

# Investigation on Industrial Distribution in Cities of Iran

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## Abstract

The growth and development of urban settlement have always been accompanied by industrial activities. Previous experience shows that after industrialization of the countries and the local selection of their industries in big cities, these cities have faced with enormous work force immigration and have observed severe changes in their urban system. These changes are mostly caused by the execution of the growth pole policy and the concentrated distribution of industries in these countries' centers. In Iran, after the solar 1340s (1961-1971C.E.), we have observed severe changes in urban system that its coincidence with the country's industrialization requires lots of considerations. The execution of the industries' establishment prohibition in a distance of 120 kilometers from Tehran is the appearance of one of the presented means in this era. But we still witness the big industries' presence by 90% in Tehran in 1981. This paper is to proceed with the method of industries' distribution in Iran by analyzing the place of small and big industries separately in cities with a population of more than 100.000 members. The results of the analysis express that 55% of the 28663 active workshops registered in cities with a population of more than 100.000 members are selected their local in only 7 cities namely Tabriz, Mashhad, yazd, Isfahan, Qom, Tehran, and Karaj, which shows a kind of disproportion in the industries' distribution across the country. Also, more than 90% of the existing active industrial workshops in cities with a population of more than 100.000 members have been in the range of less than 50 employed industries that included 50% of the employed members in the industry sector.

**Keywords:** urban system, industries' distribution, industrial workshops, small industries, cities with a population of more than 100.000 members

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## 1- Introduction

### 1-1- Problem Design

When the Industrial Evolution happened in the western countries, human beings observed an increasing development in industries inside and around cities.

The growth

And development of city and citizenship has always been accompanied by industrial activities. This accompaniment and coexistence presents the possibility of working and economic growth for the citizens from one hand, and on the other hand, causes them to face with air, soil, sound, waste water, chemical, and visual difficulties and pollutions (Ghorkhloo and Farjam, 2001: 71).

The presence of big industries in some cities caused the growth and development to increase inside these cities more than before, and changed these cities to central points which attract a great population from points around them (Gilbert, 1978: 313). The progress of this procedure caused the proportion of the population inside the urban systems to become violated. At the same time with the industries' development and its economic and social consequences, the local finding theories were presented for more enjoyment from industrial activities and reduction of negative traces and economic losses.

In general, we shouldn't forget that the city, its citizenship and citizens require industrial services and products, and this phenomenon caused the development of today cities (in comparison to the villages) in all economic, social, and even cultural fields. But instead, some losses occur to the society members due to the industries development which cannot be ignored.

### 1-2- The Necessity of Creating Balance and Programming in Iran's Urban System

The population and citizenship evolutions in the country during the past five decades and especially after 1986 have been in a way that makes the necessity of serious attention and revision in programming, and the creation of balance in Iran's urban system inevitable.

The country's urban population has reached from about 6 million members in 1956 to 26.8 million members in 1986 and finally 48.2 million members in 2006. In the same period, the number of cities has reached from 199 in 1956 to 496 in 1986 and to 1012 in 2006. In other words, the urban population of the country became eightfold in the past 50 years and the number of cities became more than fivefold in the same period. The number of cities with a population of more than 100.000 members has reached from 9 cities in 1956 to 41 cities in 1986 and to 77 cities in 2006. The number of cities with a population of more than 200.000 members has reached from 5 cities in 1956 to 23 cities in 1986 and to 39 cities in 2006. The number of provinces has reached from 13 provinces in 1956 to 24 provinces in 1986 and to 30 provinces in 2006. In a period of 50 years (1956-2006) 1.04 million members have been added to the country's population on average, annually. In the same period 40 cities have been added to the cities of the countries on average, annually (Iran's Statistics Center). Different studies express the direct relationship between the presence of industries, beside cities, and an increase in the income and employment in that city: and that is the reality which has caused population reception to become greatly culminated in some cities of the country and has made centers that effected numerous cities around them. The reason for the emphasize of industrial geography on explaining the causes and methods of changes related to industries' local position is that the factory industries often have a great effect and influence on urban and regional development patterns (Watts, 1987: 13). In most regions of the world the employment changes in services sector and specially on regional level is a reaction to the changes and evolutions of factory activities sector, and the urban and regional growth patterns depend on what happens in the status of factory employment (Ibid: 16). After the Industrial Revolution, citizenship and industrialization have progressed in a parallel manner (Poorahmad, 2005: 176).

