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Exploring relationship between the development of small and medium scale enterprises and the employment of universities graduate

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ABSTRACT

BACKGROUND AND OBJECTIVES: Over recent years the employment creation discussion was massively raised especially about university graduates and demands from Iran's government increased. The prediction of the youth unemployment rate during the period from 2015 to 2021 showed that with an annual growth rate of 5%, in the last year of the period, the unemployment rate for youth would be equal to 9.36%, and for university graduates will be 36%. Therefore, the main purpose of this research is to provide an applied model for small and medium-sized enterprise (SME) development and university graduates' employment in Iran.

METHODS: In this regard, an appropriate model was defined by studying the literature about small and medium enterprises development models and extracting effective factors according to Iran's situation. In the second stage, after selecting a sample of 60 small and medium enterprises in Iran, in order to quantitatively testing the model, the data were collected by a questionnaire and were analyzed with the help of PLS software. In the third stage, the relative importance of factors were tested from the perspective of 10 experts in the field of entrepreneurship with more than 15 years of work experience with the help of ANP and PROMETHEE methods.

FINDINGS: The results shows the preference value (Φ) of these factors respectively include the parameters of: Technology, innovation, and competitiveness (Φ=0.72); Financial support programs (Φ=0.63); Education and consultancy services (Φ=-0.38); Cooperative relationships (Φ=-0.41); and Export development (Φ=-0.55).

CONCLUSION: Changing market conditions enable SMEs to respond more agile and faster to customer needs, improve the quality of their products, reduce the cost of their production, and their tendency to recruit university graduates.

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INTRODUCTION

The mission of each university is to contribute to the economic, social, cultural, and political development of a society at the regional, national and international levels. Universities carry out this mission by developing human resource besides organizational, social, and cultural capabilities through boosting innovation and innovative entrepreneurship. The development of these capabilities in university students and graduates besides their influence on the economic development of society has been analyzed in human capital theory. According to this theory, the main goal of individuals to demand higher education is to achieve better jobs and higher incomes in the future. On the other hand, employers expect to improve their businesses by recruiting well-educated graduates, increase their productivity and gain higher profits. The small and medium enterprises (SMEs) can be very effective in creating sustainable employment, especially for university graduates, youth, and women since they attract the natural growth of a society's workforce, as well as employing the fired workforce of private organizations (Entezari, 2016). One of the major causes of long-term unemployment in developing countries is the deficiency of the business environment. Such a condition leads to an increase in the intermediary sector's cash flow, which results in lower production, increasing inflation and unemployment. In the recent years, the topic of university graduates' employment has been an extremely challenging issue, and accordingly, the demands for job creation, especially for university graduates, have increased. The prediction of the youth unemployment rate during the period from 2015 to 2021 shows that with an annual growth rate of 5%, in the last year of the period, the unemployment rate for youth will be equal to 9.36%, and for university graduates will be 36% (Mozayyeni, 2017). SMEs, including micro enterprises (enterprises with fewer than 10 employees), have a significant effect on a country's economic and industrial development (Garcia-Perez-de-Lema *et al*., 2017; Saridakis *et al*., 2018). SMEs, so-called the backbone of the private sector, are accounted for 90% of the world's total companies (Ormazabal *et al*., 2018) and between 50% and 60% of the share of employment (Mamman *et al.,* 2019). In Iran, about 80% of the economy is based on large governmental

and semi-governmental organizations. Extraction, processing, and trading of oil, petrochemicals, and gas alone account for 80% of Iranian exports and 40% to 50% of the government's budget. Contrary to the fact that most Iranian businesses are SME, Iran's economy is heavily dependent on large public corporations (UNIDO, 2003). Benefits of SMEs are: 1) mobilizing all national resources of a country to create job opportunities, generate wealth and thus reduce poverty, 2) exploiting the potential of the disadvantaged population of society, especially youth and women, to the benefit of the country's economic development, 3) implementing the government's policy of privatization based on Iran's constitution and exploiting the capacity of SMEs as a way to absorb the surplus of the unemployed labor caused by the implementation of this law, 4) promoting the culture of motivating and taking entrepreneurs' participation in economic, political, and social activities of the country, and 5) taking advantage of the remarkable innovation and flexibility of the SMEs in responding to the changing environment compared to large enterprises. Considering the benefits of SMEs, this sector is recognized as a job creator engine for university graduates in a society (Mamman *et al.,* 2019). Successful examples in all types of economies (developed, developing, and in transition) have highlighted the fact that the sustainable development of SMEs and the employment of university graduates are fulfilled when two vital elements in the business environment are available. The first element is creating a suitable legal structure for SMEs to help them develop and the second element is creating an appropriate environment for SMEs to help them become more competitive compared to large-sized enterprises (LSEs), like providing SMEs with business consultancy services, training programs, financial services and likewise (Bodlaj *et al.,* 2018; Falk and Figueira de Lemos, 2019). The result of all of these efforts is to create more jobs for university graduates and increase the GDP of society (Mamman *et al.,* 2019). What is apparent is assessing SMEs' business environment and solving its problems are the prerequisites in order to improve GDP and create job opportunities for university graduates. Therefore, before any action and policymaking, assessing the business environment is necessary in order to find barriers. Consequently, in this research,

