupation	Almost same	Almost same	Almost same	The higher position of occupation and the lower satisfaction
Floor Level	Higher floor level far away from the noise and clean	lower floor level affected by the smelling of garbage and crowd noise sometimes	Almost same	except for the top floor and the first floor, the others are OK	except for the top floor and the first floor, the others are OK	except for the top floor and the first floor, the others are OK
The Main Means of Transportation	Not enough parking space and lack of property management	Not enough parking space and lack of property management	Only one shuttle bus and not enough parking space and lack of property management	Only one shuttle bus and not enough parking space and lack of property management	More shuttle buses needed	More shuttle buses needed
Housing ownership	For the next commodity housing purchase	For the next commodity housing purchase	Important, but not so important	For the next commodity housing purchase	For the next commodity housing purchase	



**Table 6.1 Continued**

Themes, Sub-Themes	Yangguang Huayuan (1 <sup>st</sup> Phase)		Chengshi Huayuan (2 <sup>nd</sup> Phase)		Binhe Huayuan (3 <sup>rd</sup> Phase)	
	Interviewee 1 (F)	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6 (F)
<b>Housing Unit Characteristics</b>						
Living room	Appropriate size	Appropriate size	Appropriate size	Appropriate size	Appropriate size	Appropriate size
	Proper location	Improper location	Improper location	Improper location	Proper location	Proper location
		Badly connected with dining area	Badly connected with kitchen			
	Well-ventilated	Not-well ventilated	Not-well ventilated	Not-well ventilated	Not-well ventilated	Well-ventilated
	Good-lighting	Good-lighting	Bad-lighting	Bad-lighting	Bad-lighting	Good-lighting
	Fewer power sockets	Just-enough power sockets	Just-enough power sockets	Fewer power sockets	Just-enough power sockets	Just-enough power sockets
Dining area	Appropriate size	Appropriate size	Improper size	Improper size	Improper size	Improper size
	Proper location	Improper location	Improper location	Improper location	Improper location	Improper location
			Badly connected with kitchen		Badly closer to toilet	
	Well-ventilated	Not-well ventilated	Not-well ventilated	Not-well ventilated	Not-well ventilated	Well-ventilated
	Good-lighting	Good-lighting	Bad-lighting	Bad-lighting	Bad-lighting	Good-lighting
	Fewer power sockets	Enough power sockets	Enough power sockets	Fewer power sockets	Just-enough power sockets	Fewer power sockets
Bedroom	Slightly smaller size	Slightly smaller size	Slightly smaller size	Slightly smaller size	Slightly smaller size	Normal size
	Bad location	Bad location	Bad location	Bad location	Normal location	Normal location
	Not-well ventilated	Not-well ventilated	Not-well ventilated	Not-well ventilated	Not-well ventilated	Normal ventilated
				With a western exposure, cold in winter, hot in summer and the furniture goes mouldy		
	Bad-lighting	Bad-lighting	Bad-lighting	Bad-lighting	Normal lighting	Normal lighting
	Fewer power sockets	Enough power sockets	Enough power sockets	Fewer power sockets	Fewer power sockets	Enough power sockets
Toilet	Very small size		Very small size	Very small size	Normal size	Normal size
			Very bad location	Very bad location	Very bad location	Normal location
	No ventilation		No ventilation	No ventilation	No ventilation	Normal ventilation
	Bad-lighting		Bad-lighting	Bad-lighting	Bad-lighting	Good lighting
	Fewer power sockets			The 1 <sup>st</sup> floor house has the worst toilet	Fewer power sockets	Fewer power sockets
Drying area (Balcony)	Appropriate size	Appropriate size	Improper size	Improper size	Appropriate size	Appropriate size
	Well-ventilated	Well-ventilated	No ventilation	No ventilation	Well-ventilated	Well-ventilated
	Good-lighting	Good-lighting	Bad-lighting	Bad-lighting	Good-lighting	Good-lighting
	Fewer power sockets	Enough power sockets	Enough power sockets	Enough power sockets	No power socket	No power socket

**Table 6.1 Continued**

Themes, Sub-Themes	Yangguang Huayuan (1 <sup>st</sup> Phase)		Chengshi Huayuan (2 <sup>nd</sup> Phase)		Binhe Huayuan (3 <sup>rd</sup> Phase)	
	Interviewee 1 (F)	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6 (F)
<b>Housing Unit Supporting Services</b>						
Drain	Good original	Bad original	Bad original	Bad original	Normal original	Normal original
	Normal maintenance	Bad maintenance	Bad maintenance	Bad maintenance	Normal maintenance	Normal maintenance
		High-frequency damage				
Electrical & Telecommunication Wiring	Normal original	Good original	Bad original	Normal original	Normal original	Normal original
	Normal maintenance	Good maintenance	Bad maintenance	Normal maintenance	Normal maintenance	Normal maintenance
Staircases	Quite narrow	Just-enough space	Quite narrow	Quite narrow	Just-enough space	Just-enough space
	Good lighting	Good lighting	No lighting at all	No lighting at all	No lighting at all	No lighting at all
	Just okay	Unclean	Unclean	Unclean	Unclean	Unclean
	Different numbers of stairs in different floor levels & different stairs with different heights					Each stair is high
Corridor	Quite narrow	Just-enough space	Quite narrow	Quite narrow	Quite narrow	Quite narrow
	Good lighting	Good lighting	No lighting at all	No lighting at all	No lighting at all	No lighting at all
	Unclean	Just okay	Unclean	Unclean	Unclean	Unclean
	Quite noisy				Quite noisy	Big smell from the garbage
Garbage disposal	Timely collection	Timely collection	Timely collection	Not timely collection	Timely collection	Timely collection
	Efficiently managed (Most time)	Sometimes do not clean thoroughly	Sometimes do not clean thoroughly	Never clean thoroughly	Never clean thoroughly	Never clean thoroughly
					A garbage can at children's playground	Big smell affecting the corridor

**Table 6.1 Continued**

Themes, Sub-Themes	Yangguang Huayuan (1 <sup>st</sup> Phase)		Chengshi Huayuan (2 <sup>nd</sup> Phase)		Binhe Huayuan (3 <sup>rd</sup> Phase)	
	Interviewee 1 (F)	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6 (F)
<b>Housing Estate Supporting Facilities</b>						
Open space	Enough space	Not very enough space	Not very enough space	Not very enough space	Not very enough space	Not very enough space
	Good condition	Good condition	Bad condition	Bad condition	Bad condition	Bad condition
			Lighting problems	Lighting problems	Lighting problems	Lighting problems
	Good location	Good location	Improper location	Normal location	Normal location	Normal location
	Clean	Clean	Unclean	Unclean	Unclean	Unclean
	Not enough fitness equipment and space	Sometimes many noises from the open space	So much space occupied by the local shops		Need more fitness equipments and recreation places	
Children's playground	Very-limited space	Not very enough space	Not very enough space	Not very enough space	Not very enough space	Not very enough space
	Not-bad condition	Good condition	Bad condition	Bad condition	Bad condition	Bad condition
	Good location	Bad location		Bad location	Bad location	Bad location
		Conflicts with perimeter road	Occupied by parking facilities		One block's garbage collection spot is at the children's playground	
				Lighting problems	Lighting problems	Lighting problems
	Clean	Clean	Unclean	Unclean	Unclean	Unclean
Parking facilities	Very-limited space	Very-limited space	Very-limited space	Very-limited space	Enough space	Enough space
	Bad and chaotic condition	Bad and chaotic condition	Bad and chaotic condition	Bad and chaotic condition	Good condition	Good condition
	Unclean	Clean	Unclean	Unclean	Clean	Clean
	No car parking space	No car parking space	No car parking space	Lighting problems		
			Very poor street lighting light up parking area			
			Conflicts with children's playground and fitness equipment			
Local shops	Sufficient numbers	Normal numbers	Normal numbers	Sufficient numbers	Normal numbers	Normal numbers
	Good location	Normal location	Bad location	Normal location	Bad location	Normal location
			Conflicts with open space		Located at the first floor of the first row of the houses disturbing residents	
					More shops needed	
Local kindergarten	Sufficient numbers	Normal numbers	Normal numbers	Normal numbers	Normal numbers	Normal numbers
	Good condition	Normal condition	Normal condition	Normal condition	Normal condition	Normal condition
	Good location	Normal location	Normal location	Normal location	Normal location	Normal location
	Clean	Clean	Clean	Clean	Clean	Clean

**Table 6.1 Continued**

Themes, Sub-Themes	Yangguang Huayuan (1 <sup>st</sup> Phase)		Chengshi Huayuan (2 <sup>nd</sup> Phase)		Binhe Huayuan (3 <sup>rd</sup> Phase)	
	Interviewee 1 (F)	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6 (F)
<b>Neighbourhood Characteristics</b>						
Community Relationship	Active involvement	No participation	Active involvement	Active involvement	Active involvement	Active involvement
	No social exclusion	Social exclusion existing	No social exclusion	No social exclusion	No social exclusion	No social exclusion
Quietness of the housing estate	Many noises from neighbours	Many noises from neighbours	Normal	Normal	Many noises from neighbours	Many noises from neighbours
	Many noises from open space	Many noises from open space	Normal	Normal	Normal	Many noises from open space
Local Crime situation	High frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence
	Very bad situation	Very bad situation	Very bad situation	Very bad situation	Very bad situation	Very bad situation
Local Accident situation	High frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence	Medium frequency of occurrence
	Very bad situation	Very bad situation	Very bad situation	Very bad situation	Very bad situation	Very bad situation
Resident's Workplace	Long distance	Long distance	Long distance	Long distance	Medium distance	Medium distance
	Not convenient	Not convenient	Not convenient	Not convenient	convenient	convenient
Community Clinic	Medium distance	Medium distance	Very near	Very near	Very near	Very near
	Convenient	Convenient	Convenient	Convenient	Convenient	Convenient
Nearest General Hospital	Medium distance	Medium distance	Long distance	Long distance	Medium distance	Long distance
	Quite convenient	Not convenient	Not convenient	Not convenient	Not convenient	Not convenient
Local Police Station	Short distance	Short distance	Short distance	Short distance	Long distance	Long distance
	Convenient	Convenient	Convenient	Convenient	Not convenient	Not convenient
Nearest School	Short distance	Short distance	Long distance	Long distance	Medium distance	Medium distance
	Convenient	Convenient	Not convenient	Not convenient	Convenient	Convenient
Nearest Fire Station	Medium distance	Medium distance	Long distance	Long distance	Long distance	Long distance
	Not convenient	Not convenient	Not convenient	Not convenient	Not convenient	Not convenient
	No firefighting equipment	No firefighting equipment	No firefighting equipment	No firefighting equipment	No firefighting equipment	No firefighting equipment
Nearest Bus/Taxi Station	Medium distance	Medium distance	Long distance	Long distance	Medium distance	Medium distance
	Not convenient	Not convenient	Not convenient	Not convenient	Convenient	Not convenient

Source: Interview in June 2015

On the whole, in spite of any improvements between the three phases made by the local government, there were more similarities in their comments on those sub-themes (see categories in Table 6.1) between the participants who all lived at Xuzhou's low-

cost housing projects, although they lived at three different low-cost housing projects, than differences which were related to the individual's circumstances. The factors which were deemed by these six participants to be very significant to the local government as related to their residential satisfactions in these three phases of low-cost housing were concluded as follows:

#### **6.8.1 Individual and Household's Socio-Economic Characteristics**

In terms of the occupation type negatively determining the Yangguang Huayuan's inhabitants' residential satisfaction, there are two different views came out of three phases such as two interviewees from Yangguang Huayuan sharing the same view of "the higher position of occupation with the lower satisfaction" and oppositely, two interviewees from Chengshi Huayuan having a same view of "almost same", and Binhe Huayuan had one interviewee with a view of "almost same" and another view of "the higher position of occupation with the lower satisfaction".

Furthermore, Interviewee 2 added some his own opinions that the social exclusion existed in Yangguang Huayuan between residents with higher position at company and residents with lower position of occupation.

Regarding the factor of floor level positively affected the Yangguang and Binhe Huayuan's inhabitants' residential satisfactions, the four participants had the same opinion, i.e. all floors were almost same except for people's lower residential satisfactions in living on the top and the first floors because the top floor was very cold during winter and was very hot during summer and the lower floor was affected by the smelling of garbage and crowd noise explained by Interviewee 2 from Yangguang Huayuan. On the contrary, Interviewee 1 also from Yangguang Huayuan explained that the higher floor level was far away from the noise and also was clean. At the same time,

Interviewee 3 from Chengshi Huayuan held a different opinion such as all floors were almost same.

With reference to the factor of main means of transportation affected the Chengshi and Binhe Huayuan's residents' housing satisfactions, the four participants had the same view which was not enough parking space and lack of property management in Yangguang and Chengshi Huayuan. In addition, the parking space was enough in Binhe Huayuan. However, two participants from Binhe Huayuan and two participants from Chengshi Huayuan complained about the number of shuttle bus was very few especially Chengshi Huayuan.

With respect to the housing ownership which was an added sub-theme while I was sorting participants' transcripts, due to the whole low-cost housing projects in Xuzhou were not allowed the residents to buy the left homeownerships as of the day I interviewed, I did not prepare this question in the quantitative and qualitative parts. Nonetheless, the four participants amongst three phases took this factor very seriously because most residents like them wanted to purchase the next commodity housing using the current house ownership. However, Interviewee 3 showed a different view, i.e. it is important, but not so important. Interviewee 6 did not care so much about it.

### **6.8.2 Housing Unit Characteristics**

In regard to the factor of living room which positively determined residential satisfaction, all six participants preferred the size of living room over the location, for example, three participants from Yangguang and Chengshi Huayuan thought the locations of their living rooms were not proper. Interviewee 2 thought that the living room should be separated from the dining area and Interviewee 3 thought that the living room should be separated from the kitchen. Furthermore, the four interviewees from three phases thought that their living rooms did not have good ventilations and the three

interviewees from Chengshi and Binhe Huayuan complained about their living rooms having bad lighting. The four participants from three phases thought the numbers of power sockets in their living rooms were just enough for using.

Regarding the dining area, the four participants from the 2<sup>nd</sup> and 3<sup>rd</sup> phases thought that the size of their dining areas were small. Similarly, the five participants from three phases thought that the location of their dining areas were not proper, for instance, Interviewee 3 also suggested that the dining area should be separated from the kitchen. Furthermore, Interviewee 5 from 3<sup>rd</sup> phase complained about his dining area being badly very closer to the toilet. By the same token, the four interviewees from three phases thought that their dining areas were not well ventilated. The three participants from Chengshi and Binhe Huayuan complained about the lighting of dining area were not good. The four interviewees from three phases complained about the number of power sockets were fewer.

With regard to the bedroom which positively determined Yangguang and Chengshi Huayuan's residents' housing satisfactions, the five participants thought that their bedroom size was slightly smaller than their master bedroom. With the exception of the 3<sup>rd</sup> phase, the four interviewees considered that their bedroom had a bad location. At the same time, the five interviewees thought that their bedroom was not well ventilated particularly Interviewee 4 gave a specific detail regarding his bedroom with a western exposure was cold in winter and hot in summer and his furniture in bedroom went mouldy. In the meanwhile, the four interviewees from the 1<sup>st</sup> and 2<sup>nd</sup> phases had the same problem of lighting in bedroom. The half interviewees found that the power sockets in bedroom were very few.

The factor of toilet, which was not a determinant in these three phases, was a critical issue when interviewing, three participants amongst five from the 1<sup>st</sup> and 2<sup>nd</sup> phases complained about their toilets had a very small size. The three participants from the 2<sup>nd</sup> and 3<sup>rd</sup> phases amongst four complained about the locations. The four participants said that there was no ventilation in their toilets and had a bad lighting. They also complained about the fewer power sockets especially Interviewee 4 said the 1<sup>st</sup> floor house had the worst toilet.

Regarding the drying area, the four interviewees from the 1<sup>st</sup> and 3<sup>rd</sup> phases believed that the drying area had an appropriate size with good ventilation and with a good lighting. On the contrary, the two interviewees from the 3<sup>rd</sup> phase complained about no power socket in their drying areas.

### **6.8.3 Housing Unit Supporting Services**

With respect to the drain, the three participants from the 1<sup>st</sup> and 2<sup>nd</sup> phases thought that when they moved into their new houses, the drain system was not good and the maintenance was also bad particularly Interviewee 2 reported that his house's drain system had problems very frequently. Comparing with the drain, the five interviewees thought that they had a normal condition of electrical & telecommunication wiring with a normal maintenance.

Regarding the staircases, all six participants complained that their staircases were quite narrow or just enough space for using and were unclean. Except for the 1<sup>st</sup> phase having a good lighting in staircases, the 2<sup>nd</sup> and 3<sup>rd</sup> phases had no lighting at all in their staircases. Interviewee 1 gave a special comment on staircases in which different numbers of stairs were in different floor levels and different stairs had different heights. Interviewee 6 also gave a similar comment like that each staircase was very high for her.



The corridor had a similar result given by those six interviewees especially Interviewee 1 and Interviewee 5 complained about the corridor was quite noisy and Interviewee 6 complained about the corridor was affected by the big smell from the garbage sometimes.

Regarding the garbage disposal, the five interviewees gave the same conclusion such as timely collection and did not clean thoroughly especially the 3<sup>rd</sup> phase. Interviewee 5 and Interviewee 6 both from the 3<sup>rd</sup> phase gave their comments that a garbage can was put at the children's playground and the big smell from the garbage affected the corridor.

#### **6.8.4 Housing Estate Supporting Facilities**

With respect of the open space, most participants believed that it was not a very enough space with a bad condition. The 2<sup>nd</sup> and 3<sup>rd</sup> phases' open spaces had lighting problems and sanitation problems. In addition, Interviewee 1 and Interviewee 5 suggested that the property management company should buy some more fitness equipments and build more recreation places. Interviewee 2 complained about many noises came from the open space. Interviewee 3 complained about so much space was occupied by the local shops.

In terms of children's playground, all participants complained about the very limited space. Most of them especially from the 2<sup>nd</sup> and 3<sup>rd</sup> phases complained about the bad condition and the bad location, for example, Interviewee 2 said that the location had conflicts with the perimeter road. Interviewee 3 said that the location was occupied by the parking facilities. Interviewee 5 said that one block's garbage collection spot was at the children's playground. The 2<sup>nd</sup> and 3<sup>rd</sup> phases both had lighting problems and sanitation problems.

Referring to the parking facilities, the four participants from the 1<sup>st</sup> and 2<sup>nd</sup> phases complained that the parking areas were very limited with bad and chaotic conditions and also had sanitation problems, for example, Interviewee 1, Interviewee 2 and Interviewee 3 said that there had no car parking space. Interviewee 3 and Interviewee 4 said that there had many lighting problems and the location had conflicts with children's playground and fitness equipment.

In regard of the local shops, although the numbers of shops were sufficient, the 2<sup>nd</sup> and 3<sup>rd</sup> phases had some problems with locations, for example, Interviewee 3 said that the locations had conflicts with the open space. Interviewee 5 said that some shops located at the first floor of the first row of the houses disturbed residents.

With reference to the local kindergarten, all six interviewees shared almost same conclusions regarding the normal numbers with normal conditions and normal locations and all local kindergartens were clean.

#### **6.8.5 Neighbourhood Characteristics**

In regard of the community relationship, except for Interviewee 2 giving an opposite answer such as residents' no participation and social exclusion existing in Yangguang Huayuan, the rest of 5 participants gave the same answer such as residents' active involvements and no social exclusion existing.

With regard to the quietness of the housing estate, the four participants from the 1<sup>st</sup> and 3<sup>rd</sup> phases believed that many noises were generated from the neighbours and from the open spaces.

With respect of the local crime and local accident situations, the majority of the six participants complained about the frequencies of crimes and accidents' occurrences were medium with very bad situations.

Referring to the factor of resident's workplace which determined residential satisfaction, except for the two participants from the 3<sup>rd</sup> phase claimed that the distance between Binhe Huayuan and their workplaces were medium distance and it was convenient, the rest four participants complained about between their workplaces and their houses were long distances and they were not convenient.

Comparing with the community clinics located at these three phases having good locations and easy accesses, the nearest general hospitals to these three phases unfortunately had long distances and they were not convenient to get there.

