Int. J. Hum. Capital Urban Manage., 4(1): 33-42, Winter 2019

International Journal of Human Capital in Urban Management
(IJHCUM)

Homepage: http://www.ijhcum.net/

ORIGINAL RESEARCH PAPER

Mental pattern of investment demand for housing in urban areas by Grounded Theory

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ARTICLE INFO

Article History:
Received 28 July 2018
Revised 19 November 2018
Accepted 29 December 2018

Keywords:
Cognitive science
Grounded theory
Housing
Investment demand

ABSTRACT

Optimal housing selection is one of the most important challenges in housing demand, which most people, especially housing investors, are facing. Although there is an overall agreement on the importance of the budget role on choosing the house, the model that uniquely measures the role and impact of all the factors of investment demand for housing has not been presented and no clear explanation is made. Considering the central role of budget constraints, behavioral and control factors in investment demand, this research carried out in the framework of the qualitative (method of data research method) and quantitative (polynomial logistic method) approach to explaining the mental pattern of investment demand for housing in Tabriz. The data were obtained from semi-structured interviews of 12 experts familiar with the issues of housing capital and distributing a questionnaire among 720 households in Tabriz. The result revealed 250 code, 20 concepts, and 4 categories, based on which the qualitative research model was designed. Also, the results of estimating the logit model using the STATA software indicate that important factors such as welfare and comfort aspects with a coefficient of 0.8292, access to urban services with a coefficient of 0.2287 and proximity to relatives with the coefficient of 0.2199 have had a positive and significant effect on the capital investment demand. But the close proximity of the household header with the coefficient of-0.2014 has a negative impact on the choice of housing capital.

DOI:10.22034/IJHCUM.2019.01.04

INTRODUCTION

Today, in addition to housing as the basic requirement of households, it is considered as an economic commodity, which is the main source of economic activity (Maher, 1994). Choosing house is one of the most important economic decisions that is made by families because the major part of their budget is in the form of consumption and assets (MacLennan, 1977), this phenomenon plays an important role in the economic conditions of middle and lower middle class of households due to the uncertainty of the future (Coulombel, 2010). In the last few decades, there have been two different approaches to financial issues and financial theories in the subject of investment and about the type of decision-makers. The first approach is the neoclassical approach in financial science, the basic assumption of which is market efficiency and wise behavior of investors in the market (Coulombel, 2010). This approach began with the capital asset pricing model (CAPM); the Emerging markets theory (EMH) in the

