

# Ranking of Methods of Duties Collection in Najafabad Municipality

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## Abstract

Municipalities enact and collect duties and local taxes through various ways in order to provide the financial resources for implementation of assigned tasks given to economic capacities of cities but receiving the duties encounters the city's economy with many problems. In order to decrease and minimize the unfavorable effects of duties collection, economic investigations are needed and suitable models to supply sustainable revenue sources of expenses of the city should be determined.

The suitable model of supplying revenue sources of Najaf-abad Municipality given to urban management issues as well as urban economy of Iran which can be executed was examined as the major problem of this survey. Thus, the most important methods of duties collection in Najaf-abad Municipality and the most effective standards to choose its method of supplying were first extracted through historical study and field study methods. Then preferences of financial experts were obtained using a questionnaire that was formulated based on analytical hierarchy process (AHP) and by means of paired comparisons of the standards and methods of duties collection with regard to each standard of the research. Finally, relative weights of the effective standards and those of methods of duties collection with regard to each research standard were calculated by help of data related to paired comparisons extracted from the questionnaire. Then final weight of collection methods was determined in terms of set of research standards or in other words ranking of the employed collection methods in the survey by merging of the obtained relative weights.

According to the results obtained from ranking of defined indexes, "justice", "transparency", "efficiency", "sustainability", "adequacy" and finally "operational" indexes have a higher degree of importance respectively in order to offer a suitable model for duties collection. Also based on the conducted ranking, real estate duties has the highest degree of importance in terms of

suitability of bases of duties collection (including pollution and fuel duties, value-added duties, career duties, duties on automobile and technical examination, real estate duties and issuance of construction permit) and "construction duties" has the least degree of importance. At last, the results of modeling reveal increasing of efficiency if the method of supplying revenue sources of the municipality is suitable. Under conditions of model's freedom from limitations and efficiency of the collection system, methods of supplying revenue sources of minimum expenses must be provided by means of "duties based on real estate assets", "value-added tax" and "pollution and fuel duties". Similarly if methods of supplying revenue sources related to five-year development planning are needed, portion of real estate duties must be increased on the basis of real estate.

**Key words:** Duties Collection, Sustainable Resources, Municipality, Analytical Hierarchy Process

### **Introduction and statement of research problem**

General observations of status of cities in developing countries indicate considerable shortage of urban services. Although developed countries are faced with the problem of offering urban services especially in large cities but the shortage problem in developing countries is not comparable with cities in developed countries both qualitatively and quantitatively. This shortage is considerable in developing countries especially regarding initial services such as transportation, fire fighting, hygienic and educational services, waste collection, urban waste water, etc (Ghaderi, 2008).

Status of cities in developing countries is different from developed countries from another viewpoint too and that is the manner of supplying financial resources required to solve urban problems. It is expected that urban authorities in developing countries are faced with a more serious limitation to supply their required resources.

These facts propose two issues regarding the problems of municipalities: First what is the origin of financial challenges that the municipalities in developing countries are faced with? Second, what are the suitable policies in order to confront with financial challenges of civilization development in such countries (Hadi Zanuzi, 2003).

Cities especially metropolitans and medium sized cities (like Najaf-abad) are major centers of population, employment, economy and social, cultural and political changes of countries. Desirable and total growth of cities and metropolitans in the future depends on purposeful planning, budgeting, organizing, direction and supervision of their affairs. Supplying suitable and sustainable revenues has been one of the key effective issues on performance of municipalities in previous decades. General overview of historical status of revenue sources of municipalities in Iran shows that combination of sources has not had a stable process during the time and portion of each one of revenue sources has always been changing (Hashemi, 2005).

For instance, government aids offered to Najaf-abad Municipality in 1966 was about 55% of the whole budget which was equal to 59% in 1974 and 61% in 1975. It had a decreasing process since 1984 based on the national self-sufficiency plan of the municipalities (municipalities reach financial self-sufficiency during a three-year planning) so that it decreased to 39% in 1984 and 20% in 1989. Finally, it was equal to 2% in 1993 and the figure of aids in 2002 was about 0.8

percent of Najaf-abad Municipality's budget. Studying the status of governmental aids at present is mainly on the basis of focused payments of previous decentralized duties that the government regards it as an aid (Paragraph B, Note 53 of the budget act in 1984).

Najaf-abad Municipality spent about 1,500,000 Rial for each citizen in Najaf-abad in 2009 and it supplied the whole budget by receiving of local duties from citizens (indirectly) (Income Management of Najaf-abad Municipality).