With reference to the local police station, the only two interviewees from Binhe Huayuan complained about the distance between Binhe Huayuan and the local police station was long and it was not convenient. Similarly, referring to the nearest school, the only two interviewees from Chengshi Huayuan complained about the distance between Chengshi Huayuan and the nearest school was long and it was not convenient.

In regard of the nearest fire station, the all six participants complained about the distances between their houses and the fire stations were long and they were not convenient. The worst part was that there was no one housing estate had their own firefighting equipment.

In regard to the nearest bus/taxi station, the five interviewees gave their bad comments on this factor such as the distances between their houses and the nearest bus/taxi stations were medium and long and they were not convenient at all.

## **CHAPTER 7: DISCUSSION**

### **7.1 Introduction**

Based upon the results concluded according to the explanatory sequential mixed mode method study, the purpose of this research work was to identify residents' levels of satisfactions in each phase of low-cost housing and explore the factors which predicted/determined these three phases of low-cost housing projects in Xuzhou city. Accordingly, it was obviously to find out which problems were still existences from 1<sup>st</sup> phase to 3<sup>rd</sup> phase and which problems were made some improvements from 1<sup>st</sup> phase to 3<sup>rd</sup> phase.

In the first part of the explanatory sequential mixed mode method, quantitative, the 14, 12, and 13 determinants (referring to the individual and household's socio-economic characteristics and the four residential elements) were found from the three respective phases of low-cost housing as the predictors to their residential satisfactions.

In the second part of the explanatory sequential method, qualitative, it revealed that the five themes which were the core statements concluded based upon the participants' interviews would be the five critical reasons displayed as follows which affecting those three phases of low-cost housing's inhabitants' levels of residential satisfactions from the strongest influencing to the weakest influencing: (a) good social environment and neighbourhood facilities; (b) good layout and maintenance for public facilities; (c) good maintenance for housing unit; (d) good structure design for housing unit; (e) more commoditized low-cost housing.

### **7.2 RS in Three Phases of LCH**

In terms of the four elements' satisfactions which affecting the overall residential satisfaction, the respondents of the three phases shared some similarities in evaluating the satisfaction of housing unit characteristics (HUC) in their corresponding projects

with the highest average satisfaction among the four elements (69.257%, 61.519%, and 66.792%, respectively), these findings were tended to support James, M. A. Mohit & Nazyddah, E. O. Ibem & Aduwo and E. O. Ibem & Amole's (2008) (2011), (2013) and (2013b) propositions of the subsidised renters in the US, the residents living at nine previously-built and 10 newly-constructed public housing estates in urban areas of Ogun state were highly satisfied with HUC and households living at Malaysian Selangor state social houses conveyed moderately high level of satisfaction with HUC. Moreover, these findings also supported Varady & Carrozza and M. A. Mohit & Azim's (2000) and (2012) studies about the residents living at public housing estates in Hulhumalé were slightly satisfied with HUC and approximately 1,300 residents living at Cincinnati Metropolitan Housing Authority (CMHA) housing had a high level of satisfaction with HUC in four consecutive years of 1995, 1996, 1997, and 1998.

However, these findings were tended to be contrary to Ukoha & Beamish and M. A. Mohit, Ibrahim, & Rashid's (1997) and (2010) propositions regarding the 1,089 households randomly selected from residents in 19,863 public housing units in Abuja and the higher percentage of respondents living at one of the 24 newly designed public low-cost housing estates in Sungai Bonus, Kuala Lumpur showing dissatisfied with HUC. Furthermore, these findings were also opposite to Kaitilla and James' (1993) and (2008) studies about the urban households living at public housing in the city of Lae, Papua New Guineans and the nonsubsidised renters in the US were severely dissatisfied with their HUC.

In terms of 65.233%, 58.008%, and 62.259% which presented the satisfaction levels of housing unit supporting services (HUSS) in respective project, it showed the moderate level of satisfaction in Phase 1 and 3, but the low level of satisfaction in Phase 2. These findings were tended to support M. A. Mohit et al., M. A. Mohit & Nazyddah,

M.A. Mohit & Zaiton, and E. O. Ibem & Aduwo's (2010), (2011), (2012) and (2013) conclusions about that the 102 respondents in Kuala Lumpur, the 100 respondents living at single-storey cluster housing, another the 100 respondents living at Selangor state individual houses, and 100 respondents living at younger (<10 years) high-rise condominiums in Kuala Lumpur were feeling the same way as 452 household heads living at nine previously-built public housing in Ogun state were slightly and highly satisfied with HUSS.

However, in spite of the low level of satisfaction in Phase 2, these conclusions were tended to be contrary to Ukoha & Beamish, Varady & Carrozza, M. A. Mohit & Nazyddah, M.A. Mohit & Zaiton and E. O. Ibem & Amole's (1997), (2000), (2011), (2012) and (2013b) findings of the 1,089 federal employees living in Abuja, 1,300 residents living in CMHA housing, 50 respondents living at Malaysian transit houses, 100 respondents residing at older (>10 years) high-rise condominiums in Kuala Lumpur, and the residents from 10 newly-constructed public houses in Ogun state were unfortunately found to be dissatisfied with HUSS.

With respect to 62.841% and 55.564% of satisfaction levels in neighbourhood characteristics (NC) and followed by 62.137% and 54.441% which indicated the lowest average satisfaction of housing estate supporting facilities (HESF) in Phase 1 and 2, it showed the moderate level of satisfaction of NC and HESF in Phase 1, but the low level of satisfaction in Phase 2.

Regarding Phase 3, although the lowest average satisfaction (61.723%) was given to NC, whereas, when they evaluated HESF, the satisfaction index (61.867%) was a little bit better than NC satisfaction index (61.723%), the moderate level of satisfactions of HESF and NC was shown. These conclusions of Phase 1 and 3 with moderate level of satisfactions in NC and HESF were contrary to, but the conclusion of Phase 2 with

dissatisfaction of NC and HESF were tended to support M. A. Mohit et al., M. A. Mohit & Nazyddah, E. O. Ibem & Aduwo, and E. O. Ibem & Amole's (2010), (2011), (2013), and (2013b) studies about the situation of HESF and infrastructural facilities in public low-cost housing in Kuala Lumpur, Selangor state individual houses and even in nine previously-built and newly-constructed public housing estates in Ogun state, Southwest Nigeria made the respondents feel slightly satisfied or even dissatisfied. Furthermore, these findings also supported James, M.A. Mohit & Zaiton and Zanuzdana et al.'s (2008), (2012) and (2013) studies about the public housing residents in the US, those respondents who lived in urban slums and rural areas in Dhaka, Bangladesh and the 100 respondents residing in older (>10 years) high-rise condominiums in Kuala Lumpur showed their low satisfaction with NC and HESF, respectively.

However, these conclusions of Phase 1 and 3 with moderate level of satisfactions in NC were tended to support, but the conclusion of Phase 2 with dissatisfaction of NC was contrary to Varady & Carrozza, James and Zanuzdana et al.'s (2000), (2008) and (2013) studies about 1,300 residents living in Cincinnati Metropolitan Housing Authority (CMHA) housing, the subsidised renters in the US, and 100 respondents living at younger (<10 years) high-rise condominiums in Kuala Lumpur presenting a moderate, or even higher level of satisfaction with NC.

With the exception of satisfaction index with HUC (61.519%), the Phase 2 had three elements with low level of satisfactions in terms of HUSS, NC, and HESF. This findings tended to support Tian & Cui, Huang & Du, Lu, and Djebarni & Al-Abed's (2009) (2015), (1999), and (2000) propositions that the improvements of neighbourhood characteristics and housing estate public facilities could enhance the inhabitants' residential satisfactions in public housing.

The phase1 and 3 had all moderate level of satisfactions with four elements. This findings were inclined to support Mohit, Ibrahim, & Rashid, Mohit & Nazyddah, Ibem & Aduwo, and Ibem & Amole's (2010), (2011), (2013), and (2013a) propositions.

In terms of the percentage of respondents with low level of satisfaction, there was the largest (40.7% and 74.7%) in HESF of Phase 1 and 2, while 42.5% in HUSS of Phase 3, followed by 29.1%, 73.7%, and 42.5% in NC of all phases, and followed by 25.6% and 61.1% in HUSS of Phase 1 and 2 while 36.3% in HESF of Phase 3, and followed by 16.3%, 40.0%, and 18.8% in HUC of all phases.

With respect to the ratios of respondents with very low and high levels of satisfaction that were needed to be especially concerned, the proportion of respondents with very low level of satisfaction was none (0.0%) in HUC and any percentage of respondents with very low level of satisfaction did not appear across four elements in Phase 1.

Moreover, the percentage of respondents with very low level of satisfaction was 2.5% in HUSS of Phase 3 while the other two phases of low-cost housing did not have any percentage of respondents with very low level of satisfaction in this element. Furthermore, 3.2% and 1.3% of respondents of Phase 2 and 3 were very dissatisfied with HESF and another 1.1% of respondents of Phase 2 were very dissatisfied with NC as well.

Nevertheless, the proportion of respondents of Phase 1 with high level of satisfaction was the largest (9.3%) in HUC followed by 3.8% of respondents of Phase 3 and 2.1% of respondents of Phase 2. Furthermore, the respondents of Phase 1 with high level of satisfaction were the highest (8.1%) in HUSS followed by 5.0% of respondents of Phase 3 and (1.1%) of respondents of Phase 2.



In addition to that, 1.3% of respondents of Phase 3 was satisfied and very satisfied with HESF followed by 1.2% of respondents of Phase 1, and none of respondents of three phases were satisfied or very satisfied with NC.

With reference to 3.2% of respondents of Phase 2 feeling very dissatisfied with HESF, and 2.5% of respondents with very low level of satisfaction in HUSS of Phase 3 and another 1.1% of respondents of Phase 2 being very dissatisfied with NC as well, the habitability indices on the level of satisfaction indicated that 58.1% of respondents from Phase 1 were very dissatisfied with parking facilities that was significantly correlated with the element of HESF ( $r = .351^{**}$ ), this findings supported Mohit & Nazyddah's (2011) conclusion about Selangor State cluster, individual, and transit housing in Malaysia.

Furthermore, 22.1 % of respondents from Phase 2 revealed very low level of satisfaction with children's playground that was significantly correlated with the element of HESF ( $r = .418^{**}$ ). In addition, both 61.6% and 46.3% of respondents from Phase 1 and 3 showed low level of satisfactions with children's playground that was significantly correlated with the element of HESF ( $r = .324^{**}$  and  $.375^{**}$ , respectively), this finding supported Salleh's (2008) study about private low-cost housing projects in fast-growing state of Penang and less-developed state of Terengganu in Malaysia, and Onibokun's (1974) study of public housing projects in certain areas of Canada.

Furthermore, 19.8 % of respondents from Phase 1 perceived very low level of satisfaction with corridor that was significantly correlated with the element of HUSS ( $r = .526^{**}$ ), the finding was tended to support M.A. Mohit & Zaiton's (2012) study about satisfaction level of public housing estates in Hulhumalé being generally higher for HUSS except for cleaning services for corridors.

With respect to 18.8 % of respondents from Phase 3 with very low level of satisfaction with garbage disposal that was significantly correlated with the element of HUSS ( $r = .481^{**}$ ), the finding was tended to support M.A. Mohit & Zaiton's (2012) study about satisfaction level of public housing estates in Hulhumalé, and Onibokun's (1974) study of public housing projects in certain areas of Canada. However, the finding was tended to be contrary to Fauth, Leventhal, & Brooks-Gunn's (2004) conclusions about the 173 Black and Latino families who moved and stayed at publicly funded attached row-houses with seven middle-class neighbourhoods for almost two years gradually got more satisfied with public facilities in terms of garbage collection.

and followed by 14.7 % of respondents from Phase 2 with very low level of satisfaction with firefighting equipment that was significantly correlated with the element of HUSS ( $r = .290^{**}$ ). This finding also supported M. A. Mohit & Nazyddah's (2011) conclusion about the poor households who lived at the rented high-rise transit houses in urban areas of Selangor, Malaysia were dissatisfied with firefighting equipment.

Moreover, very low level of satisfactions were perceived by 34.9%, 32.6% and 25.0% of respondents from Phase 1, 2 and 3 with nearest general hospital that was only significantly correlated with the element of neighbourhood characteristics of Phase 2 ( $r = .388^{**}$ ), and was insignificantly correlated with neighbourhood characteristics of Phase 1 and 3 ( $r = \text{none}$ ). These findings were inclined to confirm with what Zanuzdana et al. (2013) found that the respondents living in rural areas and urban slums in Dhaka, Bangladesh were reported of dissatisfaction with spatial location characteristics of surrounding neighbourhood especially in the distance and convenience of clinic or general hospital.

In terms of resident's workplace, quietness of housing estate, and urban centre, 31.6% of respondents living in Phase 2, 29.1% of respondents of Phase 2, and 17.5% of respondents from Phase 3 showed their very low level of satisfactions with insignificant correlations with the element of NC. These findings were tended to confirm with M. A. Mohit & Nazyddah's (2011) studies about residential satisfactions in Selangor state cluster, individual, and transit housing, Onibokun's (1974) findings regarding high levels of noise and high probability of interference from neighbours generated by many large-sized households on a small piece of property mainly made the tenants feel dissatisfied, M. A. Mohit & Mahfoud's (2015) analysis of residential satisfaction in two double-storey terrace neighbourhoods – Taman Sri Rampai and Taman Keramat Permai in Greater Kuala Lumpur, Wang, Zhang, & Wu's (2015) study of the variation of intergroup neighbouring in the city of Nanjing, and Onibokun, James and E. Ibem's (2008), (2013) and (1974) findings referring to the residents were not satisfied with the location of shopping facilities to the public housing projects.

With regard to the low level of satisfactions with factors across four elements, 48.4 % of respondents from Phase 2 showed low level of satisfaction with open space that was significantly correlated with the element of HESF ( $r = .562^{**}$ ), this proposition was tended to be similar with Onibokun's (1974) findings about the tenants who lived in public housing projects in certain areas of Canada severely felt dissatisfied with the lack of open space. Furthermore, 30.0% of respondents of Phase 3 felt dissatisfied with local kindergarten with significant correlation coefficients ( $r = .279^*$ ).

Regarding the factors being correlated with HUSS element, low level of 45.3% of respondents (Phase 2)' satisfaction was perceived with their electrical & telecommunication wiring with significant positive correlation coefficient ( $r = .413^{**}$ ), followed by 32.6% of respondents of Phase 1 with low level of satisfaction with

staircases ( $r = .451^{**}$ ), and followed by 30.0% of respondents of Phase 3 with low level of satisfaction with street lighting ( $r = .439^{**}$ ), these results were inclined with M. A. Mohit & Azim's (2012) findings of residents living at public housing estates in Hulhumalé feeling dissatisfied with cleaning services for staircases and street lighting.

Relating to the factors being correlated with the element of NC, satisfaction with the convenience from their living to their workplaces indicated low habitability perceived by 52.3% of respondents of Phase 1 with insignificant correlation, followed by 47.4% of respondents of Phase 2 with low level of satisfaction with nearest bus/taxi station ( $r =$  positive), and followed by 42.5% of respondents of Phase 3 with low level of satisfaction with local police station ( $r = .266^{*}$ ), these results were tended to support M. A. Mohit & Nazyddah's (2011) findings about the respondents both living at Selangor state cluster and individual houses being dissatisfied with neighbourhood facilities by inadequacy of provision of public transport facilities, such as bus/taxi stations in cluster housing type and distance to work place in individual housing type respectively.

In terms of the factors being correlated with HUC element, 46.3% of respondents of Phase 2 were dissatisfied with toilet with significant correlation coefficient ( $r = .269^{**}$ ), followed by 30.2% of respondents of phase 1 with low level of satisfaction with kitchen ( $r = .623^{**}$ ), and followed by 23.8% of respondents of phase 3 with significant correlation coefficient ( $r = .315^{**}$ ), these findings were tended to support Kaitilla's (1993) conclusions about urban households living at public housing in West Taraka which was one of the low-income housing suburbs in the city of Lae, Papua New Guineans were severely dissatisfied with badly designed kitchen and toilet.

Furthermore, the findings were tended to be similar with M. A. Mohit & Azim's (2012) results regarding the residents living at public housing estates in Hulhumalé were slightly satisfied with physical space within the housing unit due to the factor of toilet causing low level of residential satisfaction.

In terms of those three phases of respondents' levels of satisfactions with the overall residential environment, the respondents of Phase 1 whose average residential satisfaction was 64.397% was perceived as the moderate level of satisfaction due to the proportion of respondents with moderate level of satisfaction was large (87.2%). In the meanwhile, the respondents of Phase 3 whose average residential satisfaction was 62.845% was also perceived as the moderate level of satisfaction due to the proportion of respondents with moderate level of satisfaction was quite big (77.5%).

Moreover, the results of both residential satisfaction indices (RS indices) of Phase 1 and phase 3 being highly positively correlated with HUSS satisfaction index (HUSSS index), with correlation coefficient ( $r$ ) values of .628 and .582, respectively were tended to support Paris & Kangari and Vera-Toscano & Ateca-Amestoy's (2005) and (2008) findings about the multifamily affordable housing resident satisfaction was mainly affected by the element of HUSS. Furthermore, these findings supported Berkoz et al. and Wahi et al.'s (2009) and (2012) studies about the component of HUSS had the most principally correlations with RS index of low cost housing owners residing in Kuching, Sarawak, East Malaysia.

However, the respondents of Phase 2 were dissatisfied [56.947% which was perceived as the low level of satisfaction due to the proportion of respondents with low level of satisfaction was large (87.4%)] with their overall residential environment.

Furthermore, the RS index of Phase 2 had the highest positive correlation ( $r = .422^{**}$ ) with NC satisfaction index (NCS index). In the meanwhile, the RS indices of phase 3 and Phase 1 also had the relatively high correlations with NCS index ( $r = .457^{**}$  and  $r = .554^{**}$ ). Accordingly, these results regarding the NCS index highly affecting RS index of Phase 2 and affecting RS indices of phase 3 and Phase 1 in a way confirmed what Carvalho et al., Sirgy & Cornwell, Hong, Paris & Kangari, Nam & Choi, and Cho & Lee's (1997), (2002), (2004), (2005), (2007), and (2011) found in their research works.

Furthermore, the residential satisfaction indices of Phase1, 3, and 2 had considerably higher positive correlations ( $r = .572^{**}$ ,  $.457^{**}$ , and  $.363^{**}$ , respectively) with HUC satisfaction index (HUCS index), NCS index, and HESF satisfaction index (HESFS index) than the same residential satisfaction indices having positive correlations ( $r = .554^{**}$ ,  $.449^{**}$ , and  $.352^{**}$ , respectively) with NCS index, HESFS index, and HUSSS index. These findings were tended to support Rent & Rent's (1978) study about the subjective attributes of residential environment was found to have enormously significant correlations with HUC satisfaction.

At last, the RS index of Phase 1 had a relatively lower positive correlation ( $r = .355^{**}$ ) with HESFS index, and followed by both RS indices of Phase 3 and Phase 2 having comparatively lower positive correlations ( $r = .319^{**}$  and  $.268^{**}$ , respectively) with HUCS index. These findings were contrary to Salleh's (2008) conclusion about the inhabitants' satisfaction levels of housing unit characteristics and housing unit supporting services provided by the private housing developers were found to be overall higher than the satisfaction levels of neighbourhood facilities and environment in private low-cost housing projects in fast-growing state of Penang and less-developed state of Terengganu in Malaysia.

With respect to the correlations between the respondents' individual and household socio-economic characteristics and RS indices, the longer the respondents of the Phase 2 lived, the more satisfied with residential environment that they felt [with correlation coefficient (r) value of .206]. This result was tended to support Fang, M. A. Mohit et al., and M. A. Mohit et al.'s (2006), (2010), and (2012) findings about there was a significant positive correlation of the overall satisfaction in public housing estates in Hulhumalé, in public low-cost housing estates in Sungai Bonus, and in the four redeveloped inner-city neighbourhoods in Beijing with the respondents' length of residency. However, this result was completely different from Rent & Rent's (1978) findings.

