

PUBLIC HOUSING SELF-SELECTION THROUGH
USER SATISFACTION IN THE CITY OF QOM, IRAN

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A thesis submitted in fulfilment of the
requirements for the award of the degree of
Doctor of Philosophy (Architecture)

Faculty of Built Environment and Surveying
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JULY 2018

Dedicated to
My beloved mother and lovely wife

ACKNOWLEDGEMENT

First and foremost, I thank God for everything that has made this research possible. This study would not have been possible without the support of many people. I would like to express my deep gratefulness to my supervisor, Assoc. Prof. Dr. Mahmud Bin Mohd Jusan who was helpful and invaluable assistance, and guidance. My sincere appreciation also extends to all my colleagues and friends. Lastly, more important than any other support, my family have nourished me with love and understanding. Their constant encouragement and emotional support kept my vigour and alive in this journey.

ABSTRACT

This research is focusing on the concept of self-selection, a decision-making process grounded in self-concept, which currently receives less attention in housing provision in Iran. This is an effort to explore new suggestions for improving the level of user satisfaction for future living environments that are designed based on current architectural ideas. Achievement of self-selection is indicated by satisfaction in decision-making process. Therefore, the aim of this research is to enhance general housing satisfaction in Qom, Iran by improving the level of residential satisfaction of public housings through the decision making process for future designs. The objectives of this research are to investigate the attributes of the residential environment, related to user self-selection of public housings in Qom, and to measure the residential satisfaction level of public housings through various aspects of self-selection. Sequential mixed methods were employed based on post-occupancy evaluation questionnaire, which clarify the level of user satisfaction. The survey questionnaire was administered to a sample (N=109) of Iranian residents who live in the public housing of Mehr Projects in the Pardisan area of Qom. The collected data were processed with IBM SPSS, ANOVA, and Smart-PLS for frequency, t-tests and model testing. The results indicate that the mean score for user residential satisfaction, self-selection and overall quality of future design are above neutral. The findings suggest that the respondents were satisfied with their current experience of living in the apartments. The quality of current state of the building has improved, and the quality of future design needs less improvement. The results can be useful in assisting architects to predict residential satisfaction and subsequently consider the desired level of self-selection in their design process. In conclusion, the significant determinants of user satisfaction by different attributes of self-selection have been highlighted, and the findings show the central position of self-selection in architectural design.

ABSTRAK

Penyelidikan ini tertumpu kepada konsep pemilihan-kendiri (self-selection), yang merupakan proses membuat keputusan berdasarkan konsep-kendiri (self-concept), yang kurang mendapat perhatian di dalam penyediaan perumahan di Iran. Ini merupakan satu usaha untuk meneroka cadangan baru bagi memperbaiki tahap kepuasan pengguna terhadap persekitaran tempat tinggal dimasa akan datang, yang direkabentuk berdasarkan idea senibina semasa. Pencapaian pemilihan-kendiri dilahirkan melalui kepuasan di dalam proses membuat keputusan. Oleh yang demikian, tujuan penyelidikan ini adalah untuk meningkatkan kepuasan umum perumahan di Qom, Iran melalui penambahbaikan tahap kepuasan kediaman di perumahan awam melalui proses membuat keputusan bagi rekabentuk masa hadapan. Objektif penyelidikan ini adalah untuk menyiasat atribut persekitaran kediaman yang berkaitan dengan pemilihan-kendiri pengguna perumahan awam di Qom, dan untuk menilai tahap kepuasan kediaman perumahan awam melalui pelbagai aspek pemilihan sendiri. Kaedah bercampur secara berurutan digunakan berdasarkan soal selidik penilaian pasca penghunian (POE), yang akan menjelaskan tahap kepuasan pengguna. Soal selidik tersebut dikendalikan keatas sampel (N-109) penduduk Iran yang tinggal di projek perumahan awam Mehr di dalam kawasan Pardisan, Qom. Data yang telah dikumpulkan diproses menggunakan IBM SPSS, ANOVA, dan Smart-PLS bagi ujian frekuensi, ujian-t dan ujian model. Keputusan menunjukkan skor-min bagi kepuasan kediaman pengguna, pemilihan-kendiri dan kualiti keseluruhan rekabentuk masa hadapan adalah melebihi tahap neutral. Dapatan tersebut mencadangkan bahawa responden merasa puas hati dengan pengalaman semasa tinggal di pangsa puri tersebut. Kualiti keadaan semasa bangunan tersebut didapati bertambah baik, dan kualiti keperluan rekabentuk masa hadapan didapati kurang keperluan penambahbaikan. Keputusan tersebut adalah berguna dalam membantu arkitek untuk meramalkan kepuasan kediaman dan seterusnya mempertimbangkan tahap pemilihan sendiri yang diperlukan didalam proses rekabentuk. Sebagai kesimpulan, penentu penting bagi kepuasan pengguna melalui pelbagai atribut pemilihan sendiri telah diserlahkan, dan jumpaan kajian ini membuktikan kedudukan utama pemilihan sendiri didalam rekabentuk senibina.

