


## Research Article

### Categorizing Small and Medium-Sized Industries with a Multi-criteria Decision-making Approach: Case Study of Alidarreh Industrial Town in Firoozkooh

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#### ABSTRACT

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<b>Article Info:</b>	<b>Abstract:</b>
<b>Received Date:</b> 2025/02/07 <b>Accepted Date:</b> 2025/04/30 <b>Published Online:</b> 2025/08/08	<p>Aiming to optimal use of facilities and preventing waste of valuable resources, industrial manufacturers have considered changes in industrial structure through increasing growth and promotion of small and medium-sized enterprises. The advantages of these enterprises have become main priorities in producing goods because of the effect of transportation, market size, and regulation. Following this objective, the present study is aimed to prioritize small enterprises based on mechanisms of independence on foreign resources, improving the share of each enterprise in employment, product, and market diversity and the share of each enterprise in export. This study is descriptive in nature and follows a survey design. Initial data is obtained through field study, library resources and internet surfing based on which, the questionnaires are presented to the sample of the study including the managers and experts in Firoozkooh and Tehran Industrial Towns, so that they could answer the questions as case prioritization. Through studying the existing literature and taking advantage from the expert knowledge, the researcher identified intended indices for prioritizing enterprises. Finally, enterprises are prioritized in the following order: cement, construction, chemicals, food, fragment making, electronic, and wood enterprises.</p> <p><b>Keywords:</b> Small Enterprises, Independence on Foreign Resources, Employment, Market Product Diversity, Export, Multi-criteria Decision-making</p>

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## 1. Introduction

The effective role of small and medium-sized enterprises in fulfilling countries' economic stable growth in recent decades has caused societies to attend these enterprises more than before, in terms of employability and competitiveness. However, the main problems in front of these enterprises are related to prioritization for investment.

Although, change in manufacturing technology in recent decades and distance from mass manufacture in large enterprises and the tendency toward flexible manufacture in small and medium-sized enterprises has increased the ability of competition for small industrial activities and caused the transfer of economic activities from huge enterprises to small enterprises, it doesn't mean the elimination of large enterprises and replacing it with small enterprises and movement trend is toward more interaction of these two cases together, so that work division between small and big enterprises has been done as they complement each other instead of competing. Such conditions in the global economy have caused more growth of small and medium enterprises in different countries (Imani Rad, 2004).

The trend of increasing development in today's business environment has placed small and medium units as parts of global manufacturing chains and network technology capabilities and a professional workforce and developed management are its most important features. Developing small and medium enterprises is the secret of the economic development during next decades. The studies have shown that small enterprises are influential in the global economy by creating job opportunities and income increase; in addition, the intensification of global competition, distrust increase and increasing demand for various products have caused more interest in these enterprises. Recent studies of global bank indicate that small industrial units in developing countries have evident influences on employment and national income and so they have played an important role in achieving distributed and equal growth. Therefore, moving toward organizing and helping small and medium industrial units shouldn't be seen from a rent-seeking categorization, but the purpose of this case is to improve the country's industrial structure and make this structure competitive for future challenges that competitiveness of these units is the source of best solution to the chronic problem of unemployment in the country (Aks, 2013; Iankova et al., 2018).

All around the world, small and medium enterprises have been considered as important economic factors and have received special attention in policy-making aspects (Clendennen et al., 2021). Despite the financial, technological and managerial support of these enterprises, their export value hasn't received a lot of attention in the initial stages of policymaking. In the first stages of development in these countries, small and medium enterprises have entered the global market as such and have had the highest export of traditional, manual and user products. As countries and small enterprises have developed simultaneously, their organization in developing and advancing export has been attended more. Countries like Taiwan and South Korea have high exports and also have strong organizations for export through small and medium enterprises. Furthermore, almost in all these countries, domestic support of small and medium enterprises is preferred to foreign export support (Schumacher, 1993).

About one million small and medium enterprises are working in Iran. These enterprises fulfill more than half of employment in the private sector and also half of the income of the private sector; moreover, nowadays, about 25 percent of whole small and medium enterprises are focused in Tehran province (Carlson, 2004).

The case study of this research is Firoozkooh Alidarreh Industrial Town which has the features that shown in Table 1.

**Table 1**

Province	Tehran
City	Tehran
The whole area of town (hectare)	205
Area of operating phase (hectare)	80.66
Industrial area (hectare)	78
Number of concluded agreements	121
Given area (hectare)	0
Number of utilized units	29
Number of employments in the units utilized (in person)	829

Alidarreh Industrial Town is located at the 2 km distance from northeast Firoozkooh. By utilizing the second phase of this town, 448 hectares will be added to this complex in which more than 380 utilization certificates are active from which 30 cases have permanent activity and 350 individuals are directly working there.

Therefore, according to the importance of small and medium enterprises in the country's economy (especially small and medium-sized enterprises in Tehran province) and the effective role of these enterprises in countries economic stable growth and also according to problems these corporations have in supplying their financial resources, the researcher intends to examine the small industries of Alidarreh Industrial Town based on supporting methods, providing facilities and financial aid (with easier conditions than large industrial units) and providing technical and specialized advice, training, export development, technology support, modernization of small industries, assisting in marketing and sales in the quality control centers of small industries, advertising, technical and specialized exhibitions and supply of raw materials and rank the importance of investing in these industries based on these supports.

## 2. Research literature

One of the common experiences of all developing countries has been providing economic overload services for small and medium units. In all countries and especially those that have had successful experiences in export, supportive organizations have been created for providing overload services for small and medium units, these services include providing information, providing export official services, market study services, and advertisement and corporations in foreign fairs and some cases providing managerial services has been also included (Pelsmacker et al., 2018). Small industrial units, besides effective and positive benefits mentioned, also face challenges and obstacles. These obstacles include capital limitation, manufacture volume limit, shortage of specialized human force, lack of laboratories and test and control equipped devices and units' inability to market and direct export of work productions besides management and manufacture work. Dimensions of governments' support of small and medium-sized enterprises can be summarized in the following cases:

1. Loan and financial standing: to help small and medium corporations attain capital, may be one of the most obvious activities of the owners and managers of these corporations. Owners of these corporations are those who need financial need to capital, because mainly are the ones who have low financial ability.
2. Technology: generally, centers responsible for small and medium corporations emphasize using technology in such corporations, sometimes it is inserted in legal

articles and sometimes banks give loans for the renewal of machines using new technology.

3. Consultative services: many of these centers provide these services as free in management, financial affairs, business activities, marketing and even preparing explanatory plans and in this way, try to reinforce aforementioned corporations.
4. Informational support: in addition to consultative services, aforementioned centers also provide informational support in the form of information which generally includes commercial, managerial, and technical status.
5. Creating scientific capacity: in some countries, a series of plans are set and implemented in most of them, there is interaction between small and medium corporations on one hand and scientific centers on the other hand.
6. Creating facilities to establish corporations: since market fluctuation, typically many small and medium corporations become bankrupt and leave activity in the field, in some countries, cumbersome provisions for establishing and disbanding corporations have been removed, and, in these countries, it has been tried to remove obstacles of entering the market and exiting it as much as possible (Aks, 2013).

