

## Structural Equation Modeling of Relations Between Old Texture Housing Planning, Housing Quality and Quality of Life of Residents of Javadieh Tehran

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**Abstract:** This study aims to determine causal relationships and modeling of relations between old texture housing planning, housing quality and quality of life of residents of Javadieh Tehran. “This study in terms of purpose” “Practical” and of type is “solidarity”. Statistical community includes citizens of Tehran Javadieh neighborhood (at least 5 years of residence). The sample size is calculated 267 people and the method is cluster sampling. For advancing the goals of this study, the Pearson correlation coefficient by using SPSS 18 Software and also method of “Structural Equation Modeling (SEM)” by using Lisrel 8.5 Software to answer questions research and hypotheses test are used. Research results show that between “old texture housing planning” and “housing quality” on the one hand and also “housing quality” and “quality of life of neighborhood residents of Javadieh”. On the other hand, there is a significant and positive relationship. This research specifies how to communicate of each of the factors and sub-factors as well as the most important indicators based on a research conceptual model.

**Key words:** Housing planning, old texture, quality of housing, quality of life, Structural Equation Modeling (SEM), Tehran Javadieh neighborhood

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### INTRODUCTION

Housing is one of the pressing issues in developing countries; Lack of sufficient resources, poor economic management, a lack of comprehensive housing planning and other abnormalities of infrastructure that there is in these countries on one hand and the rapid increase in urban population on the other hand, has made providing shelter in these countries so complex and multidimensional. It seems that a major cause of the housing problem should be sought in the planning of housing, national and macro look at the issue of how to develop and provide housing and housing programs. Iran housing programs mainly as on a national scale and part planning system are prepared and housing as a social and economic sector with other sectors are planned. Thus, despite providing a number of housing programs at the national level; it seems these programs have not achieved much success in solving the housing problem. Because national housing program with the overall evaluation of housing (in the form of index indicator of the quantity and quality of housing in the country) discuss goal setting and general policies and these policies in the event of providing regional and local programs (with taking specific circumstances of each district and city into

account) can be effective in solving the problem of housing in the districts and cities (Rameli and Johar, 2006).

The development of basic industries such as railways, sugar, tobacco silos, oil storage etc., in Southwest of Tehran caused, the creation of neighborhoods such as Javadieh. Javadieh neighborhood of Tehran is one of the first areas of marginal suburbs that are formed of population of first-generation villages’ immigrants and new urbanized workers 1941s. Meanwhile, in general area of Javadieh faces with numerous problems such as exhaustion, inscrutability, fines pieces and compactness, narrow and inefficient passages network and the phenomenon of population replacement and sequence that solving this problem without widespread intervention cannot be enabled. Also city council and the municipality Measure based on incentive density award not only did not lead to solving these texture But, in practice caused more complication of the reproduction of old texture in its place with population density and double construction issues. Destruction of neighborhoods is a dynamic process, this process reaches its peak when the necessary investment hasn’t been made for the construction in long term and services and capital required for maintenance, management and replacement

does not exist as degraded areas for the survival and stability need less investment (Tyler *et al.*, 2012). If traditional texture destruction with the current rate continues soon no effect remain of essence of the old way of life of the people of this land. Javadieh neighborhood of Tehran is one of this old texture with regard to the above, the need to study in this context is felt. On the other hand comprehensive studies on housing planning in order to improve living standards of residents in these old neighborhoods has not been conducted. And this study in its kind is carried out for the first time.

**Theoretical principles and background:** Given that in recent years many efforts to investigate the effect of “planning housing in old texture” has been done in Iran but in the field of effect of “planning housing in old texture” on “the quality of life of neighborhood residents,” few research has been done. In none of the previous studies in Iran a model for “housing planning in the old textures” and “quality of life of neighborhood residents” which includes all variables is not provided. The model presented in this study has investigated and tested most of the studied factors of different researchers in form of suggested model.

#### **Dimensions of the Housing Planning in old texture (PH)**

**Old texture:** Old texture is part of the old city built space that as sick or being who has lost its life balance is deposited in hands of the city Restoration makers so that its illnesses is treated and prepared for survival under conditions of the biological balance.