### **1-3- Purposes**

It is tried in this paper to analyze the industrial local selection pattern through analyzing the relationship between industries' local selection and the cities' population reception in Iran's urban system.

- Analyzing the relationship between cities' population and the existing industrial workshops in them.
- Ranking the industrial workshops in cities with a population of more than 100.000 members according to the number of their workers.
- Analyzing the position of small industries in cities with a population of more than 100.000 members.

### **1-4- Literature**

Different researches have been performed on analyzing the industries distribution from different experts' points of view that comprehensive studies and analyses have been performed on provincial level in all cases. Some studies have also compiled case researches in some more critical cities and provinces like Tehran, Isfahan, Mashhad, and Tabriz. The present research is the first one which passed provincial level and analyzed the industries' distribution on a national scale according to the whole cities with a population of more than 100.000 members and among about 72.000 registered industrial workshops in Iran, have ranked more than 28.000 registered industrial workshops existing in cities with over 100.000 members according to the cities. For instance, the results of some data and analyses are as follows:

In 1956, the share of Tehran province's workshops from the whole workshops in the country was 34.6% which reached 40.3 and 45.3 percent in 1966 and 1976 respectively, due to its continuous progress (The Industries and Industrial Towns Organization of Iran 2008, Introduction). After the Revolution, 38.4% of big industrial workshops and 39% of their workers were located in Tehran in 1984. This number decreased to 31.3% and 31% in 1997 (The Management and Programming Organization, 2003).

Based on the last general census on workshops in 2002, Tehran province had allocated 34.8% of workshops, 33.8 of workers, 29.8% of surplus val-

ue, 38.1% of the investment value of the country's whole big industrial workshops to itself again (The Management and Programming Organization, 2003, The results of general census on workshops) and is still located with a considerable distance from other areas of the country as an industrial pole.

### **1-5- Questions and Hypotheses**

- Is there a relationship between industries' local selection and population distributions in urban system?
- Is Tehran placed in the first rank regarding the number of industrial workshops like before?
- Have big cities had more industrial workshops due to their greater population? Which cities have a better industrial position?

### **1-6- Methodology and Research Domain**

The present research is of quantitative and descriptive-analytic type. The data was classified using the Excel and SPSS software, and the test of correlation was performed using Pearson and Spearman's correlation factor calculation, and the amount of correlation was estimated. Therefore, the effects of industries were studied on cities' population reception in this way.

The statistical population domain of the present research includes cities with a population of more than 100.000 members that the whole statistical population was studied and sampling was not performed. The analyzed information and statistics was of secondary type information and statistics obtained from Iran's Statistics Organization, The Countries' industries Organization, and Small Industries Organization.

### **1-7- Introducing Variables and Indexes**

This research data has included the number of existing industrial workshops in cities according to the number of their workers analyzed by obtaining information from the active workshop's list in Industries' Organization.

## **2- Viewpoints and Methodologies (Theoretical Bases)**

## 2-1- Definitions and Concepts

According to Economics, all of the economic system functions are divided into three general categories namely “agriculture”, “industries and mines”, and “services”.

Comparing the statistical data of different countries is impossible at a regional, continental, and global level unless the same definitions, concepts, and classifications were used for data collection and analysis. For this reason, the international statistical organizations have provided determined classifications for different social, economical, and cultural phenomena, and have recommended its usage to member countries.

One type of this classification is based on ISIC. Many countries have chosen ISIC as the basis of their economic activities classification and have regulated their information based on types of economic activities in population, production, employment, national income, and other economic statistics areas according to it. Also, International organizations such as United Nations Organization and the International Organization of Employment; the Grocery and Agriculture Organization of the United Nations Organization; the educational, scientific and cultural organization UNESCO; and other international committees have used ISIC for the publication and analysis of their information (Abu noori, 2002: 101).