In view of the economics, municipality is an institution which is the manufacturer of most urban public services and goods (required by citizens) such as green space, urban cleanliness, streets, highways and so on. Urban development along with increased living standard and thus expectations from the city will increase expenses of the municipality.

Tasks such as providing the security of cities, cleanliness of living environments, etc were at first defined for the municipality which took funds (duties) from citizens and spent them for expenses of the city (production and offering of urban services and goods). Needs of citizens for urban services and offering welfare services were increased by ever-increasing expansion of cities and also sustainable development was proposed. Tasks of the urban public sector (municipalities) were extended in the following aspects in this regard:

- 1- The necessity to offer welfare services to citizens
- 2- Development of cities; undertaking some activities

Accordingly, expenses of the city that are divided into the three following groups increased considerably:

- 1) Expenses of specific services offered for citizens (like public transportation, waste collection)
- 2) Maintenance costs of city (like maintaining the green space, historical buildings)
- 3) Expenses of urban development (like building of highways, parks)

Municipalities took action from various ways to enact and receive duties and local taxes regarding the methods of supplying revenue sources of assigned tasks given to economic capacities of cities (by approval of city councils or other legal bodies). But receiving of duties encountered urban economy with several problems such as increased price of basis of duties collection and so on. In order to decrease and minimize the unfavorable effects of duties collection, economic investigations were needed. Besides, it was necessary to determine suitable models for methods of supplying sustainable revenue sources of urban expenses (Akbari, 2005).

#### Methods and standards of duties collection

The below bases have been defined as methods of duties collection for the municipality in the current laws:

##### X1: pollution and fuel duties

Given to the legislator's permission, the municipality can take duties equal to 1% net sale from pollutant units of the environment identified by the environmental protection agency. Also considering the legislator's permission, the municipality takes 10% duties from selling of all kinds of gasoline and airplane's fuel, kerosene and gas oil and 5% from selling of mazut (Note 1, Article 38 of tax value-added law, the official gazette No. 18441 dated 24 June 2009 and Paragraph C and D of Article 38 of value-added tax).

##### X2: value-added duties along with receiving of value-added tax

The municipality receives duties equal to 1.5% of selling all goods and services to which value-added tax law is applied to (Paragraph A, Article 38 of value-added tax law).

X3 business duties on economic activists in the city

The municipality receives duties annually based on career type of economic activists across the city (given to the act of the urban council, Isfahan Ziba Newspaper, 4 Feb 2009).

X4: Automobile and vehicle inspection duties

The municipality receives duties from automobile owners annually based on one and half in thousand of the automobile price according to the announcement by the ministry of economy and finance.

Also it receives a certain price in order to offer technical examination services by approval of the city council (Paragraph B, Article 47 of value-added tax law).

X5: duties of immovable property (real estate)

Based on zoning prices the municipality receives duties equal to 1% of values of real estate located in cities entitled urban renewal and development duties annually.

X6: Duties complications on the issuance of building

The municipality receives a certain price from builders based on type of use, area, stories, occupancy level, etc according to the act of the city council against issuing of construction permit<sup>1</sup>.

The planning model is defined as below:

$$\text{MAX} \sum_{i=1}^n w_i x_j \quad \text{S.T:}$$

$$\sum_{i=1}^n a_{ij} x_j (\leq \geq) b \rightarrow i = 1, 2, \dots, m$$

$$x_j \geq 0 \rightarrow j = 1, 2, \dots, n$$

Optimization of Xi amounts is the purpose.

Xis are bases of duties collection.

Wis show significance coefficients of decision function.

Analytical hierarchy analysis method was used to estimate significance coefficients of constraint function. Using this method, qualitative superiority of each heading of revenues is quantified given to the represented indexes and finally significance coefficients of target function are exploited.

The standards are defined as below:

1- Judgment

According to utilization of urban services: People pay duties equal to the amount they utilize urban public services.

According to payment affordance: People with equal ability pay duties equally.

2- Transparency

It refers to clarity of services and their consumptions for citizens.

3- Efficiency

It is occurred when social expenses (economic effects) of duties collection are minimum.

<sup>1</sup>Legal permission to start construction operations in cities

Lack of influence on general level of duties collection base prices

Price stabilizer and preventing to create price bubbles in duties collection bases

#### 4- Sustainability

It means that the existing revenues in the model are permanent and they are minimally affected by economic fluctuations. In other words, they can be programmable and free of economic conditions of the society.

#### 5- Adequacy

The allocated resources and time to evaluate income collection and calculation must be minimal.