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LIST OF ABBREVIATIONS

AVE	-	Average Variance Extracted
BPE	-	Building Performance Evaluation
BQA	-	Building Quality Assessment
CR	-	Composite Reliability
CV Red	-	Cross-Validated Redundancy or Q^2
EFA	-	Exploratory Factor Analyses
ES	-	Effect Size
FL	-	Factor Loadings
FPE	-	Facilities Performance Evaluation
IL	-	Item Loading
ISO	-	International Standardization Organization
KMO	-	Kaiser-Meyer-Olkin
LOCs	-	Lower-Order Components
LV	-	Latent Variable
OLS	-	Ordinary Least Squares
PLS-SEM	-	Partial Least Squares Structural Equation Modelling
POE	-	Post-Occupancy Evaluation
QoL	-	Quality of Life
SEM	-	Structural Equation Modelling
SPSS	-	Statistical Package for The Social Sciences

LIST OF SYMBOLS

α	-	Alpha Value
β	-	Beta Coefficient
ε	-	Standard Error of Estimates
$\sum x$	-	Sum of the Score
N	-	The Number of Scores
N	-	Population Size
S	-	Sample Size
E	-	Estimate
Σ	-	Standard Deviation
χ^2	-	Chi-square Mean
P	-	Population Proportion (Assumed to be 0.50)
d	-	Degree of Accuracy Expressed as Proportion (0.05)
P	-	P-value
e^2	-	Level of Precision
$a*b$	-	Normal Distribution of the Indirect Path
Q^2	-	Predominant Measure of Predictive Relevance
R^2	-	Minimum Coefficient of Determination
d_{th}	-	Data Point

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CHAPTER 1

INTRODUCTION

1.1 Overview

People have the right to live their life the way they want, to make their own decisions and to set their own goals. This means, at least, that everyone can do what he/she wants in his/her private life, to contact and develop relations with other persons and to contribute in important activities. Furthermore, they should be satisfied with their belongings, especially living spaces without unnecessary influences.

Architectural design plays a significant part in satisfaction level of a residential place. Every living environment has a characteristic magnetism for users. Therefore, during the architectural design process, architects should open a communication with users to access their values and needs to improve the quality of final products. In addition, while users choose their place of residence according to the architectural parameters that surround them inside their living environment, subjective and objective attributes of the residential environment effect on residential satisfaction. Accordingly, it is important that everyone gets his/her chance to participate in a design process. Obviously, user participation will bring place more satisfaction to help them find their own tastes and desires in final products.

Iran as one of the developing countries in Asia has a newly industrialized market economy, which supports the idea of having good potential of built modern structures in different kind of design buildings. In this era of fast construction development, Iranian architects have mostly focused on architectural parameters of

residential places such as green, intelligent, low energy also profitable buildings seems there is a lack of consideration of user self-selection in their design (Council, 2008; Jensen, et al., 2013; Yu, et al., 2015; Wong, et al., 2005; Menezes, et al., 2012; Meir, et al., 2009; Kim, et al., 2011; Janda, et al., 1994; Brager & De Dear, 1998 and Abel, 1994).

Moreover, the level of satisfaction also depends on consideration of human values, which refer to desirable goals that motivate action (Schwartz, 1992, 1996, Bond, 1988, Bond, et al., 1992). Consequently, the effects of human values as part of users' characteristics on residential satisfaction needs to be examined (Amerigo, 1990, 1992; Amerigo & Aragonés, 1997; Hawkins & Mothersbaugh, 2010). Understanding how architecture influences user self-selection as an important part of every personal characteristic can produce more desirable places to live.