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1960s, the Mid-term capital asset pricing model, and the Miller and Modigliani arbitration pricing theory (APT) in the 1970s (Ghezelijeh and Emami, 2009). As time goes on researches, found many of the movements and disruptions in financial markets that were not justified by the use of market-based theories. This led to the emergence of a behavioral revolution in financial debates with Kahneman and Tversky (1979) paper which has pointed out that investment decisions are not only influenced by economic indicators and rationality, but also other factors have a significant impact on their behavior and their decision type. Among those, people in their decisions try to focus on aspects such as avoiding regret, desirable effect, mental accounting, representative intuition, and stereotyping, fluctuating behavior, conservatism, and ownership. The explanation of each of the mental and behavioral factors is as follows. Avoiding regret is an emotional phenomenon that often leads to investors staying loyal to their losing investment opportunities for a long time, in order to avoid mistakes and realization of losses. The basic idea behind this theory is that when a person chooses between two options, he does not just think about the revenues of the choice, but he also thinks about the loss of the revenue for not choosing another option. The reluctant effect of this is that investors tend to sell assets that are profitable and keep the assets, which are not, and holds that until it becomes profitable. Mental Accounting is the desire of individuals to codify, classify, and evaluate economic consequences by grouping them into a set of mental accounts. Representative intuition is a psychology-based theory of how limited cognition affects individual spending, saving, and other household behavior. Fluctuating behavior or complaint behavior is a correlated behavior pattern among individuals that investors invest in the behavior of other investors without intention, which can lead to irrational behaviors from investors (Pascual-Ezama *et al*., 2014). Conservatism is also a kind of mental process that allows people to reject views with their previous predictions and ignore new information or react less than they need. This causes individuals to be overemphasized for initial estimates, and thus can not react as a rational person in the face of new evidence. The effect of ownership is the hypothesis that based on that, individuals value what they own more than it does worth (Barberis and Thaler 2003). In the meantime, one of the methods used in decision-making is the mental pattern (Zaunbrecher *et al*., 2016). Mental models are the internal representation of cognitive systems for the interpretation of the environment and a better understanding of the person from the surrounding environment and his decision-making (Schmid *et al*., 2017). Given the importance and role of housing in the economy and its impact on the development of countries, its consumption value and capital, and its simultaneous importance in microeconomics and macroeconomics, identifying the factors influencing household decision making for investing in housing and their mental pattern extraction are important. Previous studies show that cost of house, home ownership, type of building, neighbors' characteristics and accessibility were the influential factors affecting the choice of residential location)Kim and Mara Jones (2005); Bayho *et al*., (2006); Lee (2009). Sener *et al.,* (2011) investigated the modeling behavior of choosing residential location using the polynomial logit model. In order to investigate, the effects of variables such as house prices, household characteristics, income and properties of neighbors, spatial variables were introduced into the model and the results showed that this method could better assist the modeling. *Ho et al*., (2015) Using the S-shape utility function and fuzzy logic, examined the choice of house by families using the Internet. The results showed that the proposed method provides better customer satisfaction than manual systems for choosing a house. Bork and Moller (2015), using Dynamical Mechanical Analysis (DMA) and Database Management System (DMS) methods, have tried to show house prices predictor as one of the most important and effective factors in choosing house in 50 states in the United States. They concluded that the best variables for predicting house prices vary a lot over time and across states. Wei and Cao (2017) also used DMA method to predict house prices in 30 of China's major cities. The study concluded that there was no indicative predictor of house prices in China, and prices changed over time. According to Aliyeva (2017), the second type fuzzy set is the most powerful method to choose a house. Mei *et al*. (2018), using a hedonic evaluation, showed that buying a house with a large green spaces leads to a higher price difference than houses with less green spaces. So far, no research in the field of demand for housing investment and the extraction

of the mental pattern of individuals to identify the important factors affecting their choice and their decision has not been made. Studies show that a study in the field of investment demand for housing and extracting the mental pattern of individuals to identify the important factors affecting their choice and decision has not been made. This research intends to use the Grounded Theory method to extract the mental pattern of individuals in demand for housing investment and identify the factors affecting the selection of housing in Tabriz, Iran. This research has been conducted in Tabriz, Iran in 2018.

MATERIALS AND METHODS

Tabriz, as a metropolitan city with problems such as population growth, faces the lack of adequate housing in the urban environment, was selected as the location of the research. To reach the results a well formed questionnaire using previous researches in the similar field was used. Coding and analyzing the findings were carried out on the results from interviewing of 12 experts in the field of housing in order to extract the key points involved in the mental pattern of individuals in the investment demand for housing in the city of Tabriz.

Qualitative study method

Grounded Theory

The ground theory is a general research method for the theory production. The grounded theory is an inductive and explorative research method that allows researchers in a variety of thematic areas to develop the theory instead of relying on existing theories. In this strategy, the collection and analysis of data and the theory that ultimately inferred from the data are in close relationship with each other. Instead of starting a study with a pre-conceived theory, the researcher begins with a particular study field and allows the theory to emerge from the heart of the data (Flick, 2007; Morse *et al., 2008*). In using this theory, theories that examine the current situation are managed through the designed questionnaire and the interviewee manages the progress of the acquired information (Corbin and Strauss, 2008). This method of collecting information allows individuals to have a more complete understanding of the research aspects and predict possible points that may be important to the progress of the study. This leads to the creation of new theories or a combination of existing theories (Ghezelijeh and Emami, 2009). The process of conducting research are, research questions, notes and data collection, analysis, theoretical sampling and theoretical saturation, writing and editing the theory, and comparing the texts. The analysis process starts with open source coding, and in the ideal case, it will end with selective coding. (Corbin and Strauss, 2008). Encoding is the main process of constructing and implementing a theory of data (Corbin and Strauss, 1990). The diagram of the research according to the coding steps is presented in Fig.1.

