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Investigation the financing strategies of improvement and renovation projects of urban distressed areas

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Abstract

The vast expanse of the urban distressed areas in the country and multiple damages that their inhabitants face on economic, social and cultural aspects remind the need for higher attention to these constructions. Meanwhile, Tehran's distressed areas with more than 3268 hectares (5.3% of the area of Tehran) has a population of one million and three hundred thousand people in it, is one of the priorities of the improvement and renovations in the country. According to what most experts and researchers say one of the main obstacles to the process of improvement and renovation of the urban distressed areas, is the selection and use of appropriate methods of financing. Several methods of financing that have been raised to be used in the process of improvement and renovation, on one hand due to the variety they provide are an opportunity, and on the other hand face the managers and city decision-makers with some problems in the process of selection and utilization, because using any of the methods depends on several regional and local factors. In this regard and in order to facilitate the process of decision-making in the process of improvement and renovation of urban distressed areas, this research used a cross-sectional study and also investigated the evaluation criteria and different methods of financing the distressed areas and using the obtained field data from questionnaires distributed in two stages using ANOVA test, tested the research hypothesis in order to determine the best financing method according to the improvement and renovation process from the perspective of the tested criteria and in this way tried to compare the various methods of financing in order to take advantage of the process of improving and renovation of urban distressed areas in Tehran. In this regard and based on the obtained results three methods of repayment from the operation of the project, civic engagement (contract) -guaranteed and selling shares were identified as ways with the highest priority to utilize in the process of improvement and renovation of the urban distressed areas of Tehran.

Key Words: *urban distressed areas, financing methods, the process of improvement and renovation, Tehran city.*

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1- Introduction

The issue of urban distressed areas has made several serious problems for a large number of the citizens living in these areas on various economic, social, physical, environmental and educational aspects. In these areas, hidden cultural and social values of the country lie in the inability of the area to adapt to the extended needs of the modern life (1). Given the importance of housing environment due to its' effects on human as the centre of sustainable and comprehensive development of a country, the need of considering these areas as a large part of living space of the country's citizens is an inevitable subject. All these are despite the fact that the main problem of these areas is their inability in natural improvement and renovation; in fact this principle is a principle that frees the entire universe from the deterioration and destruction until they are able to do it and disability of these areas in this important issue is the same issue that many governments came to the conclusion that they should directly interfere in the improvement and renovation of these areas. Such an action by governments not only failed to solve any of the problems in these areas, but also added new problems to the existing problems and reminded the need to rethink about the policies and strategies in this field and once again emphasized that as long as there is no urbanism response to pervasive aspects of distress, sustainability would be unattainable. (2)

All are more or less aware of this issue that, the urban distressed areas based on the definition that the Supreme Council of Architecture and Urban Development has provided suffer from three problems of fine-textured[2], instability[3] and impermeableness[4] ,and especially because of the placement of the country in the earthquake-prone region, it needs reconstruction in the shorter period than what is usual. Vast expanse and lack of financial resources of the state and municipalities in order to finance the improvement and renovation of urban distressed areas has been as one of the most serious problems for consecutive years in the area of providing suitable living space for citizens. And this issue can be clearly seen by examining the current process of improvement and renovation of the urban distressed areas. Also most of the residents of these areas are active in informal and sometimes illegal businesses and majority of them are classified in the lower income declines.The renting price of these areas is very low; also unemployment is one of the most important problems in these areas. (3) So the inhabitants of these areas cannot afford the improvement and renovation of the urban distressed areas alone. However, the right to use all the resources of the city life and to have equal opportunity to enjoy a suitable environment for life and citizenship activities, is a right that its' realization is the responsibility of custodians and macro managers of the country. The possibility to enjoy the benefits of urban life is so important that the United Nations defines the backwardness as the lack of equal opportunity to use suitable living environment for human activities. Therefore, the need to examine the ways to accelerate the process of improvement and renovation of urban distressed areas through the use of efficient financial instruments is a very important subject. Meanwhile considering the principle of participation is very important, although comprehensive participation of citizens in public affairs cannot be made, unless with the rise of participatory mechanisms knowledge by which citizens are guided on their own to the process of diagnosis, planning, monitoring and implementation of urban design. (4) In this regard, various financing methods that are mainly based on participation are made and utilized in different countries, however what is important, is

2.More than 50% of blocks have the area less than 200 square meters.