Three main characteristics of this texture on the basis of Iran’s supreme council of urbanism and architecture enactment are:

- Instability that represents the lack of appropriate structural system and non-resistant being of the building
- Impermeability that indicates the lack of proper access and passage wide enough for cars to move
- Terms that represent compactness of texture a plurality of small pieces and small area

Urban old and worn textures that in long time process have formed and developed, now a days in terms of structural and functional have experienced deficiencies most often do not meet the needs of residents as they should and this reduces the satisfaction of residents from their dwelling environment (Kamp *et al.*, 2003). Cohen believes that no building or structure before there is a Plan for its territory should not be destroyed and considers it as destructive policies (Bonine, 2008).

**Planning:** Planning means set of codified informed decisions that goals, policies, tools, implementation and evaluation are its elements and without any one of them, the program can be realized (Leigh and Blakely, 2013).

For example, housing planning, optimization program could be the cheapest possible combination of production factors to achieve the aim of producing quality housing (Choi *et al.*, 2014).

**Planner headquarters:** In view point of a group of experts, planning is a governmental effort and the planning is done by the government. The following examples are definitions that refer to the various curvature of the subject.

Planning is a conscious effort of “government” to follow the specified pattern of economic development in order to boost growth and fundamental changes in society and the economy. Planning is set of policies line strategies and in general efforts that consciously by “officials” of society by using the tools available in order to meet the pre-explained objectives of the targets are applied. Planning is guiding economic activities by a “social organization” through a mechanism that expresses production processes which must be performed within a certain period as quantitative or qualitative. In all the above definitions planning has been seen as the task of a central organization. In some of the definitions mentioned argument is that because the private sector is pursuing private interests and pursues less social benefits. A central organization which sometimes is interpreted to government or public sector that is responsible for planning task and directing economic, social, goals of society (Leigh and Blakely, 2013).

**The planner force:** In other several definitions of planning, planning is considered as a personal matter. Hiran Vias knows planning circumstance of using an individual of his resources in best way possible. In this definition resources and desires of a person from his own resources is considered as essential factors in planning while in another definition of planning public and basic needs of society are concerned. Comparison of above definition with the following definition makes this point in mind basic and public needs of society do not align with the individual demands.

**Life Level Quality (LLQ):** Method of assessing the quality of life not only vary from one field to another but it is possible in a field different assessments of this concept be done. Some scientists have put the satisfaction of individual needs in quality of life, on their

focus while the other group has paid attention to objective conditions of life and mental well-being [6]. In recent decades the quality of life is one of the most fundamental points of interest of social sciences in which the financial parameters of economic development and domestic production along with non-financial parameters such as quality of work, level of literacy and culture, health and hygiene standards, quality of leisure, environmental conditions, political climate, individual happiness and even liberty and national unity are examined (Tanaphoom and Bart, 2015).

Quality of urban life involves psychological aspects that encompasses Indices such as happiness and satisfaction and security they in some cases are also called social satisfaction and in addition to that also have aspects of the environment and other aspects including attention in social opportunities, employment prospects and wealth and leisure time (Turkoglu *et al.*, 2011).

The term quality of life is connected more with quality of the natural environment and external conditions of people lives such as pollution, housing quality, aesthetic aspects, traffic density, prevalence of crime, etc. (MacKerron and Mourato, 2009).

Szalai (1980) states that quality of life refers to the degree or feature of satisfaction with life. Important components of quality of life in a variety of environments are:

- Natural: air quality, abandoned land, open space, noise, traffic, garbage
- Created: type of building, tenure, terms, clearly, afford
- Social: education, social participation, services and recreation, crime and mental health
- Economic income, job

Thus, it can be said that environmental quality is a multidimensional concept which have commonalities with concepts such as quality of life, quality of place, perception and satisfaction of citizens and livability in a way that in many cases are considered as similar meanings (Marans, 2015).

**Satisfaction (S):** Satisfaction of place of residence depends on factors such as recreational and welfare facilities and services, culture, education, security and social interactions spaces and is associated with urban migration and effects on the amount of such population movements, especially of the old and worn textures to areas with better quality (Carruthers and Pinder, 1983).