Moreover, the more choices on main means of transportation were provided to the respondents of the Phase 3, they felt more satisfied with residential environment [with correlation coefficient (r) value of .362]. On top of that, the rest of correlations between the respondents' individual and household socio-economic characteristics and RS indices throughout three phases had positive and negative correlations, but insignificant ones. These findings were tended to support many authors' propositions such as J. P. e. a. James, Fang, Kellekci & Berköz, Salleh, M. A. Mohit et al., M. A. Mohit & Nazyddah, Day, E. O. Ibem & Aduwo, Li & Wu, Zanuzdana et al., Huang & Du, M. A. Mohit & Mahfoud, and Wang et al.'s (2001), (2006), (2006), (2008), (2010), (2011), (2013), (2013), (2013), (2013), (2015), (2015), and (2015).

In terms of the correlations between the respondents' individual and household characteristics and each element index of residential environment, the respondents' ages and occupation type had positive correlations [with correlation coefficient (r) values of .272 and .234, respectively] with HESFS index of Phase1 which, on the other hand, decreased with the increases in household sizes, decreased with the promoting in

residents' occupation sector, and decreased with the increases in their incomes [with correlation coefficient (r) values of -.275, -.260, and -.230, respectively]. These findings were tended to support M. A. Mohit et al.'s (2010) study about the respondents' employment type had a positive correlation with HESF.

Moreover, NCS index of Phase 1 declines with the increases in respondents' ages [with correlation coefficient (r) value of -.227]. This finding supported M. A. Mohit et al.'s (2010) study about the respondents' age having a negative correlation with social environment characteristics of neighbourhood satisfaction. However, NCS index of Phase 3 increased with the increase in choices about the main means of transportation provided to the respondents [with correlation coefficient (r) value of .232].

Apart from this, the rest of correlations between the respondents' individual and household characteristics and each element index of residential environment throughout three phases had positive and negative correlations, but insignificant ones.

Therefore, with reference to the above mentioned results, the respondents' individual and household socio-economic characteristics such as marital status and main means of transportation were positively correlated with RS indices throughout three phases of low-cost housing. These findings were contrary to M. A. Mohit et al.'s (2010) study about the marital status of residents living at public low-cost housing in Kuala Lumpur were negatively correlated with the overall housing satisfaction.

However, the RS indices throughout three phases of low-cost housing declined with the increases in household sizes, promoting in residents' occupation sector, and increases in their incomes. These results found in this research were similar with M. A. Mohit et al., M. A. Mohit & Azim, and Zanuzdana et al.'s (2010), (2012), and (2013) findings in terms of the household size, family size and income being negatively



significantly correlated with residential satisfactions in Malaysian public low-cost housing, in Hulhumalé's public housing, and in urban slums and rural areas in Dhaka, Bangladesh

However, these results were opposite to M. A. Mohit et al., M. A. Mohit & Azim, E. O. Ibem & Amole, Zanzudana et al., and E. O. Ibem & Amole's (2010), (2012), (2013a), (2013), (2013b) and (2014) findings about the respondents' household size in Hulhumalé's public housing, the respondents' employment sector in Malaysian public low-cost housing, the 156 households' employment sector at the OGD workers' housing estate in Abeokuta, and the respondents' income in urban slums and rural areas in Dhaka, Bangladesh and in Ogun state 10 newly-built public housing estates were positively correlated with residential satisfaction. Furthermore, these results were contrary to M. A. Mohit et al. (2010) claimed that the variable of income had a nonsignificant correlation with the overall housing satisfaction

Furthermore, the RS indices of Phase 1 and 2 had negative correlations with the respondents' gender which, however, was positively correlated with residential satisfaction index of Phase 3. These findings were tended to support Dekker et al. and E. O. Ibem & Amole's (2011) and (2013a) studies about the respondents' gender being found to be significantly correlated with residential satisfaction in the OGD workers' housing estate in Abeokuta. On the contrary, these findings were completely different from McCrea et al. and M. A. Mohit et al.'s (2005) and (2010) reports that the factor of gender of respondents in urban living in Brisbane-South East Queensland and Kuala Lumpur's public low-cost housing had no correlation with residential satisfactions.

Moreover, the older the respondents of Phase 2 and 3 were, they felt more satisfied with residential environment, in contrast, the older the respondents from Phase 1 were, the less satisfied with residential environment that they felt. These results were inclined

to support Varady & Preiser, J. P. e. a. James, Dekker et al., E. O. Ibem & Amole and Balestra and Sultan's (1998), (2001), (2011), (2013a), and (2013) findings about that the age of residents who lived at scattered-site public housing, lived at three renovated buildings and lived at the OGD workers' housing estate in Abeokuta, respectively was found to be significantly correlated with their residential satisfactions. Moreover, the results came from Phase 2 and 3 were similar with Zanuzdana et al.'s (2013) findings regarding the higher age being found to be highly associated with higher satisfaction with housing in population of urban slums and rural areas in Dhaka, Bangladesh. In addition, the result of Phase 1 was tended to support M. A. Mohit et al.'s (2010) findings about the age of 102 respondents being found to be negatively correlated with the overall housing satisfaction.

What is more, the higher educated the respondents of the Phase 2 and 3 received, the less satisfied with residential environment that they felt, on the contrary, the higher educated the respondents of the Phase 1 received, they felt more satisfied with residential environment. These findings supported Dekker et al., E. O. Ibem & Amole's, and Balestra and Sultan's (2011), (2013a), and (2013) studies about the factor of educational attainment being found to be significantly correlated with residential satisfaction. Moreover, the result of Phase 1 was tended to support Zanuzdana et al.'s (2013) findings about the higher education being found to be highly associated with higher satisfaction.

In the way of respondents' occupation type, it had positive correlations with residential satisfaction indices of Phase 2 and 3, while the same respondents' attribute was negatively correlated with residential satisfaction index of Phase 1. These results were tended to support Dekker et al., E. O. Ibem & Amole, E. O. Ibem & Amole, and E. O. Ibem & Amole's (2011), (2013a), (2013b), and (2014) findings in terms of the factor

of employment type being found to be significantly correlated with residential satisfaction. Furthermore, the results of Phase 2 and 3 were inclined to support M. A. Mohit et al.'s (2010) findings about there was a positive correlation of residential satisfaction with respondents' occupation type.

In the case of floor level, the higher floor level the respondents of the Phase 2 and 3 lived on, the less satisfied with residential environment that they felt, on the other hand, the higher floor level the respondents of the Phase 1 lived on, they felt more satisfied with residential environment. The result of Phase 1 was similar with M. A. Mohit et al.'s (2010) finding about there being a positive correlation of residential satisfaction with respondents' floor level.

In addition to that, the longer the respondents of the Phase 1 and 3 lived, the less satisfied with residential environment that they felt, however, the respondents of the Phase 2 felt in completely different ways from respondents of Phase 1 and 3. These results of Phase 1, 2, and 3 were similar illustrations with Fang's (2006) findings about the factor of length of staying being found to be significantly correlated with residential satisfaction. Furthermore, the result of Phase 2 was tended to support M. A. Mohit et al. and M. A. Mohit & Azim's (2010) and (2012) findings about there was a significant positive correlation of the overall satisfaction in public housing estates in Hulhumalé and public low-cost housing estates in Sungai Bonus with the respondents' length of residency.

### **7.3 Determinants of RS in Three Phases of LCH**

With respect to those determinants from each phase, in general the separate regression on the three phases of low-cost housing drew the conclusion that the three phases of low-cost housing had the same determinants and the diverse ones to contribute each phase of residential satisfaction.

On the basis of the qualitative results came from the six participants, the five reasons as the main themes were generated and would be discussed as follows from the most concerned (low level of satisfaction and more highly correlated to residential satisfaction) to the less concerned (high level of satisfaction and less significantly correlated to residential satisfaction). Correspondingly, the following factors not only were very significant to the local government, they also obviously indicated which problems were still existences from 1<sup>st</sup> phase to 3<sup>rd</sup> phase and which problems were already improved from 1<sup>st</sup> phase to 3<sup>rd</sup> phase.

### **7.3.1 Good Social Environment and Neighbourhood Facilities**

The first theme, which was mostly concerned by all residents living at three phases of low-cost housing projects in Xuzhou, mainly talked about residents needing a good social environment and better neighbourhood facilities.

#### **7.3.1.1 Community Relationship**

With respect to the community relationship, it had a moderately impact on the Binhe Huayuan's residential satisfaction index. This result firstly was tended to support Amerigo & Aragones', Turkoglu's, Varady & Preiser's, Byrnes-Schulte et al.'s, Al-Homoud's, Cho & Lee's, and Aulia & Ismail's (1990), (1997), (1998), (2003), (2011), (2011), and (2013) studies about the more tenant involvements, more neighbourhood social interactions and more activations of participations in the community bringing along the higher residential satisfactions of planned and squatter environments in Istanbul, scattered-site public housing, middle-income housing in Medan city, Indonesia, Badia communities, and high-rise and high-density apartment complexes in Korea, respectively comparing with the improvements in physical environment of residential situations.

Secondly, back to Xuzhou's three phases of low-cost housing projects, the 5 participants gave the same answer such as residents' active involvements and no social exclusion existing. These findings almost confirmed with some achievements made by the community committee that was the first tier of government controlled by the local government in terms of increasing social cohesion within the housing areas.

Unfortunately, something missed by the local government regarding how to get the mixed communities involved together by means of regional housing planning between the commodity and low-cost housing was elaborated by Interviewee 2 and Interviewee 6 that giving an opposite answer such as residents' no participation and social exclusion existing in Phase 1 supported from p.446-459 presenting monthly income of RMB 4,000-5,999 being negatively correlated with community relationship ( $r = -.217^*$ ), and people who lived at the commodity houses (just opposite to Phase 3) looked down upon the residents living at low-cost housing and sometimes had conflicts with each other. These findings were also found in Vera-Toscano & Ateca-Amestoy's (2008) studies talking about the residents of commodity housing surrounded by public housing in Spain were less likely to feel satisfied with their commodity houses and the intensity of social interaction did not bring along higher level of individual housing satisfaction amongst residents who lived in the mixed residential environment.

Furthermore, based upon Interviewee 6's description of the residents from Phase 3 going to the opposite condominium to use their two outdoor swimming pools and receiving their rejections due to their bad manners such as not wearing swimsuits while swimming and children making a lot of noises and Interviewee 2's description of feeling excluded in Phase 1 brought by the comparatively higher income group of residents in Phase 1 not involving their activities and being dissatisfied with community relationship, this result was tended to verify Onibokun's (1974) findings about the bad

image of public housing projects which was sometimes created by the tenants or was imagined by outside residents had perpetuated a stereotyped bad image in the minds of the public and also to support HaSeongKyu's (2006) findings about residents living at public houses adjacent to non-public housing and between lower and higher income group of residents had a strong feeling of social exclusion.

Thus, from the local residents' points of views concluded by some authors, the number of residents who opposed to social mixing residence was much higher than the number of residents who supported social mixing residence (Dennis Lord & Rent, 1987; Fauth et al., 2004; Fried, 1973; Fried & Gleicher, 1961; HaSeongKyu, 2006; Kleit, 2001a).

From Xuzhou's local government's point of views, except for Phase 2 only having low-cost housing alone, the social-mixed residences (Phase 1 and Phase 3 having low-cost housing and resettlement projects as well, and both located in low-cost and commodity mixed housing neighbourhoods) could be reducing the chances of low-cost housing area turning into a slum (or another type of urban village) and simultaneously enhancing the living safety and quality of life of residents who were living at low-cost housing by means of sharing the improved regional neighbourhood facilities with commodity housing residents, and was suggested by Wenjia & Hanif's (2016) studies about social-mixed residences involved by Malaysian locals and medium-low income migrant workers at Mentari community Bandar Sunway, Selangor to improve their more mutual understandings and help each other in order to better neighbourhood cohesion and Malaysian social cohesion rather than isolating those medium-low and low income migrant workers at specific places to easily cause a foreign refugee camp.

In addition to Xuzhou's municipal government minimising the problems of social-mixed residences with the same neighbourhood to solve social exclusion, the NGOs were suggested by many authors such as HaSeongKyu (2006); (Kleit, 2001b) to enhance social inclusion by promoting low-income group of people's social capital such as social networks, norms, and social trust which were considerable important to the poor people and could be taken as an asset used by the poor people to facilitate coordination and communication for mutual understanding between low-cost and non-low-cost housing neighbourhoods.

#### **7.3.1.2 Local Crime and Accident Situation**

With regard to the local crime and accident situation, they contributed the most to predicting Chengshi Huayuan's residential satisfaction. Moreover, p.446-459 presented the factor of local crime and accident situation having significantly positive correlations with Phase 1 and Phase 2's residential satisfactions with  $r = .297^{**}$  and  $r = .414^{***}$  ( $r = .304^{**}$ ), respectively. This result initially was tended to support Weidemann and Anderson's, Bonnes et al.'s, Paris and Kangari's, Adriaanse's, and Buys & Miller's (1982), (1991), (2005), (2007), and (2012) findings about the factor of safety from crime significantly affecting residential satisfaction of multifamily affordable houses and public housing in Brisbane. Furthermore, this result also supported Hipp's (2009) finding about crime being found to have a significantly negative effect on residential satisfaction.

Unfortunately, in terms of local crime and accident situations of Xuzhou's three phases of low-cost housing projects, the majority of the six participants complained about the frequencies of crimes and accidents' occurrences were medium with very bad situations. These experiences were similar with M. A. Mohit et al.'s, M. A. Mohit & Nazyddah's, and E. O. Ibem & Aduwo's (2010), (2011), and (2013) conclusions about

the public housing respondents living at Kuala Lumpur newly design low-cost housing, living at Selangor State transit houses, and living in Ogun State expressing low level of satisfaction with residential environment due to the effects of crime situation. Moreover, these findings were also tended to support Hipp's (2009) conclusion about the social disorder having a negative correlation with neighbourhood satisfaction.

Furthermore, based upon six participants' descriptions of high and medium frequencies of local crime and accident's occurrences with bad situations that bringing along low level of neighbourhood and residential satisfaction, a lot of authors particularly McCrea et al. (2005) and Kang and Lee (2007) suggested increasing neighbourhood and residential satisfaction of residents living in the Brisbane-South East Queensland region depended more on the improvement of neighbourhood interaction especially for the older people (that was supported by the current research in which p.446-459 displayed the respondents with Age51-60 in Phase 3 having negative correlations with satisfaction of community relationship with  $r = -.274^{**}$ ) and building a sense of community connected to crime-safe environment through focusing on the relationship between neighbourhood relationships and residents' fear of crime in urban residential area in Korea.

Thus, from the three phases' residents' points of views, a professional property management team was their prioritised requirement to deal with the current happening such as bicycle stealing, burglary, car and electric bicycle accident.

Nevertheless, on account of the level of fear of crime being found by Kang and Lee (2007) to be negatively correlated with the social network reinforcement by way of interaction and participation (that was supported by the current research in which p.446-459 presented free from local crime and accident situation having significantly positive correlations with community relationship in Phase 2 with  $r = .233^*$ ,  $.230^*$ , respectively),



some authors recommended to improve the sense of community by way of increasing the reinforcements of social cohesion and social interaction amongst neighbours so as to create a crime-safe environment in urban residential area.

In addition, in terms of the design of housing estate, Kang and Lee (2007) claimed that the increasing of surveillance opportunity through the adjustments of night lighting interval to decide the visual accessibility about the habitats, the improvement of type of alley and housing layout from the street, and even the decreasing of non-housing proportion in urban residential area had significant correlations with controlling vandalism and vehicles-related crime victimisation.

In the light of the 2<sup>nd</sup> phase of low-cost housing being located at the isolated housing area comparing to Phase 1 and Phase 3 located at the mixed housing area, the residential satisfaction level of inhabitants of Phase 2 were even lower than Phase 1 and 3's in terms of lack of neighbourhood facilities and less concerns from local government. Accordingly, the low-cost and commodity housing mixed neighbourhoods were recommended to enhance the living safety and quality of life of residents who were living at low-cost housing by means of sharing the improved regional neighbourhood facilities with commodity housing residents.

Therefore, from Xuzhou's local government's point of views, two ways of enhancements that the local government was doing and would do consisted of the low-cost and commodity housing mixed neighbourhoods and professional property management teams to improve the better community relationship in three phases and to deal with the current happening such as bicycle stealing, burgling, car and electric bicycle accident so as to get the situations of crime and accident better (p.446-459 presented free from local crime situation having a significantly positive correlation with free from local accident situation in Phase 2 with  $r = .367^{**}$ ).

### 7.3.1.3 Quietness of the Housing Estate

With respect of the quietness of the housing estate, it contributed the most to predicting Binhe Huayuan's residential satisfaction. Moreover, p.446-459 presented the factor of quietness of the housing estate having significantly positive correlations with three phases' residential satisfactions with  $r = .229^*$ ,  $r = .196^*$ , and  $r = .407^{***}$ , respectively. This result at first was tended to support Bonnes et al.'s, Buys & Miller's, and M. A. Mohit & Nazyddah's (1991), (2012), and (2011) findings about the factor of noise significantly predicting the residential satisfaction of public housing in Brisbane and residential satisfaction of Selangor State transit housing. Furthermore, this result was also inclined to support M. A. Mohit & Nazyddah's, M. A. Mohit et al.'s, and E. O. Ibem & Aduwo's (2011), (2010), and (2013) findings about 50 respondents living at Selangor State transit houses showing marginally moderate level of satisfaction with social environment due to effects of noise level, and even the public housing respondents both living in Ogun State and Kuala Lumpur feeling dissatisfied with social environment characteristics of neighbourhood.

With regard to the quietness of the housing estate, the four participants from the 1<sup>st</sup> and 3<sup>rd</sup> phases believed that many noises were generated from the neighbours and from the open spaces (p.446-459 presented the factor of quietness of the housing estate having significantly positive and negative correlations with three phases' satisfactions of corridor, open space, and local shops with  $r = .260^{**}$ ,  $r = -.230^*$  &  $r = .261^{**}$ , and  $r = .236^*$ , respectively). These experiences were similar with Onibokun's, R. N. James' (1974), (2007) affirmations about small-sized tenants feeling dissatisfied with high levels of noise and high probability of interference from neighbours generated by many large-sized households and renters' satisfaction being noticeably negatively correlated with violation of space separation by noise intrusion through walls, floors, or ceilings.

Thus, regarding the current situation of low-cost housing residents who felt hopeless in terms of the issue of quietness, on one hand, the residents understood this price of housing not having sound-proofing walls and the design of public area of housing estate not being a resident-friendly, on the other hand, the residents really wanted the local government to do some improvements.

Accordingly, the local government was suggested that it should improve the quality of housing unit design at each floor to meet the standard of commodity housing that had a standard of sound insulation and afterwards should diversify each block of residents in future's projects by low-cost, resettlement, and medium-income commodity residents to build up a good environment where the diverse residents with different education backgrounds could learn from each other and improve the quietness of corridor by reducing the noises of children's playing and fighting, couple's quarrelling, and sound of television, etc.

In addition, the local government was suggested to ask each phase of property management company to redesign the public area of housing estate where the places of open space, children's playground, and local shops should be kept a certain distance to residential blocks so as to enhance the quietness from the public area of housing estate.

#### **7.3.1.4 Resident's Workplace and Nearest Bus/Taxi Station**

In regard to the satisfaction with resident's workplace having the most impact on residential satisfaction of Yangguang Huayuan, this finding was intended to support M. A. Mohit & Nazyddah's (2011) results about the increasing of residential satisfactions in Selangor state cluster, individual, and transit housing depending more on increasing the convenience of going to workplaces for residents.

Referring to the factor of resident's workplace which determined residential satisfaction, except for the two participants from the 3<sup>rd</sup> phase claimed that the distance between Binhe Huayuan and their workplaces were medium distance and it was convenient, the rest four participants complained about between their workplaces and their houses were long distances and they were not convenient. Table 5.2 presented 73.7% of respondents of Phase 2 with low and very low level of satisfaction with resident's workplace, followed by 66.3% in Phase1 and 57.5% in Phase 3.

Nevertheless, most residents might have understood their low-cost housing's locations that had a certain distance from the downtown because of three phases having a certain kind of municipal subsidies especially on the land cost. On account of most residents went to downtown for working, their basic requirements were to get to work easily by way of using public transports.