Ultimately, this study has focused on defining the concept of self-selection as a vital part of each personal characteristic and evaluating/measuring residential satisfaction of public housing through different elements/dimensions of self-selection in one of the developed cities in Iran, Qom.

1.2 Research Background

The diversity of human requirements in an individual's living environment is obvious. Ideally, architecture should respond to these various requirements. Architecture, which has been defined for this basic purpose aims, at fulfilling not only physical and functional but also human psychological needs and desires. Principles of architecture have been used to organize or arrange structures to create a successful building or an environment (Suh, 1990; Seider, et al., 1999; Lawson, 2006). Institutions teach different sets of principles regarding architecture, but all of them have the same goals in mind: to create structures that are (a) visually attractive, (b) user-friendly, and (c) environment-friendly (Page, et al., 2010). Considering the scope of this study, even though these goals are important for earning prominent level

of satisfaction in place of residence, because of fast industrial development in building design, end-user characteristics specifically self-selection's effects have been missed. In this regard, self-selection and its determinants of residential satisfaction need to be clarified.

However, based on the conception of self-concept in the model of consumer behavior which made by Hawkins & Mothersbaugh (2010), the conceptual model of self-selection has been explored. In the following, the framework of this study, by merging the existing model of residential satisfaction (Amerigo & Aragoes, 1997) with the conceptual model of self-selection, the new model of residential satisfaction has been developed.

1.2.1 Self-selection: Concept and Definition

General Perspective: Selection by oneself or self-selection, is related to decision-making or the degree to which people make their own decisions and direct their own lives; and the opportunities that are available to people from which choices and decisions can be made (Brown, et al., 1997). Self-selection is a situation in which people decide for themselves to do something rather than someone else making this choice for them. Self-selection may happen in buying choices if some people decide to buy a new product and others decide not to buy this product (Litman, 2005; Handy, et al., 2006; Wee, 2009).

Self-selection as An Indicator: Based on Litman (2005), self-selection is an indicator in choosing a house, which has been referred to the tendency of people to choose locations based on their travel abilities, needs, and preferences (Litman, 2005). On the other hand, Mokhtarian & Cao (2008) opine that self-selection relates to the tendency of people to choose locations based on their travel abilities, needs and preferences. Self-selection is defined as the tendency of people to make choices that are relevant for travel behavior, based on their abilities, needs and preferences (Mokhtarian & Cao, 2008:7). Although self-selection has been related to house

selection based on travel abilities, it can be argued as indicating choice in general housing attributes.

Self-Selection and Decision-making: Our decisions as nature of self-selection and even the process of making them will cause learning and may influence many aspects that will change or reinforce our current self-concept and lifestyle. According to Hawkins & Mothersbaugh (2010), there are two types of influences affect self-concept and lifestyle; internal and external Influences. Furthermore, since self-selection happens in a decision-making process, having the same root as self-concept, self-selection can take self-concept's place in the model of consumer behavior which made by Hawkins & Mothersbaugh (2010). Thus, the view of ourselves and the way that we try to live, are determined by internal and external aspects, which result in needs and desires that we bring to the multitude of situations we encounter daily as shown in Figure 1.1.