Data analysis is also carried out as a multi-stage process, and with repeated data retrieval, the main concepts of the data are obtained (Backman and Kyngas, 1999). To achieve the proper analysis, after identifying key points, the data is coded, then the assigned codes and common axes are converted into a set of concepts and are extracted by grouping concepts

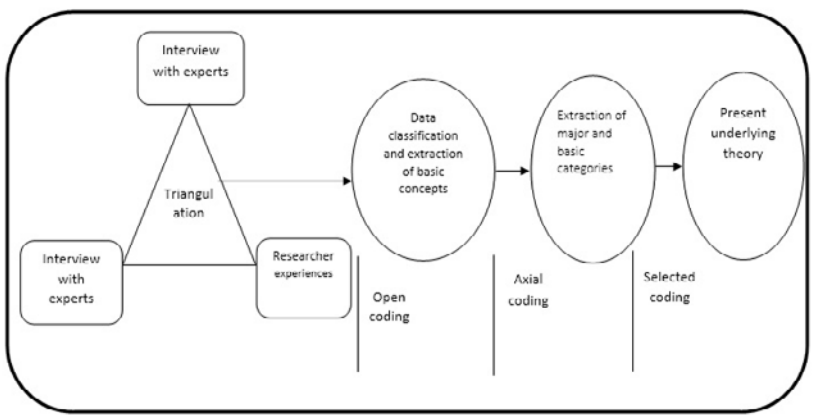

Fig. 1. Encoding steps (Corbin and Strauss, 1990)

into categories. Finally, drawing up the relationships between the categories and the concepts, the final theory is formulated. This formulation of the theory of data is evident in Fig. 2.

It should be noted that these processes are not linear, but overlapping and following a return process (Fig. 2). In fact, the grounded theory is one of the methods of conducting qualitative research that attempts to discover the theory by collecting data (Khan, 2014). In fact, this theory is one of the methods of conducting qualitative research that, by collecting data, attempts to discover the theory. In general, the main purpose of this method is to explain a phenomenon by identifying its key elements and then classifying the relations of these elements within the context and process of that phenomenon (Corbin and Strauss, 1990).

Quantitative Study Method

Logit Model

Economists believe that the dependent variable can be limited and the dependent variable values are limited to 0, 1, 2 and etc. Additionally, the dependent variable may be subject to limitations in the capture of its values. In general, the dependent variable can be a qualitative variable, which the result is the decision of the people. The underlying basis of each of these cases can be found in the general framework of probabilistic models. For this reason, assume that the factors influencing the choice of housing are examined. If the choice of housing is indicated by the random variable of Y, then Y represents the choice of house for buying. In this case, the probability of the occurrence of the incident (the choice of house to buy) Includes: The probability of buying house in the housing market by any person or family depends on his characteristics and the characteristics of the environment and the desired house, such as budget, education, employment, risk taking of the area and the desired housing. Therefore, the above probability can be considered as a function of individual characteristics and properties of housing. In this study, since the dependent variables are discrete, logistic regression is used, and since the dimension of the dependent variable is greater than 2, Multinomial Logit Model (MNL) is used. Thereupon, it is first necessary to explain the random utility theory, which is the basis for the use of discrete house choosing models and then, explain the MNL which is used in current study.