**Housing Quality (QH):** In general, there are factors in housing that defines quality. Such factors on neighborhood scale are as follows:

- Desirable form of housing
- The strength of the housing
- Security Housing
- Safety, comfort and access, as well as proper distance residents to facilities and physical services of neighborhood
- Access to nature and green and open spaces
- Supply of equipment and installations (infrastructure) needed housing
- Proximity of housing with compatible applications

These factors Heptathlon of the most important criteria and indicators in defined and explained in the appropriate quality of housing. So research hypotheses and conceptual model of research is formulated as follows:

- The planning of housing in old texture of Javadieh neighborhood with housing quality of Javadieh neighborhood has a significant relationship
- Javadieh neighborhood housing quality, by life quality of Javadieh residents has a significant relationship
- Planner chief in the planning of housing in old texture of Javadieh neighborhood of Tehran has a significant relationship with housing quality in this neighborhood
- The housing quality has a significant relationship with the residents' satisfaction performance
- The housing quality has a significant relationship with the performance of the social welfare of residents
- The housing quality has a significant relationship with performance of reducing costs

## MATERIALS AND METHODS

**Research plan:** Present study, in terms of purpose “applied” and in terms of data collection is “correlation” type. Meanwhile, because the method of “Structural Equation Modeling (SEM) to answering research questions and hypothesis testing will be used is in the midst of correlational studies from the type of” correlation matrix or covariance analysis” (Ritchie *et al.*, 2013).

### Validity and reliability

**Determining reliability of the questionnaire:** Cranach's alpha was used to assess the reliability of the measurement tool. The results of the questionnaire reliability to Cranach's alpha method for the total scale have been 0.836. Since, these values are above 70%, the questionnaire used has necessary reliability and validity.

**Determining the validity (validity) of questionnaire:**

**Content validity:** After the initial framework for evaluating research questionnaire from the perspective of 14 experts (including a number of university professors and unit managers of the relevant local authority) was presented and surveyed. This evaluation principle on the content validity of criteria has been provided in to assess the dimensions interest in the research plan was focused. Therefore, in the initial stage of content validity for measuring the validity of the questionnaire and modify it if necessary have been used.

**Construct validity (conceptual):** In this study to ensure the construct validity, of the factor analysis we use. The factor analysis should be the questions that to assess an index or attribute are designed with common factor loading and these factors are significant. Therefore, all of these research questionnaires which was designed by using valid scientific questionnaires were exploratory factor analyzed (Brown, 2006).

**Population and sample:** The population consisted of citizens of Tehran Javadih neighborhood (with minimally 5 year experience) been settled. The research questionnaire includes five-item questions of Likert range because society is unlimited, number of 267 samples with the use of Cochran table by choosing  $p = 0.5$  and measurement accuracy equal to 0.06 and confidence level of 95 % was selected and the adequacy of the sampling was determined by KMO index.

**RESULTS AND DISCUSSION****Data Analysis**

**Exploratory factor analysis for the questionnaire “Quality of Life level (LLQ)”:** According to Table 1, the

index of KMO test has been equal to 0.856 which is indicative of the adequacy of sampling value. Also according to the Bartlett test  $p < 5\%$ , so it can be said to identify the factor analysis (functional model) is appropriate. According to this table in total, 3 factors by the total variance explained by  $>74.766\%$  is able to measure the “quality of life” has been. This clearly shows the appropriate construct validity of the questions in this area.

**Exploratory factor analysis for the questionnaire “housing quality (QH)”:** According to Table 2, index of KMO test has been equal to 0.888 which is indicative of the adequacy of sampling value. Also according to value of Bartlett test p-value is  $< 5\%$ , so it can be said to identify the factor analysis (functional model) is appropriate. In this case, only one factor has eigenvalues greater than 1 means that only one factor with variance explained more than 90.306 % is able to measure the “quality housing”.

**Exploratory factor analysis for the questionnaire “planning old texture of housing (PH)”:** According to Table 3, index of KMO test has been equal to 0.864 which is indicative of the adequacy of sampling value. Also, given that the value of p-value of Bartlett’s test is  $< 5\%$ , so we can say that the factor analysis to identify the structure (model of agent) is appropriate.

Also can be seen in this case, the only factors of 1 and 2 has eigenvalues greater than 1 and remained in the analysis. In fact questionnaire, totaling 2 factors by the total variance explained the more than 79.08 % is able to measure the “old texture of housing planning”. The first factor means “Planner Staff of 43.89 %; the second factor”, force of planner “of about 35.9% of the variance” housing planning of old texture” is explained.