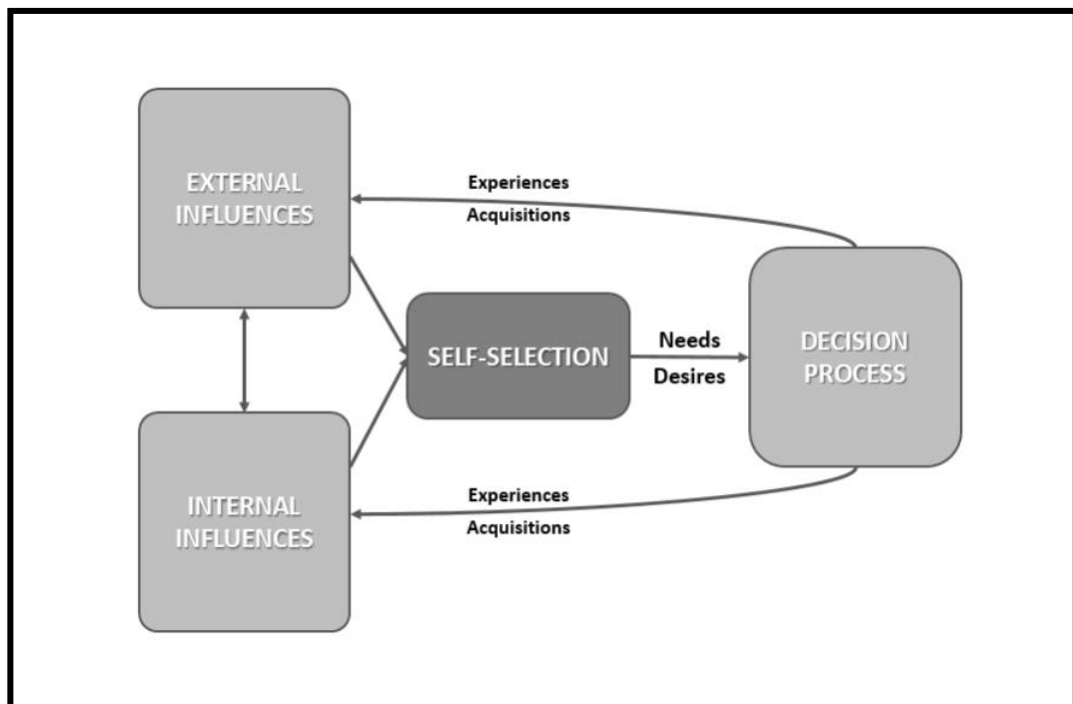


Figure 1.1 The Conceptual Model of Self-selection - Adopted from The Model of Consumer Behavior (Hawkins & Mothersbaugh, 2010)

Besides, in order to the justification of self-selection and reviewing its relationships with self-concept and lifestyle, the conceptual model of self-selection has been presented. Consequently, in the era of building design, user self-selection as part of personal characteristic shapes with these influential aspects.

Conversely, although an architect knows diverse ways of achieving the qualities, which support the responsiveness of the place itself, and even with the highest level of public participation, most people will still have to live or work in places that designed only by others. It means the self-selection issue is not considered well in the context of building designs. It is therefore especially significant to make it possible for end-users to personalize these existing environments. This is the only way that most people will achieve an environment, which stands the stamp of their own tastes and values (Bentley, et al., 1985).

1.2.2 Residential Satisfaction

McCray & Day (1977) identify residential satisfaction as the degree of satisfaction experienced by an individual or a family member regarding the present housing situation. Residential satisfaction is a factor that has a noticeable effect on social and private life which is defined by Galster (1987) as an apparent gap between a respondent's requirements and goal and the reality of the current residential context. In addition, residential satisfaction includes satisfaction with the housing elements and satisfaction with the part (Onibokun, 1974). Ogu (2002) maintained residential satisfaction is employed to evaluate residents' insights and feelings for their housing units and the environment. Besides, a systemic model of residential satisfaction signifies the active position of the personal characteristic on satisfaction with life in general. For instance, Amerigo & Aragonés (1997), have presented a systemic model of residential satisfaction as shown in Figure 1.2.