3.More than 50% of blocks have no stable structural system.

4.More than 50% of blocks have passage width less than 6 meters.

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the need for a clear picture of each of the financing methods, in order to being able to compare the methods with each other and facilitate decision-making for executives, based on the strengths and weaknesses as well as their suitability to the process of improvement and renovation of the urban distressed area of the country, this is what is considered as the main issue of this study.

Research Literature

There are some studies, working on the research subject, mentioned as below.

A research entitled as "prioritizing financing methods in distressed urban areas (case study: Isfahan City)" has been conducted by Moayedfar. In this study, the researcher by categorizing the financing methods into two general groups, that is debt-based financing and asset-based financing, has determined the effective criteria on selection of each of the financing methods according to the literature review, and prioritizes the criteria by utilizing analytic hierarchy process (AHP) which is one of the most accurate and precise methods of multiple-criteria prioritizing, accordingly more returns rate (0.289), greater participation of the private sector (0.259), more available amount (0.223), less financial costs (0.091), less financing process cost (0.083), and low risk (0.055) had the greatest relative importance. Following, the researcher prioritizes the financing methods separately and in total. Accordingly, the Bond methods, private sector investment, project shareholder, metrical sales term, and lending bank facilities had the highest priority. (5)

In addition, HosseinAbadi in a research entitled as "evaluation of financing methods in modernization projects of the urban distressed areas, case study, Hamzeh Abad area in section 20 of Tehran city" ranked the common methods of financing upgrading and modernization projects of distressed urban areas on the basis of three cooperation indices (among residents), functionality (in urban management), and economical efficiency. In this framework, the first two indices were measured by Friedman test and SPSS software, respectively. Besides, economical efficiency was measured ad evaluated by IRR (Internal Rate of Return) and CAMFAR software. Accordingly, on the basis of cooperation index, the social cooperation, borrowing bank facilities, project shareholder, metrical sales term and bond was ranked respectively. And according to functionality index, the metric house sale, BOT (Build Operator Transfer), civil partnership, Bonds, project shareholder, and obtaining bank facilities are prioritized respectively. And finally, according to internal rate of return, the bond partnership, metrical sale term, BOT, civil partnership, obtaining facilities from institutes, local banks, and project shareholder are prioritized respectively. (6)

JafarzadehNadjar in a research entitled as "financing by issuing bonds, opportunities and threats" examined the advantages and disadvantages of utilizing bonds as one of the financing methods of upgrading and modernizing project of distressed urban areas around Imam Reza Holy Shrine. Finally by considering the evaluations, he presents solutions to success of financing of modernization projects by utilizing bonds. (7)

These solutions are as follows:

1. Exact designing of technical and financial feasibility of the project

2. Designing opportunities for rearrangement of old social and economical frameworks

3. Examining economical, social, cultural and also population characteristics of the area before beginning the project.

4. Exact investigation of access conditions to different public services in the desired areas.

5. Presenting proper interpretation on the total trend that dominates the market at the end of the project, due to the returns of major part of the principle plus interest of the bond buyers obtained from selling the residential and business units.