based on the previous literature, the role of SMEs development and university graduates' employment determinants were categorized, whereas insufficient researches were done regarding the issue of SMEs and employment for graduates of universities in Iran, taking the impact of cooperative relationships and internationalization factors into consideration. The main concern of this research is to answer the question that "what are the main factors of SMEs development and the university graduates' employment in Iran?" Precisely, this study is about to seek university graduates' employment drivers through empowering SMEs. Thus, a comprehensive model for the development of SMEs and university graduates' employment considering Iran's situation in order to be applicable in designing, implementing, developing, and guiding SME clusters in various industries in Iran even in the form of home businesses and family workshops was provided. In the following section, literature review is examined according to this issue.

Literature review

As Entezari (2016) points out, the expectation of policymakers, likewise, is that first, by increasing in the well-educated graduates' share of the total employment, GDP increases. Second, well-educated graduates are expected to be not only self-employed but also create new job opportunities for other people. In Iran, the excessive increase in the number of higher education institutions until 2013 not only has not helped solving the society's problem of unemployment, but it also caused new problems, such as the high number of well-educated unemployment, excessive job expectations, and an increase in the emigration of educated people known as the brain drain phenomenon (Mozayyeni, 2017). According to the Institute of Research and Planning in Higher Education, (2018), there are totally 2468 education institutions and 3 million 794 thousand and 420 students studying in these institutions. In the current situation, providing a solution to the growth and development of graduates' employment and reducing the costs imposed on the country by that is necessary. According to the UNIDO, (2003), in developing economies, the SME sector is the only realistic way of realizing the vision for increasing employment and creating added value. Therefore, the purpose of this research in order to develop the

SME sector and create jobs for university graduates leads to the following hypotheses:

Hypothesis, 1: Technology-oriented, innovative, and competitive SMEs are likely to create more employment for university graduates

According to Porter's diamond theory on the competitiveness of nations and industries, countries can create competitive advantages through numerous factors, including the promotion of technology in the industry, training the skillful technical workers and government support of the economy (Özer *et al.,* 2012). In many countries, the government's policy of creating jobs for university graduates is to strengthen SMEs through focusing on improving competitiveness, innovation, and technology levels of these businesses (UNIDO, 2003). According to Saridakis *et al.,* (2018) and Latifian (2006), several methods, including computerization of production operations and the establishment of supportive structures for encouraging SMEs to implement automation and set up databases contributes to an increase in the competitiveness of SMEs and their willingness to employ well-educated, specialized labor. In addition, several articles refer to the allocation of low-interest loans to SMEs as a way of encouraging them to automate, expand activities, and increase tendency to employ well-educated workforce (Malek Saeedi *et al.,* 2017; Rahnavard and Husseini, 2005; Tayyebi *et al.,* 2010). On the other hand, the UNIDO, (2003) has also insisted on the importance of providing SMEs with training workshops to encourage them to use technology. Therefore, SMEs which use new technologies require specialized labor. Limaj and Bernroider (2019), along with several other scholars, emphasize the need to provide SMEs with specialized technical staff and facilitate their access to technical services (Amini, 2015; Malek Saeedi *et al.,* 2017). Also, Jernström *et al.,* (2017) and Giotopoulos *et al.,* (2017) state that SMEs that have developed R&D programs in collaboration with universities and other private research institutes have shown greater stability in competing in different markets. Finally, Rahnavard and Husseini (2005) argue that implementing incentive schemes for the industrial development of SMEs through attracting foreign investment in technology helps to improve SMEs' competitiveness and create job opportunities for university graduates.

Hypothesis, 2: The employment of university graduates is likely to be increased by the development of financial support programs for SMEs

So far, the effect of financial issues on the job creation potential of SMEs has been studied by many researchers. According to Amini (2015), the provision of the necessary financial resources for SMEs through venture capital companies leads to an increase in the capital of these businesses and, thus, the employers' tendency to recruit new employees, especially well-educated ones. Several articles focus on facilitating laws about allocating low-interest loans to SMEs and implementing incentive tax schemes as a way to encourage entrepreneurs to set up new businesses and, thus, creating new jobs for university graduates (UNIDO, 2003; Malek Saeedi *et al.,* 2017; Rahnavard and Husseini, 2005; Amini, 2015). For example, Amin Aghai (2008) argued that SMEs' financial constraints, their use of financial facilities, such as low-interest loans, and the amount of taxes they pay to the government and the municipality contributes to the employers' tendency to recruit new workers. On the other hand, the UNIDO, (2003) states that the establishment of entrepreneurship centers with the aim of launching, supporting, and guiding new startups can encourage entrepreneurs to set up new businesses and increase self-employment who seek to take advantage of entrepreneurship centers' benefits. Eventually, Malek Saeedi *et al.,* (2017), along with several other scholars, emphasize the need to provide SMEs' with low-interest loans. They argue that SMEs that have more financial resources can develop their activities and, thus, generate more employment (Rahnavard and Husseini, 2005; Tayyebi *et al*., 2010).