Experiences of Japan, South Korea, Malaysia, Thailand, Taiwan and Indonesia represent that:

1. Role of small and medium enterprises in industrial developed countries and also new industrialized countries, is significant and increasing.
2. The existence of dynamic small and medium enterprises is very important for creating big industries that have competition power in global markets.
3. Technical, managerial supports, informing and training employees of small enterprises, compared to other supports, have been effective and governmental supports to promote technology and human resources have existed in small and medium enterprises.
4. The policy of supporting small enterprises that produce the final product, hasn't had significant success.
5. Export orientation of small and medium enterprises has been successful.
6. Creating manufacturing networks and increasing contract work relations has been important for the growth and development of small and medium enterprises (Saura et al., 2021).

Almost in all countries where the issue of growth and promotion of small and medium enterprises has been attended, this important point is observed that for the growth of these enterprises, the economic structure of the whole country should be modified. That is, theoreticians in different countries say that if the economic condition isn't publicly provided for the activity of industry sector, there's also no hope for the growth of small and medium enterprises (Janita & Miranda, 2018). After modification of the macroeconomic structure, effective activity of small and medium enterprises requires collecting and explaining strategies and policies specific to these enterprises. Governments are collecting and explaining policies for small and medium enterprises separately, because it causes the creation of conditions for healthy competition (Schumacher, 1993).

In industrialized countries, efforts are made to moderate existing inequalities in an industry that result from the power of big industries in the market through creating a healthy competition environment in the industry and taking appropriate policies, and providing conditions of dynamic increasing growth of small and medium enterprises (Cortez & Johnston, 2017):

1. Developing financial infrastructure: creating a special capital market for small and medium enterprises and helping with the creation of institutions for supplying loan guarantees for these enterprises.

2. Developing information infrastructure: helping with the creation of information networks related to contractor small and medium enterprises and also the creation of information networks that provide services in the field of marketing and giving information.
3. Facilitating the relations between contractors and corporations as the members of industrial branches through enacting some rules including rules of delay in payments to contractors and modifying rules in the direction of dynamic growth of small and medium enterprises
4. Existence of focus in policy-making for small and medium institutions including manufacturing and servicing institutions and collecting information related to small and medium enterprises and analyzing results of policy-making based on this information
5. help with the creation of private institutions supporting small and medium enterprises like incubators, contractor institutions, consultative institutions and banks specific to small and medium enterprises

Among the most important policies related to the reinforcement of small and medium-sized enterprises and promoting their productivity, the following cases can be mentioned:

1. Encouraging small and medium enterprises to promote manufacturing technology and training employees through fiscal incentives.
2. Facilitating the provision of consultation services through helping with the creation of institutions supporting small and medium enterprises (Carlson, 2004).

### **Industrial corporations and challenges**

Competitiveness in the scene world and thereby high boom of the domestic manufacturing market requires a decrease in cost, improving the quality of goods and manufacturing services and development of product markets. To decrease cost and increase the quality of products, industrial corporations' managers should select investment paths in improving managerial and manufacturing systems (Hagen et al, 2022). A complicated combination of commercial promotional and service activities with policies of determining price and promoting physical quality should be utilized so that a good can find its place in a competitive market. Investment for presence in the global market and its continuance in many cases, has lower expenses than ending activity and permanent bankruptcy. It is recommended that corporations for gaining survival experience in competitive space, face external markets gradually and with initial investment and experience it step by step. As much as the government measures are important in forming and inhibiting the space of business of Iranian corporations, its role in promoting their market is also significant, this role isn't limited to inside the country and its effects also include international markets.

Gradual injection of petroleum income to reconstructive plans makes domestic industries sure about the existence of a growing and permanent market. This causes planning to decrease the finished price and improve quality. Many economic decisions of government start independently and its dependency on other factors influential on business isn't considered. Joining global markets requires effective interactions with the world and assistance to leading corporations in taking appropriate positions in the market (Setkute & Dibb, 2022). Clarification in investors' rights and respect for international agreements and treaties and clearance in rules related to business and manufacturing, decreasing fast changes in import and export provisions and demonstrating the capability of predicting performance by government, is the requirement for developing the market of industrial corporations. Foreign direct investment in the country will be accompanied by the promotion of manufacturing technologies level and improvement of managerial systems. With the growth

of foreign investment in the country, quality standards will go beyond the factory and national level and will compulsorily reach the level of global standards and this in turn is a requirement for entering global markets and promoting manufacture in corporations (Unido, 2003).

### Position of small and medium corporations in the economy

Creating and supporting small and medium corporations is one of the fundamental priorities in economic development plans in many developed and developing countries. Small and medium corporations have an important role in creating employment and providing appropriate background for innovation and increasing exports (Sousa & Rocha, 2019). Small corporations have more flexibility and there is more entrepreneurship and creativity in them. Small and medium corporations can adapt themselves to environmental fast changes more easily and respond to economic and political factors very quickly; small and medium corporations are agents of attracting and recruiting a huge part of the country's population and training workforce. Supplying specialized human forces for big corporations is performed by small and medium corporations. The complicated and fast transformation of recent decades and also acceleration of the trend for globalization have caused different communities to prepare themselves for accepting global transformations (Krings et al, 2021). What was an economic advantage until some previous decades, was establishing big corporations and keeping them active and the reasoning was that the bigger these corporations, the more dynamic and strong the economy (Suh & Chow, 2021); although this thought was propagated for some decades and some huge corporations were established based on that, recent transformations and especially population pressure, every moment innovations, more complicated management and decision-making processes, need to immediate decision making and experiences resulting from small and medium corporations' activity, has clarified importance of these corporations.

**Table 2.** Small and Medium Enterprises Definition

Country	Small and medium enterprises definition	Definition criterion
China	Corporations with personnel lower than 100	Number of employments
Indonesia	Number of employment lower than 100 individuals	Number of employments
Japan	Number of employees lower than 300 individuals	Number of employments
South Korea	Number of employees lower than 400 individuals	Number of employments
Malaysia	Number of employees lower than 150 individuals	Number of employments
Philippines	Number of employees lower than 300 individuals	Number of employments
Iran	Number of employees lower than 149 individuals	Number of employments
Resource: small and medium enterprises organization		

### Small and medium enterprises advantages

The economic development method which is based on entrepreneurship and developing small and medium enterprises, can have the following advantages:

1. According to country employment current conditions can be a good cross-sectional respondent for removing unemployment.
2. Most small enterprises because of not having high-level technology, create more job opportunities.



3. Most small enterprises don't need high experience and technological knowledge and after a while, enterprise owners can achieve sufficient experience.
4. In small enterprises, performing a part of activities by founders and owners of enterprises causes limited overload expenses.
5. Small enterprises can act locally and in a decentralized manner that causes a decrease in expenses.
6. In enterprises the sales amount isn't stable, the large manufacturing volume and scale advantage may not cause a decrease in expenses and increase in competitive advantage that smaller enterprises can produce products with lower expense.
7. If corporation competition requires creativity and innovation ability, in most cases and for big corporations, maintaining the production ability of creative personnel is difficult.
8. If a corporation's success requires intensive local control and supervision of its activities, small corporations may have a kind of advantage over big corporations.
9. In some industries, buyers' tastes vary; each wants a special kind of product, and this issue is more compatible with the structure of small and medium enterprises.