Table 1: Total explained variance

Components	Initial eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Equity	Variance (%)	Cumulative variance	Equity	Variance (%)	Cumulative variance	Equity	Variance (%)	Cumulative variance
Satisfaction	10.180	50.901	50.901	10.180	50.901	50.901	7.530	37.652	37.652
Social welfare	2.732	13.662	64.563	2.732	13.662	64.563	4.253	21.265	58.917
Reduction in costs	2.041	10.203	74.766	2.041	10.203	74.766	3.170	15.849	74.766

Table 2: Total explained variance

Components	Initial Eigen values			Extraction sums of squared loadings		
	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
1	5.418	90.306	90.3060	5.418	90.306	90.306
2	0.220	3.659	93.9650			
3	0.158	2.632	96.5970			
4	0.122	2.034	98.6300			
5	0.059	0.985	99.6150			
6	0.023	0.385	100.000			

Table 3: Total explained variance

Components	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Equity	Variance (%)	Cumulative variance	Equity	Percent variance	Cumulative variance	Equity	Variance (%)	Cumulative variance
Planner staff	4.843	60.534	60.534	4.843	60.534	60.53	43.511	43.891	43.891
Force of planner	1.484	18.547	79.081	1.484	18.547	79.081	2.815	35.190	79.081

Table 4: Correlation statistical assumptions and hypotheses

Variables	Number of samples	Mutual significant	Pearson correlation coefficient ®
Main hypothesis “housing planning”-“quality of life level”	268	0.0000	0.906 (**)
“Housing planning”-“housing quality”	268	0.0000	0.622 (**)
“Housing quality”-“quality of life level”	268	0.0000	0.609 (**)

\*\*Correlation is significant at the 0.01 level (2-tailed)

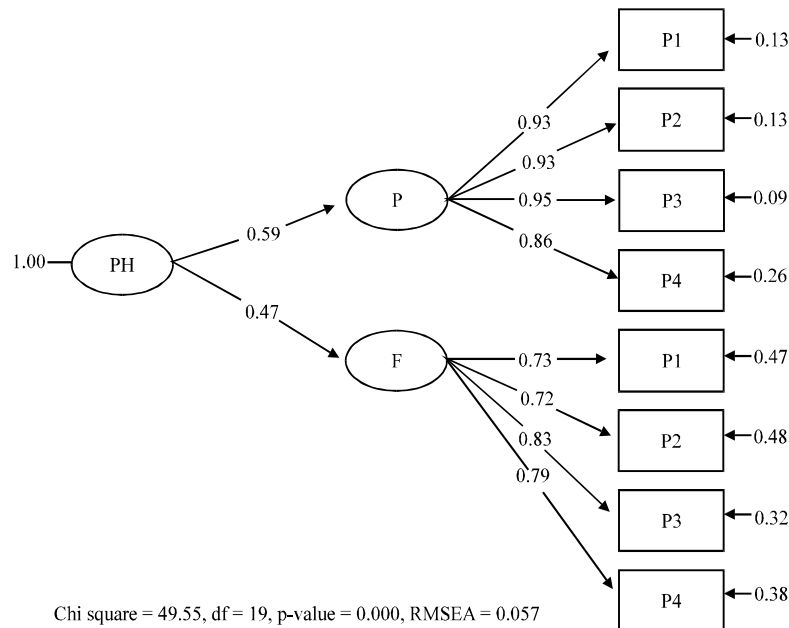


Fig. 1: The standard estimate model “housing planning in old texture”

Table 5, the correlation coefficient between research variables and significance level of each show, it can be said with 99 % confidence; between “housing planning” with “quality of life”, there is significant and positive relationship. Also, the relationship between “housing planning” with “housing quality” and “housing quality” and “quality of life”.

**Results “Structural Equation Modeling (SEM)”:** By using structural equation modeling and Lisrel 8.53 Software causal relationship between variables were studied in research hypotheses. The results indicate a positive and significant causal relationship between “housing planning” and “housing quality”. Therefore, the hypothesis of 1 is confirmed. Therefore, it can be stated that the promotion of dimension “planning of housing in old texture” in the target population at 95 % confidence level causes to promote “housing quality”.

Results also showed that between “housing quality” and “uality of life level” there is a significant relationship at the level of 95 % then “housing quality” in the target population causes to promote “quality of life level” (Fig. 1 and 2).