Hypothesis, 3: The development of education and consultancy services for SMEs is likely to contribute to the development of employment for university graduates

Amini (2015) described the main characteristics and challenges of Iran's labor market, amongst which are the high unemployment rate of university graduates, the continuing unemployment, the inappropriate universities' educational content according to the needs of the country's labor market and the unskillful workforce. Then, in order to reduce the unemployment rate, it was recommended to focus on training skillful workforce. On the other hand, Movvahedi (2017), Amini (2015) and Garcia-Perez-de-Lema *et al.,* (2017), in various studies stated the need to organize training workshops for university graduates as the potential labor with the aim of empowering them through providing applicable skills appropriate to the labor market's needs. According to Limaj and Bernroider (2019) and some other researchers, the development of educational programs in the form of workshops for managers and technical staff with the aim of training innovation in managerial and technical levels is necessary for raising SMEs' innovativeness (Rahnavard and Husseini, 2005; Parsapour *et al.,* 2017; Garcia-Perez-de-Lema *et al.,* 2017; Amini, 2015; Movvahedi, 2017). In addition, Movvahedi (2017) states that SMEs' consultancy centers, by providing professional and customized advisory services, enable SMEs to find effective solutions to their problems and encourage entrepreneurs to create sustainable jobs. On the other hand, the UNIDO, (2003) highlights registering products and facilities, needed by SMEs, in an integrated public tender system allows SMEs to take advantage of the tender bids' benefits formally, reduces the total cost of production, and increases employers' tendency to recruit new people.

Hypothesis, 4: SMEs with more developed cooperative relationships are likely to create more job opportunities for university graduates

In the face of a changing competitive environment, SMEs are looking for ways to grow sustainably, expand their operations, and become more competitive. In such a situation, the development of communication networks is a critical factor in promoting their performance and creating job opportunities (Lin and Lin, 2016). The development of communication networks through the establishment of cooperative relationships between SMEs with LSEs, suggested by many researchers, is required to promote SMEs' performance and enhance employment. The UNIDO (2003) emphasizes that the government should encourage LSEs to engage in voluntary activities in relation to SMEs by supplying raw materials and playing roles in their production process. On the other hand, Lin and Lin (2016) argue that the advantages of cooperating with LSEs provide SMEs with the opportunity to access technology, strengthen SMEs' weaknesses, reduce costs and risk of transactions, increase SMEs' market reputation, share knowledge,
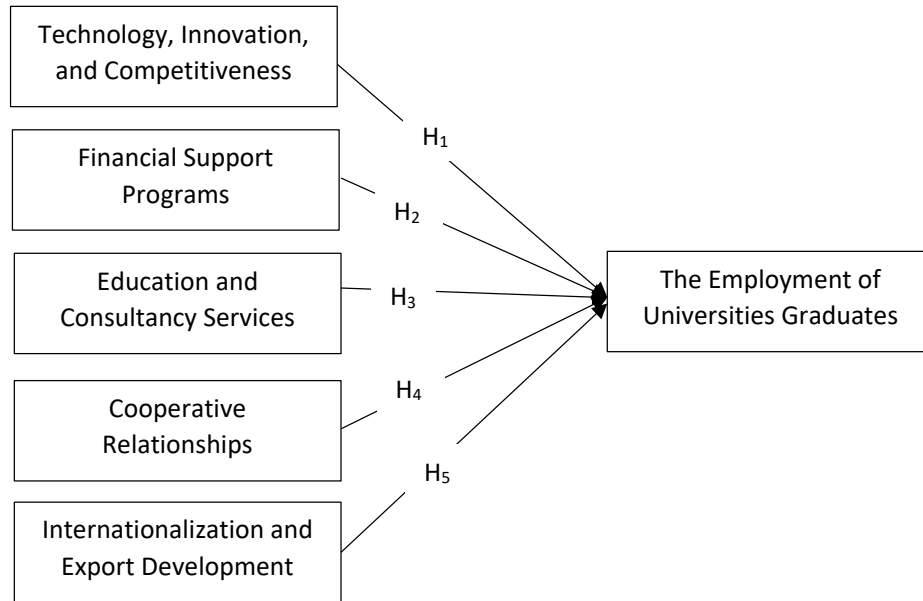
Fig. 1. The theoretical model