However, the current situations of their nearest bus/taxi stations were not satisfied according to Table 5.2 presenting 61.1% of respondents of Phase 2 with low and very low level of satisfaction with nearest bus/taxi station, followed by 54.6% in Phase1 and 45.1% in Phase 3. Moreover, the factor of nearest bus/taxi station contributed the most to predicting Phase 2's residential satisfaction. This result supported M. A. Mohit & Nazyddah's (2011) findings again about the respondents both living at Selangor state cluster and individual houses feeling dissatisfied with neighbourhood facilities by inadequacy of provision of public transport facilities in terms of bus/taxi station. Moreover, this result also supported Tian & Cui's (2009) findings about the residents, who lived at a public housing in Harbin, north-eastern China, being not satisfied with transport facilities.

Coincidentally, two participants from Binhe Huayuan and two participants from Chengshi Huayuan complained about the number of shuttle bus was very few especially

Chengshi Huayuan not only having a problem with the distance between the station and residential area (which was more than 1 kilometre), but there being only one shuttle bus with around 30 minutes of each shuttle and the operating hours only from 6am to 6pm.

Thus, the distance between Xuzhou's low-cost housing and residents' workplaces did not matter their satisfactions too much comparing to the nearest bus/taxi stations (public transports provided) not only mattering their satisfactions with convenience of workplaces but also deciding their satisfactions in terms of the distances between their houses and the nearest bus/taxi stations and the numbers of public buses. Accordingly, the local government should improve their concerns about how to re-plan the bus routes around Xuzhou's low-cost housing areas in order to save their time on going to work.

#### **7.3.1.5 Community Clinic, Nearest General Hospital, and Nearest School**

The satisfactions with community clinic and the nearest general hospital had the most and moderate impacts on residential satisfaction of Yangguang Huayuan. Furthermore, the residents of Yangguang and Chengshi Huayuan were simultaneously very concerned about the improvements of satisfactions with the nearest schools. These findings were tended to support Dennis Lord & Rent's and M. A. Mohit & Nazyddah's (1987) and (2011) conclusions about the increasing of residential satisfactions in those eight scattered-site public housing projects and in Selangor state cluster, individual, and transit housing depended more on the access to school and increasing numbers of the nearest school. However, these conclusions were tended to be contrary to Lovejoy, Handy, & Mokhtarian's and Al-Homoud's (2010) and (2011) findings about the factor of nearest school being not found to contribute to predicting neighbourhood satisfaction both in traditional and suburban neighbourhoods and this factor being found to moderately or less impact residential satisfaction in the village of As-Salhiyyah in the northern Badia.

Table 5.2 presented 45.3% of respondents of Phase 1, followed by 45.0% in Phase 3 and 36.8% in Phase 2 with high level of satisfaction with community clinics. However, 74.7% of respondents of Phase 2 had low and very low level of satisfactions with the nearest general hospital, followed by 74.4% in Phase 1 and 61.3% in Phase 3. In terms of the level of satisfaction with the nearest school, 38.4% of respondents of Phase 1 showed high level of satisfaction, followed by 26.3% in Phase 3 and 18.9% in Phase 2. Equally, 11.6% of respondents of Phase 2 showed very low level of satisfaction, followed by 11.3% of Phase 3 and 9.3% in Phase 1.

Moreover, the results from the interview were inclined to support those above percentages in terms of the community clinics located at these three phases having good locations and easy accesses, but the nearest general hospitals to these three phases unfortunately having long distances and they were not convenient to get there. Referring to the nearest school, the only two interviewees from Phase 2 complained about the distance between Phase 2 and the nearest school was long and it was not convenient.

On this basis, these findings were intended to support Zanuzdana et al.'s (2013) results about the respondents living in rural areas and urban slums in Dhaka, Bangladesh feeling dissatisfied with the nearest general hospital because of the distance and convenience. However, these findings regarding community clinics throughout three phases with good locations and easy accesses were tended to be contrary to Zanuzdana et al.'s (2013) conclusion about respondents' dissatisfactions with the community clinic with the same reason as their dissatisfactions of the nearest general hospital. In terms of the respondents from Phase 1 and Phase 3 giving moderate and high level of satisfactions with the nearest schools, these findings were tended to support Fauth et al.'s (2004) conclusion about those 173 Black and Latino families living at publicly funded attached row-houses in seven middle-class neighbourhoods

feeling satisfied with schools. Moreover, the reason why the two interviewees from Phase 2 with dissatisfaction of the nearest school was similar with Tian & Cui's (2009) findings about the residents, who lived at a public housing in Harbin, north-eastern China, being not satisfied with children's schools ascribed to the distance between residential area and the nearest school being long and bad transport facilities resulting in inconvenience.

Thus, the distance and convenience caused the low level of satisfactions of the general hospital and nearest school which were related with the numbers and convenience of public buses provided by the local government. In addition, the local government was suggested by low-cost residents to build at least one general hospital and one elementary, junior, and senior middle school within each phase of low-cost housing area as the way of building community clinics at each phase of low-cost housing.

#### **7.3.1.6 Local Police Station**

The satisfaction with the local police station had the moderately impact on Phase 3's residential satisfaction index. This result was tended to support M. A. Mohit & Nazyddah's (2011) findings about residential satisfactions of Selangor State cluster and transit housing depending more on distance to police station. Accordingly, except for two interviewees from Phase 3 complaining about the distance between residential area and local police station being long and not convenient, the other four interviewees from Phase 1 and 2 claimed that the distance between residential areas and local police stations being short and convenient.

Thus, the local government was suggested by low-cost residents to set up more local police stations to ensure their safety in residential areas where a lot of crimes happened due to lack of good property management having financial problems based on the characteristics of low-cost housing.

#### **7.3.1.7 Nearest Fire Station**

The satisfaction with the nearest fire station had the moderately impact on Phase 3's residential satisfaction index. Moreover, 41.0% of respondents of Phase 2 had low and very low level of satisfactions with the nearest fire station, followed by 33.8% in Phase 3 and 25.6% in Phase 1 (Table 5.2 presented). The reason why the most residents from three phases were dissatisfied with this was because all six participants complained about the distances between their houses and the fire stations were long and they were not convenient. This result was inclined to support M. A. Mohit & Nazyddah's (2011) findings about the respondents both living at Selangor state cluster and individual houses feeling dissatisfied with distance to fire station.

In addition to the fire station with long distance and inconvenience, 52.6% of respondents of Phase 2 showed low and very low level of satisfactions with the firefighting equipment, followed by 38.8% in Phase 3 and 32.6% in Phase 1 (Table 5.2 presented). Accordingly, all six participants from three phases were angry with no such a low-cost housing estate having their own firefighting equipment. This result was also tended to support M. A. Mohit & Nazyddah's (2011) findings about 50 respondents living at transit houses in urban areas being dissatisfied with firefighting equipments.

Thus, the local government should install the firefighting equipments at each phase of low-cost housing as soon as possible and ask the fire department to organise the fire drills through which all of low-cost housing residents would have increased their awareness of fire prevention.



### 7.3.2 Good Layout and Maintenance for Public Facilities

#### 7.3.2.1 Open Space

The residents of Phase 1 and 3 were much concerned about the enhancements of satisfaction with the open space. p.446-459 presented the factor of open space having significantly positive correlations with Phase 2 and Phase 3's residential satisfactions with  $r = .236^*$  and  $r = .292^{**}$ , respectively. This result was similar with Berkosz et al.'s (2009) findings about the factor of open area contributing most to predicting mass housing users' residential satisfactions in Istanbul.

Based upon Table 5.2 presenting 57.9% of respondents of Phase 2 with low and very low level of satisfactions of the open space, followed by 27.6% in Phase 3 and 22.1% in Phase 1, most participants criticised that it was not a very enough space with a bad condition. This problem was similar with what Onibokun (1974) found in public housing projects in certain areas of Canada where the tenants severely felt dissatisfied with the open space due to lack of space.

In addition, the 2<sup>nd</sup> and 3<sup>rd</sup> phases' open spaces had lighting problems and sanitation problems. Interviewee 1 and Interviewee 5 suggested that the property management company should buy some more fitness equipments and build more recreation places. Interviewee 2 complained about many noises came from the open space (p.446-459 presented the factor of open space having significantly positive and negative correlations with quietness of housing estate and residents living on the 1<sup>st</sup> Floor in Phase 3 and Phase 1 with  $r = .261^{**}$  and  $r = -.272^{**}$ , respectively). Interviewee 3 complained about so much space was occupied by the local shops (p.446-459 presented the factor of open space having a significantly positive correlation with local shops in Phase 2 with  $r = .232^{**}$ ).

Thus, the local government was suggested by local low-cost residents that should ask the property management company to provide some more fitness equipments and to build more recreation places. Moreover, the lighting and sanitation problems should be fixed as soon as possible especially the lighting problem caused a lot of safety issues in terms of accidents and bicycles stolen.

With respect to the quietness of housing estate in terms of the open space, the residents living on the 1<sup>st</sup> Floor at Phase 1 were dissatisfied with the open space, because many noises came from the open space disturbed the residents who lived on the lower levels of floors. Accordingly, the layout of open space would be redesigned, for example, the activities area should be far away from the residential area. In terms of Phase 2, the local shops should be separated from the open space so as to reduce a lot of noises from local shops.

#### **7.3.2.2 Children's Playground**

The factor of children's playground was one of key predictors to significantly determine the residential satisfactions of Phase 2 and 3. This result was tended to support Salleh's (2008) finding about the factor of children playgrounds determining the level of residential satisfaction of inhabitants living at private low-cost housing projects in fast-growing state of Penang and less-developed state of Terengganu in Malaysia.

Based upon 74.4% of respondents of Phase 1 having low and very low level of satisfactions of children's playground, followed by 66.3% in Phase 2 and 62.6% in Phase 3 (Table 5.2 displayed), all participants complained about the very limited space. This result was similar with what Onibokun (1974) found that the tenants who lived at public housing projects in certain areas of Canada severely felt dissatisfied with the children's playgrounds because of lack of space.

Most of them especially from the 2<sup>nd</sup> and 3<sup>rd</sup> phases complained about the bad condition and location, for example, Interviewee 2 said that the children's playground had conflicts with the perimeter road (P.446-459 presented the factor of children's playground having significantly positive correlations with perimeter road in Phase 1 and 3 with  $r = .270^{**}$  and  $r = .221^*$ , respectively). Moreover, Interviewee 3 said that the children's playground was occupied by the parking facilities (P.446-459 presented the factor of children's playground having a significantly positive correlation with parking facilities in Phase 2 with  $r = .238^*$ ). Interviewee 5 said that one block's garbage collection spot was at the children's playground (P.446-459 presented the factor of children's playground having a significantly positive correlation with Garbage disposal in Phase 3 with  $r = .452^{***}$ ). In addition, the 2<sup>nd</sup> and 3<sup>rd</sup> phases both had lighting and sanitation problems (P.446-459 presented the factor of children's playground having a significantly positive correlation with street lighting in Phase 3 with  $r = .298^{**}$ ).

Thus, the local government was suggested by local low-cost residents that should ask the property management company to redesign the location of children's playground due to it had conflicts with the perimeter road in Phase 1, was occupied by the parking facilities in Phase 2, and was affected by one block's garbage collection spot in Phase 3. In addition, the local government should ask the property management company to fix the lighting and sanitation problems in Phase 2 and 3 as quickly as they could, because the lighting problem caused a lot of safety issues regarding when the children were playing during the night and the sanitation problem caused a lot of children's health issues.

### 7.3.2.3 Parking Facilities

The satisfaction with parking facilities had the moderately impact on Yangguang Huayuan's residential satisfaction. This result was tended to support M. A. Mohit & Nazyddah's (2011) findings about the satisfaction with parking facilities contributing moderately to predicting residential satisfactions of Selangor State cluster, individual, and transit housing. On the contrary, the result was opposite to Lovejoy et al.'s (2010) findings about parking being not found to contribute to predicting neighbourhood satisfaction both in traditional and suburban neighbourhoods.

Based upon 69.7% of respondents of Phase 1 having low and very low level of satisfactions of parking facilities, followed by 58.9% in Phase 2 and 53.8% in Phase 3 (Table 5.2 displayed), the four participants from the 1<sup>st</sup> and 2<sup>nd</sup> phases complained that the parking areas were very limited with bad and chaotic conditions and also had sanitation problems, for example, Interviewee 1, Interviewee 2 and Interviewee 3 said that there had no car parking space. Furthermore, Interviewee 3 and Interviewee 4 said that there had many lighting problems in Phase 2 (P.446-459 presented the factor of parking facilities having a significantly positive correlation with street lighting in Phase 2 with  $r = .249^{**}$ ) and the location of parking area had conflicts with children's playground and fitness equipment in Phase 2 (P.446-459 presented the factor of parking facilities having significantly positive correlations with children's playground and fitness equipment in Phase 2 with  $r = .238^*$  and  $r = .247^{**}$ , respectively).

With comparison to Phase 3 had a good car park environment with enough space, good condition, and a clean area, the local government should ask the property management company to plan an area only for car park in Phase 1 and 2 which would not occupy the places of children's playground and fitness equipment especially in Phase 2. Hence, the residents' cars would be arranged systematically for parking at

Phase 1 and 2 to deal with the current chaotic conditions. Additionally, to keep car parking area's cleanness was also very necessary for the residents. Besides, the lighting problems in the currently mixed bicycle & car parking area of Phase 2 would be dealt as soon as possible to reduce the risk of bicycle and auto thefts.

#### **7.3.2.4 Local Shops**

The residents of three phases simultaneously raised one fact that to improve satisfaction of local shops may enhance their residential satisfactions (P.446-459 presented the factor of local shops having significantly positive correlations with all three phases' residential satisfactions with  $r = .184^*$ ,  $r = .255^{**}$ , and  $r = .278^{**}$  respectively). This result was tended to support Onibokun's (1974) finding about the satisfaction with location and quality of shopping facilities around the housing area contributing to predicting residential satisfaction of the tenants who lived in public housing projects in certain areas of Canada.

Although the numbers of shops were sufficient, the certain numbers of residents came from Phase 2 and 3 had low and very low level of satisfactions with local shops (Table 5.2 showed 39% of respondents in Phase 2 and 26.3% of respondents in Phase 3 with low and very low level of satisfactions), because they thought that the local shops in Phase 2 and 3 had some problems with locations, for example, Interviewee 3 said that the locations of local shops in Phase 2 had conflicts with the open space (P.446-459 showed the factor of local shops having a significantly positive correlation with Phase 2's open space with  $r = .232^*$ ). In addition, Interviewee 5 said that some shops located at the first floor of the first row of the houses in Phase 3 disturbed residents (P.446-459 showed the factor of local shops having a significantly positive correlation with quietness of housing estate with  $r = .236^*$ ).

Consequently, the local government would ask the property management company to relocate those local shops located at Phase 2 which occupied some places of public area and affected those residents' spaces of playing. Additionally, the property management company would relocate some shops located at the first floor of the first row of houses in Phase 3 so as to reduce many noises generated by those shoppers to keep quiet environment as much as they could.

#### **7.3.2.5 Local Kindergarten**

Xuzhou's local authority should pay very attention to enhancing residents' satisfaction with local kindergarten that was the common determinants to improving residential satisfactions of Phase 2 and 3 (P.446-459 presented the factor of local kindergarten having significantly positive correlations with Phase 2 and 3's residential satisfactions with  $r = .249^{**}$  and  $r = .261^{**}$ , respectively). This result was inclined to support M. A. Mohit & Azim's (2012) findings about the factor of kindergarten as a predictor variable determining the residential satisfaction in public housing in Hulhumalé.

Based upon Table 5.2 presenting 39.5% of respondents in Phase 1 having high level of satisfaction with local kindergarten followed by 36.3% in Phase 3 and 11.6% in Phase 2, all six interviewees shared almost same conclusions regarding the normal numbers with normal conditions and normal locations and all local kindergartens were clean.

Contrarily, in spite of the numbers, conditions, locations, and cleanness of local kindergartens being at normal level, 47.4% of respondents in Phase 2 having low level of satisfaction with local kindergarten followed by 30.0% in Phase 3 and 24.4% in Phase 1 still worried about the teaching quality in those local kindergartens as other elementary, junior and senior middle schools not having good teaching qualities due to

those good teachers were not willing to come to those low-income residential areas for teaching and they were willing to go to schools with higher reputation and get higher payment.

Although the low-cost and commodity mixed housing neighbourhoods designed by Xuzhou's local authority aimed at bringing along low-cost housing residents to share commodity housing's neighbourhood facilities (except for Phase 2 which was isolated from the commodity housing area, therefore, the overall residential satisfaction of Phase 2 was shown low level) especially the education in terms of good schools with high qualified teachers, as a matter of fact, the medium-high and high-income groups of residents did not really want their children to study with other children came from the low-cost housing, because most low-cost households did not pay very attention to their children's education and they were busy with their works.

As a result, those renowned schools were in need of certain numbers of students to make profits so as to attract more and more high qualified teachers. In another way, those renowned schools increased their tuition fees to attract those high qualified teachers to come over here to teach. Sadly, those low-income households could not afford to pay these high tuition fees to get their children into these better kindergartens, elementary school, junior, and senior middle schools equipped with better teachers and better teaching facilities.

To solve this kind of problem, the local government was suggested to set aside a special fund for those low-income households' children education consisted of education allowances for those better full-day schools and better extra-curricular tutorial classes (non-governmental training organisations) in order to improve their overall education levels.

### **7.3.3 Good Maintenance for Housing Unit**

#### **7.3.3.1 Drain and Electrical & Telecommunication wiring**

The satisfactions with drain and electrical & telecommunication wiring had the most impacts on residential satisfactions of Phase 1 and Phase 3, respectively (P.446-459 showed the factor of drain having significantly positive correlations with Phase 1 and 3's residential satisfactions with  $r = .331^{***}$  and  $r = .207^*$ , respectively, and the factor of electrical & telecommunication wiring had significantly positive correlations with Phase 1, 2, and 3's residential satisfactions with  $r = .378^{***}$ ,  $r = .279^{**}$ , and  $r = .400^{***}$ ). These results were tended to support M. A. Mohit & Nazyddah's (2011) findings about the satisfaction with cleanliness of drains contributing moderately to predicting residential satisfactions of Selangor State cluster, individual, and transit housing and also supported Zanuzdana et al.'s (2013) findings about the electricity contributing most to predicting residential satisfaction of urban slums and rural areas in Dhaka, Bangladesh. However, these results were tended to be contrary to Eziyi Offia Ibem et al.'s (2013) findings about the electricity not having much more significant correlation with the level of satisfaction of residents living at nine previously-built public housing estates in Ogun State, Nigeria.

With respect to the views given by those participants, the three participants from the 1<sup>st</sup> and 2<sup>nd</sup> phases thought that when they moved into their new houses, the drain system was not good and the maintenance was also bad particularly Interviewee 2 reported that his house's drain system had problems very frequently. These comments on the drain were inclined to support M. A. Mohit & Nazyddah's (2011) findings about the 50 respondents living at transit houses in urban areas feeling dissatisfied with cleanliness of drains and were also tended to support E. Ibem's (2013) findings about residents living at nine newly constructed public housing estates between 2003 and 2010 in urban centres in Ogun State believing their drainage system being very poor.



Comparing to the drain, the five interviewees thought that they had a normal condition of electrical & telecommunication wiring with a normal maintenance. However, this result was tended to be contrary to E. Ibe's (2013) findings about residents living at nine newly constructed public housing estates in urban centres in Ogun State feeling dissatisfied with electricity in their housing.

On the basis of the quality of low-cost housing was not relatively higher comparing to the quality of commodity housing, most residents required local government to improve the work efficiency of property management company in doing maintenance work and repairs for cleaning drains and redoing electrical wiring layout to give some more electrical sockets to fulfil their needs.

#### **7.3.3.2 Staircases, Corridor, and Garbage Disposal**

The satisfactions with staircases contributed the most to predicting Phase 2's residential satisfaction (P.446-459 showed the factor of staircases having a significantly positive correlation with Phase 2's residential satisfaction with  $r = .215^*$ ). Moreover, the residents of three phases simultaneously raised one fact that to improve satisfaction with corridor could enhance residential satisfactions of three phases (P.446-459 presented the factor of corridor having significantly positive correlations with Phase 1 and 3's residential satisfactions with  $r = .314^{**}$  and  $r = .374^{***}$ , respectively). These findings were tended to support M. A. Mohit & Azim's (2012) results about cleaning services for corridors and staircases moderately determining resident satisfaction of public housing estates in Hulhumalé.