### **Methodology**

Analytical hierarchy process was used since final purpose of the survey was to rank methods of duties collection. This technique is one of the most comprehensive systems designed for decision-making with multiple standards, because formulating of the problem in hierarchical form is possible through this technique and also various qualitative and quantitative standards can be considered in the problem. Having confirmed and finalized the methods and standards of duties collection, preferences of respondents were extracted in the form of paired comparisons of standards and paired comparisons of methods of duties collection with regard to each standard using the questionnaire that was proposed based on AHP technique.

Validity of the questionnaire and the represented preferences by respondents were determined given to calculation of inconsistency rate in paired comparisons tables. Therefore, if inconsistency rate of paired comparisons tables is less than 0.1, the questionnaire will have the essential validity (Saati, 1985: 69).

Mathematical calculations of AHP are used to extract weight of coefficients of standards and the linear planning model for ranking of duties collection bases (strategies).

### **Conceptual model**

Now the research model is depicted in the form of hierarchical tree (Figure 1). The hierarchical tree of AHP has three levels normally:

Purpose, research standards and alternatives constitute level one, two and three respectively. In this survey the purpose is to rank methods of duties collection in Najaf-abad Municipality too.

The second level is research standards that are indeed the effective standards to select suitable methods of duties collection.

The third level is research alternatives that are methods of duties collection. First, the questionnaire was formulated based on AHP method.

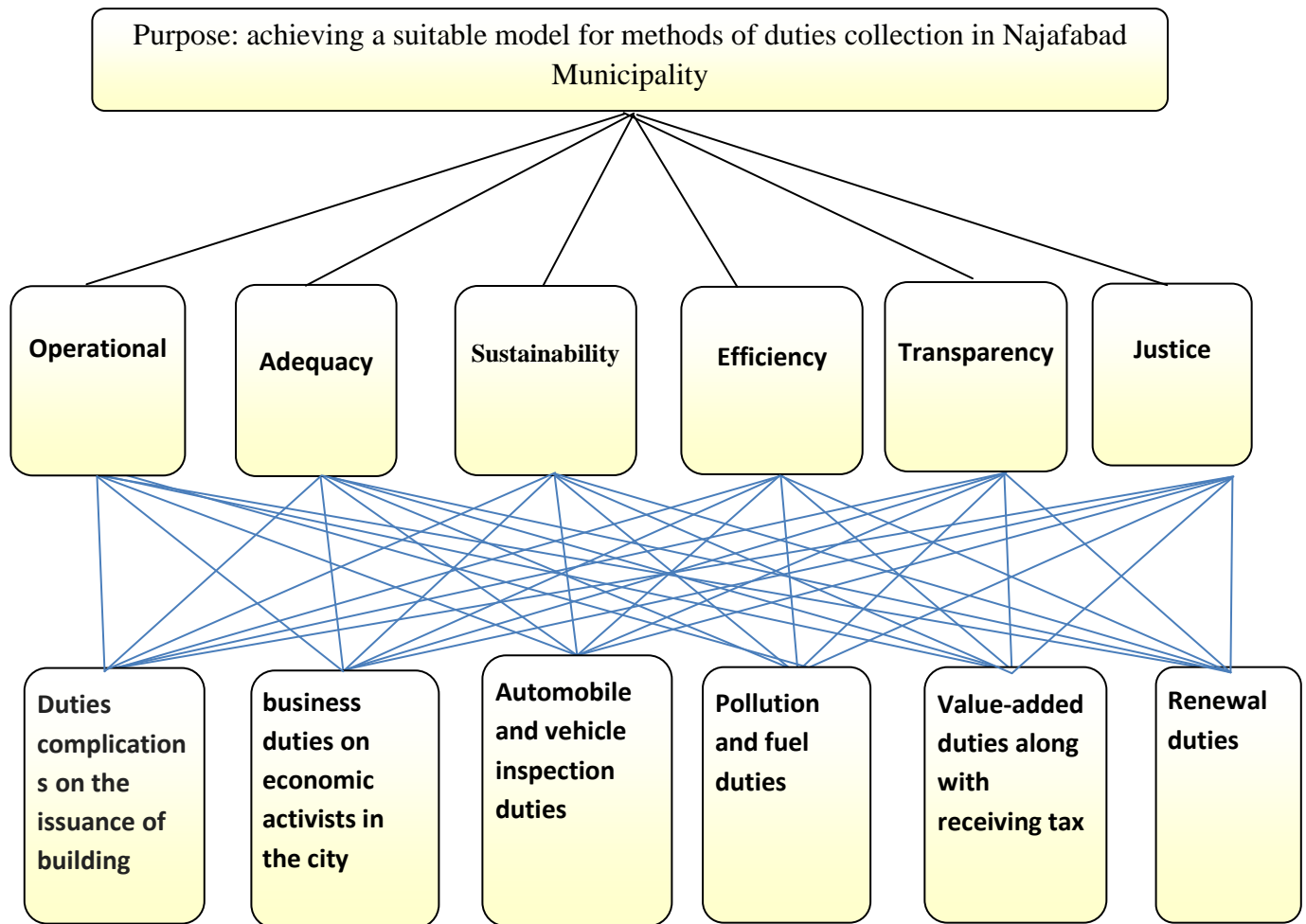


Figure 1- Decision-making problem tree for methods of duties collection in Najaf-abad Municipality