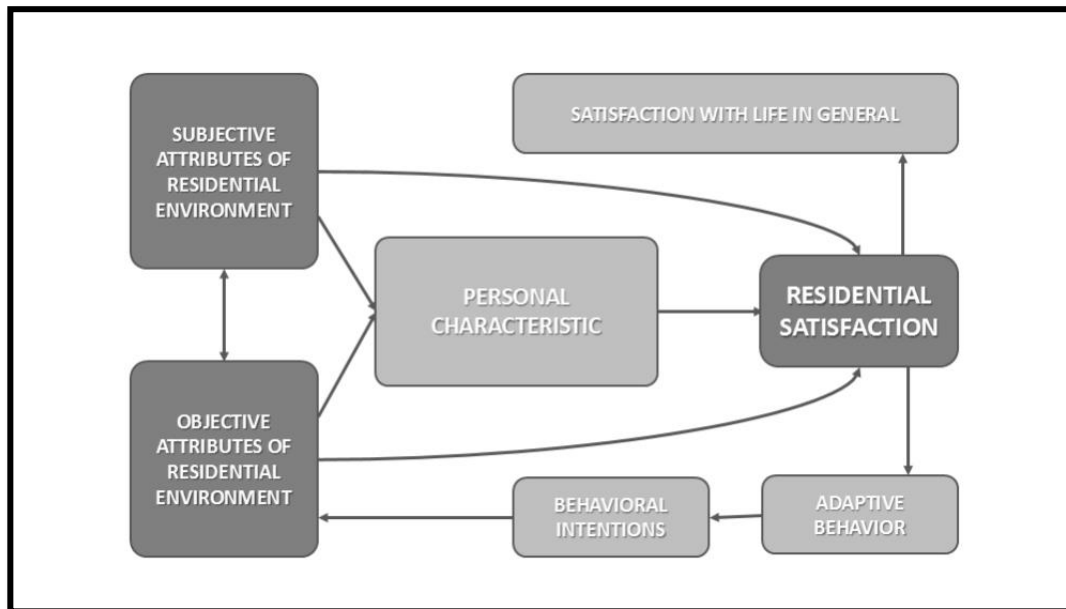


Figure 1.2 A Systemic Model of Residential Satisfaction (Amerigo & Aragonés, 1997)

As shown in Figure 1.2, to achieve the prominent level of residential satisfaction, personal characteristic of end-user and subjective/objective attributes of the residential environment in comparison with internal/external influences on a place of the resident should be well thought-out.

1.2.3 Assessment Tool

There are several assessment tools to evaluate/measure different variables in architecture including post-occupancy evaluation (POE), building performance evaluation (BPE), building quality assessment (BQA), and facilities performance evaluation (FPE). Therefore, based on the preliminary study, the assessment models are mainly based on the POE (Zimring & Reizenstein, 1980; Preiser, et al., 1988; Ornstein, 1999; Wagenberg, 2001; Heerwagen & Zagreus, 2005; Rasli, 2006; Turpin-Brooks & Viccars, 2006; Preiser & Nasar, 2008; Meir, et al., 2009; Izran, et al., 2010; Izran, 2011; Menezes, et al., 2012; Preiser, (ed.), 2013; Chiu, et al., 2014; Yu, et al., 2015; Wener, et al., 2015). Accordingly, by choosing POE as the suitable assessment

tool for this study, the criteria, which are required to be estimated include: health, safety, security, functionality, efficiency, social, environmental psychology, aesthetics, operations, comfort, durability, economics, flexibility, accessibility, building environment, and culture (Preiser, 1989; Preiser, et al., 1988; Preiser & Vischer, 2005; Preiser & Nasar, 2008; Issacs, et al., 1994; Ho, 1997, 1999).

1.3 Problem Statement

As a reasonable explanation of the early human behaviors, since the first person decided to build an accommodation, the main reasons were; the best response to his/her needs and desires. Obviously, even in primary space design and construct, each decision has been made to bring more satisfaction and comfort. However, the criterion of an excellent product was; answering to self-selection which has been defined as a choice that each person makes by himself/herself. Then again, self-selection may be a key to better understanding of people's choices (Handy, et al., 2006).

Since the 1980's, fancy features and technological capabilities for the future generation of buildings based on business goals have been introduced: intelligent building, green building, low energy building, zero energy building, and high-performance buildings. Moreover, architects of these kinds of buildings have been forced to design them based on modern ideas of architecture, which means answering the technological issue with profitable solutions in fastest methods. Although these approaches are important, the gap what has been paid less attention here is the respect to the personal characteristic of users during designing and construction process of these buildings. On the other hand, considering the users' ideas, beliefs, attitudes, and desires would be an appropriate technique for deriving final users' satisfaction with products. Now, it is very clear to establish that if designers who wish to reach out the prominent level of people satisfaction, they should be considered self-selection in their decision-making design.

Subsequently, user satisfaction relies on different criteria in architecture design, the scope of this study is user self-selection as a vital part of each personal characteristic, which could help architects to design and construct more suitable places to live. However, this study has concentrated on self-selection by measuring residential satisfaction on identified self-selection aspects in residential places of public housings.