Random utility theory

Random utility theory has theoretical advantages over the proposed rental model. For example, the household decision-making process is based on a possible selection phase between the discrete types of physical (building characteristics and features of areas) and behavioral factors. The equilibrium is obtained by probability distribution in the Random utility theory, which shows the probability of the household preference between discrete options. In addition, in this theory, the utility function of the household includes measurable and random components that random sentences represent the unknown characteristics of the area and housing and household behavioral characteristics when making their decision. Anas (1982) in his research mentioned that different choices of households are only considered and examined by assuming random sentences with different socioeconomic and behavioral characteristics. In this model, the utility function for households is shown in Eq. 1:

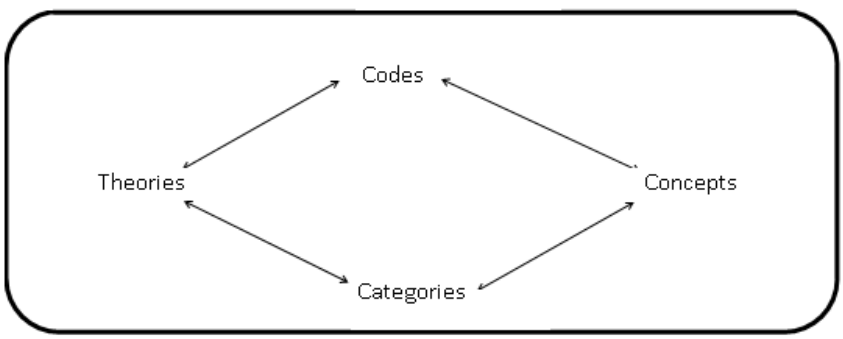

Fig. 2. The evolutionary nature of the data theory (Backman and Kyngas, 1999)

$$y = x_i\ \beta_i + u_i,\ x_i = x_1,\ x_{25} \qquad \beta_i = \beta_1 \dots \beta_{25} \tag{1}$$

Where, x_i is the vector of explanatory variables (including behavioral, physical variables (building and area characteristics).

Logit Model (LM)

The overall structure of the Logit model is represented as Eq. 2

$$y_i = \ln\left(\frac{p_i}{1-p_i}\right) = z_i = \beta_1 + \beta_2 x_i \tag{2}$$

Since the dependent variable is the choice of residential location by families for investment, the Logit Model was used, which is a twice choice. The used discrete model to investigate the relationship between factors influencing housing choices, derived from the grounded theory, which is showed in Eq. 3.

$$\begin{aligned} y = {} & \alpha + \beta_1 x_1 + \beta_2 x_2 + + \beta_3 x_3 + \beta_4 x_4 \\ & + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 \\ & + \beta_{10} x_{10} + \beta_{11} x_{11} + \beta_{12} x_{12} + \beta_{13} x_{13} \\ & + \beta_{14} x_{14} + \beta_{15} x_{15} + \beta_{16} x_{16} + \beta_{17} x_{17} \\ & + \beta_{18} x_{18} + \beta_{19} x_{19} + \beta_{20} x_{20} + \beta_{21} x_{21} \\ & + \beta_{22} x_{22} + \beta_{23} x_{23} + \beta_{24} x_{24} + \beta_{25} x_{25} + \varepsilon y \end{aligned} \tag{3}$$

Y in Eq. 3 is a dependent variable, which in the questionnaire is mentioned as ""Residential state: investment or not". In the case of the answer was investment, number 1 was allocated to the answer and if the answer was not, number 2 was allocated to this question. Estimates of explanatory variables are in the form of 5-point so that the number 1 the minimum and 5 determines the maximum. The explanatory variables which Estimate the level of person regarding the location of housing are as follows:

Location

x_1 The social welfare and housing (social status of the cultural, religious, and social aspects).

x_2 The position of the house, such as proximity to the workplace.

x_3 The location of the house and the security.

x_4 The house location in terms of providing conditions for avoiding the crowd and traffic.

x_5 Access to important urban amenities and proximity to main roads.

x_6 The house access to urban services (taxi station, subway, bank, offices, etc).

x_7 The access and proximity of the house to the educational and therapeutic centers.

x_8 The location of the house in terms of providing conditions for proximity to families.

x_9 The access to the university, schools and kindergarten.

x_{10} The green space and visible landscapes from the inside of the residential place.

x_{11} The privacy of the area and the relative relaxation in the residential complex.