The economic activities with industrial concept are defined as follows in the international classification: “The industrial activities are considered as all of the mechanical and chemical changes and transformations of organic and inorganic materials by the machine or human workforce, to produce products in workshops and/or houses to sell all or a part of it in marketplace.” (The Statistical Center of Iran, 1996) The statistical population included all of the industrial workshops located in urban regions of the city. Industrial workplace is a fixed and determined place that a collection of capital and workforce are used in order to produce one or more products. The workers (employees) are persons which work for the work-

shop in or out of the workshop, fulltime or part-time. The applied framework for the designs performed in this research was the list of independent and acceptable industrial workshops performed using the results of the industries organization’s general consensus.

## 2-2- Viewpoints and Theories

Different viewpoints have been proposed on industries’ establishment. We can refer to Alfred Weber, August Lush, Palander, Smith, Greenhot, Walter Izard, Rasterone, Rušto, Renner, Crystaller, Tunen, Leonardo model for instance (Kalantari, 2001, 175-179). Also, the theories of spatial organization and the theoretical bases of the industry local selection and establishing the industrial centers such as industrial zone, industrial region, industrial pole, and industrial park, are among the spatial organization theories and the theoretical bases of the industry local selection (Papeli Yazdi, 2003, 177).

On the other hand, the United Nation’s Industrial Development Organization (UNIDO) in 1976, with an emphasize on the industries settlement in rural areas, has asserted that the industrialization of villages and poverty reduction can supplement each other; the industries’ settlement in villages results in small-scale capital raise using local resources and their change, transformation, and production which can result in job and income production itself.

## 2-3- Industries’ Regulation and the Global Experiences

In Industrial Revolution era, the industries local selection was performed mainly based on natural factors, economic considerations, and transportation facilities. But, after the emergence of industrial development’s negative events in European cities, some movements and actions were started in order to supervise the industries development and maintaining the cities’ health and hygienic from the midst of the 19th century. From the beginning of the 20th century, the urban industries’ regulation matter gained an important position in urban designing and programming.

The industrial units' local selection was only dependent on 2 factors before: the first was accessibility, being near to the route for accessing the raw material and the consumption market, and the second factor, which played a more fundamental role, was the inexpensive ground.

With recent progress in different fields of industries' technology, the communications and control technology, the transportation facilities progress, and the growth of urban designing and industrial architecture, and the emergence of new industrial regionalization definitions and patterns and methods inside the cities (such as flexible regionalization, multifunctional regionalization, floating regionalization, encouraging regionalization, etc.) the restrictions of industries' local selection decreased gradually and found other dimensions for itself. Also, with the emergence of global trade and the free market phenomena, the local selection procedure has encountered new problems and the outside region and global factors play roles in this local selection. In Mexico for example, the American factories have been transmitted to Mexico country and was established at the border of these two countries to reduce the cost of work force for the Maquiladora program execution (Polese, et al., 1999:p.109).

In this new era, the basis of regionalization for the industries local section is based on two principles:

a) The industries classification based on different criteria such as output standards and its pollutions, the industrial groups' activity type, and their type of activity and job and management etc.

b) Determining a suitable place for each class of industries.

a-The Previous Main Factors for Determining the Industries' Place in Cities

-The closeness of the basic materials when transportation had low capacity, long distance, and high cost.

-The closeness of energy resources: the flowing water and coal and therefore the role of areas with coal mines at least for the establishment of heavy industries.

-Providing the sale market and therefore a suitable

network for transportation, harbors' attraction for the industries before the railroads emergence, different industries development in regional capitals or metropolitans which are far from any types of basic materials or energy resources.

-Access to more assets obtained through trade or agriculture and therefore to proceed with the previously successful industries and also the role of capitals that pay attention to the assets concentration.

-Abundant, adept, and inexpensive workforce with attracted carrier background for a carrier perspective.

-The existence of suitable and ambitious human-beings; merchants, manufacturers, and also affluent, the commanders creating the industries.

b-The nowadays Main Factors for Determining the Industries' Place in Cities

Nowadays, the metropolitans have changed their forms basically due to the changes caused by industrial activities and advanced services related to modern technology, simultaneously. These reformations in the industrial institutes were caused by motivations as the following:

-The emergence of new and lighter, stronger, and more applicable materials from different perspectives: rear materials, new plastics etc..