All aforementioned cases are advantages of some small enterprises that bring them success in these parts, now, if different industries want to possess a competitive advantage, they should have the following requirements:

1. Existence of scale advantage: the existence of scale advantage and mass production can increase competitive advantage in a corporation, because of the existence of productivity scale advantage will increase and expenses can be lowered.
2. Mass production: if the industry and scale advantage is large, the experience can be increased by more production in less time, that is, production in very high volume, will bring skills for a corporation in less time.
3. Ability of development and research: different corporations and enterprises can fulfill the demands and expectations of customers correctly only when after evaluating needs and field research have the ability of a necessary investment to fulfill these needs through research and developing products and processes, that are, ability in research and development can be one of the important competitive advantages.
4. Ability for marketing: the existence of facilities and sufficient capital for marketing, including target markets, determining needs of these markets, advertisement and increasing corporation share in different markets are the most important competitive advantages (Faruk et al., 2021).

As induced from previous cases, small enterprises of the country except for enterprises that have a competitive condition that enterprise based on the aforementioned cases created them, have none of the competitive advantages (mass production, high income and return, technology level, ability of research and development and high skill, marketing ability, advertisement in extended level, high quality of products and appropriate distribution channels) and cannot be profitable in a stable manner and long-term and succeed in maintaining and developing employment. This trend has occurred in most small enterprises of the country during the last years and is evident completely and returns to the government's investment policies as a structural problem. These kinds of enterprises are relatively small and weak and through them, there are no obstacles to the entrance of any competitor including foreign and domestic; as soon as the entrance of bigger corporations which have competitive facilities and advantages, fail (Aks, 2013).

In most developing countries, to confront industries' lack of focus and no competitive advantage, typically, the government uses different strategies and policies that to confront lack of focus in small existed enterprises, The following strategies may be effective:

1. Creating clusters and cooperatives including some small corporations to create at least a part of competitive advantages through shared investment of these corporations. Support of these corporations by the government should be just in the direction of achieving these advantages.

2. Nonfinancial support of government to compensate for some competitive advantages. Since most small enterprises cannot market and influence distribution channels extensively, the government can create structures for the existence of these competitive advantages. The government should review its investment policies to prevent more non-concentration in different industries and remove the competitive advantages of the country's industry. The following cases can be mentioned as examples:

1) Identifying advantages, strength points and regional opportunities of the country and doing macro-investments by foreign and domestic big investors.

2) Developing small enterprises and investment in this direction

3) Identifying small enterprises whose competitive advantages are in their smallness and investment in them.

### **Relationship between big, small, and medium-sized enterprises**

Harmonization of small enterprises with circumstances of developing countries causes this imagination that all these features have priority on big enterprises. But, the fact is that small and big enterprises in most situations just through relation with each other can harmonize industry wheel with acceleration of changes. Particularly, features of small enterprises that can be directly used by big enterprises are as follows:

1. Supplying pieces and equipment to heavy industries by small enterprises provides the possibility for big enterprises to focus on their competencies which is developing and growing technology.
2. Supplying spare pieces of previous productions of big enterprises, causes keeping customers satisfaction with the after-sale services of big enterprises.
3. Plans of development and promotion of big enterprises, can be implemented only by supporting and supplying the market and maintaining customers by small enterprises.
4. The ability to absorb limited and scattered capital and direct them into manufacturing and industrial activities, provides conditions for integrating capital and transforming heavy industries.
5. The possibility of the presence of small enterprises as second contractors of big enterprises in deprived areas, increases the share of this kind of industries in removing deprivation.
6. Small enterprises are considered as an appropriate bed for training professional and efficient human force needed for big enterprises.
7. The share of small enterprises in absorbing and transforming limited and scattered agricultural, bestial products, and mineral materials in rural and remote regions and converting them to industry food is undeniable.
8. Technical and specialized ability of small enterprises in producing and supplying most pieces and semi-produced goods of domestic and foreign industries, provides conditions for preventing the dispersion of heavy industries' production.
9. Big enterprises not only prevent the decrease of production volume of units through using a decrease of investment expenses, preventing irregular development of units and closing some parts of the production line of industrial pieces and goods and even rendering montage and design part of good to small units of design and engineering and montage, but also increases the productivity up to several levels.



10. Big enterprises could have the most innovation and diversity of products by using recommendations and creative thoughts of small and medium contractor units while removing potential weaknesses and problems and promoting the quality of manufactured goods.
11. Big industries could decrease the finished price of goods through performing alternative contract works, but also provided the possibility that units can prepare and supply spare pieces of different goods exited from their production line for long years and according to applicants' requests.

Big enterprises and or public institutions should have useful cooperation with small and medium-sized enterprises about policymaking and planning and control implementing these policies carefully. First, according to its administrative management role the government should take action in favor of small enterprises to create new small enterprises or guarantee the continuance of small enterprises by supporting them through modifying provisions. Also, the government in the position of owner of big enterprises, should identify disposed small enterprises and then use the advantages of small units in the production chain. In our country, export development is considered one of the main pivots of industrial development. Creating and developing small enterprises is vital for filling an existing gap in the industry, especially in terms of copy and montage and production of pieces that have the capability of competition in the international arena. One of the main solutions to the relationship between small enterprises with medium and big industries is buying small enterprises from other industries. It means that high-capital based and big industries, as much as possible, supply their needed services, whether in terms of research and development, designing and engineering, and or constructing pieces, through small specialized groups so that expenses increase and also increase heavy overload expenses in big industries can be prevented, and capability of products competition will increase and cause development and growth of small enterprises. The role of big industries management especially industries in government's authority and public institutions is determinative in this case. Selected strategies in these industries shouldn't be vertical development and organizational magnification, but through taking proper policies, facilities of small enterprises should be used more, and through organizational minimization, competition capability, and organizational flexibility should increase (Aks et al., 2011).

### 3. Research methodology

The current study follows a descriptive and practical nature with a survey design. Library research and also questionnaires are distributed among managers and experts of industrial towns of Firoozkooch and Tehran to collect the data. Initial information of samples is obtained through field study, library study, and internet surfing, and given to managers and experts in the form of questionnaires so that, they could answer the questions as the case prioritization. Considered indices were:

1. No dependence on foreign resources
2. Share of each enterprise in employment
3. Product diversity and market diversity
4. Share of each enterprise in export