The characteristics of housing are as follows:

x_{12} The separation of the public and private areas in the residential place;

x_{13} The building appearance;

x_{14} The access routes to the residential place, including elevators, stairs, corridors, etc;

x_{15} The interior design of the house;

x_{16} The number of available rooms in the house

x_{17} The public facilities of the house, such as flooring and the quality and quantity of cabinets;

x_{18} The house heating and cooling system;

x_{19} The lighting conditions of the interior spaces of the house;

x_{20} The age of the residential place;

x_{21} The strength and quality of building and material used and incident-resistant (natural and unnatural);

x_{22} The location of a residential place in the alley (length and width of the alley).

The Behavioral and control factors of housing are as follows:

x_{23} The impact of other people's views or experiences on a person to choose a house;

x_{24} The person's information about the market;

x_{25} The percentage of monthly income that a person wants to dedicate on buying/ renting a residential place.

Having in mind that the questionnaire is used, as the tool for collecting the data using simple sampling method, its validity and reliability was measured, using Cronbach's alpha (0.78). Based on the Cochran formula for the households over 370000, in which the sample size is steady at 383, in the current research,

out of 563660 households in the city of Tabriz, a sample size of 720 households was used.

RESULTS AND DISSCUSION

In Fig. 3, based on the detailed study of the interviews is provided. In the obtained results from the interviews, the experts emphasized the importance of housing and the factors affecting the choosing a house, and in this regard, the interviewees presented their accumulated experiences in the field of housing to extract the mental pattern of choosing house in Tabriz. Fig. 3 presents the factors that play an important role in people's decision making of choosing a house which are as a coherent structure, and the importance of the role of Grounded Theory in extracting the mental pattern of their choices.

Since Fig. 3, is a result of many years of experienced and expert opinion (both scientifically and empirically) in the realm of housing, it seems important to applicants, practitioners and researchers in the field of housing because they are people who are familiar with the barriers and opportunities available in this area and are able to analyze the housing market as one of the most important markets in the country. The first step in choosing house in order to look at it as an asset from the viewpoint of the participants in the interview is to examine the current situation of the housing market and identify its weaknesses and strengths. Secondly, monetary requirements or the budget is the most important issue in the process of choosing a house. In the market for non-homogeneous goods, such as housing, price levels are interpreted as commodity quality, and other characteristics of the applicants are manifested (mohammadzade *et al.*, 2017). According to the Population and Housing Census in 2012, this figure was 0.62, and in 2016, the index has fallen to 1.6 (Statistical Center of Iran, 2018). In addition, one of the few indicators that illustrate the high demand for assets in Iran's housing market is the number of vacant houses. The number of vacant residential units according to the Population and Housing Census in 2012 was 1,663,000 units (mohammadzade *et al.*, 2017). At first glance, it is expected that the supply of these vacant units can reduce the level of household density in residential units and bring them to the closer and desired number. However, not only did this supply not occur, but also the number of vacant houses have grown dramatically, reaching 2587000 units in 2016 (Statistical Center of Iran, 2018). The third step in choosing and investing in housing is the reasons for choosing it. The third step in choosing and investment in housing is the reasons for choosing it. The reason for choosing housing by families is twofold: The psychological aspect and the financial aspect. Psychological aspects for investment in housing which is derived from Stress and pressure from economic instability and financial aspects for investment in housing, which has its reasons as follows:

- Maintaining asset value (investing to prevent the loss of wealth);
- Profitability resulting from rising housing prices purchased in the future;