gain new opportunities in the market, and the acceleration of innovation. In addition, LSEs play an important role in linking SMEs to international markets via their overseas branches (Jernström *et al.,* 2017; Lin and Lin, 2016; Latifian, 2006; Saridakis *et al.,* 2018; Movvahedi, 2017). On the other hand, establishing cooperative relationships between SMEs in the same or affiliated industries or, in other words, creating SME clusters is essential because it leads to the gathering of a number of SMEs in industrial parks and taking advantage of the other facilities and technologies. Advantages like cooperating in buying raw materials and gaining market trust lead to a dramatic boost in SMEs' competitiveness, since the formation of SME clusters increases the ability of each enterprise in accessing more extended distribution systems, new technologies, and new products development (Lin and Lin, 2016; Chen *et al.,* 2017). UNIDO (2003) also highlighted the need for the creation of a lobbying mechanism in favor of the SME sector against the government in the form of SME clusters. Finally, Garcia-Perez-de-Lema *et al.,* (2017), along with Limaj and Bernroider (2019), emphasize the need for improving the cooperative relationships between SMEs and universities which leads to an enhancement in performance and innovation of SMEs.

Hypothesis, 5: SMEs' internationalization and export development may promote employment for university graduates

According to Vernon (1966, 1971, 1979) research about product life cycle theory (PLC), the process of globalization is a sequent of product life cycle. Companies first offer their products to local markets and thereby obtain feedback about their performance, then they can export their products to foreign markets, expand activities, and increase their employment potential. According to the UNIDO, (2003), the biggest problem faced by SMEs in terms of employment is the lack of market knowledge and the experience of international trade. Therefore, in order to increase the capacity of SMEs to create employment, the government needs to teach them export experience through providing related training, consulting services, and connecting them with foreign buyers (UNIDO, 2003). According to Giotopoulos *et al.,* (2017), the government can, by providing information about foreign exhibitions, encourage SMEs to play a prominent role in international markets. Inspired by the results of previous literature, the importance of developing SMEs for the employment of university graduates is obvious. Despite the fact that previous researches have consistently emphasized the critical role of SMEs not only in employment but

also in GDP growth, mostly the role of technology, innovation, competitiveness, financial support, and education were studied by national scholars, thus, the potential impact of cooperation and export development especially in the Iranian environment were less considered. In the present study, with the help of gathering many factors, an applicable model for developing SMEs and employment for university graduates, as shown in Fig. 1. The current study have been carried out in Boroujerd's industrial park in 2018.

MATERIALS AND METHODS

Data collection and sample

In this section, in order to achieve the research's objectives, the hypotheses were examined. Therefore, the place of study, sampling method, data collection, method of measuring variables, research tools and data analysis methods were described. By purpose, this cross-sectional research is a qualitative one and, by the method, this survey-based research is a descriptive one. To assess the hypotheses, data were collected in Iran from SMEs operating in the industrial parks by the use of convenience sampling method through questionnaires. To collect data, two questionnaires were designed through the study of literature, dissertations, articles, and databases related to the research's topic (in national and international level). The first questionnaire was designed to test the theoretical model for university graduates' employment creation. It was arranged based on the Likert scale and assessed the perspective of 60 entrepreneurs that employed between 10 and 249 people. The model was confirmed by the PLS software. Subsequently, the second questionnaire, using the pairwise comparisons, determined the relative importance of the model's factors from the perspective of 10 experts in the field of entrepreneurship with more than 15 years of work experience. Therefore, in the present research, the field method was used to determine the key factors and confirm the theoretical model, the factors were weighed using the ANP method and were ranked using the PROMETHEE method. In the following section, these methods are explained.

Research instrument

The power of the relations between the latent variable and the observable variable is defined by the factor loading (λ). The value of factor loading is defined between zero and one. If the factor loading is less than 0.3, the relation between the variables is considered weak and is discarded. However, the acceptable value of factor loading is between 0.3-0.6 and values greater than 0.6 are desirable. In factor analysis, variables that measure a latent variable must have high factor loadings with that latent variable, and low factor loadings with other latent variables. The t-test is used to evaluate the significance of the relations between the variables with a significant level of 0.05. Therefore, if the t-value is calculated less than 1.96, the relation is not significant (Gorsuch, 1983). The analytic network process (ANP) is a more general form of the analytic hierarchy process (AHP) process used in multi-criteria decision analysis (MCDM). The ANP structures a decision problem into a network then use a system of pairwise comparisons to measure the weights of the components of the structure, and finally to rank the alternatives in the decision. The first step in the ANP method is creating a model and structure of the problem. The problem should be expressed clearly and be analyzed into a logical system like a network. Such a network structure can be achieved with the help of decision makers through brainstorming sessions or other appropriate methods. In the second step, pairwise comparisons are used to find out how the elements in the network are interacting (Saaty, 1996). The weights used at this stage are the input values to indicate the priorities of each criterion and sub-criterion in the PROMETHEE method. PROMETHEE method is a multi-criteria decision-making methodology designed to discuss qualitative and discrete alternatives (Brans *et al.*, 1986). This method is quite simple compared to other multi-criteria analysis methods, and it is especially appropriate for issues that require a limited number of actions to be ranked based on several criteria that are sometimes contradictory. This approach can be one of the most powerful decision-making methods that can help managers choose the best decision choices. The ranking of actions is performed by comparing the pair of actions in each criterion. The comparison is measured based on a predefined preference function with the domain [0, +1]. The preference function P is a function which compares two actions "a" and "b" in terms of the criterion j as Eq. 1:

$$P_j(a, b) = P[d_j(a, b)] \qquad (1)$$

dj (a, b) = fj (a) - fj (b) denotes the difference in the size of two actions for criterion fj. This difference for criteria that have to be maximized will be significant only if fj (a)> fj (b). For the criteria that have to be minimized, the opposite condition is true. When a preference function has been associated with each criterion by the decision maker, all comparisons between all pairs of actions can be done for all criteria. A multi-criteria preference degree is then computed to globally compare every couple of actions as Eq. 2:

$$\prod(a,b) = \frac{\sum_{i=1}^{k} \pi_i P_i(a,b)}{\sum_{i=1}^{k} \pi_i} \quad (2)$$

In order to position every action with respect to all the other actions, two scores are computed as shown in Eq. 3 and Eq. 4:

$$\varphi^+(a) = \sum_{b \in k} \prod(a,b) \quad (3)$$

$$\varphi^-(a) = \sum \prod(a,b) \quad (4)$$

The positive preference flow quantifies how a given action is globally preferred to all the other actions while the negative preference flow quantifies how a given action is being globally preferred by all the other actions. The positive and negative preference flows are aggregated into the net preference flow as Eq. 5:

$$\varphi(a) = \varphi^+(a) - \varphi^-(a) \quad (5)$$

This is the PROMETHEE II complete ranking which is obtained by ordering the actions according to the decreasing values of the net flow scores. In other words, the criterion with the highest net flow has priority (Brans *et al.,* 1986).

RESULTS AND DISSCUSIONS

The PLS Output

Table 1 shows the output of PLS software which contains the factor loadings of the model's criteria. As mentioned, factor loadings above 0.3 are acceptable and criteria with factor loadings lower than 0.3 are excluded. According to the results, all model's factors were confirmed. Also, the t-value was extracted as follows which were all greater than 1.96, and thus, acceptable.

Weight measurements and ranking the model's criteria and sub-criteria using ANP and PROMETHEE methods

After designing a network of the model in Super Decision software and entering the data collected from questionnaires, the weights of all criteria were calculated. In the second stage, in order to rank criteria, the value of the index Φ was calculated by PROMETHEE software. Based on the outputs, the model's inconsistency was 0.08, which is less than 0.1, so the system's consistency was confirmed. Due to the system compatibility, the data of the paired comparisons was introduced into the Super Decision software and calculate the weight of each of the factors. The output of this part is shown in Table 2.

Given the output of PROMETHEE software, the value of Φ for the first criterion, which is technology, innovation, and competitiveness, was 0.72 and more than other criteria. Therefore, it was the most prior criterion. By assessing each sub-criterion of each factor, the weight and rank of each sub-criterion was extracted. In the next step, the weight associated with the indicators for the development of technology, innovation, and competitiveness were calculated. By performing Super Decision software, the value of inconsistency for "technology, innovation, and competitiveness" criterion was equal to 0.04, which is less than 0.1, so the system's consistency was proven. In the following, the weight of the sub-criteria of this element using Super Decision and ranking them using the PROMETHEE software were calculated. The result is shown in Table 3.

The findings which followed the main stream literature, reveal that empowering SMEs to be able to develop technology, innovation and competitiveness through activities such as allocating low-interest loans to encourage automation, launching databases, providing SMEs with workshops about how to use technology, providing SMEs with technical expertise, investing in R&D projects with help of universities and other training centers, and implementing promoting plans for attracting foreign direct investment and joint venture capital in the field of technology to enhance SMEs. Aforementioned activities, according to experts, in today's changing market conditions enable SMEs to respond more agile and faster to customer needs, improve the quality of their products, reduce the cost of their production, and increase tendency to recruit new labor. Therefore,

Table 1. The PLS software output for t-values and factor loadings of the research model's criteria