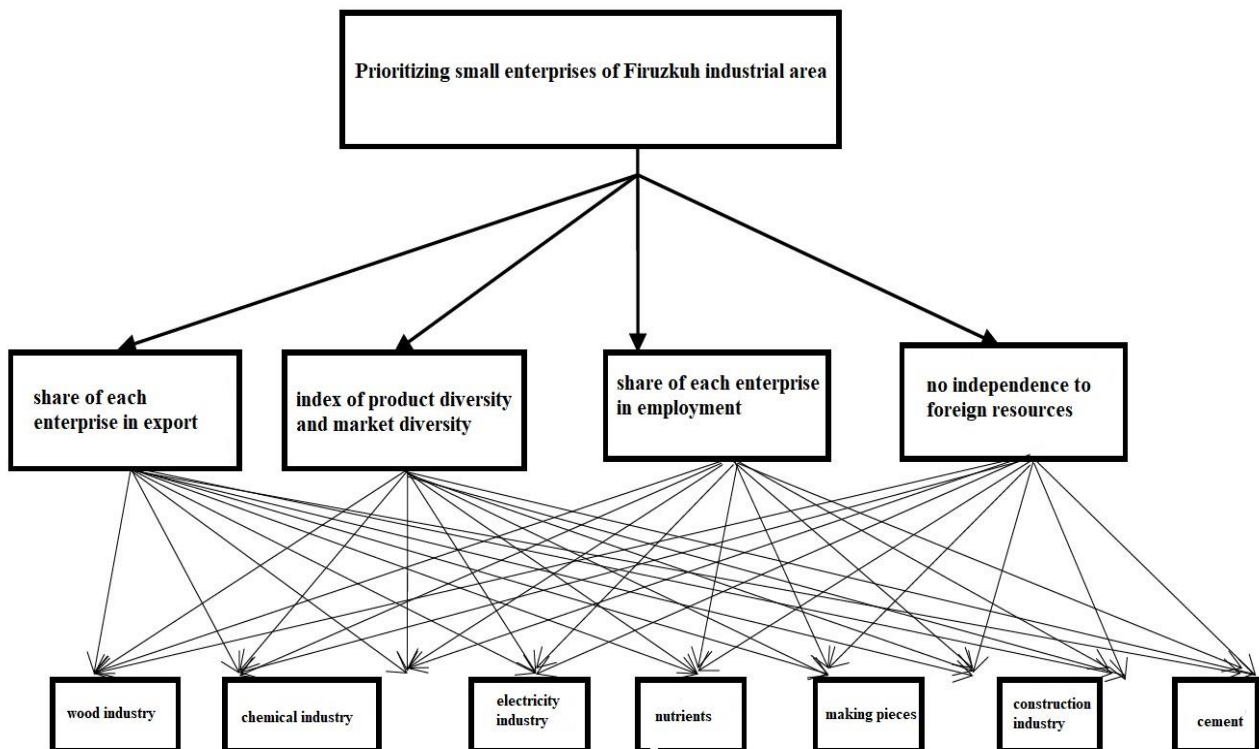


Figure 1. Research Conceptual Framework

In this study, the Fuzzy network analysis process has been used based on four factors and their related components to prioritize (weight). At this point, comparative matrices (pairwise comparisons) of factors, the dependence of factors on each other, and components formed based on the geometric mean of expert opinions and their consistency are controlled. Unlike the process of hierarchical analysis, where the relationship between factors and components is hierarchical and unidirectional, in the process of network analysis, besides the hierarchical relationship, factors, and components may be related and interdependent in some parts of the model. In the next step, the average opinion of the experts along with the first questionnaire (second round) was sent to the people again. According to this approach, each of the experts can compare his opinion with the average opinion and modify their previous opinions if they like. Table 3 shows the results of questionnaire one (second round).

Table 3. Average opinions of experts (second round)

Row	Factors	Average	Fuzzy average	De-fuzzified average
1	cement industry	58/4	(0/69 ,0/94 ,1/00)	859/0
2	construction industry	58/4	(0/65 ,0/90 ,1/00)	844/0
3	chemical industry	67/4	(0/63 ,0/88 ,1/00)	859/0
4	Food industry	67/4	(0/65 ,0/90 ,1/00)	875/0

Row	Factors	Average	Fuzzy average	De-fuzzified average
5	parts manufacturing industry	55/4	(0/67 ,0/92 ,1/00)	859/0
6	Electricity and electronics industry	39/4	(0/65 ,0/90 ,1/00)	891/0
7	Wood Industry	88/4	(0/69 ,0/94 ,1/00)	875/0

In third step, the amount of experts' disagreement (difference between the fuzzy mean of the first and second period) is calculated. If the calculated difference is less than 0.2, the fuzzy Delphi process will be stopped, Otherwise, the process will continue.

**Table 4.** The average difference of experts' opinions (disagreement) in questionnaire one

Row	Factors	De-fuzzified average 1	De-fuzzified average 2	difference of opinion (Disagreement)
1	cement industry	0/828	859/0	042/0
2	construction industry		844/0	005/0
3	chemical industry	819/0	859/0	052/0
4	Food industry	838/0	875/0	047/0
5	parts manufacturing industry	845/0	859/0	031/0
6	Electricity and electronics industry	869/0	891/0	031/0
7	Wood Industry	870/0	875/0	016/0

Considering that the average difference of all components is less than 0.2, It can be concluded that, there is a good consensus among the experts and there is no need to re-refer the questionnaire. Finally, we consider a limit to accept it or not to extract components. In this study, according to the 20-80 rule, the acceptable limit of the components is about 0.8. If the de-phased value of the triangular fuzzy number is close to 0.8 or higher according to the opinion of the experts, it is accepted as a component and is not accepted otherwise. Therefore, all cases were confirmed by experts in different industries.

### Examining the cause-and-effect relationship

Questions were made from the same group of experts based on pairwise comparisons to investigate cause-and-effect relationships

These opinions are converted into the corresponding fuzzy linguistic values and eventually, the fuzzy average of experts' opinions was calculated corresponding following formula.

$$\tilde{Z} = \frac{\tilde{Z}^1 \oplus \tilde{Z}^2 \oplus \dots \oplus \tilde{Z}^p}{p}$$

**Table 5.** Fuzzy matrix of direct relationship

DM	Factors	C1	C2	C3	C4	C5	C6	C7
C1	cement industry	◊0/00 ◊0/25 (0/00)	◊0/48 ◊0/73 (0/23)	◊0/50 ◊0/75 (0/25)	◊0/88 ◊0/98 (0/63)	◊0/90 ◊1/00 (0/65)	◊0/44 ◊0/69 (0/19)	◊0/54 ◊0/79 (0/29)
C2	construction industry	◊0/23 ◊0/48 (0/00)	◊0/00 ◊0/25 (0/00)	◊0/35 ◊0/60 (0/10)	◊0/83 ◊0/98 (0/58)	◊0/92 ◊1/00 (0/67)	◊0/40 ◊0/65 (0/15)	◊0/31 ◊0/56 (0/06)
C3	chemical industry	◊0/44 ◊0/69 (0/19)	◊0/44 ◊0/69 (0/19)	◊0/00 ◊0/25 (0/00)	◊0/78 ◊0/78 (0/55)	◊0/85 ◊1/00 (0/60)	◊0/83 ◊0/98 (0/58)	◊0/27 ◊0/25 (0/02)
C4	Food industry	◊0/40 ◊0/65 (0/15)	◊0/50 ◊0/75 (0/25)	◊0/42 ◊0/67 (0/17)	◊0/73 ◊0/68 (0/52)	◊0/85 ◊1/00 (0/60)	◊0/54 ◊0/79 (0/29)	◊0/00 ◊0/25 (0/00)
C5	parts manufacturing industry	◊0/83 ◊0/98 (0/58)	◊0/85 ◊1/00 (0/60)	◊0/83 ◊0/98 (0/58)	◊0/92 ◊1/00 (0/67)	◊0/88 ◊1/00 (0/63)	◊0/31 ◊0/56 (0/06)	◊0/55 ◊1/00 (0/70)
C6	Electricity and electronics industry	◊0/78 ◊0/78 (0/55)	◊0/85 ◊1/00 (0/60)	◊0/78 ◊0/78 (0/55)	◊0/85 ◊1/00 (0/60)	◊0/85 ◊1/00 (0/60)	◊0/27 ◊0/25 (0/02)	◊0/75 ◊1/00 (0/50)
C7	Wood Industry	◊0/73 ◊0/68 (0/52)	◊0/90 ◊1/00 (0/65)	◊0/73 ◊0/68 (0/52)	◊0/85 ◊1/00 (0/60)	◊0/85 ◊1/00 (0/60)	◊0/73 ◊0/68 (0/52)	◊0/80 ◊1/00 (0/65)

After creating the fuzzy matrix of the direct relationship, this matrix should be converted into a normalized direct relationship matrix. Table 6- The normal matrix indicates a direct relationship between the factors.