On the basis of Table 5.2 showing 48.9% of respondents from Phase 1 having low and very low level of satisfactions with staircases followed by 46.3% in Phase 3 and 42.1% in Phase 2, all six participants complained that their staircases were quite narrow or just enough space for using and were unclean. Except for the 1<sup>st</sup> phase having a good

lighting in staircases, the 2<sup>nd</sup> and 3<sup>rd</sup> phases had no lighting at all in their staircases. Interviewee 1 gave a special comment on staircases in which different numbers of stairs were in different floor levels and different stairs had different heights. Interviewee 6 also gave a similar comment like that each staircase was very high for her.

As a matter of course, the local government should have checked low-cost housing's quality when it just completed construction and was ready to be introduced to low-income housing market. Currently, the local government would ask their local property management companies to re-measure the numbers and heights of staircases in order to make sure that the numbers of stairs would be the same in all floor levels and each staircase would have the same height with a limit height. Moreover, the property management companies of Phase 2 and 3 should learn from Phase 1 to install timers for lights so as to enhance their safeties during the night. In addition, the uncleanness of staircases making all of three phases' residents' headache must be fixed as soon as possible. The property management companies would ask their janitors to increase the frequencies of cleaning. Finally, to increase the space of staircases throughout three phases would not easily change its physical design, but should easily clear up all occupied residents' leftovers to increase current space.

On the basis of 52.6% of respondents from Phase 2 having low and very low level of satisfactions with corridor followed by 36.6% in Phase 3 (4.17 presented), the corridor had a similar result given by those six interviewees especially Interviewee 1 and Interviewee 5 complained about the corridor was quite noisy (P.446-459 presented the factor of corridor having a significantly positive correlation with quietness of housing estate in Phase 1 with  $r = .260^*$ ) and Interviewee 6 complained about the corridor was affected by the big smell from the garbage sometimes (P.446-459 presented the factor of

corridor having a significantly positive correlation with garbage disposal in Phase 3 with  $r = .236^*$ ).

In terms of the factor of garbage disposal, the satisfaction with the garbage disposal had less impact on Yangguang Huayuan's residential satisfaction (P.446-459 presented the factor of garbage disposal having significantly positive correlations with Phase 1 and 3's residential satisfactions with  $r = .341^{***}$  and  $r = .326^{**}$ , respectively). This result was inclined to support Mohit & Nazyddah's (2011) findings about the moderate beta coefficient of the model predicting that cleanliness of garbage house and garbage collection were the minor predictor variables of residential satisfactions in Selangor State individual, cluster, and transit housing. However, this result was tended to be contrary to Mohit et al.'s (2010) findings about the high beta coefficient of the model predicting that cleanliness of garbage house and garbage collection were the major predictor variables of residential satisfaction of public low-cost housing in Kuala Lumpur.

On the basis of Table 5.2 showing 38.4% of respondents in Phase 1 having low and very low levels of satisfactions with garbage disposal followed by 36.3% in Phase 3 and 33.7% in Phase 2, the five interviewees gave the same conclusion such as timely collection and did not clean thoroughly especially the 3<sup>rd</sup> phase. Interviewee 5 and Interviewee 6 both from the 3<sup>rd</sup> phase gave their comments that a garbage can was put at the children's playground (P.446-459 presented the factor of garbage disposal having a significantly positive correlation with Phase 3's children's playground with  $r = .452^{***}$ ) and the big smell from the garbage affected the corridor (P.446-459 presented the factor of garbage disposal having a significantly positive correlation with Phase 3's corridor with  $r = .236^*$ ).

Accordingly, the above mentioned dissatisfactions with staircases, corridors, and garbage disposal found in this study were tended to support M. A. Mohit & Azim's (2012) findings about the residents living at public housing estates in Hulhumalé feeling dissatisfied with cleaning services for corridors and staircases and garbage collection.

The property management companies would strongly suggest all of residents not to play at the corridors especially their children to reduce their noises that disturbed some neighbours' lunch breaks. In addition, the spot of garbage collection which was normally located in front of each block was believed to be quite near to the corridor and the first and second floors of some units. Thus, it brought along some bad smell to the corridor and some units especially during summer due to most garbage cans were not covered and were not cleaned thoroughly and those extra rubbishes were thrown out of garbage cans. Moreover, one garbage can was put at Phase 3's children's playground to make the whole place smelly and make the children find other places for fun.

In spite of timely collection of rubbish from garbage collection spots, the property management companies should make a covered garbage house (regarding all of garbage collection spots not being covered and even most garbage cans not being covered and not cleaned thoroughly and those extra rubbishes being thrown out of garbage cans) on the side of each block (not in front of each block) to prevent the bad smell coming into the corridor and some units.

#### **7.3.4 Good Structure Design for Housing Unit**

##### **7.3.4.1 Living Room, Dining Area, Bedroom, Toilet, and Drying Area**

The satisfaction with living room moderately contributed to predicting Phase 3's residential satisfaction. Moreover, the satisfaction with dining area had the most impact on Phase 1's residential satisfaction (P.446-459 showed the factor of dining area having a significantly positive correlation with Phase 1's residential satisfaction with  $r =$

.374<sup>\*\*\*</sup>). This result was tended to support Mohit et al.'s (2010) findings about the high beta coefficient of the model highlighting the necessity of exploring residential satisfaction in dining space. However, this result was contrary to M. A. Mohit & Azim's (2012) findings about the moderate beta coefficient of the model highlighting the necessity of exploring residential satisfaction in dining space.

With regard to the residents of Phase 1 and 2 being simultaneously very concerned about the improvements of satisfactions with bedroom (P.446-459 showed the factor of bedroom having significantly positive correlations with Phase 1 and 2's residential satisfactions with  $r = .527^{***}$ ,  $r = .180^*$ , respectively), these findings were tended to support Paris & Kangari's (2005) results examined from a group of 5,170 rented multifamily units from 1997 to 2005 revealing that renters' satisfaction improvements were correlated with bedrooms. Furthermore, these findings were also inclined to support Mohit et al.'s and M. A. Mohit & M. Azim's (2010) and (2012) conclusions about the high and moderate beta coefficients of the models highlighting the necessities of exploring residential satisfactions in specific housing units characteristics including bedroom-1 and bedroom-3. What's more, these findings also support E. O. Ibem & Amole's (2013a) results about providing more numbers of bedrooms in the housing units so as to improve residential satisfaction in the OGD Workers' housing estate in Abeokuta, Ogun State, Nigeria.

In spite of the factor of toilet being none of any predictors in three phases, it was a critical factor to determine three phases' residential satisfactions. This finding was tended to support Zanuzdana et al.'s (2013) conclusions about satisfaction with toilet contributing to predicting residential satisfaction of urban slums and rural areas in Dhaka, Bangladesh.

Regarding satisfaction with drying area contributing the most to predicting Phase 2's residential satisfaction to support Mohit et al.'s and M. A. Mohit & M. Azim's (2010) and (2012) findings about the factor of dry area, the four interviewees from the 1<sup>st</sup> and 3<sup>rd</sup> phases believed that the drying area had an appropriate size with good ventilation and with a good lighting. At same time, Table 5.2 also gave a similar answer saying 54.7% of respondents from Phase 2 having a moderate level of satisfaction with drying area followed by 47.7% in Phase 1 and 43.8% in Phase 3. These findings were tended to support M. A. Mohit & Azim's (2012) conclusions about residents living at public housing estates in Hulhumalé being slightly satisfied with size and condition of washing and drying area.

In regard to 36.9% of respondents from Phase 2 having low and very low levels of satisfactions with living room followed by 30.1% in Phase 3 and 26.8% in Phase 1 and 47.4% of respondents from Phase 2 having low and very low levels of satisfactions with dining area followed by 27.9% in Phase 1 and 27.6% in Phase 3 (Table 5.2 displayed), these results were tended to support Kaitilla's (1993) findings about urban households living at public housing in West Taraka which was one of the low-income housing suburbs in the city of Lae, Papua New Guineans being severely dissatisfied with their living/dining areas.

In terms of dissatisfaction with living room, all six participants preferred the size of living room over the location. Regarding the dining area, the four participants from the 2<sup>nd</sup> and 3<sup>rd</sup> phases thought that the size of their dining areas were small. On the basis of 26.3% of respondents from Phase 3 having low and very low levels of satisfactions with bedroom followed by 25.2% in Phase 2 and 24.4% in Phase 1 (Table 5.2 displayed), the five participants thought that their bedroom size was slightly smaller than their master bedroom. With respect to the results of 64.2% of respondents from Phase 2 having low

and very low levels of satisfactions with toilet followed by 38.8% in Phase 3 and 34.9% in Phase 1 (Table 5.2 displayed) being similar with Kaitilla's and M. A. Mohit & Azim's (1993) and (2012) findings about urban households living at public housing in West Taraka in the city of Lae, Papua New Guineans and residents living at public housing estates in Hulhumalé being severely dissatisfied with toilet, three participants amongst five from the 1<sup>st</sup> and 2<sup>nd</sup> phases complained about their toilets had a very small size.

Regarding the size of housing unit, these above results found in this study supported Galster's (1985) findings about interior condition and room size being given the high priority to improving households' residential satisfaction. These were also tended to support Fang's (2006) finding about the size of housing unit being also found to be significantly correlated with residential satisfaction in Beijing. Moreover, these were in line with Eziiyi Offia Ibem et al.'s, E. O. Ibem & Amole's, and E. O. Ibem & Amole's (2013), (2013b), and (2014) findings about the increasing of subjective life satisfaction in 10 newly-constructed public houses in Ogun state and the improving of performance of the buildings in meeting residents' needs and expectations in nine previously-built public housing also in Ogun state, Nigeria depending more on the enlarging the size of main activity areas in housing unit characteristics.

With respect to those dissatisfactions with the size of living room, dining area, bedroom, and toilet, these were generally confirmed with Kaitilla's (1993) findings about urban households living at public housing in West Taraka in the city of Lae, Papua New Guineans feeling severely dissatisfied with sizes of houses. In particular, these results supported M. A. Mohit et al.'s, M. A. Mohit & Nazyddah's, M. A. Mohit & Azim's, and E. O. Ibem & Aduwo's (2010), (2011), (2012), and (2013) findings about satisfaction with size of living room in the residences as a predictor variable

contributing most to predicting residential satisfaction of public housing. Moreover, it was also tended to support Eziyi Offia Ibem et al.'s (2013) findings about satisfactions with size of living room and sleeping area being significantly correlated with the level of satisfaction of residents living at nine previously-built public housing estates in Ogun State, Nigeria.

With respect to three participants from Phase 1 and 2 thinking of the locations of their living rooms being not proper, Interviewee 2 thought that the living room should be separated from the dining area (P.446-459 presented the factor of living room having a significantly positive correlation with Phase 1's dining area with  $r = .664^{***}$ ). Moreover, Interviewee 3 from Phase 2 thought that the living room should be separated from the kitchen. Similarly, the five participants from three phases thought that the locations of their dining areas were also not proper, for instance, Interviewee 3 also suggested that the dining area should be separated from the kitchen (P.446-459 showed the factor of dining area having a significantly positive correlation with Phase 2's kitchen with  $r = .221^*$ ). Furthermore, Interviewee 5 from 3<sup>rd</sup> phase complained about his dining area being badly very closer to the toilet. With the exception of the 3<sup>rd</sup> phase, the four interviewees considered that their bedroom had a bad location. The three participants from the 2<sup>nd</sup> and 3<sup>rd</sup> phases amongst four complained about the locations of toilets. These findings were inclined with Onibokun's (1974) conclusion about the location of the different rooms contributing most to predicting residential satisfaction of public housing projects in certain areas of Canada. Simultaneously, the results of dissatisfactions with living room, dining area, bedroom, and toilet's locations explained Kaitilla's and Tian & Cui's (1993) and (2009) findings about urban households living at public housing in West Taraka, the city of Lae, Papua New Guineans and living at a public housing in Harbin, north-eastern China both being severely dissatisfied with their houses' poorly layout.



In addition, the four interviewees from three phases thought that their living rooms and dining areas did not have good ventilations. At the same time, the five interviewees thought that their bedroom was not well ventilated particularly Interviewee 4 gave a specific detail regarding his bedroom with a western exposure was cold in winter and hot in summer and his furniture in bedroom went mouldy. The four participants said that there was no ventilation in their toilets as well. These results were tended to support Turkoglu's (1997) finding about housing ventilation affecting the level of residential satisfaction of planned and squatter environments in Istanbul. Furthermore, these results also supported Tian & Cui's (2009) findings about urban households living at a public housing in Harbin, north-eastern China being not satisfied with their houses' heat ventilation.

Furthermore, the three interviewees from Phase 2 and 3 complained about their living rooms and dining areas having bad lightings. In the meanwhile, the four interviewees from the 1<sup>st</sup> and 2<sup>nd</sup> phases had the same problem of lighting in bedroom. The four participants said that there had a bad lighting in their toilets as well. These results supported Tian & Cui's (2009) findings about urban households living at a public housing in Harbin, north-eastern China being not satisfied with their houses' lighting.

On the basis of Mohit et al.'s, Mohit and Nazyddah's, and M. A. Mohit & M. Azim's (2010), (2011), and (2012) findings regarding the high and moderate beta coefficients of the models highlighting the necessities of exploring residential satisfactions in specific housing units characteristics particularly socket points, the four participants from three phases thought the numbers of power sockets in their living rooms were just enough for using and at the same time the numbers of power sockets in their dining areas were fewer. Similarly, the half interviewees found that the power sockets in bedroom were

very few. They also complained about the fewer power sockets especially Interviewee 4 said the 1<sup>st</sup> floor house had the worst toilet. On the contrary, the two interviewees from the 3<sup>rd</sup> phase complained about no power socket in their drying areas. These results were tended to support M. A. Mohit & Azim's (2012) findings about residents living at public housing estates in Hulhumalé being dissatisfied with number of electrical sockets.

Therefore, Wong & Siu's (2002) findings regarding Guangzhou's and Beijing's studies explained the reasons why those above results regarding lower satisfaction level of housing unit characteristics found in this current study brought by Chinese money and carelessness-motivated private developers, who were almost same as Malaysian private developers, did badly in the insufficient lighting, and ventilation of housing units.

Accordingly, E. O. Ibem & Amole's (2013a) conclusions about to improve residential satisfaction in the OGD Workers' housing estate in Abeokuta, Ogun State, Nigeria by way of providing good housing structure design in the housing units strongly suggested Xuzhou's local government to pay very attention to the housing design and layout in terms of the sizes, locations, ventilation, and lighting of rooms. In addition, the local residents required their property management companies to add some more useful devices such as electrical sockets to improve the conveniences in their daily life.

#### **7.3.5 More Commoditized LCH**

With respect to the factor of floor level being significant to the residents of Phase 1 and 3 at the same time, this finding supported M. A. Mohit et al.'s (2010) conclusion about there being a positive correlation of overall residential satisfaction with respondents' floor level.

In terms of the residents of Phase 1 who lived on the 5<sup>th</sup> floor were more satisfied than those who lived on the 2<sup>nd</sup> floor, the four participants had the same opinion, i.e. all floors were almost same except for people's lower residential satisfactions in living on the top and the first floors because the top floor was very cold during winter and was very hot during summer and the lower floor was affected by the smelling of garbage and crowd noise explained by Interviewee 2 from Phase 1 (P.446-459 showed the factor of 1<sup>st</sup> floor having a significantly negative correlation with Phase 1's open space with  $r = -.272^{**}$ ).

In terms of the residents of Phase 3 who lived on the 3<sup>rd</sup> floor were more satisfied, Interviewee 5 from Phase 3 explained that residents living on the middle floors were more satisfied, such as 3<sup>rd</sup> floor and 4<sup>th</sup> floor and Interviewee 6 agreed and preferred to choose 3<sup>rd</sup> floor because the 3<sup>rd</sup> floor was not high and stayed away from disgusting smell of garbage and very few numbers of mosquitoes and flies were around.

On the contrary, Interviewee 1 from Phase 1 explained that the higher floor level was far away from the noise and also was clean. At the same time, Interviewee 3 from Phase 2 held a different opinion such as all floors were almost same.

The predictor of occupation type (Others vs. Management & Professional) negatively determining the Phase 1's inhabitants' residential satisfaction explained that the small group of residents of Phase 1 whose occupation type with management & professional turned to be less satisfied than those whose occupation type with others such as some jobs paid by daily-settlement (no fixed contract), retired, and laid-off/unemployed. This finding was tended to support Dekker et al.'s, E. O. Ibem & Amole's (2011), (2013a) and (2013b), and (2014) conclusions about respondents' employment being found to be a predictor contributing to foretelling the residential satisfaction in the OGD workers' housing estate in Abeokuta and subjective life satisfaction in public houses. However,

this finding was tended to be contrary to M. A. Mohit et al.'s (2010) conclusion about there being a positive correlation of residential satisfaction with respondents' employment type.

On the basis of Zanuzdana et al.'s and E. O. Ibem & Amole's (2013) and (2013b) findings about the factor of income being found to be a predictor to contribute most to predicting residents' satisfaction with life in Ogun State 10 newly-built public housing estates in specific individual and household characteristics and satisfaction with housing in population of urban slums and rural areas in Dhaka, Bangladesh and Posthumus, Bolt, & van Kempen's (2014) findings about the factor of income having a negatively significant correlation with residential satisfaction, the reason why there were three interviewees from Yangguang and Binhe Huayuan sharing the same view of "the higher position of occupation with the lower satisfaction" (Table 5.3 presented the factor of income having negative correlations with three phases' residential satisfactions) was that the income level of residents with occupation type of management & professional made them ask for more from the existing low-cost housing comparing to the income level of residents with occupation type of others. However, these findings were tended to be contrary to M. A. Mohit et al.'s (2010) conclusions about the variable of income having a nonsignificant correlation with the overall housing satisfaction. Nevertheless, M. A. Mohit et al.'s (2010) conclusions were similar with the current findings regarding three interviewees from Phase 2 and 3 having a same view of "almost same" which meant that some certain numbers of local habitants' levels of residential satisfactions had nothing relationship with the factors of occupation type and income.

However, the main characteristics of low-cost housing which were far different from commodity housing's were to fulfil the very basic needs of medium-low and low income group of residents. Nevertheless, in fact, those low-cost housing residents

considered their houses as commodity housing because they expected to sell their properties for buying another real commodity houses after being allowed to purchase their rest of home ownerships.

In this vein, the housing ownership was mostly concerned by local low-cost housing residents because on one hand they would have a full homeownership of housing, on the other hand, they would have a legal right to deal with their low-cost housing such as to rent or to deposit or to sale.

The fact of the matter was that the factor of housing ownership should be a determinant which on some level must have contributed to predicting three phases' residential satisfactions. However, technically speaking, it was meaningless to put this independent variable of homeownership into the SPSS calculation because the answer given by local residents would be the same as "no completed homeownership yet", instead, it would increase its collinearity to damage the result.

Regarding this, Chinese low-cost housing had its special characteristics with "partial homeownership" which was totally different from some countries, such as Gur and Dostoglu (2011); (Paris, 2006; Paris & Kangari, 2005; Y. P. Wang & Murie, 2011) literally described their affordable housing as a commodity housing which provided full ownerships to medium and medium-low income groups of customers.

Therefore, the result of homeownership as a predictor was tended to support Rent & Rent's, Lane & Kinsey's, and Grinstein-Weiss et al.'s (1978), (1980) and (2011) findings about promoting homeownership amongst low- and moderate-income households to improve their levels of residential satisfaction in low-income housing estates.

Moreover, this result also supported McCrea et al.'s and Vera-Toscano & Ateca-Amestoy's (2005) and (2008) findings about satisfaction with home ownership as an essential predictor variable contributed most to predicting satisfaction of housing in the Brisbane-South East Queensland region and inhabitants' residential satisfaction in those areas mixed with commodity and public houses.

Furthermore, this result also supported E. O. Ibem & Amole's (2013b) and (2014) findings about the high beta coefficient of the model highlighting the essential of exploring the subjective life satisfaction of residents of public housing in Ogun State urban areas in Nigeria in specific individual and household characteristics such as respondents' tenure status.