Latent variables	Observable variables	T-value	Factor loading	Confirmed/Not confirmed
Technology, innovation, and competitiveness	Allocating low-interest loans to encourage automation	109.295	0.950	✓
	Launching a centralized database of R&D projects and technologies accessible to SMEs	219.216	0.985	✓
	Providing SMEs with workshops about how to use technology	61.976	0.942	✓
	Providing SMEs with technical expertise	126.641	0.965	✓
	investing in R&D projects with the help of universities and other training centers	315.021	0.983	✓
	Implementing promoting plans for attracting foreign direct investment and joint venture capital in the field of technology	194.138	0.978	✓
Financial support programs	Incentive tax schemes to encourage entrepreneurs setting up startups	113.366	0.970	✓
	The establishment of entrepreneurship centers in order to support and guide the startups	571.361	0.991	✓
	Facilitating laws about allocating low-interest loans to SMEs	91.308	0.947	✓
	Establishing venture capital companies to finance SMEs	82.590	0.961	✓
	Allocating low-interest loans to SMEs	89.471	0.965	✓
Education and consultancy services	delivering innovation workshops to managers	763.940	0.993	✓
	Delivering innovation workshops to technical staff	414.068	0.988	✓
	Training workshops for university graduates	242.465	0.977	✓
	Establishing consultancy centers for the SME sector	111.772	0.973	✓
	Setting up a public tender system for SMEs (SMEs' accessibility to lower cost products and services)	912.183	0.995	✓
Cooperation relationships	The improvement of cooperative relationships between SMEs and LSEs (as potential suppliers and potential foreign relationships mediators)	344.874	0.986	✓
	The improvement of cooperative relationships between SMEs in the same or affiliated industries in the form of SME clusters	181.132	0.980	✓
	The improvement of cooperative relationships between universities and SMEs in order to enhance the performance and innovation of the SME sector	549.928	0.990	✓
	The creation of a lobbying mechanism in favor of the SME sector against the government	181.274	0.981	✓
Internationalization and export development	Implementing incentive schemes to increase exports by providing training workshops to learn market knowledge and export experience	623.483	0.992	✓
	Implementing incentive schemes to increase exports by delivering advisory services and connecting SMEs to foreign buyers	598.793	0.992	✓
	Implementing incentive schemes to increase exports by providing information about foreign exhibitions and encouraging SMEs to participate in foreign exhibitions	258.541	0.986	✓

the obtained results clearly confirmed the impact of the above factors on university graduates' employment. So, the first hypothesis (H$_1$), that is technology-oriented, innovative, and competitive SMEs can create more employment for university graduates, was true. Given the output of PROMETHEE software, the value of Φ for the first criterion, which is implementing promoting plans for attracting foreign direct investment and joint venture capital in the field of technology, was 0.65 that was more than other sub-criteria. Therefore, it was the most prior sub-criterion of technology, innovation, and competitiveness. By performing Super Decision software, the value of inconsistency for "financial

Table 2. The model's main factors' weights and ranking

Factor	Weight	Φ	Rank
Technology, innovation, and competitiveness	0.45	0.72	1
Financial support programs	0.32	0.63	2
Education and consultancy services	0.07	-0.38	3
Cooperation relationships	0.12	-0.41	4
Internationalization and export development	0.04	-0.55	5

Table 3. The weight and ranking of sub-criteria relative to the factor of technology, innovation, and competitiveness

Sub-criterion	Weight	Φ	Rank
allocating low-interest loans to encourage automation	0.06	-0.46	4
launching databases	0.27	0.60	2
providing SMEs with workshops about how to use technology	0.23	0.49	3
providing SMEs with technical expertise	0.04	-0.60	5
investing in R&D projects with help of universities and other training centers	0.02	-0.68	6
implementing promoting plans for attracting foreign direct investment and joint venture capital in the field of technology	0.38	0.65	1

Table 4. The weight and ranking of sub-criteria relative to the factor of Financial support programs

Sub-criterion	Weight	Φ	Rank
incentive tax schemes to encourage entrepreneurs setting up startups	0.16	-0.27	3
the establishment of entrepreneurship centers in order to support and guide the startups	0.04	-0.62	5
facilitating laws about allocating low-interest loans to SMEs	0.29	0.41	2
establishing venture capital companies to finance SMEs	0.06	-0.58	4
allocating low-interest loans to SMEs	0.44	0.61	1

support programs" criterion was equal to 0.05, which is less than 0.1, so the system's consistency was proven. In the following, the weight of the sub-criteria of this element using Super Decision and ranking them using the PROMETHEE software were calculated. The result is shown in Table 4.

The research also emphasized the undeniable role of developing financial support in empowering the SME sector. With regard to the importance of this issue, experts point out despite the fact that financial constraints positively contribute to innovation enhancements in SMEs (Bodlaj, 2018), the employers' tendency to hire new workforce decline since the SMEs' total capital is restricted. Therefore, due to the aim of this research, financial support in the form of incentive tax schemes to encourage entrepreneurs setting up startups, the establishment of entrepreneurship centers in order to support and guide the startups, facilitating laws about allocating low-interest loans to SMEs, establishing venture capital companies to finance SMEs and allocating low-interest loans to SMEs lead to an increase in the

total capital of SMEs and, thus, encourage employers to recruit new staff especially well-educated ones. Therefore, the second hypothesis (H$_2$), which is the employment of university graduates can be increased by the development of financial support programs for SMEs, was confirmed. Given the output of PROMETHEE software, the value of Φ for the first criterion, which was allocating low-interest loans to SMEs, was 0.61 and more than other sub-criteria. Therefore, it was the most prior sub-criterion of financial support programs. By performing Super Decision software, the value of inconsistency for "education and consultancy services" criterion was equal to 0.09, which is less than 0.1, so the system's consistency was proven. In the following, the weight of the sub-criteria of this element using Super Decision and ranking them using the PROMETHEE software were calculated. The result is shown in Table 5.