1.4 Research Questions

Enhancing the level of people satisfaction as one of the biggest gold of every decision around the world is most wanted. In the field of architecture, designers of residential buildings would play a substantial part in increasing user satisfaction level of residential places. Firstly, they should consider a communication with users' candidate during the design process to involve ideas, beliefs, attitudes, and desires of users, finding out the best design decisions. Secondly, using the assessment tool to evaluate/measure the level of design quality of the product by verifying users' living experiences, would help them to learn and improve their designs in similar upcoming projects.

In this regard, many research questions related to the personal characteristic, self-concept, self-selection, user satisfaction, residential satisfaction, housing typologies, public housings, and assessment tool have been reviewed. Based on these keys, which are about investigating residential satisfaction level of public housings in Qom, the research questions are as follows:

Research Question One: What is the conceptual framework based on the relationship between residential satisfaction and self-selection?

Identifying the concept, meaning, and definition of self-selection, residential satisfaction, and their relationship are achieved via answering the following sub research questions:

- (a) What is the perception of self-concept?
- (b) What is the idea of self-selection and its relevance with personal characteristic?
- (c) What is the conception of user satisfaction?
- (d) What is the concept of residential satisfaction?

Research Question Two: What are the attributes of the residential environment, related to user self-selection of public housings in Qom?

Investigating the attributes of user self-selection of public housings through finding the answers for the following sub research questions:

- (a) What are the public housings typologies in Qom?
- (b) What are the residential environment's attributes of public housings in Qom?

Research Question Three: What is residential satisfaction level of public housings in Qom?

1.5 Research Aim and Objectives

The aim and desired outcome of this study are to enhance the level of people satisfaction in general as the result of the improved level of residential satisfaction of public housings of Qom in comparable future designs. To achieve the aim, this study set out to examine these objectives:

- (a) To investigate the attributes of the residential environment, related to user self-selection of public housings in Qom.
- (b) To evaluate/measure residential satisfaction level of public housings in Qom through various aspects of self-selection.

1.6 Scope and Limitations of the Study

Justification of the scope needs to narrow down from three ways which are: user characteristic, architecture design, and study area as shown in Figure 1.3. Furthermore, there are six limitations from three points of view; including the place of residence, the user characteristics, and the stage of the process.