-Applying automatic machines and robots for small dimension products especially to reduce the need for the workforce; although this tendency increases the number of high level employees, the service and research companies' office, greatly.

-Decentralization in artificial production allows the neighboring provinces to accept the factories even in rural areas (but always near to the good paths of communication).

-Today, the industrial institutes move to organized poles around the city more than before, and just keep a public relationship office or an advertising service at the city center for themselves. In contrast, these institutes prefer pleasant environments, sometimes green and often near international airports or highways. (Or determining the place for industrial institutes near non-localized scientific buildings has

achieved considerable success, nowadays.)

The metropolitans have prepared their internal space by expelling all of the factories and heavy industries from city texture, and have preferred replacing advanced services over them. The transmission of activities from city's central part to its near peripheral areas is called "dedensification", and the transmission of activities from city to farther areas is called "decentralization".

#### **2-4- The Historical Process of Industries existence in Iran**

The beginning of mechanical industry establishment in Iran can be related to Amir Kabir's office. Entering the Pahlavi era and forming modern factory industries and the government's main role in modernization process, Tehran became specially important as capital, and by the accumulation of affluent class, establishment of university and the emergence of communication tools, Tehran has change to the center for new industries, in a way that till 1945, about 26% of big factories and 17% of their employees were located in Tehran (Zadboom Counselor Engineers, 1991: 21).

The industrial development steps in Iran and its reflection on urban development can be generally classified into 3 main steps:

First, Familiarity with new industries towards the end of Qajar era and the first skeletal reformations of the cities.

Second, the formation of new industries, The Rezakhan era with the cities renewal and the slow growth of development.

Third, the domination of industrial economy, from 1350S (1961-1971) on with the rapid growth in urban settling and urban building.

In Iran also after the industrialization, Tehran has always been the most important industrial pole of the country including about a third of the industries. Although the industrial decentralization guidelines' adoption from 1967 on, and the prohibition of industry establishment in a distance of 120 kilometers from Tehran have caused the slow decrease in industries establishment in Tehran for a period, resulted

in the movement of industrial centralization to peripheral areas and the emergence of peripheral industrial axes along communicational and main roads connecting to Tehran instead (Poorahmad, 2005: 178).

The inharmonic industrial development aspect in Iran together with the rapid growth of urban settling and urban tendency, except from the negative socio-economic events, have caused very negative effects on skeletal-spatial development of the cities in recent decades. On one hand, the geographical distribution of the industries has become inharmonic and has caused disorder to the urban network, and on the other hand, the skeletal-spatial organization of cities has faced with different types of disturbances, densifications and incompatibilities.

#### **3- Research Steps**

In this research, the cities with a population of more than 100.000 members in the country are categorized in the basic table in their population order; then, using the addresses of the active workshop places registered in Industries Organization, the number of existing industrial workshops in each city was counted and was put on the special row for that city. Then, for scoring the importance and effectiveness of each industry, the number of individuals working in the workshop variable was used to determine the workshop's importance factor.

Therefore, the industries are divided into 10 groups according to their job making amount: 5 or less workers, 6-10 workers, 11-25 workers, 26-50 workers, 51-75 workers, 76-100 workers, 101-250 workers, 251-500 workers, 501-1000 workers, and more than 1000 workers. After this categorization, the counting was performed again based on The Industries Organization data. From a total number of 42.000 registered workshops in The Industries Organization, 28663 workshops were located in cities with a population of more than 100.000 members which were analyzed in this study. A summary of the obtained results is recorded in table (1).

Also, analyzing the relationship between the cities

rank according to their population, and their ranking in every level of industries (according to the number of workers) through calculating the Spearman's coefficient factor, there is no significant relationships proved between the cities rank in population and their ranking the number of industries (even by removing Tehran and some other cities of high rank in table 1).