Confirmed by the main stream literature, experts point out the insufficient accessibility of employers to employees who are well-trained, skillful, and familiar

Table 5. The weight and ranking of sub-criteria relative to the factor of Education and consultancy services

Sub-criterion	Weight	Φa	Rank
delivering innovation workshops to managers	0.47	0.72	1
delivering innovation workshops to technical staff	0.15	-0.134	4
training workshops for university graduates	0.22	-0.007	2
establishing consultancy centers for the SME sector	0.05	-0.46	5
setting up a public tender system for SMEs (SMEs' accessibility to lower cost products and services)	0.11	-0.126	3

Table 6. The weight and ranking of sub-criteria relative to the factor of Cooperation relationships

Sub-criterion	Weight	Φ	Rank
the improvement of cooperative relationships between SMEs and LSEs (as potential suppliers and potential foreign relationships mediators)	0.49	0.65	1
the improvement of cooperative relationships between SMEs in the same or affiliated industries in the form of small and medium clusters	0.17	-0.17	3
the improvement of cooperative relationships between universities and SMEs in order to enhance the performance and innovation of the SME sector	0.05	-0.84	4
the creation of a lobbying mechanism in favor of the SME sector against the government	0.29	0.33	2

with the environment of industries. They believe it is possible to provide educational content appropriate for the needs of the market to university graduates in order to increase the employers' tendency to hire well-educated individuals. In their opinion such education contents can be delivered in the form of training workshops for university graduates, delivering innovation workshops to both managers and technical staff, establishing consultancy centers for the SME sector, setting up a public tender system for SMEs (SMEs' accessibility to lower cost products and services). Experts emphasize that the purpose of such a comprehensive tender system is to set up a system where SMEs can easily find suppliers with lower prices, as an example. Thus, by decreasing total costs, the desire to develop activities and the need to hire new staff increases. Consequently, the third hypothesis (H_3) was approved. Given the output of PROMETHEE software, the value of Φ for the first criterion, which was delivering innovation workshops to managers, was 0.72 and more than other sub-criteria. Therefore, it was the most prior sub-criterion of education and consultancy services. By performing Super Decision software, the value of inconsistency for "cooperative relationships" criterion was equal to 0.07, which is less than 0.1, so the system's consistency was proven. In the following, the weight of the sub-criteria of this element using Super Decision and ranking them using the PROMETHEE software were calculated. The result is shown in Table 6.

Emphasized by the result of this study and followed by the main stream literature, the positive impact of cooperative relationships on creating job opportunities for university graduates was approved. The relative significance of this factor has been evaluated in the third place, but in the opinion of the experts its vital role in the development of the SME sector shouldn't be underestimated since the necessity of communication and cooperation in today's modern world in implementing various business plans and accelerating the development of SMEs and, thus, increasing job opportunities for well-educated people is indisputable. They acknowledge that cooperative relationships help the stability and the development of SMEs through the improvement of cooperative relationships between SMEs and LSEs (as potential suppliers and potential foreign relationships mediators), the improvement of cooperative relationships between SMEs in the same or affiliated industries in the form of small and medium clusters in order to increase the bargaining power of purchasing, the development of new products and the development of new technologies, the improvement of cooperative relationships between universities and SMEs in order to enhance the performance and innovation of the SME sector, and the creation of a lobbying mechanism in favor of the SME sector against the government. They believe that establishing cooperative relationships between the SME clusters and LSEs leads to access to some

Table 7. The weight and ranking of sub-criteria relative to the factor of Internationalization and export development

Sub-criterion	Weight	Φ	Rank
Implementing incentive schemes to increase exports by providing training workshops to learn market knowledge and export experience	0.49	0.17	1
Implementing incentive schemes to increase exports by delivering advisory services and connecting SMEs to foreign buyers	0.20	-0.17	3
Implement incentive schemes to increase exports by providing information about foreign exhibitions and encouraging SMEs to participate in these exhibitions	0.31	0.00	2

kind of facilities especially for SMEs in the form of raw material procurement, the use of experience in purchasing new tools, the use of experience and training of the staff, and pay back to LSEs in the form of delivering orders in exchange for receiving services instead of paying back in cash, LSEs' participation in a percentage of SMEs' profit margin in exchange for delivering services instead of being paid in cash. Thus, employers tend to develop activities and need more staff. Therefore, the fourth hypothesis (H_4), which is SMEs with more developed cooperative relationships can create more job opportunities for university graduates, was confirmed.

Given the output of PROMETHEE software, the value of Φ for the first criterion, which was the improvement of cooperative relationships between SMEs and LSEs (as potential suppliers and potential foreign relationships mediators), was 0.65 and more than other sub-criteria. Therefore, it was the most prior sub-criterion of cooperative relationships. By performing Super Decision software, the value of inconsistency for "internationalization and export development" criterion was equal to 0.05, which is less than 0.1, so the system's consistency was proven. In the following, the weight of the sub-criteria of this element using Super Decision and ranking them using the PROMETHEE software were calculated. The result is shown in Table 7.