**Table 6.** Normal matrix of the direct relationship of factors

DM	Factors	C1	C2	C3	C4	C5	C6	C7
C1	cement industry	◊0/00 ◊0/25 (0/00)	◊0/48 ◊0/73 (0/23)	◊0/50 ◊0/75 (0/25)	◊0/54 ◊0/79 (0/29)	◊0/88 ◊0/98 (0/63)	◊0/90 ◊1/00 (0/65)	◊0/00 ◊0/25 (0/00)
C2	construction industry	◊0/23 ◊0/48 (0/00)	◊0/00 ◊0/25 (0/00)	◊0/35 ◊0/60 (0/10)	◊0/31 ◊0/56 (0/06)	◊0/83 ◊0/98 (0/58)	◊0/92 ◊1/00 (0/67)	◊0/23 ◊0/48 (0/00)
C3	chemical industry	◊0/44 ◊0/69 (0/19)	◊0/44 ◊0/69 (0/19)	◊0/00 ◊0/25 (0/00)	◊0/27 ◊0/25 (0/02)	◊0/78 ◊0/78 (0/55)	◊0/85 ◊1/00 (0/60)	◊0/83 ◊0/98 (0/58)
C4	Food industry	◊0/40 ◊0/65 (0/15)	◊0/50 ◊0/75 (0/25)	◊0/42 ◊0/67 (0/17)	◊0/00 ◊0/25 (0/00)	◊0/73 ◊0/68 (0/52)	◊0/85 ◊1/00 (0/60)	◊0/78 ◊0/78 (0/55)
C5	parts manufacturing industry	◊0/83 ◊0/98 (0/58)	◊0/85 ◊1/00 (0/60)	◊0/83 ◊0/98 (0/58)	◊0/55 ◊1/00 (0/70)	◊0/90 ◊1/00 (0/65)	◊0/83 ◊0/98 (0/58)	◊0/73 ◊0/68 (0/52)
C6	Electricity and electronics industry	◊0/78 ◊0/78 (0/55)	◊0/85 ◊1/00 (0/60)	◊0/78 ◊0/78 (0/55)	◊0/75 ◊1/00 (0/50)	◊0/92 ◊1/00 (0/67)	◊0/78 ◊0/78 (0/55)	◊0/85 ◊1/00 (0/60)
C7	Wood Industry	◊0/73 ◊0/68 (0/52)	◊0/90 ◊1/00 (0/65)	◊0/73 ◊0/68 (0/52)	◊0/80 ◊1/00 (0/65)	◊0/85 ◊1/00 (0/60)	◊0/73 ◊0/68 (0/52)	◊0/85 ◊1/00 (0/60)

**Table 7.** Matrix of the collective relationship of factors

DM	factors	C1	C2	C3	C4	C5	C6	C7	Ri
C1	cement industry	cement industry	◊0/29 (0/09 ◊0/19)	◊0/30 (0/10 ◊0/20)	◊0/31 (0/12 ◊0/21)	◊0/69 (0/19 ◊0/44)	◊0/69 (0/19 ◊0/44)	◊0/25 (0/00 ◊0/00)	◊0/31 (0/12 ◊0/21)
C2	construction industry	construction industry	◊0/10 (0/00 ◊0/00)	◊0/24 (0/04 ◊0/14)	◊0/22 (0/02 ◊0/12)	◊0/65 (0/15 ◊0/40)	◊0/75 (0/25 ◊0/50)	◊0/67 (0/17 ◊0/42)	◊0/31 (0/12 ◊0/21)
C3	chemical industry	chemical industry	◊0/27 (0/07 ◊0/17)	◊0/10 (0/00 ◊0/00)	◊0/21 (0/01 ◊0/11)	◊0/98 (0/58 ◊0/83)	◊1/00 (0/60 ◊0/85)	◊0/98 (0/58 ◊0/83)	◊0/31 (0/12 ◊0/21)
C4	Food industry	Food industry	◊0/30 (0/10 ◊0/20)	◊0/26 (0/07 ◊0/17)	◊0/10 (0/00 ◊0/00)	◊0/78 (0/55 ◊0/78)	◊1/00 (0/60 ◊0/85)	◊0/78 (0/55 ◊0/78)	◊0/31 (0/12 ◊0/21)
C5	parts manufacturing industry	parts manufacturing industry	◊0/78 (0/55 ◊0/78)	◊1/00 (0/50 ◊0/75)	◊1/00 (0/67 ◊0/92)	◊0/68 (0/52 ◊0/73)	◊1/00 (0/65 ◊0/90)	◊0/68 (0/52 ◊0/73)	◊0/69 (0/19 ◊0/44)
C6	Electricity and electronics industry	Electricity and electronics industry	◊0/68 (0/52 ◊0/73)	◊1/00 (0/65 ◊0/80)	◊1/00 (0/65 ◊0/80)	◊1/00 (0/60 ◊0/85)	◊0/69 (0/19 ◊0/44)	◊0/69 (0/19 ◊0/44)	◊0/29 (0/09 ◊0/19)
C7	Wood Industry	Wood Industry	◊0/25 (0/00 ◊0/00)	◊0/60 (0/10 ◊0/35)	◊0/60 (0/10 ◊0/35)	◊0/56 (0/06 ◊0/31)	◊0/98 (0/58 ◊0/83)	◊1/00 (0/67 ◊0/92)	◊0/48 (0/00 ◊0/23)
Di		(0/06 ◊0/16 ◊0/26)	◊0/26 (0/06 ◊0/16)	◊0/26 (0/06 ◊0/16)	◊0/26 (0/06 ◊0/16)	◊0/26 (0/06 ◊0/16)	◊0/26 (0/06 ◊0/16)	◊0/98 (0/58 ◊0/83)	◊1/00 (0/60 ◊0/85)

Next, the values that are equal to the sum of the rows and columns of the collective relationship of the factors are calculated by using the collective correlation matrix of the factors.

**Table 8.** The values of  $\tilde{R}_i, \tilde{D}_i, \tilde{R}_i + \tilde{D}_i, \tilde{R}_i - \tilde{D}_i, (\tilde{R}_i + \tilde{D}_i)^{def}, (\tilde{R}_i - \tilde{D}_i)^{def}$