### Findings

The current survey has two major purposes as below:  
 Ranking of duties' collection standards in Najaf-abad Municipality and ranking of bases of duties collection based on the presented indexes

Hypotheses were proposed in order to realize the purposes and each one was studied in order to clarify the results.

1- The most important standard in ranking the bases of supplying revenue sources in the municipality is justice.

Analytical hierarchy process was used for ranking of the proposed standards that was based on formulation of the questionnaire. The questionnaires were sent to experts and the collected data was analyzed using Expert Choice software. The obtained results reveal that the highest score is allocated to justice among other standards. Thus, this hypothesis cannot be rejected.

Table 3-4 Ranking of indexes

Rank	Index	Definition	Weight (degree of importance)
1	C1	Justice	0.445
2	C2	Efficiency	0.183
3	C3	Transparency	0.119
4	C4	Sustainability	0.117
5	C5	Operational	0.072
6	C6	Adequacy	0.064

Source: research results

2- Receiving real estate duties is the best basis of supplying revenue sources in the municipality. This hypothesis was obtained given to ranking of duties collection standards and ranking of duties collection bases of coefficients of target function (suitable methods). The target function was optimized under different conditions (in periods of one and five year and planning for three alternatives of supplying revenue sources to maintain the current status, minimal methods of supplying revenue sources to continue the existing growth process and methods of supplying revenue sources to reach the purposes of five-year development plan). The primary results by assuming the current status of duties collection structure (inefficiency of income collection) in the municipality showed that construction permits duties is the major method of duties collection in the municipality. Inserting the efficiency condition in the model and optimization under conditions of increased efficiency of collection of resources reveal that minimally 60% of resources must be financed from real estate duties if the current growth process is continued and it will be equal to 80% if it is planning to realize purposes of the five-year period plan.

Table 1-Ranking of alternatives (estimation of significance coefficients)

Rank	Index	Definition	Weight (degree of importance)
1	A1	Renewal duties (real estate)	0.310
2	A2	Value-added duties	0.285
3	A3	pollution and fuel duties	0.140
4	A4	Automobile and vehicle inspection duties	0.113
5	A5	business duties	0.099
6	A6	Duties complications on the issuance of building	0.053

Source: research results

Table 2- Comparing the substitution of duties' basis on real estate (assets) instead of duties' basis on construction

Symbol	Title of duties	Continuing the growth process		Expenses of development	
		Without efficiency	With efficiency	Without efficiency	With efficiency
X5	Renewal duties	3.1%	60%	3.3%	80.5%
X6	Construction permit	65.1%	0	78.3%	0
	Supplying revenue sources (billion Rial)	298	298	522	520

Source: calculations of the researcher

Therefore, this hypothesis cannot be rejected given to the standards of a suitable model and the performed modeling.

### Discussion and Conclusion

The following can be stated considering the researcher's studies and observations and the results obtained from modeling.

According to the results obtained from ranking of indexes in this survey in order to present a suitable model for receiving of duties, the highest degree of importance belongs to "justice", "transparency", "efficiency", "sustainability", "adequacy" and finally "operational" indexes respectively.

Based on ranking performed in terms of suitability of duties collection bases (ranking of defined indexes in the survey) "duties on the basis of real estate assets" has the highest degree of importance and "construction duties" has the lowest importance.

The results of modeling show that a little portion of revenues must be supplied through construction duties under conditions of budget limitation. Increased need to methods of supplying revenue sources in order to provide expenses of development given to limitation of other resources enhances construction duties.

According to modeling results, the claim that the current conditions and rules and regulations governing methods of supplying revenue sources of the municipality are led to unsustainable conditions in the municipality's revenue cannot be rejected. These results illustrate the effect of increased efficiency on making financing of the municipality suitable.

Under conditions of the model's freedom from limitations and efficiency of the collection system, methods of supplying revenue sources of minimum expenses must be provided from "real estate assets duties", "value-added tax portion" and "pollution and fuel duties".

If methods of supplying revenue sources of five-year development expenses are needed, duties on the basis of real estate will be increased.

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