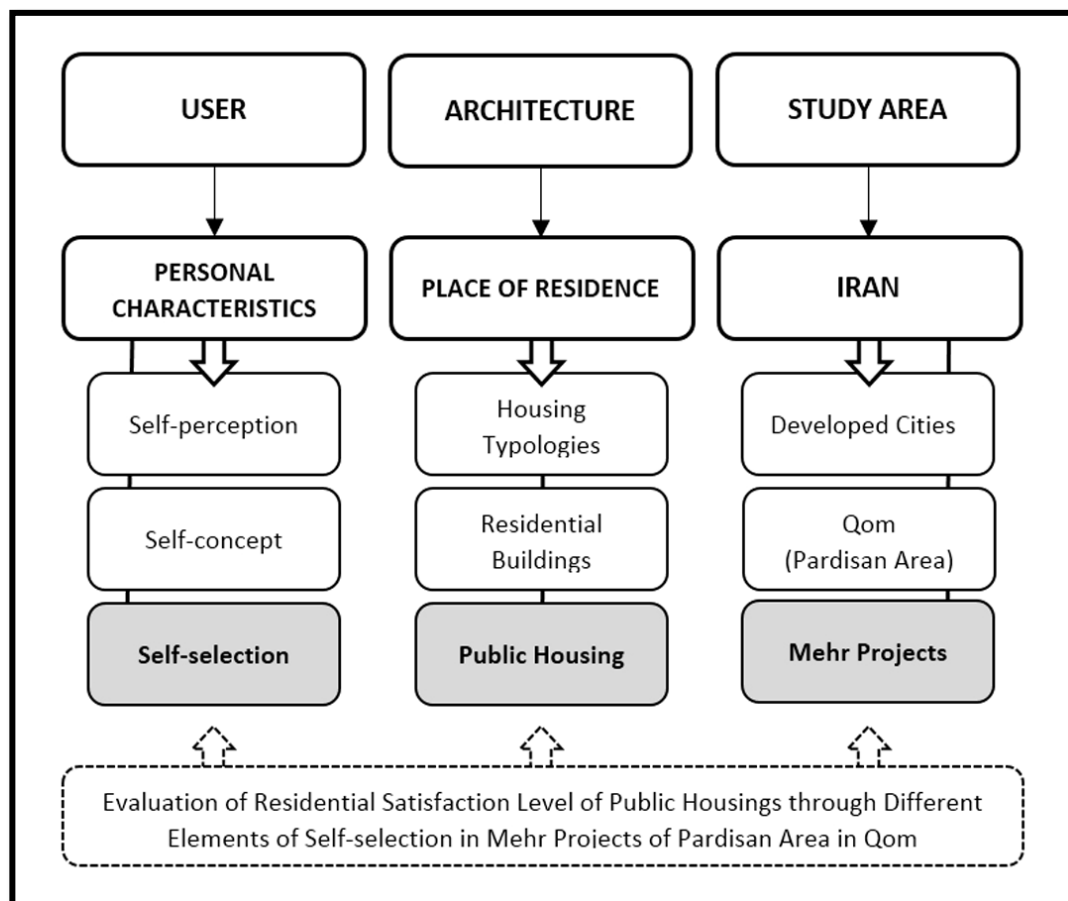


Figure 1.3 The Scope of the Study

By considering Iran/Qom as the study area, the scope is structured by the following subsections:

1.6.1 The Place of Residence

One: The focus of the study is in public housings of developed cities in Iran. In this regard, Pardisan area of Qom have been chosen.

Two: The developed questionnaire grounded on adapted questions was administered to a sample of public housings, living in residential buildings of Mehr housing projects in Pardisan area of Qom.

1.6.2 The User Characteristics

Three: Regarding self-selection's concept, personal characteristic for the root of self-perception, self-concept, and self-selection have been justified.

Four: Based on the concept of public housings, the respondents of the questionnaire who live in these residential buildings have a median income as rated by country, state (province), region or municipality.

Five: Since users all are Iranians, the original questionnaire has been translated into Persian by the author for local users in Qom who may not read or understand English text properly.

1.6.3 The Stage of the Process

Six: Considering evaluation of residential satisfaction level, POE has been chosen to measure the level of satisfaction with public housings of Mehr housing projects in Qom.

1.7 Research Methodology

The important part of each research methodology goes into a research approach which is the exact methods of data collection and analysis. The choice of methods is connected to specify the type of information to be collected in advance of the study. However, the type of data may be numeric information gathered on scales of instruments or more text information of the participants (Creswell, 2003). In the form of data collection in this study, both quantitative and qualitative data are targeted. Thus, by focusing on collecting data from users who have experience of living in residential buildings of public housings in Qom, mix methods of both open- and closed-ended questions, multiple forms of data drawing on all possibilities statistical and text analysis has been chosen.

Research Action Plan: According to the objectives, which have been identified for achieving the aim and answering research questions, four phases of the research action plan in five steps are shown in Figure 1.4.