Factors	Ease of use	cement	constructional	chemical	food	Electricity and electronic	wood
$\tilde{R}$	$\begin{pmatrix} .8/.71 \\ (0/35 \text{ } .2/12) \end{pmatrix}$	$\begin{pmatrix} .0/.70 \text{ } .6/.09 \\ (0/15) \end{pmatrix}$	$\begin{pmatrix} .0/.88 \text{ } .6/.65 \\ (0/18) \end{pmatrix}$	$\begin{pmatrix} .0/.98 \text{ } .7/.95 \\ (0/20) \end{pmatrix}$	$\begin{pmatrix} .0/.09 \text{ } .0/.19 \\ (0/00) \end{pmatrix}$	$\begin{pmatrix} .0/.16 \text{ } .0/.26 \\ (0/06) \end{pmatrix}$	$\begin{pmatrix} .0/.30 \\ (0/10 \text{ } .0/20) \end{pmatrix}$
$\tilde{D}$	$\begin{pmatrix} .7/.63 \\ (0/15 \text{ } .1/82) \end{pmatrix}$	$\begin{pmatrix} .1/.05 \text{ } .7/.78 \\ (0/32) \end{pmatrix}$	$\begin{pmatrix} .0/.5 \text{ } .0/.96 \text{ } .7/.71 \\ (0/32) \end{pmatrix}$	$\begin{pmatrix} .0/.86 \text{ } .6/.78 \\ (0/18) \end{pmatrix}$	$\begin{pmatrix} .13/.88 \\ (0/47 \text{ } .1/75) \end{pmatrix}$	$\begin{pmatrix} .1/.82 \text{ } .7/.63 \\ (0/15) \end{pmatrix}$	$\begin{pmatrix} .6/.65 \\ (0/18 \text{ } .0/88) \end{pmatrix}$
$\tilde{R} + \tilde{D}$	$\begin{pmatrix} .16/.34 \\ (0/50 \text{ } .3/94) \end{pmatrix}$	$\begin{pmatrix} .13/.88 \\ (0/47 \text{ } .1/75) \end{pmatrix}$	$\begin{pmatrix} .1/.83 \text{ } .13/.85 \\ (0/43) \end{pmatrix}$	$\begin{pmatrix} .1/.84 \text{ } .14/.74 \\ (0/38) \end{pmatrix}$	$\begin{pmatrix} .0/.16 \text{ } .0/.26 \\ (0/06) \end{pmatrix}$	$\begin{pmatrix} .3/.94 \text{ } .16/.34 \\ (0/50) \end{pmatrix}$	$\begin{pmatrix} .7/.71 \\ (0/5 \text{ } .0/96) \end{pmatrix}$
$\tilde{R} - \tilde{D}$	$\begin{pmatrix} .0/.19 \\ (0/00 \text{ } .0/09) \end{pmatrix}$	$\begin{pmatrix} .0/.16 \text{ } .0/.26 \\ (0/06) \end{pmatrix}$	$\begin{pmatrix} .0/.20 \text{ } .0/.30 \\ (0/10) \end{pmatrix}$	$\begin{pmatrix} .0/.17 \text{ } .0/.26 \\ (0/07) \end{pmatrix}$	$\begin{pmatrix} .0/.98 \text{ } .7/.95 \\ (0/20) \end{pmatrix}$	$\begin{pmatrix} .0/.09 \text{ } .0/.19 \\ (0/00) \end{pmatrix}$	$\begin{pmatrix} .13/.88 \\ (0/47 \text{ } .1/75) \end{pmatrix}$
$(\tilde{R} + \tilde{D})^{def}$	6/93	5/37	5/37	5/65	4/23	5/72	6/37
$(\tilde{R} - \tilde{D})^{def}$	0/53	-0/74	-0/24	0/44	0/23	0/19	0/12

If the  $(\tilde{R}_i - \tilde{D}_i)^{def}$  value of each factor becomes positive, the factor belongs to the group of causes and is a penetrative element. However, if the value  $(\tilde{R}_i - \tilde{D}_i)^{def}$  becomes negative, the factor will belong to the effect group and will be considered as an element under penetration. It also indicates the total intensity of an element (along the length axis) both in terms of permeating and being under penetration.

### Prioritization

In this study, the Fuzzy network analysis process has been used based on four factors and their related components to prioritize (weight). At this point, comparison matrices (pairwise comparisons) of factors, the dependence of factors on each other, and components are formed based on the geometric mean of experts' opinions, and their consistency is controlled. Unlike the process of hierarchical analysis, where the relationship between factors and components is hierarchical and unidirectional, In the process of network analysis, besides the hierarchical relationship, in some parts of the model, factors, and components may be related and interdependent.

### Binary comparison of factors

A binary comparison of 7fold factors is conducted based on a 9-hourly quantitative scale, by the process of network fuzzy hierarchical analysis. The result of prioritization (fuzzy and definite weight) of the factors, the inconsistency rate based on the Gogus & Boucher method (less than 0.1), and the resulting weighted vector, i.e.,  $W_{21}$ , are presented in Table 9.



**Table 9.** Prioritization (weight) of factors, Inconsistency coefficient and weighted vector ( $W_{21}$ )

	Factors	Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/158 ∙ 0/265 ∙ 0/444	0/289	$CR^m = 0/05$
C2	construction industry	0/148 ∙ 0/250 ∙ 0/420	0/273	
C3	chemical industry	0/130 ∙ 0/215 ∙ 0/360	0/235	$CR^g = 0/04$
C4	Food industry	0/158 ∙ 0/269 ∙ 0/454	0/294	
C5	parts manufacturing industry	0/185 ∙ 0/176 ∙ 0/144	0/240	$CR^g = 0/06$
C6	Electricity and electronics industry	0/180 ∙ 0/145 ∙ 0/177	0/277	$CR^g = 0/05$
C7	Wood Industry	0/130 ∙ 0/190 ∙ 0/139	0/239	$CR^g = 0/05$

**Binary comparison of internal dependencies ( $W_{22}$  matrix)**

The binary comparison between the factors is conducted to reach the  $W_{22}$  matrix elements and based on the scale of 9 hourly quantities to understand the interdependencies between factors. The way to ask about the importance factor in this case, for example, is as follows:

"What is the relative importance of the first factor in comparison with the second factor?" Four other binary comparison matrices should be formed and the consistency coefficient of each of them should be controlled based on the Gogus & boucher method to be able to calculate the matrix related to the mutual dependence of the factors ( $W_{22}$ ).

**Table 10.** Prioritization (weight) of factors, with the control of the first factor

	Controlling the first factor	Fuzzy weight	Net weight	Inconsistency rate
C2	cement industry	0/219 ∙ 0/342 ∙ 0/533	0/365	$CR^m = 0/05$
C3	construction industry	0/224 ∙ 0/353 ∙ 0/554	0/377	$CR^g = 0/06$
C4	chemical industry	0/195 ∙ 0/303 ∙ 0/475	0/325	
C5	Food industry	0/185 ∙ 0/176 ∙ 0/144	0/294	$CR^g = 0/03$
C6	parts manufacturing industry	0/180 ∙ 0/145 ∙ 0/177	0/240	$CR^g = 0/02$
C7	Electricity and electronics industry	0/130 ∙ 0/190 ∙ 0/139	0/277	$CR^g = 0/04$

**Table 11.** Prioritization (weight) of factors, with the control of the second factor

Controlling the second factor		Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/217 ∙ 0/342 ∙ 0/539	0/367	CR <sup>m</sup> = 0/06 CR <sup>g</sup> = 0/07
C3	construction industry	0/193 ∙ 0/303 ∙ 0/480	0/326	
C4	chemical industry	0/228 ∙ 0/353 ∙ 0/544	0/375	
<b>C5</b>	Food industry	0/196 ∙ 0/302 ∙ 0/471	0/380	CR <sup>m</sup> = 0/04
<b>C6</b>	parts manufacturing industry	0/243 ∙ 0/375 ∙ 0/571	0/361	CR <sup>g</sup> = 0/05
<b>C7</b>	Electricity and electronics industry	0/208 ∙ 0/322 ∙ 0/499	0/325	CR <sup>m</sup> = 0/03

**Table 12.** Prioritization (weight) of factors, with the control of the third factor

Controlling the third factor		Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/230 ∙ 0/357 ∙ 0/552	0/380	CR <sup>m</sup> = 0/06 CR <sup>g</sup> = 0/07
C2	construction industry	0/216 ∙ 0/339 ∙ 0/527	0/361	
C4	chemical industry	0/196 ∙ 0/303 ∙ 0/473	0/325	
<b>C5</b>	Food industry	0/196 ∙ 0/302 ∙ 0/471	0/310	CR <sup>m</sup> = 0/04
<b>C6</b>	parts manufacturing industry	0/243 ∙ 0/375 ∙ 0/571	0/319	CR <sup>g</sup> = 0/05
<b>C7</b>	Electricity and electronics industry	0/208 ∙ 0/322 ∙ 0/499	0/345	CR <sup>g</sup> = 0/03