Farhadi in a research entitled as "designing modern instruments of financing for restor-

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ing urban distressed areas" introduced a performance model of transferring the assets to bonds as a new financing mechanism to design upgrading Bonds, by examining the depository system and lending facilities as well as forming municipal investment fund and considering the financial limitations. And the results of modernization bonds are proposed as increase in liquidity, better risk management, and increase in variety of financing sources, increase in shareholder wealth, and also increase in social welfare. (8)

In another research entitled as "urban and economical development and modernization of distressed areas (Tehran)" suggests solutions to attract local assets by proposing definitions of distressed areas of the city and also highlighting the problems of upgrading and modernizing projects of such areas in the country and all over the world. These solutions are as follows: (9)

1.Creating and developing organizations and profit groups in order to collect and guide the sources towards distressed areas of the city

2. Utilizing capital revolving fund loans to upgrade and modernize the distressed areas of the city

3. Increasing tax of specific economical sectors in order to be used in upgrading and modernizing the distressed areas.

4. Attracting public helps and donates.

5. Obtaining public deposits in the framework of Islamic contracts

6. Selling bonds (securities, shareholders)

In addition, Mohammad Aeini in a study entitled as "upgrading and modernizing city distressed areas in economical perspective" after numerating the vast advantages of upgrading distressed areas, such as 40 percent reduction of crowd accommodation, 20 to 30 percent reduction in protection costs of cities, reduction in security costs of the city, reduction in family transportation time and costs, reduction of energy consumption and the pollution, helping in protecting environment, wonderful capacity in accommodating overflowing urban crowd, preventing the development of urban space, etc., has emphasized on the necessity of change in perspectives toward distressed areas of the city from a threat to an opportunity and proposes this as a systematic solution in integrating different policies in hosing issue. (10)

Research methodology

Research type and method

The present study must be considered an applied one due to its aim which is to meet specific and defined needs. The research attempts to compare different financing methods regarding different financing criteria and determine the best method in al criteria, in order to facilitate decision making in financing methods of modernization and upgrading process of urban distressed areas.In addition, considering the research question, this study must be placed in cross-sectional group of studied that attempts to determine the relational importance of the determining criteria of the suitable financing method of upgrading and modernizing urban distressed areas, by utilizing library studies and the information obtained from the questionnaire, and in the next step, by using field studies which are in fact scientific examinations in real and non-laboratory conditions, tries to determine the total rank of each of the methods by considering the expert opinion and total criteria.

Sampling Design

The statistical population of this study includes all the experts and scholars that have experience in financing the distressed areas of Tehran and can only categorize these experts according to their research institute and active governmental corporate in the field of modernization of distressed urban areas. Therefore, it seems that due to lack of a list of the mentioned experts in this field, in one hand, non-probability sampling is suitable to this research and on the other hand, due to normal classes in statistical population, utilizing probability sampling of layer sampling (stratum) type will effectively improve the sampling.Ac-

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cording to what was stated and with studying the different non probability sampling methods concluded that simultaneous use of quota sampling methods which is equivalent with layer sampling methods in the area of probability sampling and snowball sampling has the highest congruency with the population of this study, as well as the goals of this study. In this context, in the first step it is tried to determine the classes of statistical population of the research, and based on that, experts and professionals active in the field of financing the urban distressed areas of Renovation Organization of Tehran Municipality, main professional civil and development of Tehran city, ad active academic researchers in the field of financing strategies of improvement and renovation projects of urban distressed areas, were determined as the classes of statistical population of the research, and in the second step using quota sampling method it is tried to choose some experts with each class using snowball sampling. Snowball sampling method or network sampling, is a method to identify cases in a network, in a way that any individual or unit in the network is connected to another one via a direct or indirect link. This means that each person directly knows other members of the network or has relationship with them, or is affected by other members of the network. And can be considered as representative of the other members of the network. This method is initially started by a few individuals and cases and expands is based on the first case. (11)

• Method of data collection

Questionnaire used in this study consists of two phases:

The first phase questionnaire

In the first step to determine the evaluation criteria of the various methods of financing the old texture of the city of Tehran and also to determine each criterion, the first stage questionnaire was distributed. the questionnaire by introducing the research and its main objectives, asked the respondents who mainly were experts with expertise and experience in at least one of the areas of financing the old texture of the city, to assign points to the criteria of the answer sheet (these criteria were obtained through library studies and the use of research that was done in this area, in the past.) on the importance that they give for the criteria to evaluate the various methods of financing the old texture of Tehran, as well the respondents were asked, if they consider the measure as important as well as the mentioned criteria, they should mention that criteria in the prediction part of the questionnaire, as well as the points that are attached to it, also if they do not consider the basic criteria as important, they should allocate zero points to them. In order to create the same understanding between the respondents, each criterion were defined separately at the end of the questionnaire.In order to determine the number of samples for distributing questionnaires various methods were analysed. Since there is not a list of qualified experts with expertise and experience in the field of financing the old texture of the city of Tehran as the population of the research, the researcher based on the field observations and the survey research that has been done before the distribution of the questionnaire, estimates the number of these people as maximum of 40 people at the best condition.

With this assumption, and based on the following formula that was used to calculate the sample size for interval data (The first perspective)[5] and with low population size(up to 150), the number of samples required to

5. In the case of the five option Likert range or other range (more than two options) that are a kind of Ordinal scale, there are two views.

The first view: by assigning values, and tolerance, the scale can be converted into distance scale and various statistical calculations such as the mean and the variance mean can be done on them and the mean test and variance analysis, and. .. Can be used

The second view: because the scale is ordinal, there is not the possibility of doing statistical calculations (mean, variance, etc) and binomial test (test) or chi-square test were used. (In this study the first view is considered.)

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provide a minimum credit of the research, are estimated as 36 samples.

N=40

$$\sigma \approx \frac{7-1}{6} = 1$$

$$z_{\frac{\alpha}{2}} = 1.96$$

$$n = \frac{N * z_{\frac{\alpha}{2}}^2 * \sigma^2}{\varepsilon^2 * (N-1) + z_{\frac{\alpha}{2}}^2 * \sigma^2} = \frac{40 * 1.96^2 * 1^2}{0.1^2 * (40-1) + 1.96^2 * 1^2} \cong 36$$

Based on the number of the obtained samples, 40 questionnaires described based on the sampling were distributed to the specified rate among the experts of the renovation organization of Tehran and the main professional company of development and improvement of the city as well as some collegiate scholars and 19 questionnaires were completed (48%) that due to the nature of optimal research is being assessed.

The second phase questionnaire

At this phase by using library studies and the use of semi-structured interviews, a number of financing methods that can be used in the financing of the old texture of the city, were detected. {1-repayment of the operation of the project "BOT Type",2-selling stocks, 3-publication of bonds, 3- meters of housing sale, 4-establishing land and real estate investment companies (RAIT) 5-getting loans, 6. civil participation (contract) -partnership, 7. Civil Participation (contract) - non-Partnership)} by basing these techniques as well as using criteria specified in the questionnaire of the first phase, the second phase questionnaire was set. In the second questionnaire, methods of financing the old texture of the city were listed in the right column of the table and the mentioned criteria in the first row of the table. And respondents were asked to assign a point for the methods of financing the old texture of the city with regard to the appropriateness with any of the criteria; according to Likert scale (1 meaning the lowest score and 7 means the highest rating).

Similar to the first phase of the questionnaire in order to determine the numbers of samples for distributing questionnaires various methods wereanalysed. Since there is not a list of qualified experts with expertise and experience in the field of financing the old texture of the city of Tehran as the population of the research, the researcher based on the field observations and the survey research that has been done before the distribution of the questionnaire, estimates the number of these people as maximum of 70 people at the best condition. (This number at this stage is more than the number of persons eligible for this feature in the first stage, backing of the decision is to being easier to respond to questions at this point than the previous step.)

With this assumption, and based on the following formula that was used to calculate the sample size for interval data (the first perspective) and with low population size (up to 150), the number of samples required to provide a minimum credit of the research, are estimated as 58 samples.