Given the output of PROMETHEE software, the value of Φ for the first criterion, which was implementing incentive schemes to increase exports by providing training workshops to learn market knowledge and export experience, was 0.17 and more than other sub-criteria. Therefore, it was the most prior sub-criterion of internationalization and export development.

The findings, followed the main stream literature, revealed that despite the less-considered role of globalization and export development in scholars (Giotopoulos *et al.,* 2017), particularly national ones (UNIDO, 2003), and despite its ranking as the fifth important factor, its positive impact on the development of the SME sector is strongly confirmed by this research. With regard to the opinion of experts, the great influence of this factor on the SME sector development, besides its low priority compared to other factors, is justified by the significant increase in the total capital of SMEs due to the difference between the foreign exchange rates and Iran's currency and, thus, its great potential on creating new job opportunities. On the other hand, both the ambiguities in the context of the future of Iran's international banking interactions and the geographical locations of the provinces and their distances to the mutual borders with Iran's neighbor countries affect the low priority of this factor in proportion to others. Therefore, the last hypothesis of this study (H_5), that is the SMEs' internationalization and export development can promote employment for university graduates, was confirmed.

CONCLUSSION

In this study, the relationship between technology, innovation, competitiveness, financial and educational support and the development of SMEs, as a job creator engine for university graduates, taking the impact of cooperation and export development, especially in Iran's environment, is investigated. The present study is helpful in collecting a number of factors contributing to the development of the SME sector and employment for university graduates in Iran. The results show that technology development, innovation, and competitiveness of SMEs is a relatively more preferable determinant in creating job opportunities for university graduates. Overall, the findings follow the main stream literature, reveal that empowering SMEs through activities such as the development of technology, innovation and competitiveness, financial support programs, *education and consultancy services*, and

SMEs' internationalization and export development, according to experts, in today's changing market conditions enable SMEs to respond more agile and faster to customer needs, improve the quality of their products, reduce the cost of their production, and their tendency to recruit university graduates.

The results of this research have several management implications at the executive level. Before proceeding executive suggestions, it is important to note that all of the sub-criteria of the model can strongly affect the development of employment for university graduates and their importance cannot be ignored or underestimated. Therefore, in line with the purpose of this research and based on the output obtained, several executive suggestions are presented:

1. Due to empowering SMEs to be able to develop technology, innovation and competitiveness, according to the first hypothesis, setting up a comprehensive tender system to help SMEs find affordable products, services, and technologies is helpful.

2. According to the second hypothesis, which is about the development of financial support programs for SMEs, increasing loans and financial facilities by simplifying the banking systems besides improving the SME sector's funding by promoting the banking system to increase credit lines for industrial SMEs is suggested;

3. Based on the importance of offering education and consultancy services to SMEs, according to the third hypothesis, reorganizing universities' educational content appropriate for the specific needs of SMEs business environment and training efficient technical workforce besides linking graduated university students to SMEs in all industries through comprehensive and transparent databases is helpful;

4. Due to the fourth and the third hypotheses, which relatively emphasized on the role of SMEs' developed cooperative relationships and consultancy services, supporting entrepreneurial and self-employment activities in rural areas by connecting entrepreneurs and consultancy centers at low-cost and simplifying the administrative and legal processes besides establishing the necessary mechanisms for creating new capacities especially for SMEs operating in isolated locations with limited accessibility to raw material resources and encouraging the formation of SME clusters, especially in geographically low-income

regions is suggested;

5. Based on the second and the fifth hypotheses, which relatively emphasized on the development of financial support programs for SMEs and export development, lobbying and influencing governmental decisions to allocate some of its income to implement incentive programs and to promote the export of the SME sector besides modification of incentive and financial privileges like tariffs, taxes, and other export expenditures for all SMEs, especially SMEs in less developed areas, in order to encourage them to increase exports and increase employment creation in these areas is helpful;

6. Due to the importance of SMEs' internationalization in promoting the employment of university graduates, according to the fifth hypothesis, attracting local and foreign investments for the development of R&D projects to the benefit of SMEs is suggested;

The present study, in spite of the importance of its findings to employment creation, has some limitations. This research is based on the cross-sectional convenient sampling method with a focus on SME industries in some industrial parks. Therefore, it is recommended to retest the model with a larger sample of SMEs in order to more accurately generalize the results and reach a more comprehensive viewpoint. Future researches can also evaluate the inclination of executive agencies and the effectiveness of their activities as moderators in the extent of job creation efforts through the SME sector development, considering the role of other factors such as economic indicators. Therefore, studying the impact of these factors on the development of the current model can be beneficial.

AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

ABBREVIATIONS

LSEs	large-sized enterprises
PLC	product life cycle
SMEs	small and medium enterprises
UNIDO	United Nation's Industrial Development Organization

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