**Hypotheses related to the conceptual model of planning housing in old texture:** Agent “planner staff “with “planning housing in old texture” has significant and positive relationship. Agent “force of planner” with “planning housing in old texture” has significant and positive relationship. According to results all the main aspects of the model are significant because a significant number of them are >1.96. As a result the above hypothesis is confirmed. Agents “planner staff” with a significant number of (9.59), “force of planner” with a significant number of (13.01) with “planning of housing in old texture” have positive and significant relationship.

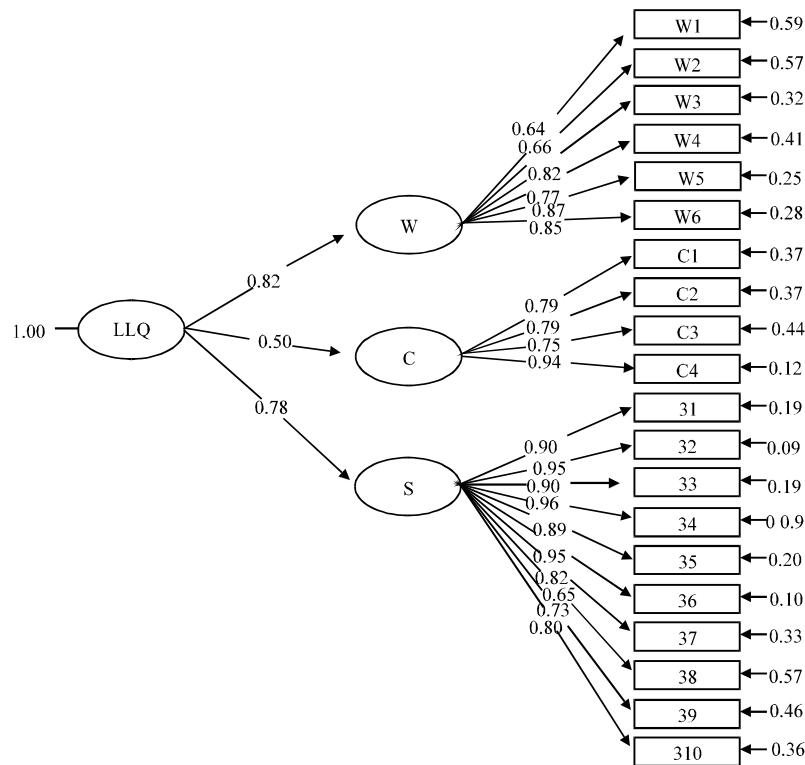


Fig. 2: The standard estimation of “life level quality of residents”

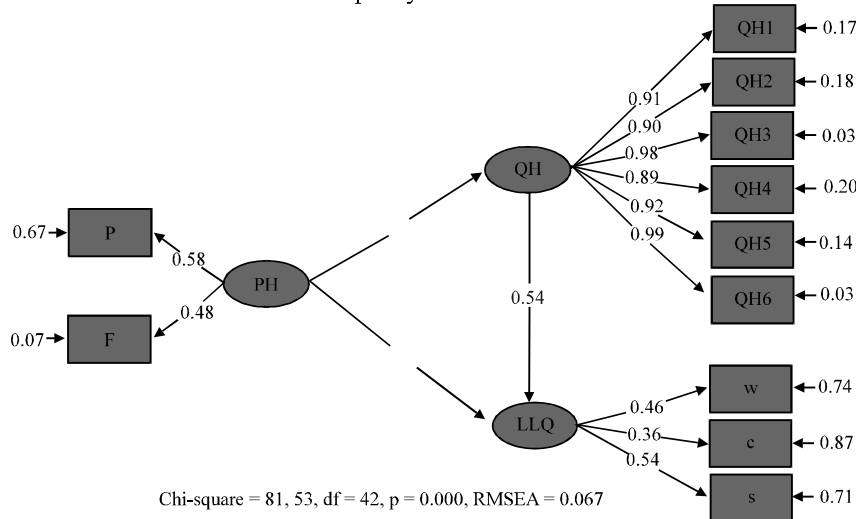


Fig. 3: Significance numbers model of total model

According to Fig. 3, whole relationship of agents and sub-agents, according to assumptions is positive and significant, so all research hypotheses are confirmed. Based on standard estimates of whole model (Fig. 4), amount of indirect effect of each sub-agents “planner of housing in old texture” (i.e., planner staff of and force of planner) also sub-agents “quality of life level” (i.e., satisfaction, social welfare and reducing the

cost of life) on the intermediate agent “housing quality” is measurable. At final model for each of the agents explaining value “planning of housing in old texture.” has been reported these values are as follows:

- Planner staff with path coefficient of 0.59
- Force of planner with coefficient of 0.47

According to Fig. 1, the following results for each of the dimensions of the model follow:

- In “planner staff” index of “urban management system’s ability to improve the texture old” 95 % correlation coefficients with most important index
- In “force of planner” (also with a correlation coefficient of 94%) is the most important indicators “financial and banking facilities to improve the quality of housing in terms of quantitative”

**Assumptions related to the conceptual model of life level quality of residents:** “Social welfare of residents” factor with “the quality of life of residents” has a significant and positive relationship

- “Cost reduction” factor with “level life quality of residents” has a significant and positive relationship
- “Residents’ satisfaction” factor with “level quality life of residents” has a significant and positive relationship

Based on the results of all the main aspects of the model have been significant; because significance number of them is larger than 1.96. Consequently, these hypotheses are confirmed; Means factors social welfare residents with significance number of (8.42) and” reduction cost of living, “with significance number of (6.87) have a positive and significant relationship with” life level quality of residents”. Also “satisfaction of residents” with significance number of (10.14) has a positive and significant relationship with “life level quality of residents”.

In the final model for each of the factors “planning of housing in old texture” determining value is reported these values are as follows:

- Social welfare of the residents with coefficient track of 0.82
- Satisfaction of residents with a path coefficient track of 0.78
- The costs reduction with coefficient track of 0.50

Based on Fig. 5, the following results were obtained for each model size:

- The most important indicators in the “Social Welfare of residents’ most important indicators, respectively” citizen security “and” necessary facilities for leisure “has been with a correlation coefficient of 87 and 85%
- And in “reducing costs”, the most important index “type of used and quality materials in order to reduce the cost of housing taking the cost of basic needs into account” is estimated with a correlation coefficient of 0.94
- The most important indicators in the “satisfaction of residents”, the most important indicators of the “satisfaction of access to public services”, “satisfaction of housing units due to resistance and long-lasting materials “ and” satisfaction of access to health care” has been with a correlation coefficient of 96 and 95 %

#### Examining the relationship between Javadiieh neighborhood's housing planning in old texture with “life level quality of neighborhood residents” hypothesis:

According to the results, significant and positive causal relationship between “housing planning in the old texture of Javadiieh neighborhood “and” life level quality of neighborhood residents” is approved. The results show that the “planning of housing in old texture” variable predicts around 81.54 % of “life level quality of residents.”

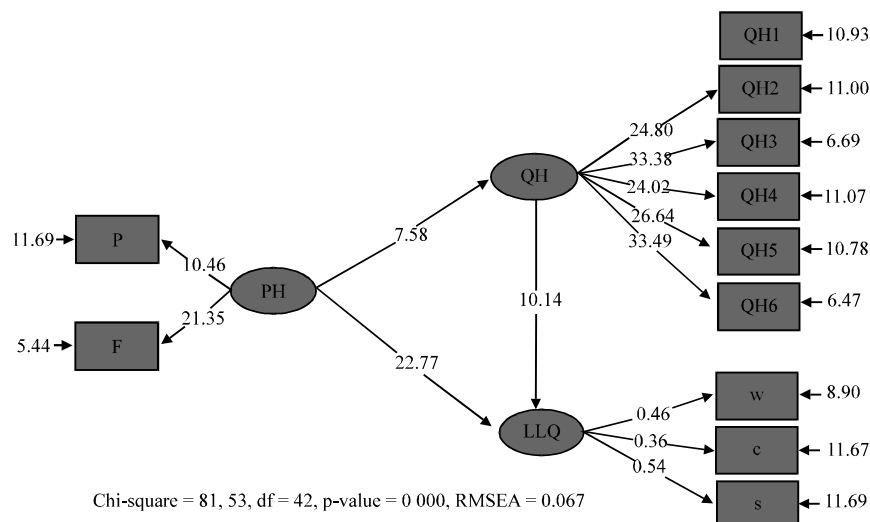


Fig. 4: The standard estimation of total model

Table 5: DimensionsIndicators (operational definitions)