In spite of the whole current low-cost housing projects in Xuzhou being not allowed the residents to buy the rest of homeownerships, the four participants amongst three phases took this issue very seriously because most residents like them wanted to purchase the next commodity housing using the current house ownership.

Thus, the higher satisfaction with homeownership was presumed to bring along their higher levels of residential satisfaction in Xuzhou's three phases of low-cost housing and they were obviously dissatisfied with the current status of their housing tenure.

These findings were inclined to support M. A. Mohit & Azim's (2012) conclusions about the type of tenure having a significantly positive correlation with residential satisfaction in public housing estates in Hulhumalé. These findings were proved to be mostly similar with Hu's and Zanuzdana et al.'s (2013) and (2013) conclusions about the homeownership status in urban China and in rural Dhaka, Bangladesh having greatly positive correlations with both resident's housing satisfaction and overall happiness. These current findings also found out a same result with Hu's (2013)

conclusions about the existing residents at low-cost housing in urban China paying very close attention to when and how they could buy their full homeownership.

On the contrary, some local residents did not consider the issue of low-cost housing's homeownership as a top problem comparing to other problems which they were currently facing with, such as Interviewee 3 from Phase 2 showing a different view, i.e. the homeownership was important, but not so important and Interviewee 6 from Phase 3 did not care so much about it comparing to other satisfactions of neighbourhood characteristics, housing estate supporting facilities, housing unit supporting services, and housing unit characteristics.

Thus, despite having a partial homeownership or a full homeownership after 5 or 10 years' purchasing, their current or future concerns were more about that the low-cost housing should be physically constructed or improved as the procedure of commodity housing's construction in order to satisfy those local medium-low income households because some certain numbers of them would not have capabilities of buying their next commodity houses in the near future. They had to rely more on their current residential environment rather than thinking of moving out.

Therefore, these findings were tended to support Chen et al.'s (2013) conclusions about a higher proportion of low-income group in Dalian, China not only being less satisfied with their lower rate of homeownership, but they also being less satisfied with their residential environments in terms of less liveable neighbourhoods and smaller housing spaces.

In addition, another two more issues to which should be paid more attention by local authority talked about residential disparities between lower and relatively higher income groups either within the same low-cost housing area mixed by low-cost housing and

resettlement housing or within the same community mixed by low-cost (medium-low income) housing and commodity housing, for instance, except for Phase 2 being alone, Phase 1 and 3 were mixed residences, such as Interviewee 2 complained that the social exclusion existed in Phase 1 between residents with comparatively higher position at company and residents with lower position of occupation (P.446-459 presented that residents with monthly income of RMB 4,000-5,999 in Phase 1 and 2 had lower satisfactions with community relationship, local crime situation, and local accident situation than residents with monthly income of RMB 2,000-3,999 in Phase 1 and 2 having with  $r = -.217^*$ ,  $r = -.271^{**}$ , and  $r = -.256^{**}$ , respectively).

Furthermore, Interviewee 6 complained that the residents from Phase 3 went to the opposite condominium to use their two outdoor swimming pools and finally received their rejections due to some of low-cost housing residents' previously bad manners in terms of not wearing swimsuits while swimming and their children making a lot of noises.

Accordingly, although some of low-cost housing residents had good manners, the social exclusion still existed and caused some problems especially in this mixed residences due to the bad image of their previously bad manners being embedded in commodity residents' mind. This result supported George C. Galster & Hesser's, HaSeongKyu's, and Adriaanse's (1981), (2006), and (2007) findings about those respondents' satisfaction ratings being more strongly tied to the similarity of neighbours so that social exclusion existed amongst these sorts of high-low income mixed-groups and residents who lived at public rental housing estates which were surrounded by non-public housing in Korea.



Hence, the level of social exclusion would determine those Xuzhou's low-cost housing inhabitants' levels of residential satisfactions. This finding was tended to support HaSeongKyu's and Nam & Choi's (2006) and (2007) conclusions about the reduction of feeling of residential exclusion and experience of discrimination as two predictor variables being significantly correlated with residential satisfaction of inhabitants at public housing and adjacent to non-public housing.

Consequently, on the basis of what a lot of authors understood, the facet of residential disparities between residents living at commodity housing and low-cost housing, e.g. , Phase 1 and 3 were mixed residences must have caused the problem of social exclusion. Then, S. M. Li, Zhu, and Li (2012) took a Chinese example to elaborate. In the context of neighbourhood and housing types characterised by distinctive built-environment features and socio-occupational mixes, the inhabitants living at commodity housing estates in Guangzhou, China showed their higher level of satisfaction with community attachment and neighbourhood satisfaction under the effects from gating bringing about very minimal influences on community attachment.

Thus, the residents of commodity housing surrounded by public housing were less likely to feel satisfied with their commodity houses, specifically, what it amounted to, then, was that the intensity of social interaction did not bring about higher level of individual housing satisfaction amongst residents who lived in the mixed residential environment.

Nevertheless, Xuzhou's local government learnt some lessons in which building the mixed residences in terms of low-cost and commodity housing could let local low-cost housing residents enjoy commodity housing's better neighbourhood facilities, e.g. public transportation. Except for Phase 2 being alone and its only one shuttle bus line with around 30 minutes of each shuttle and the operating hours only from 6am to 6pm,

Phase 1 and Phase 3's satisfaction levels of nearest bus/taxi station were higher than Phase 2's (Table 5.2 showed 36.3% of respondents from Phase 3 had high level of satisfaction, followed by 32.6% in Phase 1 and only 8.4% in Phase 2) in terms of Phase 1 and 3's locations at the mixed residences area with commodity housing areas.

On the basis of the factor of main means of transportation contributing moderately to predicting Phase 2 and Phase 3's residents' housing satisfactions (Table 5.3 displayed the factor of main means of transportation having a positive correlation with phase 3's residential satisfaction with  $r = .362^{**}$ ), local residents' main means of transportation was not only affected by neighbourhood facilities such as nearest bus/taxi station, it also was affected by the development of design of low-cost housing estate supporting facilities. These findings were unique comparing to other articles reviewed in this study from 1980s to 2016 in which this factor of residents' main means of transportation treated as a very concerned by Xuzhou's low-cost housing residents was first time put into residential satisfaction's mathematical modelling.

Then, with respect to P.446-459 presented that residents (Phase 2)' main means of transportation by foot was positively correlated with Phase 2's residential satisfaction ( $r = .224^*$ ) and residents (Phase 3)' main means of transportation by cycling was negatively correlated with Phase 3's residential satisfaction ( $r = -.384^{***}$ ), above age 60 of residents in Phase 2 went outside, for example, for buying some commodities and food preferring to walking there because there was only one shuttle bus line passed by and they did not have other choices, but, at very least, there was a quite big food market nearby which was not a formal market (P.446-459 presented that the factors of above age 60 and local market had positive correlations with residents (Phase 2)' main means of transportation by foot with  $r = .425^{***}$  and  $r = .241^{**}$ , respectively). Furthermore,

residents from Phase 3 who rode bicycles to go outside were not satisfied due to the location of Phase 3 being a bit far away from Xuzhou's downtown.

At this point, the mixed residences indeed enhanced the whole average of living standard of low-cost housing especially in housing estate supporting facilities and also improved local low-cost housing residents' confidences with having commodity housing's residents as neighbours, for instance, Phase 3's basic parking facilities got much improved by Xuzhou's local authority compared to Phase 1 and 2 according to the increased average standard which was evaluated together with surrounded commodity housing.

However, there still had some shortages of living in mixed-residential areas, for instance, due to the features of built environment were different between low-cost and commodity housing, two participants from Phase 3 complained about the number of shuttle bus was very few as most of commodity housing residents went outside by driving instead of by public transportations and they did not rely too much on public transportations comparing to low-cost housing residents.

Therefore, the residential disparities happened in Xuzhou's low-cost housing and commodity housing mixed residences caused a lot of dissatisfactions not only felt by commodity housing residents, but also felt by low-cost housing residents in terms of social exclusion and relatively lower expectations for future low-cost housing purchasing based on the current situations of low-cost housing. These findings were tended to support Chen et al.'s (2013) conclusions about the significant income-based disparities and inequalities in residential environments existing in Dalian where the low-cost housing residents having lower level of satisfactions with their residential environments in terms of less liveable neighbourhoods and smaller housing spaces compared to commodity housing residents.

Accordingly, to enhance housing estate supporting facilities of Xuzhou's low-cost housing especially the recreational facilities e.g. to build swimming pools mentioned during the survey was a response to local low-cost housing residents' requests which were asked to improve the whole quality of low-cost housing in accordance with the building standard of commodity housing. In addition, to enrich the types of Xuzhou's low-income housing in terms of different needs of different housing would increase not only low-cost housing inhabitants' residential satisfaction, but also increase low-income housing's residential satisfaction. These conclusions were inclined to support Chen et al.'s (2013) findings about that sufficient provisions of low-income and low-rent housing together with strict implementation of income criteria to be qualified for applying subsidised housing would be helpful to reduce residential disparities between low-income and high-income groups under the housing market mechanism to provide their much needed housing supply and choices which would likely increase their residential satisfactions.

In a few words, to improve the whole residential environment of Xuzhou's current low-cost housing in line with their requirements particularly more towards commodity housing would not only reduce some certain degrees of residential disparities in the mixed residences, but would also increase low-cost housing residents' confidences with this type of mixed living environment.

#### **7.4 Summary of Discussion**

In a word, this chapter of discussion found out the similarities and differences between the results came out of this current work and the results came out of those previous research works. Through deep discussions based upon the level of their concerns, it found that the residents' current living environment was needed to improve by way of cooperation amongst their own, property companies, and the local government.

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## **CHAPTER 8: CONCLUSION AND RECOMMENDATIONS**

### **8.1 Introduction**

In the final chapter, it would firstly conclude what this research work found to achieve the objectives of the quantitative and qualitative researches. Then, it would elaborate how those research findings implicated the individuals and local government such as the low-cost housing residents, NGO, NPC (National People's Congress) deputies at all levels, property company and local government, municipal state-owned construction company (MSOCC), design company and construction enterprise, and supervision company. On the basis of the findings, the public participation in the low-cost housing development was found to be a severe recommendation which would be explained in detail. After that, the limitations of this research work would be described in terms of the research methodology and lack of studies about China's low-cost housing satisfaction. Finally, it would talk about the further study which continued with the recommendation and would narrow down this research work's limitations.

### **8.2 Summary of Findings**

It would conclude the above findings which had already answered to those research questions and achieved those research objectives as well.

#### **8.2.1 Validated Model and Factors Found in Developed and Developing Countries**

With reference to the results given by SPSS and explained in p.377-445, the conceptual model mentioned in Chapter 2 has already been tested and validated by Adjusted  $R^2$ .

The adjusted  $R^2$  value (.779/.731) of the 1<sup>st</sup> model indicated that 77.9/73.1% of the variance in residential satisfaction index had been explained by the model. The tolerance values of the coefficients of predictor variables are well over 0.22/0.26

(1 – adjusted  $R^2$ ) and this indicated the absence of multicollinearity between the predictor variables of the model.

Moreover, the adjusted  $R^2$  value (.715/.671) of the 2<sup>nd</sup> model indicated that 71.5/67.1% of the variance in residential satisfaction index had been explained by the model. The tolerance values of the coefficients of predictor variables are well over 0.28/0.32 (1 – adjusted  $R^2$ ) and this indicated the absence of multicollinearity between the predictor variables of the model.

Furthermore, the adjusted  $R^2$  value (.774/.726) of the model indicated that 77.4/72.6% of the variance in residential satisfaction index had been explained by the model. The tolerance values of the coefficients of predictor variables are well over 0.22/0.27 (1 – adjusted  $R^2$ ) and this indicated the absence of multicollinearity between the predictor variables of the model.

In addition, those factors/predictors determining residential satisfaction which had been reviewed from the studies about residential satisfactions of public and commodity housing in developed and developing countries were found and concluded according to the components/elements.

(a) ***Housing Unit Characteristics (HUC)***

In HUC, there were seven key factors that should be more concerned such as living room, dining area, master bedroom, bedroom, kitchen, toilet, and balcony. Those factors which were mentioned above had several interior characteristics affecting their satisfaction levels in terms of size, location, ceiling height, ventilation, daylighting, and power sockets.

(b) ***Housing Unit Supporting Services (HUSS)***

With respect to HUSS, the literature strongly suggested these two factors consisting of drain and electrical & telecommunication wiring which talking about the supporting services provided within the housing unit. The situations of drain and wiring of when moving into the room and the maintenance after moving into affected each factor's satisfaction level.

Furthermore, in terms of the supporting services provided around the housing unit, the numbers of firefighting equipment and training course for how to use firefighting equipment decided upon the satisfaction level of firefighting equipment. Moreover, the numbers and brightness determined the satisfaction level of street lighting. The size, location, lighting, and cleanness decided on the satisfaction levels of staircases and corridor. In addition, the garbage collection and management of garbage (house) determined the satisfaction level of garbage disposal.

(c) ***Housing Estate Supporting Facilities (HESF)***

Regarding HESF, the factors were concluded from the studies about residential satisfactions of public and commodity housing in developed and developing countries such as open space, children's playground, parking facilities, perimeter road, pedestrian walkways, and local shops. Their satisfactions were affected by each number, condition, location, and cleanness.

(d) ***Neighbourhood Characteristics (NC)***

Speaking of NC divided by social environment and spatial location characteristics of neighbourhood, the residents' involvement and social exclusion decided upon the satisfaction level of community relationship. Furthermore, the levels of neighbourhood noise and crowd noise from open space determined the satisfaction level of quietness of housing estate. The frequency of occurrence, and seriousness decided on the satisfaction



level of local crime and accident situations. In addition, the number of security guards and frequency of security patrols determined the satisfaction of local security control.

In terms of the spatial location characteristics of neighbourhood, the factors which were discussed previously consisted of resident's workplace, nearest general hospital, local police station, nearest fire station, and urban centre. Their satisfaction levels were determined by the distance from each housing area to each outside destination and convenience of arriving over the destination.

(e) ***Individual and Household's Socio-Economic Characteristics***

There were ten factors correlated with the four residential components (HUC, HUSS, HESF, and NC) and overall residential satisfaction of each housing area such as gender, age, educational attainment, marital status, household size, occupation sector and type, household's monthly net income, floor level, and length of residence.

**8.2.2 Levels of Satisfaction/Dissatisfaction between the Three Phases**

With regard to the overall residential satisfaction, the respondents of Phase 1 whose average residential satisfaction was 64.397% was perceived as the moderate level of satisfaction due to the proportion of respondents with moderate level of satisfaction was large (87.2%). In the meanwhile, the respondents of Phase 3 whose average residential satisfaction was 62.845% was also perceived as the moderate level of satisfaction due to the proportion of respondents with moderate level of satisfaction was quite big (77.5%). However, the respondents of Phase 2 were dissatisfied [56.947% which was perceived as the low level of satisfaction due to the proportion of respondents with low level of satisfaction was large (87.4%)] with their overall residential environment.

The respondents of the three phases shared some similarities in evaluating the satisfaction of housing unit characteristics (HUC) in their corresponding projects with the highest average satisfaction among the four elements (69.257%, 61.519%, and 66.792%, respectively).

In terms of 65.233%, 58.008%, and 62.259% which presented the satisfaction levels of housing unit supporting services (HUSS) in respective project, it showed the moderate level of satisfaction in Phase 1 and 3, but the low level of satisfaction in Phase 2.

With respect to 62.841% and 55.564% of satisfaction levels in neighbourhood characteristics (NC) and followed by 62.137% and 54.441% which indicated the lowest average satisfaction of housing estate supporting facilities (HESF) in Phase 1 and 2, it showed the moderate level of satisfaction of NC and HESF in Phase 1, but the low level of satisfaction in Phase 2.

Regarding Phase 3, although the lowest average satisfaction (61.723%) was given to NC, whereas, when they evaluated HESF, the satisfaction index (61.867%) was a little bit better than NC satisfaction index (61.723%), the moderate level of satisfactions of HESF and NC was shown.

### **8.2.3 Determinants between the Three Phases**

The residents of three phases simultaneously raised one fact that to improve satisfactions with corridor and local shops could enhance residential satisfactions over there together with other determinants.

Furthermore, the residents of Phase 1 and 2 were simultaneously very concerned about the improvements of satisfactions with bedroom and the nearest schools. Meanwhile, the residents of Phase 1 and 3 were much concerned about the enhancements of satisfactions with open space and the floor level.

Xuzhou's local authority should pay very attention to enhancing residents' satisfactions with local kindergarten and children's playground that were the common determinants to improving residential satisfactions of Phase 2 and 3. Additionally, the main means of transportation was one of key predictors also to significantly determine the residential satisfactions of Phase 2 and 3.

In regard to the rest of determinants of three phases of low-cost housing, the satisfactions with the dining room, drain, resident's workplace, and community clinic had the most impact on residential satisfaction of Phase 1, and the satisfactions with the nearest general hospital and Yangguang Huayuan's parking facilities, and the floor level had the moderately impact, whereas the satisfaction with the garbage disposal had less impact on Phase 1's residential satisfaction. Moreover, the predictor of occupation type was significant to Yangguang Huayuan's residential satisfaction.

The satisfactions with the local crime situation, staircases, drying area, nearest bus/taxi station, and local accident situation contributed the most to predicting Phase 2's residential satisfaction, and the main means of transportation contributed moderately to predicting the residential satisfaction.

Finally, the satisfactions with the electrical & telecommunication wiring, corridor, quietness of housing estate, Binhe Huayuan's children's playground and Binhe Huayuan's open space had the most impact and the satisfactions with the police station, nearest fire station, local kindergarten, local shops, living room, community

relationship, and main means of transportation had the moderately impact, whereas the floor level had less impact on the Phase 3's residential satisfaction index.

#### **8.2.4 Explorations on Determinants between the Three Phases**

On the whole, the following Figure 8.1 summarised the quantitative and qualitative findings with local government policies on how to improve the current status quo of Xuzhou's low-cost housing.

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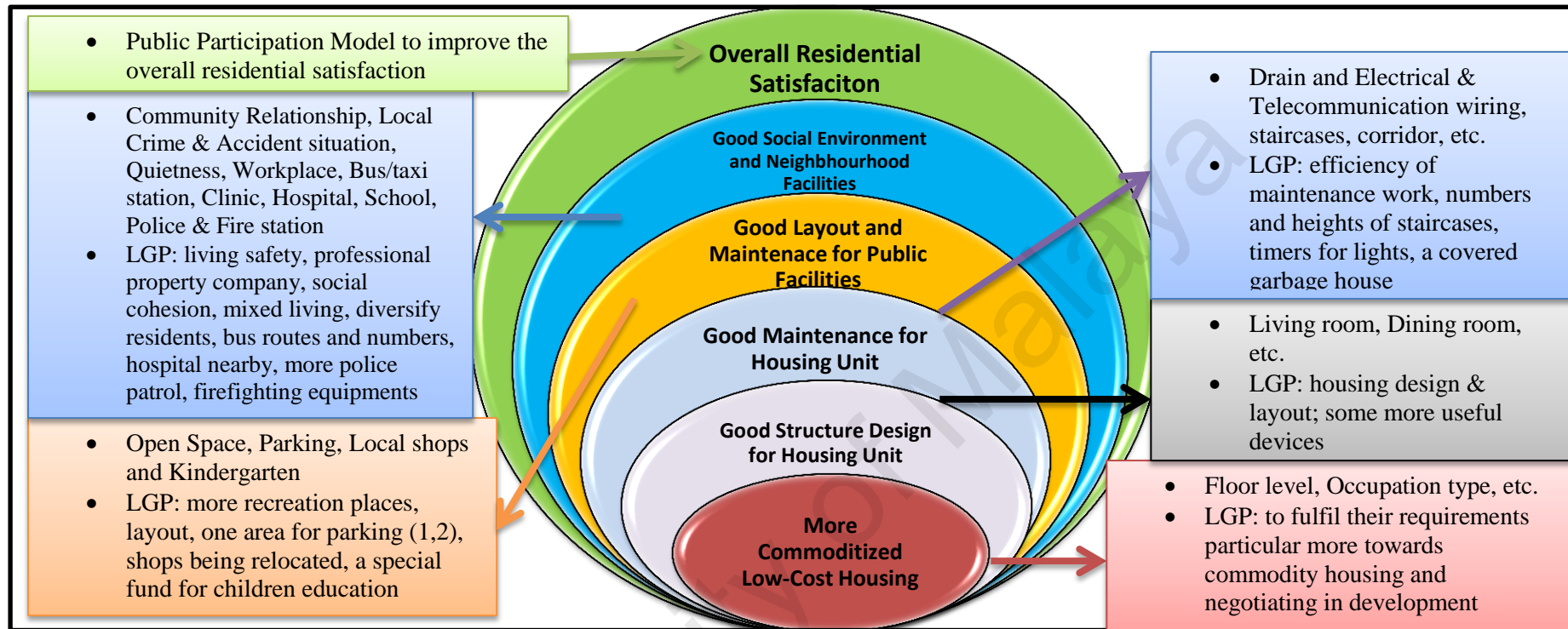


Figure 8.1 Quantitative & Qualitative Findings Summarised with (LGP: Local Government Policy)

With respect to those five concluded themes which consisting of some improved conditions and unsolved problems from Phase 1 to Phase 3, the most concerned element which related to neighbourhood characteristics satisfactions mainly described the low-cost housing residents' aspirations of good social environment and neighbourhood facilities (see Figure 8.1).