**Table 13.** Prioritization (weight) of factors, with the control of the fourth factor

With the control of the fourth factor		Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04 CR <sup>g</sup> = 0/05
C2	construction industry	0/243 ∙ 0/375 ∙ 0/571	0/397	
C3	chemical industry	0/208 ∙ 0/322 ∙ 0/499	0/343	
<b>C5</b>	Food industry	0/224 ∙ 0/353 ∙ 0/554	0/380	CR <sup>m</sup> = 0/04
<b>C6</b>	parts manufacturing industry	0/195 ∙ 0/303 ∙ 0/475	0/361	CR <sup>g</sup> = 0/05
<b>C7</b>	Electricity and electronics industry	0/185 ∙ 0/176 ∙ 0/144	0/325	CR <sup>m</sup> = 0/03

**Table 14.** Prioritization (weight) of factors, with the control of the fifth factor

With the control of the fifth factor		Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04 CR <sup>g</sup> = 0/05
C2	construction industry	0/243 ∙ 0/375 ∙ 0/571	0/397	
C3	chemical industry	0/208 ∙ 0/322 ∙ 0/499	0/343	
<b>C4</b>	Food industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04
<b>C6</b>	parts manufacturing industry	0/195 ∙ 0/303 ∙ 0/475	0/361	CR <sup>g</sup> = 0/05
<b>C7</b>	Electricity and electronics industry	0/185 ∙ 0/176 ∙ 0/144	0/325	CR <sup>m</sup> = 0/03

**Table 15.** Prioritization (weight) of the factors, with the control of the sixth factor

With the control of the sixth factor		Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04
C2	construction industry	0/243 ∙ 0/375 ∙ 0/571	0/397	
C3	chemical industry	0/208 ∙ 0/322 ∙ 0/499	0/343	
<b>C4</b>	Food industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04
<b>C5</b>	parts manufacturing industry	0/195 ∙ 0/303 ∙ 0/475	0/361	CR <sup>g</sup> = 0/05
<b>C7</b>	Electricity and electronics industry	0/185 ∙ 0/176 ∙ 0/144	0/325	CR <sup>m</sup> = 0/03

**Table 16.** Prioritization (weight) of factors, with the control of the seventh factor

With the control of the seventh factor		Fuzzy weight	Net weight	Inconsistency rate
C1	cement industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04
C2	construction industry	0/243 ∙ 0/375 ∙ 0/571	0/397	
C3	chemical industry	0/208 ∙ 0/322 ∙ 0/499	0/343	
<b>C4</b>	Food industry	0/243 ∙ 0/375 ∙ 0/571	0/397	CR <sup>g</sup> = 0/05
<b>C5</b>	parts manufacturing industry	0/208 ∙ 0/322 ∙ 0/499	0/343	CR <sup>g</sup> = 0/05
<b>C6</b>	Electricity and electronics industry	0/196 ∙ 0/302 ∙ 0/471	0/324	CR <sup>m</sup> = 0/04

The results are presented in the  $W_{22}$  matrix after forming these seven matrices and performing the necessary calculations.

**Table 17.** Matrix related to interdependence of factors ( $W_{22}$ )

$W_{22}$	Factors	C1	C2	C3	C4	C5	C6	C7
C1	cement industry	000/0	367/0	380/0	324/0	310/0	228/0	298/0
C2	construction industry	365/0	000/0	361/0	397/0	339/0	277/0	245/0
C3	chemical industry	377/0	326/0	000/0	343/0	418/0	271/0	266/0
C4	Food industry	325/0	375/0	325/0	000/0	355/0	254/0	231/0
<b>C5</b>	parts manufacturing industry	228/0	219/0	305/0	346/0	000/0	233/0	227/0
<b>C6</b>	Electricity and electronics industry	362/0	390/0	348/0	355/0	362/0	000/0	266/0
C7	Wood Industry	377/0	390/0	354/0	316/0	367/0	344/0	000/0

### Calculation of the super matrix of the limit

Formation of weighted super matrix: Given that All comparison matrices in the balanced super matrix structure ( $W_{22}$ ,  $W_{21}$ ) have been calculated and their consistency has been controlled, the weighted super matrix can be obtained by replacing these matrices in the original super matrix, according to Table 18.

**Table 18.** Weighted super matrix

			Goal	Factors						
				C1	C2	C3	C4	C5	C6	C7
				000/0	000/0	000/0	000/0	000/0	000/0	000/0
Factors	C1	cement industry	289/0	000/0	367/0	380/0	324/0	271/0	266/0	346/0
	C2	construction industry	273/0	365/0	000/0	361/0	397/0	254/0	231/0	355/0
	C3	chemical industry	235/0	377/0	326/0	000/0	343/0	233/0	227/0	316/0
	C4	Food industry	294/0	325/0	375/0	325/0	000/0	208/0	219/0	305/0
	C5	parts manufacturing industry	228/0	219/0	305/0	346/0	213/0	000/0	390/0	348/0
	C6	Electricity and electronics industry	362/0	390/0	348/0	355/0	234/0	237/0	000/0	255/0
	C7	Wood Industry	377/0	390/0	354/0	316/0	212/0	241/0	251/0	000/0

*Calculation of the limit super matrix:* The purpose of maximizing the weighted super matrix is that the relative long-term effect of each of its elements on each other can be achieved. To differentiate the importance coefficient of each element of the weighted matrix, we raise it to the power of K, which is an arbitrarily large number until all the elements of the super matrix become the same (be equal). In the present study, in the 10th power of the weighted super matrix, the limit super matrix is obtained, and all its elements are approximately equal.

**Table 19.** Limit super matrix

			Goal	Factors						
				C1	C2	C3	C4	C5	C6	C7
				000/0	000/0	000/0	000/0	000/0	000/0	000/0
Factors	C1	cement industry	487/0	487/0	487/0	487/0	487/0	294/0	325/0	375/0
	C2	construction industry	504/0	504/0	504/0	504/0	504/0	228/0	219/0	305/0
	C3	chemical industry	478/0	478/0	478/0	478/0	478/0	362/0	390/0	348/0
	C4	Food industry	472/0	472/0	472/0	472/0	472/0	377/0	390/0	354/0
	C5	parts manufacturing industry	271/0	266/0	219/0	305/0	346/0	235/0	377/0	326/0
	C6	Electricity and electronics industry	254/0	231/0	390/0	348/0	355/0	294/0	325/0	375/0
	C7	Wood Industry	233/0	227/0	390/0	354/0	316/0	228/0	219/0	305/0

It is necessary to mention that the elements of the limit super matrix should be normalized to obtain a random/probabilistic state. The marginal significance vector (weight) for dimensions and components after normalization are presented in Table 20.

#### 4. Conclusion

Based on the findings, among the components, the food industry has the most weight. So, the priority is the food industry. After the food industry, the second priority is the cement industry, the third priority is electricity and electronics, the fourth priority is the construction industry, the fifth priority is the parts manufacturing industry, the sixth is the wood industry and the seventh is the chemical industry.

It can be concluded that small and medium-sized enterprises have been considered as one important economic factor and have been attended to, particularly in terms of policy-making. This is consistent with the findings of different studies (Faruk et al., 2021; Sousa & Rocha, 2019).