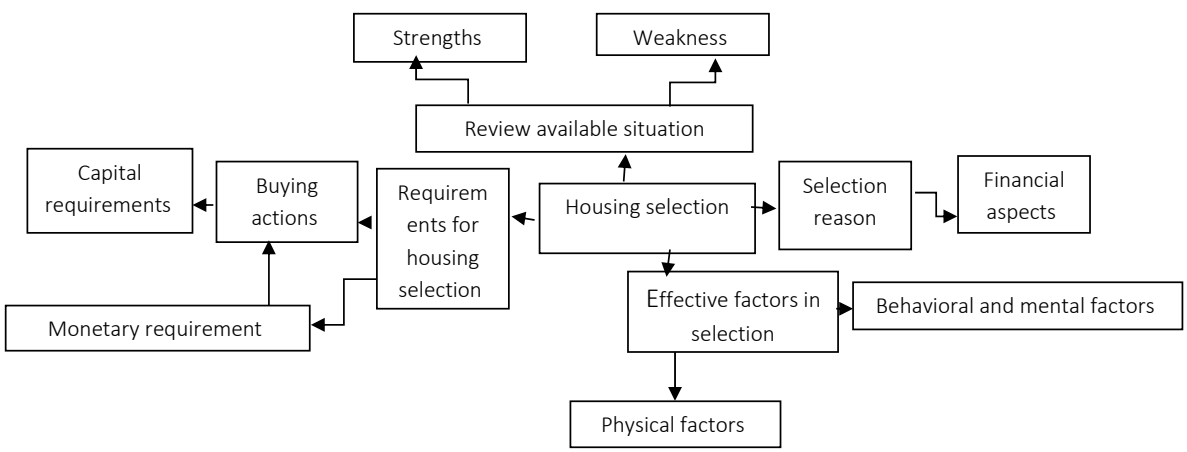

Fig. 3. The results of the interview

- Pre-purchase housing to collect minor currencies;
- The optimal combination of wealth and the use of market shocks for profitability.

Housing is amongst the most basic of all human needs. Identifying the various dimensions of housing attributes, their relationship with investment, will be of great help to interested parties. Housing characteristics and residential environment include building plan, building facade, parking, building direction, heating and cooling system, construction quality and resistance to natural and unnatural accidents, lighting of the building, less unit in the building and more rooms, the quality and the quantity of the kitchen cabinets, the elevator, the location inside the alley (length and width of the alley) and new construction that are effective in choosing house. The characteristics of areas are also influenced by different environmental values. Among the most important environmental values affecting on choosing house, one can mention the following: familiarity with the characteristics of the people in the region (the situation of the inhabitants of the area), cultural and religious habits, proximity to the work place, high security, authenticity of the population, avoidance of congestion and traffic, access to the main street, access to the market, access to urban services, family closeness, access to universities and schools, the luxury of the residential area, the climate, the value of the land ,the location of the area in the city, proximity to the educational and health centers and the quality of the city. According to the interview with the housing department experts, the division into behavioral and control factors took place. Having sufficient information on the housing market situation and the anticipation of expected revenues and rates and interest rates, refers to the effect of the reluctance of the behavioral factor, and investors tend to sell assets that are profitable and hold the assets that have been depreciated. In the optimal combining factor of the individual's wealth, one is concerned with the aspect of being away from regret and regret of the behavioral factor. The next factor, namely, business intelligence and individual business power, can be considered as a combination of behavioral factors away from regret. In the aspect of being away from regret, the behavioral factor of the investor seeks to choose the best investment option considering the opportunity cost. Investors also tend to use their business intelligence to sell profitable assets and hold on to the assets that point to the effect of the reluctance of the behavioral agent. In terms of factors such as decision-making power and the level of education due to the individual's mental concerns about investing in housing, given the low risk and generally higher returns of the section, investors are mimicking behavior from other investors, which may lead to wrong decisions because they do not take into account all aspects of affairs. These cases refer to the aspect of the massive behavioral factors. The starting point of the discussion, which was also considered by the participants in the interview, is the discussion of household budget constraints. If the household has sufficient budget, considering the requirements for choosing house, it will examine the characteristics of different locations by taking into account the personal expectations, personal and mental factors and personal behavior with existing housing conditions, an effective step in optimal selection according to their need. Fig. 4 illustrates the mental pattern of people choosing house for investment purposes.Next, the discrete model of Multinomial Logit Model was used for investigating the effect of factors affecting the choice of a residential location, which was extracted through grounded theory.