N=70

$$\sigma \approx \frac{7-1}{6} = 1$$

$$z_{\frac{\alpha}{2}} = 1.96$$

$$n = \frac{N * z_{\frac{\alpha}{2}}^2 * \sigma^2}{\varepsilon^2 * (N-1) + z_{\frac{\alpha}{2}}^2 * \sigma^2} = \frac{70 * 1.96^2 * 1^2}{0.1^2 * (70-1) + 1.96^2 * 1^2} \cong 58$$

Based on this and in order to obtain 58 samples, 40 questionnaires were distributed to the specified rate among the experts of the modernization organization of Tehran and the main professional company of development and improvement of the city as well as active researchers that finally 42 questionnaires were completed (60%) and analysed.

textured• Hypothesis testing

Among the different methods of financing, raised in the study in regarding the estimation of the criteria in terms of financing development projects and renovation of old texture of Tehran, there is a significant difference. In order to test the hypotheses raised in the research by using Microsoft Excel software, the average of all of the questionnaires was obtained to determine the point of each specified "criterion- methods" (points of each to

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each method relative to each of the criteria) and was put in a separate list similar to the second phase questionnaire tab. In continue, the weight of each criterion that was obtained by using a first phase questionnaire, multiplied by any of the values of criterion- methods of the questionnaire table, and thus the weight of each criterion was considered in the analysis. In order to analyse the data by SPSS software, at a first step, the two variables were defined in the software. The first variable is independent variable grouping (Factor), which includes various methods of financing, and the second variable is the quantitative dependent variable, and includes all the advantages, and methods - criteria in the table. Based on this, and after defining the desired criteria, scores of each method in terms of each criteria or the point of criteria - methods, were placed in the column of quantitative dependent variable and in front of its own financing method, that before were put in the column of independent variable grouping. In the next step, they were analysed by using ANOVA test and assuming a 5% significance (90% confidence level) and by the assuming H1 that there is difference between the different ways of financing the projects in meeting the criteria for financing the rehabilitation and reconstruction of the old texture in Tehran, as the research hypothesis, and the H0 assumption of no difference between the different ways of financing the projects in meeting the criteria for financing the rehabilitation and reconstruction of the old texture of the city. Also, in order to evaluate the presence or absence of significant differences in the form of two by two between the different groups, Tukey test as one of the strongest tests after experiencing (Post Hoc), was activated by assuming 10% significance. Of course it should be noted that if the hypothesis H0 is not rejected there is no need to test after the experience.On this basis and according to a Sig. less than 0.05, as presented in Table 1, H0 is rejected and H1 is accepted.

The results of the tests after the experience that are finalized in Table 2 and Figure 1 reflects the fact that we can classify thefinancing methods of the projects for the development and renovation of the distressed areas of Tehran into three main categories, where each category containsfinancing methods that estimate the financingcriteria approximately in the same level.

The first group consisted of the method of issuing bonds (bonds), getting loans, formation of land and real estate investment companies (rates), housing sales on meters and civil participation (contractual) - non-partnership. The second group consists of loans, formation of land and real estate investment companies (rates), housing sales on meter, civil participation (contractual) -non-partnership, sellingstocks and civilparticipation (contractual) partnership. And finally, the third group consisted ofhousing sales on meters, civil participation (contractual) – non-partnerships, selling stocks, civilparticipation (contractual) - partnership and repayment from the operation of the project. In this classification some methods have been repeated in all three categories, and some are common between the two categories. This is because the considered methods between the two or three groups in which they exist, have an equal variances and we cannot typically categorize itin a separate group, but in the meantime there are methods that are independent categorized in each group. Thus, according to the obtained results we can conclude the following results from

	Sum of Squares	d. f	Mean Square	F	Sig.
Between Groups	968.886	7	138.412	4.816	0.000
Within Groups	2270.686	79	28.743		
Total	3239.582	86			

Table 1. Table resulted from ANOVA test to test the hypothesis on the significance level of 0.05

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the financing methods of the urban distressed areas in order to fulfill the criteria of financing the distresses areas in Tehran and these methods are categorized into three categories in order of their priority.