#### 4- Summing up and Conclusion

The obtained results from the industries' ranking in each category according to the number of workers in all cities with over 100.000 members (Table 1) express that in contrary to what is assumed, Tehran city, having the highest population in industries 1-10 categories, is in 4, 6, 10, 15, 19, 12, 10, 22 and 7,

Arranging the data in table (1), in priority order from the highest number of existing industries in each rank, table (3) is extracted.

Number of workshops (categorized according to number of staffs in workshops)										Sum of the work-shops	Per-centage of active work-shops	City
More than 1000 staff	501-1000 staff	251-500 staff	101-250 staff	76-100 staff	51-75 staff	26-50 staff	11-25 staff	6-10 staff	1-5 staff			
Tabriz	18.05	5175	1706	1968	1120	224	56	26	39	20	9	7
Mashhad	10.65	3051	96	635	1298	673	144	46	110	31	12	6
Yazd	7.83	2245	540	650	625	249	71	22	49	23	10	6
Isfahan	6.42	1841	506	551	485	153	62	16	34	18	11	5
Qom	5.54	1587	260	626	491	162	29	4	12	3	0	0
Tehran	3.65	1045	319	366	241	64	20	5	20	5	1	4
Karaj	3.48	998	197	322	283	132	21	10	26	2	3	2
Arak	2.72	778	73	271	253	111	24	7	25	4	3	7
Shiraz	2.68	768	105	255	279	89	13	10	12	4	1	0
Qazvin	2.4	687	132	191	170	84	28	23	44	12	1	2
Rasht	2.22	637	223	179	107	51	23	5	27	10	10	2
Kerman	2.15	616	23	158	264	97	25	12	23	7	6	1
Semnan	2.01	577	144	127	175	71	21	6	23	9	1	0
Ardabil	2.01	576	46	231	193	56	18	9	19	3	0	1
Savch	1.89	540	11	78	177	134	54	25	34	15	7	5
Shahryar	1.6	460	56	129	182	52	25	5	9	2	0	0
Zahedan	1.55	445	100	139	134	55	13	2	2	0	0	0
Zanjan	1.36	389	43	118	113	67	17	7	17	5	1	1
Shahre-kord	1.35	388	28	148	153	38	7	6	7	0	1	0
Babol	1.32	377	68	140	110	39	5	6	8	1	0	0
Nishabur	1.13	325	4	48	157	76	23	5	8	2	2	0
Kashan	1.09	313	9	73	151	44	12	9	11	2	1	1
Sari	1.08	310	52	131	75	28	6	5	5	3	4	1
Other cit-ies	15.82	4535										
Total	100	28663										

Table(1): The number of existing industries in cities with a population of more than 100.000 members (in a descending order)

Workshop	Number of workshop	Percentage of work-shops	Cumulative percentage of workshops	Assessment of number of employees
1-5 Staff	4741	19.6	19.6	14223
6-10 Staff	7534	31.2	50.8	60272
11-25 Staff	7236	30	80.8	130248
26-50 Staff	2749	11.4	92.2	104462
More than 50 Staff	1868	7.8	100	—
Total	24128			

Table (2): Workshop diversity according to the number of employed people (in 23 greatest cities based on number)

Rank	Workshops with less than 6 workers	Workshops with 6-10 workers	Workshops with 11-25 workers	Workshops with 26-50 workers	Workshops with 51-75 workers
1	Tabriz	Tabriz	Mashhad	Mashhad	Mashhad
2	Yazd	Yazd	Tabriz	Yazd	Yazd
3	Isfahan	Mashhad	Yazd	Tabriz	Isfahan
4	Tehran	Qom	Qom	Qom	Tabriz
5	Qom	Isfahan	Isfahan	Isfahan	Saveh
6	Rasht	Tehran	Karaj	Saveh	Qom
7	Karaj	Karaj	Shiraz	Karaj	Qazvin
8	Semnan	Arak	Kerman	Arak	Shahryar
Kerman					
9	Qazvin	Shiraz	Arak	Kerman	_____
10	Shiraz	Ardabil	Tehran	Shiraz	Arak