**Table 20.** Prioritization (weight)

	<b>Factors</b>	<b>weight</b>
C1	cement industry	351/0
C2	construction industry	310/0
C3	chemical industry	246/0
C4	Food industry	375/0
C5	parts manufacturing industry	299/0
C6	Electricity and electronics industry	338/0
C7	Wood Industry	275/0

Although these enterprises have been supported in terms of financial technological and managerial aspects, but have not been attended to a lot in the initial stages of policy-making for their export value. In the initial stages, small and medium-sized enterprises have entered the global market as such and have had a greater share of export of traditional, manual and user products. As countries and small enterprises have developed simultaneously, their organization in developing and advancing exports has received more attention. According to Setkute and Dibb, 2022, countries like Taiwan and South Korea which have a lot of exports, also have export strong organizations for small and medium-sized enterprises. In addition, in all these countries, domestic support of small and medium enterprises has been preferred to foreign and export support. Almost in all studied countries, group organization has existed for directing industries' exports. In countries with more developed exports, small and medium-sized enterprises have had their organization and in countries with low export and development, small and medium enterprises have been organized with big enterprises in the chamber of commerce. In India, South Korea and Taiwan, small enterprises have organizations specific to themselves and in countries like Malaysia and Indonesia, have been organized with big enterprises and most in chambers of commerce.

Foreign currency policies have been one of the inseparable components of policies encouraging export in general and for small and medium-sized enterprises in particular. Typically, in most studied countries, if exporters want to export, their import is excluded from tariff duties. This issue causes ease of import for exporter and since exporter brings foreign currency into the country, with an increase in their import, they will have more export

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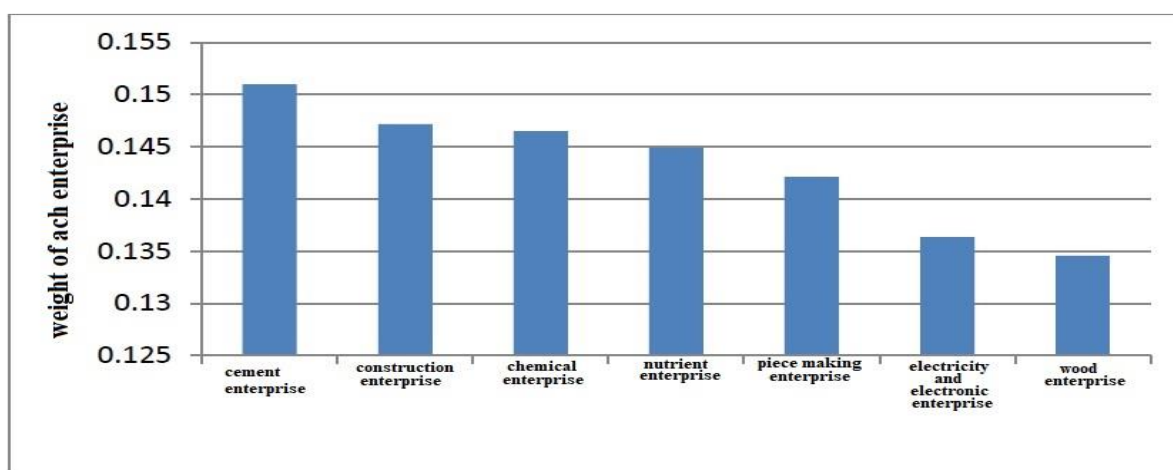
this policy has been the most important foreign currency policy in supporting small and medium enterprises.

In all the countries mentioned, the private sector has been active or has become active gradually (as Krings et al., 2021 indicated). Foreign currency control policies, export apportionment, high increase of tariff and apportionment of import institutions have been used as a main policy in none of these countries; and, since they have considered the private sector very important, guiding policies have been indirect and effective.

One of the common experiences of all studied countries has been providing economic overload services for small and medium units. All studied countries and particularly countries that have had successful experiences in export issues (as indicated by Iankova et al., 2018) and have created supportive organizations to provide overload services for small and medium units. These services include providing information, providing export official services, market study services, advertisements and corporations in foreign fairs, and in some cases, managerial services were also included.

In line with the findings of some studies (e.g. Clendennen et al., 2021; Wilkinson & Perry, 2021), besides effective and positive benefits which were mentioned, small industrial units also face challenges and obstacles. These obstacles include capital limitation, manufacture volume limit, shortage of specialized human force, lack of laboratories and test and control equipped devices and units' inability to market and direct export of work productions besides management and manufacture work.

The priority of investment in the industry of Firoozkooh town is cement. Due to sufficient resources and appropriate beds and near and available target markets of Semnan, Mazandaran and Tehran. Also, good ways coming down Firoozkooh town, selling cement and delivering it to market at an appropriate time, is from another good condition for the cement enterprise of Firoozkooh town. The second priority is for construction enterprise and construction enterprises to have good positions in the Firoozkooh industry and this position is because of the existence of mineral material resources and workforce and also easy and appropriate access to the target market due to the near distance to Tehran and some high-population and constructing cities.



**Figure 2. Prioritizing small and medium-sized enterprises in Firuzkuh Industrial Area.**

Chemical enterprises are the third priority. Firoozkooh industrial town is outside 120 km radius of prohibited industries and is one of the appropriate features for this industry in

Firoozkooh, with this limitation of distance from Tehran, Firoozkooh is a good option and even is in the minimum distance of initial material. Also, chemical enterprises have the highest share in employment and have high consumption and diversity of market. Nutrient enterprises have a fourth priority. Because of mechanization, this enterprise has a low share in employment, but has the important feature of being near to consumption market. Some nutrient industries in Firoozkooh town have an appropriate condition like being near initial materials like milk, wheat and types of fruits. This is one of the good features of Firoozkooh industrial town. Piece making and electricity and electronic and wood enterprises have the next priorities. The low priority of these enterprises is their weakness in indices like employment share and export. Most aforementioned weak enterprises in Firoozkooh, have lower personnel because of mechanization and low scope of work.

Further research should be performed to use its results for improving affairs and or changing conditions. The results of this research can also be used by investors and founders of the industry of Firoozkooh town who are seeking to select the best choice for investing in city enterprises. This research considers the capabilities of investing in enterprises in Firoozkooh city according to criteria of no dependence on foreign resources, share of each enterprise in employment, product diversity and market diversity, and share of each enterprise in export. According to the aforementioned criteria and prioritization performed by multi-criteria decision-making technique, the cement enterprise has first rank and priority in the Firoozkooh industry, so, it is suggested that investors put the cement factory and products related to this product in their priorities. Firoozkooh and the cities near to it, don't have white cement factories. Constructing a white cement factory is also suggested by investors and artisans. Also, several mines in Firoozkooh are appropriate for constructing cement factories that haven't been utilized yet. In the next suggestion, I introduce construction and chemical enterprises to investors and artisans that have the next priorities in Firoozkooh industrial city. According to the aforementioned criteria, construction and chemical enterprises have priority after cement. In these enterprises, employment, export share, market diversity, product diversity, availability of resources and initial materials in Firoozkooh city are in good condition, and investing in these two enterprises is also suggested by investors. In the end, a more active presence of these enterprises in export is suggested so that they can have maximum use of this power. Especially in the cement enterprise, because of sufficient resources and mines, through reaching the country's market surplus, we can have a more effective presence in the export of this enterprise.

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