Amongst those eleven sub-themes, the sub-themes of community relationship, resident's workplace, nearest school, and nearest bus/taxi station had been improved in a sort of way amongst the comparisons of three phases of local low-cost housing projects.

With respect to the sub-themes of resident's workplace and nearest bus/taxi station, the degree of convenience of going to work (most of them nearly every day took public transports) was more important than the location of low-cost housing. Accordingly, the convenience of going to work of the 3<sup>rd</sup> phase had been much improved compared to the previous two phases especially the 2<sup>nd</sup> phase which not only had a problem with its distance between the residential location and down town, but also only had one shuttle bus with around 30 minutes of each shuttle and the operating hours only from 6am to 6pm.

Referring to the sub-theme of nearest school, except for the distance between Phase 2 and its nearest school was long and it was not convenient due to bad transport facilities, the rest two phases gave moderate and high level of satisfactions with the nearest schools.

However, the Xuzhou's local government had not been doing so well in getting the mixed communities involved in terms of the commodity and low-cost housing by a way of regional housing planning, although the social-mixed residences could be reducing

the chances of low-cost housing area turning into a slum (or another type of urban village) and simultaneously enhancing the living safety and quality of life of residents living at low-cost housing by means of sharing the improved regional neighbourhood facilities with commodity housing residents.

Regarding the sub-theme of community clinic, all of community clinics located at these three phases of low-cost housing had good locations and easy accesses in order to provide good and initial medical services.

On the contrary, these sub-themes of quietness of the housing estate, local crime and accident situations, nearest general hospital, local police station, and nearest fire station had not been enhanced since the 1<sup>st</sup> phase of low-cost housing until the 3<sup>rd</sup> phase.

The quietness of the housing estates in three phases were broken by many noises generated from the neighbours and the open spaces. Moreover, the local crime and accident situations were complained about the frequencies of crimes and accidents' occurrences were medium with very bad situations throughout Xuzhou's three phases of low-cost housing projects. Furthermore, the nearest general hospitals to these three phases unfortunately had long distances and they were not convenient to get there.

Unfortunately, Phase 3 was complained about the distance between residential area and local police station being long and not convenient compared to Phase 1 and 2. What was worse, all of three phases' residents complained that the distances between their houses and the fire stations were long and they were not convenient. In the meantime, the residents from three phases were also angry with no such a low-cost housing estate having their own firefighting equipment.

The second most concerned element which related to housing estate supporting facilities satisfaction mainly described the low-cost housing residents' aspirations of good layout and good maintenance for public facilities (see Figure 8.1).

Amongst those five sub-themes, the sub-theme of parking facilities had already been much enhanced in the 3<sup>rd</sup> phase of low-cost housing project. The 1<sup>st</sup> and 2<sup>nd</sup> phases were complained about their parking areas being very limited with bad and chaotic conditions and also having sanitation problems. Furthermore, there also had many lighting problems in Phase 2 and the location of parking area had conflicts with children's playground and fitness equipment in Phase 2. Contrarily and luckily, Phase 3 made an improvement on building two isolated car parks with good environment, enough space, good condition, and clean areas.

With respect to the sub-theme of local kindergarten, all of kindergartens located at nearby or within the three phases of low-cost housing projects had normal conditions and normal locations and all local kindergartens were clean.

In contrast, these sub-themes of open space, children's playground, and local shops had not been enhanced or even were worse than previous phases amongst these three phases of low-cost housing projects. Firstly, the three phases' open spaces were mostly criticised regarding not having enough space and having bad conditions. However, the 2<sup>nd</sup> and 3<sup>rd</sup> phases' open spaces were reported to be much worse than the 1<sup>st</sup> phase's open space due to they had lighting and sanitation problems.

Secondly regarding the sub-theme of children's playground, all of three phases' children's playgrounds were criticized about their very limited spaces especially they had bad conditions and locations at Phase 2 and 3. Additionally, the 2<sup>nd</sup> and 3<sup>rd</sup> phases both had lighting and sanitation problems.



Furthermore, with respect to the sub-theme of local shops, the certain numbers of residents came from Phase 2 and 3 had low and very low level of satisfactions with local shops compared to Phase 1 where the local shops had sufficient numbers with good locations, because they thought that the local shops in Phase 2 and 3 had some problems with locations, for instance, the locations of local shops in Phase 2 had conflicts with the open space. In Phase 3, some shops located at the first floor of the first row of the houses actually disturbed residents.

The third most concerned element which related to housing unit supporting services satisfaction mainly described the low-cost housing residents' aspirations of good maintenance for housing unit (see Figure 8.1).

Amongst those five sub-themes, the sub-theme of drain had already been much improved in the 3<sup>rd</sup> phase of low-cost housing project with good maintenances. However, the 1<sup>st</sup> and 2<sup>nd</sup> phases still had dissatisfactions with drain due to the drain system was not good and the maintenance was also bad.

With respect to the sub-theme of electrical & telecommunication wiring, all of three phases of low-cost housing projects had a normal condition of electrical & telecommunication wiring with a normal maintenance.

On the contrary, these sub-themes of staircases, corridor, and garbage disposal had been worsening in Phase 2 and 3 compare to Phase 1. Regarding the sub-theme of staircases, all three phases' staircases were complained about quite narrow or just enough space for using and unclean. Except for the 1<sup>st</sup> phase having a good lighting in staircases, the 2<sup>nd</sup> and 3<sup>rd</sup> phases had no lighting at all in their staircases.

Moreover, with respect to the sub-theme of corridor, what all three phases' corridors were criticized was similar with those complaints about the staircases regarding the space, lighting, and cleanness. In addition, Phase 1 and 3's corridors had a same problem with noise and Phase 3 had another problem with the big smell from the garbage.

Furthermore, with respect to the sub-theme of garbage disposal, three phases almost had the same situation which was timely collection of garbage, but the garbage cans were not cleaned thoroughly particularly Phase 3.

The fourth most concerned element which mentioned about housing unit characteristics satisfaction mainly talked about the low-cost housing residents' requiring of good structure design for housing unit (see Figure 8.1).

In the middle of those five sub-themes, the sub-themes of living room, bedroom, and drying area were almost same design from Phase 1 to Phase 3 which nearly satisfied those residents. For instance, the sub-theme of living room was given a highly comment on the size over the location throughout three phases of low-cost housing projects. What's more, most residents from three phases thought that their living rooms did not have good ventilations. Furthermore, most residents from Phase 2 and 3 complained about their living rooms having bad lighting. Additionally, most residents from three phases thought the numbers of power sockets in their living rooms were just enough for using.

Furthermore, the sub-theme of bedroom was criticised about its size which was slightly smaller than their master bedroom. In the meanwhile, most residents thought that their bedrooms were not well ventilated. In addition, the residents from Phase 1 and

2 had the same problem of lighting in bedroom. Additionally, the power sockets were found in bedroom was very few.

Moreover, the sub-theme of drying area received a good comment with having an appropriate size with good ventilation and with a good lighting from Phase 1 and 3. However, some residents from Phase 3 complained about no power socket in their drying areas.

In terms of the sub-theme of dining area, it dissatisfied most residents from three phases. For example, most residents from Phase 2 and 3 thought that the size of their dining areas were small and also had bad lightings. And most residents from three phases thought that the locations of their dining areas were also not proper and did not have good ventilations. In addition, the numbers of power sockets in their dining areas were fewer.

With respect to the sub-theme of toilet, except for some residents from Phase 3 thought that the conditions of their toilets were in a way acceptable, most residents from Phase 1 and 2 complained about their toilets had a very small size and a bad location. Furthermore, they complained that there was no ventilation in their toilets and there had a bad lighting in their toilets as well. In addition, the problem with fewer power sockets in their toilets had also been seriously taken into considerations.

In short, those residents living at three phases of low-cost housing projects in Xuzhou finally wanted their houses to be enhanced according to the standard of commodity housing in order to improve their social economic status in China based upon their households' socio-economic characteristics affecting their judgements on assessing their residential satisfactions (see Figure 8.1). Thus, those above mentioned

four sub-themes were the keys to affecting their measurements in terms of occupation type, floor level, main means of transportation, and housing ownership.

In relation to the sub-theme of floor level, all floors were almost same except for people's lower residential satisfactions in living on the top and the first floors because the top floor was very cold during winter and was very hot during summer and the lower floor was affected by the smelling of garbage and crowd noise. Thus, the residents who were living on the middle floors were more satisfied than others, because the middle floors were not high and stayed away from disgusting smell of garbage and very few numbers of mosquitoes and flies were around.

Advert to the sub-theme of occupation type, the small group of residents of Phase 1 whose occupation type with management & professional were less satisfied than those whose occupation type with others such as some jobs paid by daily-settlement (no fixed contract), retired, and laid-off/unemployed. This indicated that the reason why most residents from Phase 1 and 3 thought of "the higher position of occupation with the lower satisfaction" was that the income level of residents with occupation type of management & professional made them ask for more from the existing low-cost housing comparing to the income level of residents with occupation type of others.

With respect to the sub-theme of homeownership, most residents from three phases took this issue very seriously because they wanted to purchase the next commodity housing using the current house ownership. Thus, the higher satisfaction with homeownership was presumed to bring along their higher levels of residential satisfaction in Xuzhou's three phases of low-cost housing and they were obviously dissatisfied with the current status of their housing tenure.

However, there was a group of certain numbers of residents from three phases did not consider the issue of low-cost housing's homeownership as a top problem comparing to other problems, such as satisfactions of neighbourhood characteristics, housing estate supporting facilities, housing unit supporting services, and housing unit characteristics.

Accordingly, their current or future concerns were more about that the low-cost housing should be physically constructed or improved as the procedure of commodity housing's construction in order to satisfy those local medium-low income households due to they would not have capabilities of buying their next commodity houses in the near future. Hence, they had to rely more on their current residential environment rather than thinking of moving out.

Regarding the sub-theme of residential disparities which was additionally mentioned above, the social exclusion existed in Phase 1 and 3 not only between residents with comparatively higher position at company and residents with lower position of occupation, but also between the low-cost housing residents and the commodity housing residents, although Xuzhou's local government learnt some lessons in which building the mixed residences in terms of low-cost and commodity housing could let local low-cost housing residents enjoy commodity housing's better neighbourhood facilities, e.g. public transportation.

With respect to the sub-theme of main means of transportation, local residents' main means of transportation was not only affected by neighbourhood facilities such as nearest bus/taxi station, it also was affected by the development of design of low-cost housing estate supporting facilities. For instance, above age 60 of residents in Phase 2 went outside for buying some commodities and food preferring to walking there, because there was only one shuttle bus line passed by and they did not have other

choices, but, at very least, there was a quite big food market nearby which was not a formal market. Furthermore, residents from Phase 3 who rode bicycles to go outside were not satisfied due to the location of Phase 3 being a bit far away from Xuzhou's downtown.

Regarding this, the mixed residences surely enhanced the whole average of living standard of low-cost housing especially in housing estate supporting facilities and also improved local low-cost housing residents' confidences with having commodity housing's residents as neighbours, for instance, Phase 3's basic parking facilities got much improved by Xuzhou's local authority compared to Phase 1 and 2 according to the increased average standard which was evaluated together with surrounded commodity housing. Therefore, to improve their current living environment of low-cost housing was suggested to construct according to the standard of commodity housing.

#### **8.2.5 Public Participation Model as Recommendation to Improve RS**

On the basis of the results came from the last question of qualitative part, all six participants sincerely hoped that they could express their requirements by way of getting involved in the whole process of low-cost housing projects construction. It was confirmed that a lot of authors cited in this research work also recommended their local governments and property management companies to get their residents publicly participated in managing their properties in accordance with Arnstein's (1969) 'a ladder of citizen participation'. Therefore, the local residents wanted to get more engaged in the whole process of low-cost housing development by means of dialogue and partnership than only being informed and consulted.

### **8.3 Implications**

Recognising that all new second-tier cities in Jiangsu province nearly provided the low-cost housing in the city level which belonged to the low-income housing project and the municipal government concerned about their residential satisfactions via their own way of evaluations in terms of the numbers of low-income houses provided and the general living environment, the findings of this current research work were aimed at several interested participants: low-cost housing residents, NGO, NPC (National People's Congress) deputies at all levels, property company and local government, municipal state-owned construction developing & investment company and design company, construction enterprise and supervision company.

Knowing the predictive power of physical/objective and non-physical/subjective factors to the inhabitants' residential satisfactions in their low-cost housing projects may assist the local government in developing strategies to enhance the dwellers' residential satisfactions in the low-cost houses. The implications of this study described as follows.

#### **8.3.1 Low-Cost Housing Residents, NGO, NPC Deputies**

On the part of the low-cost housing residents, the findings of this study told of how their current living situations were and which factors in the survey were the most concerned by residents.

In addition, on the basis of the low-cost housing project was meant to protect those medium-low and low-income group of people's living rights, the currently implemented low-cost housing projects in those second-tier cities in Jiangsu province especially in Xuzhou city should not only ensure a living place to them, but should also satisfy them to some extent.

To the residents, they could get benefits from the scientific findings of this current study in which they could practically understand their current residential environment in terms of which parts were already improved and which parts were needed to further enhance. At same time, this study might build a platform for low-cost housing residents whereby they could express their comments directly to the local authority instead of informing their property management companies or the NPC deputies. Accordingly, this study might improve the efficiency of reporting their living situations to the local authority.

With regard to the NGO, the numbers of NGOs in the second-tier cities of Jiangsu province were very limited and they have not been a formation of industry chain. As the low-cost housing project which was initiated and supervised by the local authority was developed by the municipal state-owned construction developing & investment company and designed and built by the design and construction enterprises which were both designated by the municipal state-owned construction company, all of construction activities did not get the medium-low and low-income group of people and the NGOs involved in the preparation and construction processes of low-cost housing projects. After the completion of low-cost housing, there was no interview from any NGOs or any government's work units to ask about how their current residential environments were according to their qualitative results.

Therefore, this study indicated the theory of residential satisfaction and presented how to apply this theory to assessing the residential satisfactions of Xuzhou's three phases of low-cost housing projects based upon the questionnaire survey and interviews. Hence, this study might benefit the local government from finding the NGOs which were the third party and isolated party to do the similar assessments of low-cost



housing's inhabitants' residential satisfactions which should be taken into more considerations than the numbers of low-cost houses.

With respect to the NPC deputies, they are the representatives of Chinese citizens in different levels and help them voice out their comments when their public interests were violated. However, the issue of the decreasing of low-cost housing's inhabitants' residential satisfactions was not considered as a violation of their public interests. Although the residents of low-cost housing could report their dissatisfactions to the NPC deputies, the NPC deputies could not easily deliver the reports to the related superior departments due to their complaints were not detailed and validated by way of the scientific experiment.

Thus, the NPC deputies might be suggested to cooperate with the NGOs in collecting and analysing the residents' complaints by way of a scientific research which was brought the implications by this current work. After then, the scientific reports would be delivered to the local authority.

### **8.3.2 Local Government and MSOCC**

With respect to the relationship between the local government and the municipal state-owned construction developing & investment company in terms of constructing low-cost housing projects, the municipal state-owned construction company is asked and supervised by the local government to fully take in charge of the construction work of low-cost housing project and subcontract the design and construction works to the third party of design and construction enterprises. In the meanwhile, the whole process of construction is supervised by the independent supervision institution. After completion, the municipal state-owned construction company will hand the whole project over to the local government for further distribution to those qualified applicants. Since the qualified residents move and live here, except for the quality of

houses being ensured by the municipal state-owned construction company, their residential properties are managed by the property management company which is either recommended by the municipal state-owned construction company or found in the market and later is under the supervision of the local government.

However, the whole process of construction and the system of property management did not involve the local residents, the NGOs, and the NPC deputies to do the decision makings or the supervisions on the low-cost housing projects. Consequently, there is a misunderstanding between the local residents and the local government which has been found in this research work talking about what the local government concerned was not exactly what the local residents wanted such as some factors being found and discussed in the above findings consisting of community relationship, local crime and accident situation, quietness of the housing estate, nearest fire station, open space, staircases, corridor, garbage disposal, etc.

Furthermore, some researchers who were mentioned in the literature review part criticised that improving the residential satisfaction of low-cost housing required specific analysis of specific cases instead of general low-cost housing policy.

It turned out that this study might be a bridge built for the mutual understanding between the local residents and the local government. The Xuzhou's local government might get benefits from this work to improve their understandings about where to enhance the residential satisfactions of Xuzhou's three phases of low-cost housing.

For instance, in the light of the 2<sup>nd</sup> phase of low-cost housing being located at the isolated housing area, the residential satisfaction level of inhabitants of Phase 2 was even lower than Phase 1 and 3's in terms of lack of neighbourhood facilities and less concerns from local government.

However, although Xuzhou's local government considered that the social-mixed residences of Phase 1 and 3 could be reducing the chances of low-cost housing area turning into a slum (or another type of urban village) and concurrently enhancing the living safety and quality of life of low-cost housing's residents by way of sharing the improved regional neighbourhood facilities with commodity housing residents, it was unfortunate that the social contradiction between the residents who lived at the commodity housing estates and the residents who lived at the low-cost housing estates often occurred in these mixed communities when they had some social interactions.

In spite of the fact that the local government provided each bus/taxi station around each phase of low-cost housing project, the issues of the distances between their houses and the nearest bus/taxi stations and the numbers of public buses going to different places such as the downtown, general hospital, and schools were not taken into account when the local government planned the each phase of low-cost housing project's surrounding transportation environment.

Regarding the satisfactions of the situations of accident and crime around the three phases of low-cost housing, it was easy for the local government and property management company to build more neighbourhood facilities for the residents, however, they ignored their surrounding environment such as bicycle stealing, burglary, car and electric bicycle accident which were found and brought into discussion in this research work.

Moreover, the local government had no idea about the local residents wanted their houses to meet the standard of commodity housing that had a standard of sound insulation in order to low some noises from the outside. In the meanwhile, the residents also required each phase of property management company to redesign the public area of housing estate where the places of open space, children's playground, and local shops

should be kept a certain distance to residential blocks so as to enhance the quietness from the public area of housing estate.

Despite of the local government building the supporting facilities for low-cost housing estates, the numbers and locations of those supporting facilities were seriously neglected based upon the findings of this research work, for instance, some more fitness equipments and recreation places were needed from the residents' requirements. Additionally, both Phase 1 and 2 needed a parking area.

Moreover, the location of children's playground needed to be redesigned due to it had conflicts with the perimeter road in Phase 1, was occupied by the parking facilities in Phase 2, and was affected by one block's garbage collection spot in Phase 3. In addition, those local shops located at Phase 2 which occupied some places of public area and affected those residents' spaces of playing needed to be relocated. Furthermore, some shops located at the first floor of the first row of the houses in Phase 3 also needed to be relocated in order to reduce many noises generated by those shoppers.

Regarding the lighting and sanitation problems, the lighting problems in the currently mixed bicycle & car parking area of Phase 2 would be dealt as soon as possible to reduce the risk of bicycle and auto thefts. In addition, the lighting problem caused a lot of safety issues regarding when the children were playing during the night and the sanitation problem caused a lot of children's health issues.

In addition, the most overlooked aspect of housing estate supporting facilities was the firefighting equipment which was not installed in any of three phases of low-cost housing projects.