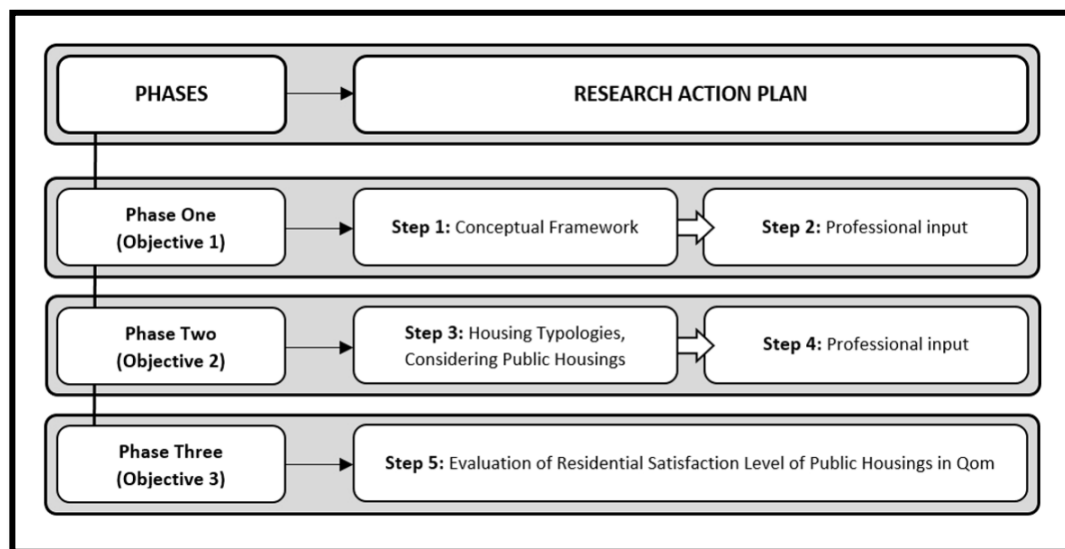


Figure 1.4 Research Action Plan

1.7.1 Phase One (Objective 1):

Step 1 - The Conceptual Framework: A content analysis of previously published reports (Code: self-concept, personal characteristic, self-selection, user satisfaction, and residential satisfaction) have been conducted.

Step 2 - Professional Input: First, an interpretive study on models of self-selection and residential satisfaction in the normal way of a close group discussion meeting have been conducted. Then, the conceptual framework has been proposed to the close group discussion meeting with academic professionals and the Brainstorming method has been used to develop the conceptual framework.

1.7.2 Phase Two (Objective 2):

Step 3 - Housing Typologies, Considering Public Housings: A content analysis of previously published reports (Code: housing typologies, and public housings) have been conducted.

Step 4 - Professional Input: First, an interpretive study on housing typologies, and specifically, public housings in the normal way of a close group discussion meeting have been performed. Then, the Delphi decision-making model in the close group discussion meeting with academic professionals.

1.7.3 Phase Three (Objective 3):

Step 5 - Evaluation of Residential Satisfaction Level of Public Housings in Qom: A content analysis of previously published reports (Code: assessment tool and POE) has been conducted. Then, the collected data from occupant survey questionnaires with emerging methods both open- and closed-ended questions have been applied to IBM SPSS, and Smart-PLS for frequency, t-tests and model testing.

Finally, the result of quantitative and qualitative data has been reported in chapter 4 and 5.

1.8 Research Significance

The significance of this study is explained in the following sections:

- a) By identifying the concept, meaning, and definition of self-selection, residential satisfaction, and their relationship from the first objective, the conceptual framework has been proposed.
- b) In objective two, housing typologies and the attributes of the residential environment, considering user self-selection of public housings in Qom have been investigated.
- c) To fulfill the objective three, the residential satisfaction level of public housings in Qom through various aspects of self-selection have been evaluated/measured.

1.9 Research Organization

This study has been divided into six sections. Each section has been described as follows:

In Chapter 1, the structure of the study has been presented. It started with an overview and research background of the study followed by problem statement. Research questions, research aim and objectives, scope and limitations of the study as well as research methodology have been adopted. Here, also, the research significance of the study has been accentuated, which ends with research organization of the study.

In Chapter 2, different theories, models, standards, and concepts have been reviewed. This chapter has presented a review of the literature pertinent to self-

concept, personal characteristic, self-selection, and user satisfaction by covering the significant theories and models which are considered fundamental to this study. Moreover, the concept of residential satisfaction has been presented.

In Chapter 3, by developing the conceptual framework for the theoretical framework of this study, the methodology has been detailed by clarifying different methods which are used to connect other studies with this study. It has set up the options and reasons for choosing the kind of methodology which is selected for this study. It also makes clear the strategy of data collection. In addition, it accepted the mixed method in data collection and analysis. A post-positivist research paradigm and consequently a mix method methodology using survey questionnaire with a few open-ended questions has been found to be suitable to answer the research questions and therefore has been applied to the current study.

At the end of every chapter, a summary of the chapter has been written. The data collection procedure, data analysis, and findings have been presented in Chapter 4. This part of the thesis has been completed with discussion and conclusive results.

In Chapter 5, the conclusion which comes from the study findings has been presented. As the concluding section of the thesis, some useful information namely Appendix and a copy of current study questionnaire and other documents have been attached.

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