Table 1 shows the results of estimation of Multinomial Logit Model for identifying factors affecting choosing rental housing in Tabriz. According to the table, the variable coefficient of housing choosing was significant regarding the welfare aspects with 0.8292 and then the social comfort of capital purchases and the coefficient with 0.2287 was positive. This means that with access to the workplace the chances of choosing a residential place increases. The estimation by model represents a positive and significant coefficient for the variable of access to urban services with 0.357 coefficient (taxi, subway, bank, and offices) in choosing a residential location by capital purchase, which indicates the importance of access to urban services for investment in housing; and the more access to these services, the likelihood of choosing a residential environment for investment increases. Choosing a residential location because of proximity to relatives had a significant positive effect on capital purchases. In other words, when the household has enough money to choose housing and its capital purchase, the residential location will be chosen near relatives as much as possible. Access to green space and landscapes from inside to outside had a negative significant effect (at 10% level) on choosing a residential location, which indicates this feature is

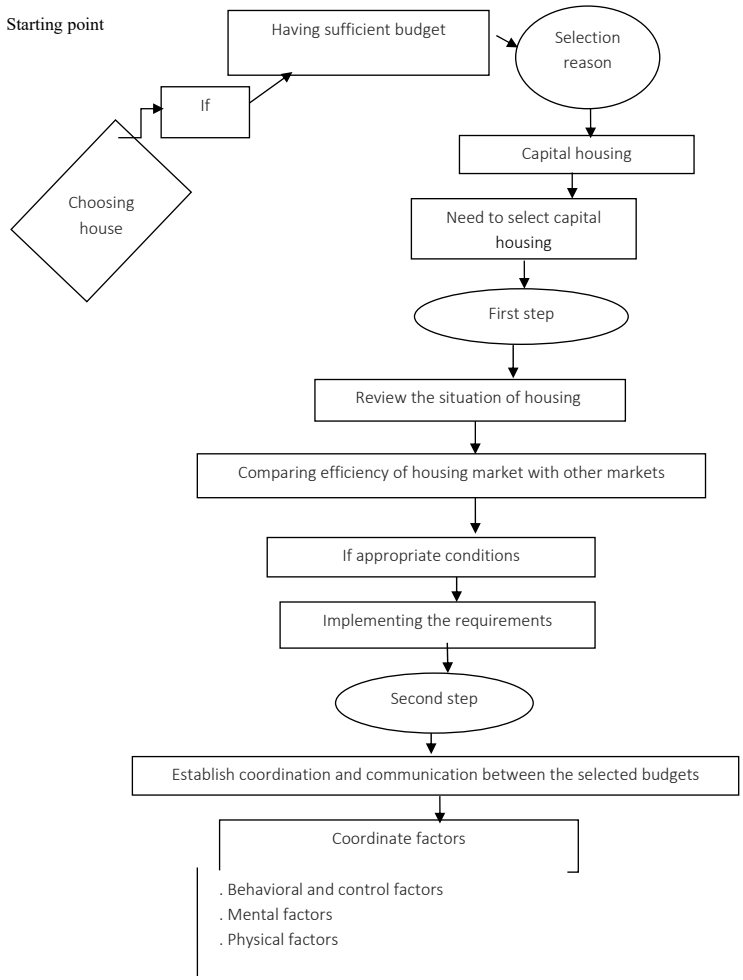

Fig. 4. The mental pattern of people in investment demand for housing

not a priority in choosing a residential location in Tabriz city. Since an urban area in Tabriz has a very high price and given high interest in vast size residential houses, creating green spaces for landowners is not economical, therefore the choice of residential location is not a top priority. The effect of the privacy and the relative relaxation of the area had a positive effect on capital purchase and indicate that the probability of choosing a residential place in Tabriz increases with comfort and relaxation of the area and the lack of noise pollution. The separation way of the public and private spaces in a house (living rooms, dining rooms, bathrooms, etc.) are variables that have significant but negative effect on the capital purchase and again shows the low priority of this variable in choosing a residential place. Because the buyer chooses a place to use the value growth of the assets over time, hence does not give much priority to public and private spaces. The public facilities had a negative significant effect on the choice of housing by purchase capital, which indicates the low priority of this variable. Buying houses is important for due the owners to their high value of assets and this increase in value is most influenced by the land and its location; therefore, less attention is paid to the general facilities of houses. The variable of residential location in an alley (length and width of the alley) had a positive significant effect on the choice of buying a house in Tabriz. The variable of knowledge of housing market had a significant but negative effect on the choice of residential place, which indicates the low importance of this variable in choosing a residential location by household to buy. In other words, the probability of choosing a residential