Under the circumstance of the quality of low-cost housing being comparatively lower, the property management company's work efficiency of doing maintenance work needed to be improved. Additionally, their satisfactions of staircases and corridors needed to be paid very attention to.

With respect to the housing unit characteristics, the local government was suggested by this research work to pay very attention to the housing design and layout in terms of the sizes, locations, ventilation, and lighting of rooms.

In addition, the local residents required their property management companies to add some more useful devices such as electrical sockets to improve the conveniences in their daily life.

In short, despite of the fact that Xuzhou's local government built the mixed residences in order to let local low-cost housing residents enjoy commodity housing's better neighbourhood facilities, the local government did not know exactly what they wanted based upon their understandings and experiences learnt from other cities or the secondary data.

Through the findings of this research work, it could fill the gap of understandings between the local government and the low-cost housing residents, i.e. all the residents wanted was a low-cost housing met with the standard of commodity housing. This is the Chinese common sense that the residents living at low-cost housing thought the residents living at commodity housing would look down upon them.

## **8.4 Recommendations**

### **8.4.1 Theory Prepared**

Based upon the results given by Xuzhou's low-cost housing residents showed they wanted to take part in the whole process of low-cost housing development, a lot of authors have studied about the public participation in low-income housing development with reference to Arnstein's (1969) 'a ladder of citizen participation' (Cui et al., 2016; Galster & Hesser, 2016; Healey, 2015; Huang & Du, 2015; McClure et al., 2015; Tao et al., 2014; Xi & Hanif, 2016).

In addition to the residents being suggested to publicly participate in managing their properties with the professionals, in this research work, the local residents wanted to participate since the project was in the process of preparations. Accordingly, under the conduct of Healey's institutional model (Patsy Healey, 1992, 2011) which was the actors-centred and applicable to all types of development projects and was workable under different economic and political regimes (Patsy Healey, 2008, 2012; Zöllig & Axhausen, 2011), the institutional model should provide an understanding and explanation of the nature of the negotiating processes embedded in the specific housing development process in any other particular context (Ennis, 1997; Patsy Healey, 2016) based upon the fundamental shift of planning thought changing from a procedural conception to the communicative planning theory involving the public actors in any types of planning to facilitate the development process by way of the inter-personal communication and negotiation (Craig, 1999; Habermas, 1984; Taylor, 1999).

In terms of this consolidated model indicating the different actors to pursue their strategies and interests through a negotiating framework initiated by the local authority (Patsy Healey, 2007; P. Healey, 2015; Patsy Healey et al., 2008), the different roles such as the qualified applicants, NGOs, NPC deputies, municipal state-owned

construction company, design company, construction enterprise, and supervision Company would be introduced by the local government into a proper institutional model of housing development to negotiate and pursue their own interests when preparing and building the low-cost housing project.

#### **8.4.2 Public Participation in LCH Development Model Proposed**

On the basis of the public participation in low-cost housing development promoting the equity in order to improve the low-cost housing residents' acceptances of local government's decisions, some Chinese scholars proposed different models of public participation in low-cost housing development.

Sheng's, Patsy Healey et al.'s, Grillo, Teixeira, & Wilson's, Liang & Fang's, Ammar, Ali, & Yusof's and Li's (1990), (2008), (2010), (2012), (2013), and (2013) summarised those previously proposed theoretical-models and recommended their public participation mode in public projects development. In combination with the findings found in this research work, the way of public participation in the full process of China's low-cost housing development (see Figure 8.1) initiated by the local government and applied by the municipal state-owned construction company (MSOCC), design company, construction enterprise, supervision company, qualified applicants of low-cost housing, NGO, NPC deputies to negotiate for their own interests would substantially improve the inhabitants' residential satisfactions to a certain extent.

In terms of Figure 8.1, the first public participation happened at the initial stage of low-cost housing's project establishment which was led by Housing Security Centre of Municipal Housing Administration Bureau and was reviewed by the departments of land administration, environmental protection, planning, and was supervised by National People's Congress from top to bottom in order to ensure practicability and equity of the low-cost housing project. In the first public participation in the project

establishment of low-cost housing, the NPC deputies supervised the process of project establishment by way of regular inspection organised by the committee of experts.

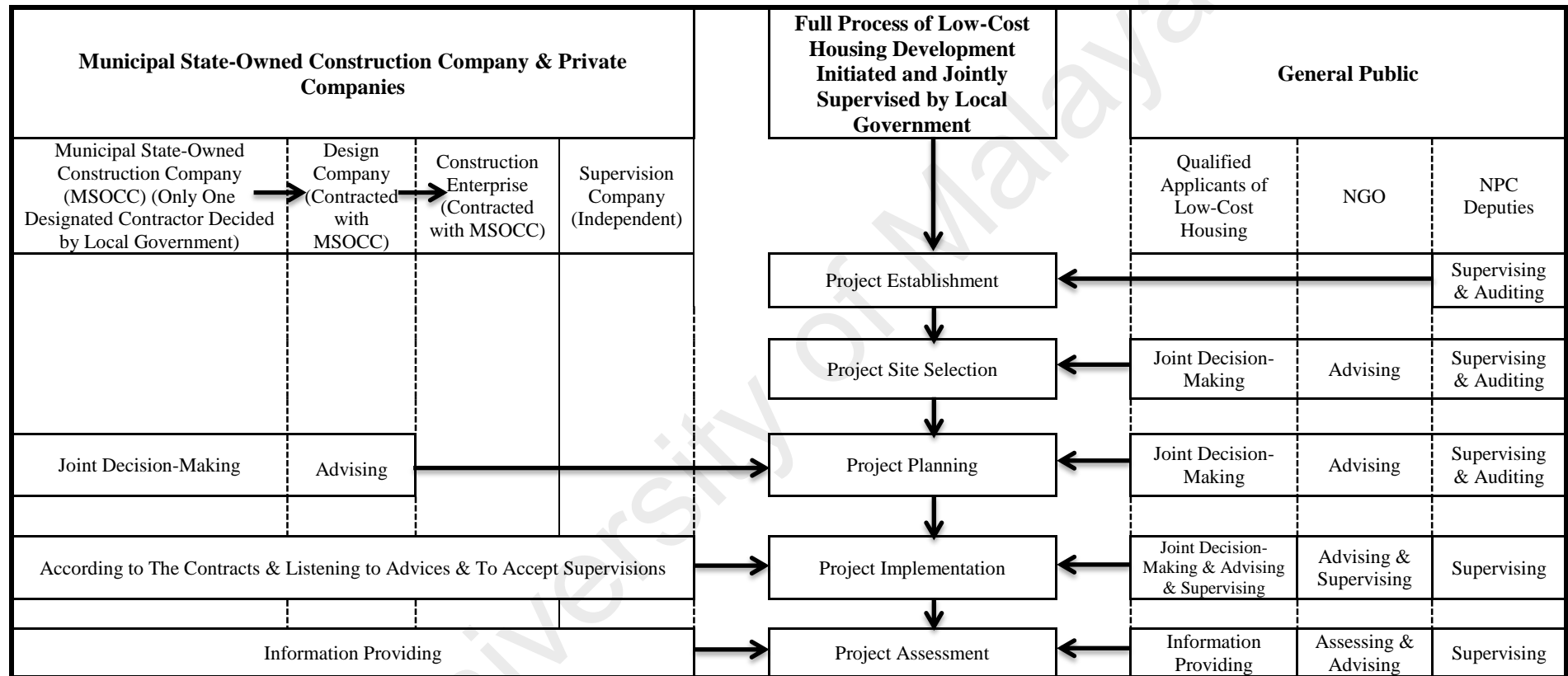
With respect to the second public participation happened at the second stage of low-cost housing's project site selection, the qualified applicants of low-cost housing was suggested and introduced to join in government's discussion for the first time. On account of the low-cost housing ensuring the living rights of medium-low and low-income group of citizens, those qualified applicants who would finally move into the low-cost housing should be brought into the joint decision-making part as soon as possible.

Regarding the joint decision-making part, the local government was intended to enhance the acceptance of low-cost housing policy through negotiations with the qualified applicants in order to improve their confidences in low-cost housing projects. However, due to the conflicts of interests among the different groups of interests were far different, the negotiation between the government departments & municipal state-owned construction company and the general public would be held repeatedly so as to raise their mutual understandings.

In the past, the qualified applicants and other citizens did not have that kind of opportunity to take part in the government's discussion since the beginning of the project site selection.

In contrast, the findings of this paper indicated that the local residents really wanted to take part in the government's discussions about the site selection in accordance with their lower level of satisfactions with neighbourhood characteristics.





**Figure 8.2 Public Participation in the Full Process of LCH Development**

Reference: proposed by Liang & Fang's and Li's (2012) and (2013) and modified by the writer

Therefore, the local government should invite the qualified applicants and citizens to make the joint decision on the site selection by way of negotiation. On the platform of negotiation, the local government should try their best to meet those medium-low and low-income group of citizens' requirements regarding their residential satisfactions. Furthermore, the applicants and residents would understand those difficulties that the government had by listening to their report such as the land use policy for low-cost housing development, the future planning for the low-cost housing area, etc.

In addition, the roles of NGOs and NPC deputies playing were to advise and facilitate the citizens and qualified applicants in collecting their complaints to report to those related departments. The roles of NGOs and NPC deputies acting were like a bridge connecting the local government and the qualified applicants & citizens in order to advise and facilitate them to make the final joint decision.

Regarding the third public participation happened at the third stage of low-cost housing's project planning, the current qualified applicants, residents, and citizens were very seldom or never invited by the local authorities to participate in the low-cost housing's project planning.

Thus, the qualitative results of this current work told that some misunderstandings of low-cost housing policy planning dissatisfied them such as the local residents had not yet had their full homeownerships due to Xuzhou's local government had already postponed two times, i.e. the first five years regarding which the local government postponed selling another leftover homeownership from after 5 years' purchasing to after 10 years' buying and the second postponing was reported that the local government had not yet confirmed exactly which date the 1<sup>st</sup> phase of low-cost housing residents could buy the rest of homeownerships from the local government.

By comparison, if the Xuzhou's local government had applied the negotiation process before the project implementation, the residents might understand why the local government postponed the time of purchasing homeownerships and then they would find some alternatives through negotiation.

In addition, the municipal state-owned construction company (MSOCC) which was the only one contractor designated and supervised directly by the local government and the design company which was on the contract with MSOCC and was also supervised by MSOCC came into the discussion with the citizens and residents to make a joint decision by means of expert and high technical report seminar.

Besides, the roles of NGOs and NPC deputies playing were to advise and facilitate the citizens and qualified applicants in collecting their complaints to report to those related departments. Moreover, the NOGs and NPC deputies also supervised and audited the low-cost housing development process.

In regard to the fourth public participation occurred at the fourth stage of low-cost housing's project implementation, Liang & Fang's and Li's (2012) and (2013) claimed that the major negotiation occurred between the government departments and the municipal state-owned construction company (design and construction companies) in the low-cost housing's project implementation. Moreover, the private companies which were introduced by the MSOCC into the low-cost housing construction could help the local government to ease fund shortages in building low-cost housing. At same time, the risk of cooperating with local government in China was considered lower comparing to working with private sectors.

On the contrary, it has been criticised that the findings came from this current study challenged the public participation mode at the 4<sup>th</sup> stage of building low-cost housing in terms of the qualified applicants, residents, and citizens were intended to take part in the public-private partnership of construction based upon the joint decision rather than only advising and supervising.

In addition, the roles of the qualified applicants & residents & citizens, NGOs and NPC deputies playing were to advise and supervise the process of project implementation. Sometimes, the NGOs and NPC deputies should find the consulting organisation and public media which were the professionals in the construction field to facilitate the citizens and qualified applicants in delivering their dissatisfactions with the project implementation to those related government departments. Furthermore, the reputation of local government would be increased by means of publicising the process of project implementation and the local government would be better supervised by the independent supervision company and the general public.

With regard to the fifth public participation taken place at the fifth stage of low-cost housing's project assessment, this public participation model suggested that the local government should do the overall assessment on the new project based upon the information provided by the qualified applicants and the MSOCC.

However, the results from this research work argued that the assessment on the overall residential environment which would be made after the qualified households moved into should be paid more attention by the local government rather than the assessment made before their moving into new low-cost houses, because the qualified households had no choice of living elsewhere once they felt dissatisfied with the new housing environment. Accordingly, to improve their living experiences looked like

much more important. Moreover, it was criticised that the assessment had to be done by the independent supervision company.

Additionally, the NGOs and NPC deputies should try their best to find a good and suitable residential satisfaction scale with scientific questions to help the local residents enhance their living environments and to facilitate the local government to make more scientific policies on low-cost housing.

#### **8.4.3 Public Participation in LCH Development Contributing to Policy**

The public participation in low-cost housing development would bring the following benefits to its policy i.e. rational pricing, good planning, and Good Housing Estate Supporting Facilities and Housing Unit Characteristics for Low-Cost Housing.

##### **8.4.3.1 Rational Pricing for LCH**

The rational pricing for low-cost housing was more concerned by the local government and medium-low and low-income group of citizens. If the pricing of low-cost housing was made higher, the medium-low and low-income group of citizens did not afford to buy low-cost housing. Instead, the local government could not recover the construction costs and those private companies would lose their enthusiasms in getting involved in building low-cost housing.

During the interview, it was found that the price of new low-cost housing in some 2<sup>nd</sup> tier cities in Jiangsu province was higher than the local citizens' affordability. As a result, a lot of qualified households finally did not have enough money to buy low-cost houses.

It was assumed that the negotiation between the local government and qualified households which was already introduced in low-cost housing development would make the pricing more rationally by way of the local government publicising their construction costs and their development details.

#### **8.4.3.2 Good Planning for LCH**

With regard to the public participation in the site selection, the good location of low-cost housing would enhance the inhabitants' residential satisfaction to a great extent. Currently, the local government planned the mixed residences in terms of the low-cost and commodity housing in order to improve the quality of neighbourhood facilities of low-cost housing by sharing the public facilities of commodity housing.

However, those residents who lived at low-cost housing had social problems with those residents living at commodity housing such as social discrimination. Not only that, the commodity housing's residents thought that the price of their housing would be severely affected by the surrounding low-cost housing. More than that, the Xuzhou's low-cost housing of Phase 2 also failed for its isolated location in terms of lack of neighbourhood facilities.

Thus, by way of negotiation between the residents and local government, the local government would know exactly what they wanted and the local government would not waste time and resources to build some useless facilities.

#### **8.4.3.3 Good HESF and HUC for LCH**

The findings of this research indicated that the most residents were dissatisfied with the housing estate supporting facilities in terms of the local shops and recreational facilities.

Thus, the local government would know exactly how to improve their housing estate supporting facilities by way of negotiation between the residents and local government.

The findings of this research indicated that the local residents dissatisfied with their toilets in terms of the size and ventilation. In addition, they wanted the dining area and living area to be redesigned by separating.

As for the developer, the housing design of low-cost housing had to be different from the commodity housing, because the developer actually wanted to sell more commodity houses for more profits. They had to build better designed commodity houses than low-cost houses.

Thus, the negotiation might improve their mutual understandings regarding the differences between these two types of houses and try to help the low-cost housing residents to fix up their problems.

### **8.5 Limitations of This Study**

Despite of the fact that this research work finally has already answered those research questions, objectives and fulfilled the research gap that was indicated at the beginning of the research, some limitations of this research work as follows which was contained in the methodology part might affect the results which would bring along some influences into the discussions.

- Each city's low-cost housing project has its unique circumstances
- Data collection had been still criticised by other authors, although those ways that this research adopted and applied were all common ones
- Stepwise regression method (criticised & higher qualified data)
- Case selection (no conclusive theory about the numbers of case selecting)
- Recommendations (limited)

First of all, although the Xuzhou city which is the largest city in Jiangsu province and could represent all of the new 2-tier cities in Jiangsu province to a certain extent, each city's low-cost housing project has its unique circumstances. Under the almost same low-cost housing's building standard throughout the new 2-tier cities in Jiangsu province in terms of the physical living environment, the determinants to each city's low-cost housing satisfaction would be slightly different based upon the calculations made by the mathematical model of residential satisfaction. Therefore, the study of three phases of low-cost housing in Xuzhou city only could indicate the status quo of the low-cost housing programme in those new 2-tier cities of Jiangsu province and describe & investigate the inhabitants' residential satisfactions with that programme in Xuzhou city.

Secondly, on the basis of this research work applying the explanatory sequential mixed mode method, the way of stratified random sampling for selecting participants, the Yamane's mathematical formula of calculating the sample size, and the structured questionnaire being deployed to collect the quantitative data at the first part of mixed mode method were all common ways of collecting data and were learned from the literature reviews. However, these ways of data collection had been still criticised by other authors. For example, the sample size is a much debated issue whereby it would bring along a very different result. The Yamane's model claimed that doing a predictive model better apply the Yamane's model to calculate the sample size. Instead, knowing the percentage better use the national survey or the actual numbers.

Furthermore, the stepwise-method regression which was used for analysing the quantitative data had been still criticised by some authors when they were doing the same topic. For instance, comparing to the stepwise-method regression, some authors



recommended the logit or the categorical regressions because the stepwise-method regression required the higher qualified data.

With respect to the second part of mixed mode method, qualitative, so far there was no conclusive theory about how many cases would be exactly selected for further qualitative analysis. Some authors claimed that one or two cases would be picked up according to the quantitative results. However, some researchers argued that the numbers of cases should be the same as the sample size from the quantitative part.

In addition, the way of data collection and analysis in the qualitative part which would be either done by manual work or done by software work has been being discussed, for instance, some social science researchers thought that the information recorded by manual work would be more detail than the software work did regarding the numbers of questions being asked in the qualitative survey. In contrast, some researchers argued that the information recorded by software work would be more efficiently and scientifically than the manual work did regarding a lot of questions being asked in the qualitative survey.

Thirdly, on the basis of the findings, the recommendation part was very limited because there was no verified data or resources to support it.

## **8.6 Future study**

In the context of China's housing market, it is not only necessary but also urgent to launch China's Housing Act as soon as possible particularly the low-income housing. The processes of construction and management of low-income housing have to be abided by the law.

On the basis of the findings of this research work, the local residents are willing to take part in low-cost housing's construction and management. Accordingly, the public

participation in low-cost housing development model would be the next study consisted of the correlations between the regulations of four participated stages and the satisfactions of four residential components & individual and household's socio-economic characteristics. Here is the process of future research.

- To review the policies and regulations in each stage of the public participation model
- To investigate how significant those correlations between the regulations in public participation and each component's satisfaction & individual and household's socio-economic characteristics will be
- To propose a low-cost housing construction and management law to protect the medium-low and low-income group of citizens' housing and living rights
- All new 2-tier cities in Jiangsu province, China and select one or two typical low-cost housing projects from each city
- Exploratory sequential mixed mode method
- The MANOVA will be used to analyse
- A proper low-cost housing construction and management law

Therefore, to review the policies and regulations in each stage of the public participation model is the first objective. Then, to investigate how significant those correlations between the regulations in public participation and each component's satisfaction & individual and household's socio-economic characteristics will be is the second objective. Finally, according to the results given by the second objective describing which policy and regulation has the most significant with their residential components' satisfactions & their socio-economic characteristics, it will propose a low-cost housing construction and management law to protect the medium-low and low-income group of citizens' housing and living rights.

With respect to those participants, it is learned from the limitations of this current work that the survey will be deployed in all new 2-tier cities in Jiangsu province and will select one or two typical low-cost housing projects from each city.

The exploratory sequential mixed mode method will be applied. The Nvivo qualitative data analysis software will be used firstly to facilitate in designing the quantitative research questionnaire because the qualitative data would be very complicated in terms of being collected from several projects in several cities.

The MANOVA will be used to analyse the quantitative data because the correlations between the regulations of four participated stages and the satisfactions of four residential components & individual and household's socio-economic characteristics meet the MANOVA mathematical modelling.

Therefore, the local government and citizens with the NGOs and NPC deputies' supervisions will propose a proper low-cost housing construction and management law to protect the medium-low and low-income group of citizens' housing and living rights.

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## LIST OF PUBLICATIONS AND PAPERS PRESENTED

### Paper Presented at Conference

Xi and Hanif (2016)

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The first page at p.460 (Appendix F)