1.Three methods of repayment from the operation of the project, civilparticipation (contractual) -partnership and sellingstocks will be in priority.These methods, respectively, have the largest coordination with the improvement and renovation process of the urban distressed areas of Tehran.

2.After the above methods, the two methods of civilparticipation (contractual) –non-partnership and meter housing sales on meters are in the second priority.

3.And finally the three methods of land and real estate investment companies (rates), getting loans and participating bonds (bonds) are in the third priority and have the minimum coordination the improvement and renovation criteria ofthe distressed areas of Tehran.

Conclusions and recommendations for future research

According to the results obtained from testing the raised hypothesis, it can be concluded that, in general, three methods of repayment from the operation of the project, the civil-partnership participation and selling stocks, respectively have the highest coordination with the conditions of the urban distressed areas of Tehran and can provide the greatest productivity according to the experts.But basically utilizing the financing methods for each project should be adjusted to suit the specific conditions of that project and exploited;most obviously, the proper financing method for each project may be different from the financing method of the other project. On the other hand, the utilization of a single financial instrument for financing a project is not required and an optimal combination of financing methods can be utilizedfor a specific project and a greater efficiency may also be obtained through this method. Therefore, the new research definition can be very useful in order to enable the comparison of all financial methods in separation from the perspective of each of the criteria.So that if the managers and decision makers were intended to utilize different financing methods for a particular project, they would be able to take the best decision to suit their project using the familiarity with the strengths and weaknesses of each project.For this reason, it is recommended to conduct a similar research by separately focusing on each of the identified criteria and determine the status of each of the approaches to each of the criteria to prepare the substrate for utilizing a combination of financing methods as well as a better understanding of each of them to take advantage

Financing method	N	Subset for alpha = 0.10		
		1	2	3
Bond issuance	11	15.930		
Getting a loan	11	20.222	20.222	
Formation of land and real estate investment companies	11	20.900	20.900	
Housing sales on meters	11	22.101	22.101	22.101
The civil- non-partnership participation	11	22.443	22.443	22.443
Selling stocks	11		24.152	24.152
The civil-partnership participation	11		24.766	24.766
Repayment from the operation of the project	10			28.202
Sig.		0.102	0.500	0.153

Table 2. rating and classification of different financing methods in terms of all the criteria on the basis of the significant level of 0.1
TukeyHSDa,b

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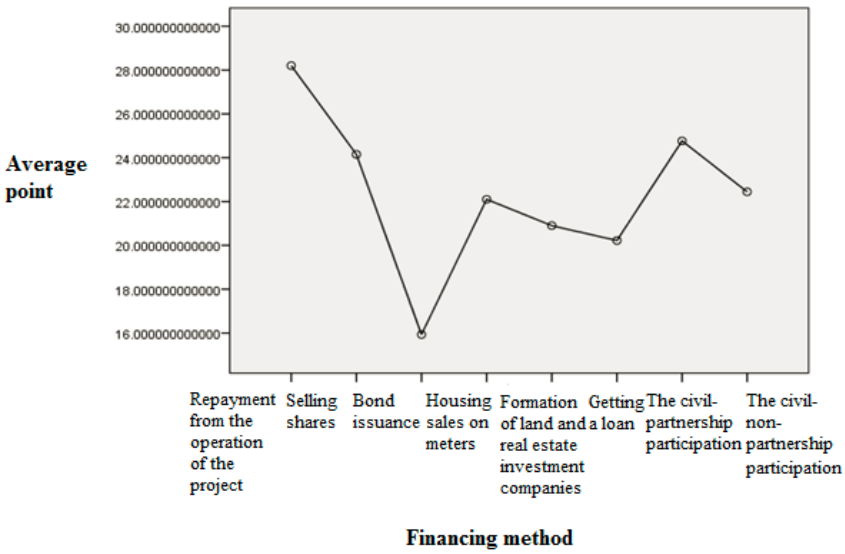


Figure 1.The diagram resulted from theTurkey test to compare different financing methods in terms of all criteria

in improvement and modernization projects that have a unique nature.

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