Dimensions	Indicators (operational definitions)
<b>Staff planner</b>	
P1	Fitness residential density with population density
P2	Fitness residential area to area facilities and equipment
P3	Urban management system's ability to improve the texture worn
P4	Fitness applications of services and amenities with population growth and increased housing units planner
<b>Force of planner</b>	
F1	The profitability of investment in housing
F2	Facilitate the planning of the housing according to the type of ownership
F3	Financial and banking facilities to improve the quality of housing in quantitative terms
F4	The ability to improve the old texture of urban management policies
<b>Housing quality</b>	
QH1	The proportion of number of rooms in the house with the number of family members
QH2	The suitability of municipal sewage disposal system
QH3	The proportion of fragment size of residence according to the number of family members
QH4	The proportion of wastes management system
QH5	The suitability of visual and horizon landscape
QH6	The proportion of density residential units with a population density
<b>Resident satisfaction</b>	
S1	Satisfaction of the proportion of population growth with a growth rate of housing units
S2	Satisfaction of housing units due to resistant and durable materials
S3	Satisfaction of quality and the life of residence
S4	Satisfaction of access to public services
S5	Satisfaction of access to services
S6	Satisfaction of access to health services
S7	Satisfaction of access to cultural services
S8	Satisfaction of access to educational services
S9	Satisfaction of access to sports facilities
S10	Satisfaction of access to equipment and urban facilities
<b>Social welfare of residents</b>	
W1	Cleanliness roads and streets
W2	Amount of burglary
W3	Amount of addicts in the region
W4	Amount of theft from shops
W5	Security of citizens
W6	Facilities for spend leisure time
<b>Reduce costs</b>	
C1	The suitability of communication network and the network in order to reducing costs
C2	Amount of the proportion of administrative facilities to reduce costs in the neighborhood
C3	Increase the residential area to the total net area in reducing cost price
C4	C4 type of materials used and quality in order to reducing costs of housing taking into account the cost of basic needs

Therefore, it can be stated that in the neighborhood of Tehran Javadieh “planning of housing in old texture” in the target population in confidence level of 95% increases “quality of life level of residents” (Table 5).

From other results of this model is that “housing quality” factor, index “Fitness density of residential units with a population density” with a correlation coefficient of 0.99 and the index of “fitness of the size of residence with respect to the number of family members with correlation coefficient of 0.98 are the most important indexes.

## CONCLUSION

Using such research determines a variety of criteria and indicators for housing planning in old textures such as Javadieh neighborhood of Tehran and in effect of such study relationship between housing planning and higher living standards and satisfaction of residents identified

and it becomes clear whether planning in such textures have economic- social justification which can be practical model in many urban plans.

## SUGGESTIONS

**Executive suggestions based on the findings:** According to confirmation of existence of the relationship between the “housing planning in the old texture of Javadieh neighborhood” and “life level quality of neighborhood residents” we should more than ever work to create proper infrastructure and grounds. So, we be able to act much better and faster take advantage of the force and Headquarters planner and expert as well as creating a culture of renovation and reconstruction the inhabitants and residents of areas affected by oldness relating to the implementation of local housing planning. This issue through increasing the quality of housing residents, creates grounds of real meaning of quality of life in the



neighborhood and among community. Therefore, we should with increasing the standard of housing quality indicators and the factors and indicators of quality life, meaning level of satisfaction, social welfare etc. step under the domination of development concepts, happiness and peace as well as saving life and reducing costs through more efficient and effective economic measures to optimized spending and purposeful family income. Therefore realizing this ideal without the support and financial backing of the government and the private sector as well as effort and creativity, expertise, cooperation and willingness of residents and their attention to issue of quality of housing will not be possible. Suggestions are obtained based on the results of tests such as standard estimation of structural equation modeling results "planning of housing in old texture" model and the "life level quality of neighborhood residents" model.

**Research suggestions:** At the end the following for further study is suggested to researchers: reviewing the effect of "planning of housing in old texture" on "life level quality of neighborhood residents" in different neighborhoods (due to different possible outcomes in other neighborhoods). Reviewing the effect of "planning of housing in old texture" and "life level quality of neighborhood residents" according to consideration of changes in housing construction technology. Reviewing the factors affecting the "life level quality of neighborhood residents".

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