Table (3): Ranking of cities regarding to the number of employed people

Rank	Workshops with 76-100 workers	Workshops with 101-250 workers	Workshops with 251-500 workers	Workshops with 501-1000 workers	Workshops with more than 1000 workers
1	Mashhad	Mashhad	Mashhad	Mashhad	Tabriz
2	Tabriz	Yazd	Yazd	Isfahan	_____
3	Saveh	Qazvin	Tabriz	Yazd , Rasht	Mashhad , Yazd
4	Qazvin	Tabriz	Isfahan	_____	_____
5	Yazd	Isfahan , Saveh	Saveh	Tabriz	Isfahan , Saveh
6	Isfahan	_____	Qazvin	Saveh	_____
7	Kerman	Rasht	Rasht	Kerman	Tehran , Ahvaz
8	Karaj	Shahryar	Karaj	Semnan	Sari , Karaj , Qazvin Rasht , Bushehr Ghaemshahr
9	_____	Arak	Kerman	Karaj , Arak Kermanshah	_____
10	Ardabil , Kashan	Semnan , Kerman	Tehran , Zanjan	_____	_____

Rest of Table (3)

respectively. This means the success of the industries transfer policy from Tehran (The law of industries' establishment prohibition in 120 kilometers from Tehran, legislated in 1967); but, this success was only in statistics and digits, and in action the industrial workshops were moved to the margins of external city traffic axes with a low distance from Tehran, especially the Karaj-qazvin industrial axe, although all of the problems and burdens as a result of industries concentration is remained on Tehran more than before. The existing data in the present study also verifies this fact, in a way that if all of the existing workshops in the three cities of Tehran, Karaj, and Shahriar are summed up, this city is ranked three with 8.7% amount among the existing workshops in cities with a population of more than 100.000 members, from the number of workshops perspective. By separating Alborz province from Tehran, the situation seems to become better, but the real conditions remained the same way and the capital will face with a high concentration of industries around itself, especially in traffic axes around it. The evidence for this fact is the great number of active industrial workshops existing in Karaj, Shahriar, Qazvin, Saveh and Qom cities that use the advantages of nearness to the capital with a low distance from it, and have harmless effects on the body of Iran's urban system with their severe centralism.

The results of the analysis express that 55% of the 28663 active workshops registered in cities with a population of more than 100.000 members are selected their local in only 7 cities namely Tabriz, Mashhad, Yazd, Isfahan, Qom, Tehran, and Karaj, which shows a kind of disproportion in the industries' distribution across the country. Tabriz, Mashhad, and Yazd have allocated the greatest number of industries to themselves. In this regard, special strategies must be considered for these cities; especially cities such as Tabriz and Mashhad which also have proper history of their traditional industries that have been marginalized after the solar 1340s (1961-1971) because of a growth in oil price and its single polarity in Iran's economics.

In table (1), the centers of 12 provinces with the presence of less than 1% of the industrial workshops didn't have a proper position in the country's industry. That is, in those provinces (specially the boundary provinces) a proper plan was not made for the industries. However, the presence of some industries (regarding the existing potentials in the areas) can bring about a full-scale development in these areas and the surrounding areas, besides job making and preventing immethodical migration to the capital. Therefore, the pressure caused by high population is reduced in Iran's urban system and a kind of harmony and balance will be created in it that all regions will benefit from it.

The obtained results from table (2) express that more than 90% of the existing active industrial workshops in 23 cities above in table (2) have been in the range of less than 50 employed industries that included 50% of the employed members in the industry sector. Recently, the small industries have had an effective role in the industrial and economical development of many countries of the world, especially the South-east Asian, west European, and even east European countries.

In a way that most Southeast Asian countries have considered their industrial development basis as the growth and development of small industries. But in Iran, not only these industries did not have a special position in industrial and economic development, but also they have faced with bankruptcy and many cases of closure. According to the statistics provided by Iran's Statistics Center, during 1994-99, 129.997 small industrial units were closed and this fact caused 274.827 job opportunities to be missed in the country. Generally, the owners of the small industries' productive units remark "nonprofitability" as the most important factor for the bankruptcy and closure of their productive units, that results from different factors which are sometimes inborn and influenced by the internal environment of industrial workshops, and some others are out born which is a

result of inappropriate policy making of the responsible authorities. In line with this, policies must be formulated to support these types of industries and provide the financial facilities.

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