Table 1. Estimation of Multinomial Logit Model for Investment Demand for Housing in Tabriz (Base: Consumption Purchase)

Explanatory variable	coefficient	P-value
1- Housing choosing due to welfare and Social comfort aspects	0.1698	0.073
2- Access to the workplace for head of household	0.0302	0.732
3- Choosing a residential location due to the security	-0.065	0.477
4- Choosing a residential location for avoiding the crowd and traffic	-0.015	0.865
5- Access to important urban uses and main routes	0.027	0.782
6- Access to urban services (taxi station, subway, bank, offices, etc.).	-0.093	0.357
7- Access to health education centers	-0.011	0.907
8- Choosing a residential location because of proximity to action	0.0958	0.282
9- Access to the university, schools and kindergarten	-0.005	0.950
10- Access to the green space and visible landscapes from the inside to the outside of the residential place	-0.18	0.040
11- Choosing a residential location because of the privacy of the area and having relative Relaxation	0.1516	0.089
12- Choosing a residential location because of the separation of public and private spaces in the residential place	-0.066	0.504
13- Choosing a residential location due to the appearance	-0.011	0.91
14- Choosing a residential location due to access routes to the residential place (elevators, etc.)	0.0101	0.918
15- Choosing a residential location due to interior design	-0.231	0.015
16- Number of bedrooms	0.053	0.593
17- Public facilities such as parquet and the quality and quantity of cabinets	-0.255	0.018
18- Cooling and heating system	-0.285	0.007
19- Lighting conditions of the interior spaces	0.2569	0.01
20- Choosing a residential location due to the age of the residential place	0.012	0.909
21- Incident-resistant	-0.312	0.003
22- Choosing a residential location due to location of a residential place in the alley (length and width of the alley)	0.2459	0.012
23- Choosing a residential location due to the other people's views or experiences	-0.011	0.902
24- Information about the market	-0.183	0.032
25- Monthly expenses for housing choices	-0.027	0.753
Intercept	1.9304	0.002

place for purchasing would be reduced if people be aware of the housing market. This means that as the monthly spending increases, the chances of choosing a place to buy are reduced.

CONCLUSION

The rapid increase of urbanization in recent decades in Iran has caused economic, social and cultural problems in cities, especially in metropolitan areas. Currently, metropolitan areas such as Tabriz faces problems; some are related to the pattern of population and congestion. Hence, studying the patterns of residential location choosing using discrete choosing models can be very important in making a proper decision. In the current study, it was tried to extract factors influencing the choosing of residential places including the characteristics of household and housing, the variables of commute, welfare aspect, social comfort and characteristics of the area through the grounded theory and the general pattern of choosing the residential location of households in Tabriz was drawn. Then, the extent and effect of each factor were measured using the discrete Multinomial Logit Model. In addition to expanding the view of making decisions about the choice of residential place and what buyers do in the housing market, this socioeconomic approach expands the mental pattern modeling of residential place by considering various factors related to the characteristics of the household, housing and the residential place. The results of Multinomial Logit Model indicated that determinants of choosing a residential place by households was not just limited to one or two factors but households also consider all aspects of choosing a residential place for capital investment.

ACKNOWELEGMENT

The authors would like to acknowledge University of Tabriz for its assistance and supports.

CONFLICT OF INTREST

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy has been completely observed by the authors.

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HOW TO CITE THIS ARTICLE

Shirafkanlamso, M.; Mohammadzadeh, P.; Behboudi, D., (2019). Mental pattern of investment demand for housing in urban areas by Grounded Theory. Int. J. Hum. Capital Urban Manage., 4(1): 33-42.

DOI: 10.22034/IJHCUM.2019.01.04

url: http://www.ijhcum.net/article_34812.html