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Investigating the Manufacturing Industries' Competitiveness According to Porter's Competitive Model (Case Study: Ilam Manufacturing Industries)

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ABSTRACT

The purpose of this study was to investigate the competitiveness of manufacturing industries according to Porter's Competitive model in six industries including chemical and cellulose, textile, power and electronics, automotive and auto parts, metal and casting, and food and pharmaceutical industries. The research method was a descriptive survey and applied in terms of purpose. The statistical population of the study consisted of 3372 employees of industrial companies in Ilam city. Using Krejcie-Morgan-sample-size table (1995), 246 people were selected by stratified sampling method. To collect data, a researcher-made questionnaire with 25 items was used, verified in terms of its reliability and validity by Cronbach's alpha and factor analysis methods, respectively. For data analysis, LISREL and SPSS software, one-sample t-test, Friedman prioritization and variance analysis were used. The results showed that the food and pharmaceutical industry with the average score of 3.27 and the electrical and electronics industry with the average score of 3.25 ranked the highest and the lowest respectively in terms of competitiveness based on Porter's Five Forces Model.

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1. Introduction

There are a number of theories put forward by researchers to justify and explain competitiveness and the factors which influence it; which categorize the influencing factors on competitiveness. These theories and models have a fairly large variety; however, Michael Porter's model is of particular importance. Porter's five forces competitiveness model (1980) is one of the well-known models for analysis of companies' competition, used to develop and formulate competitive strategies which increase companies' competitive edge. Porter has introduced five forces to examine the competitive environment in an industry, including: threat of new entrants, threat of substitute products or services, buyer bargaining power, supplier bargaining power, and competition among existing firms in the industry. Considering these forces, an active firm in a particular industry can find a competitive position for itself in the industry and in the competitive market. Accordingly, the industry and its competitiveness are said to have an intersubjective nature (Wu et al., 2017). Of the five competitive forces, competition between rival companies has the highest force. The strategies implemented by a company will succeed only when it can have competitive advantage over the strategies that competing rivals perform. Interactions between competitors also take place in order to maintain their market share (Azarian, 2014). The second force is the potential of new rivals to enter. Newcomers to an industry bring new capacity and tend to gain market share, which puts a lot of pressure on prices, costs, and investment rates required for competition (Partonejad et al., 2014). In the competitive environment, the entry and exiting of the producers is free (Solvell, 2015). The third force is the potential of developing substitute products. The programs that companies implement to increase market capacity and market penetration, as well as capturing the market share are among the most well-known criteria that can be used to measure the competition intensity for substitute products. Identifying substitute products is an issue that requires searching for other products that have the same function as the intended industry product (Khodamoradi et al.,

2011). The fourth force is the bargaining power of suppliers of raw materials. In a competitive industry, suppliers can also bargain like buyers. When they see that the buyer has less power of choice, they can take advantage of their ability to raise prices or reduce the quality of goods and services purchased in an industry (Azarian, 2014). The fifth force is the power of the buyer to bargain. Strong buyers who are another type of strong suppliers can access more value by lowering the prices, demanding for better quality or more services, and collaborating with other agents. Buyers are potentially powerful if they have a high bargaining power, especially if they are sensitive to prices (Partonejad et al., 2014). One of the most important problems of our industries is lack of competitiveness; which in part is due to the lack of a specific approach to increase competitiveness. In the global economy, competitiveness means the possibility of gaining a sustained position in international markets (Pena-Vinces et al., 2014).

Considering that Iran is joining the World Trade Organization and after joining WTO, tariffs and customs duties should be removed at the borders of our country and that by eliminating tariffs, the entry of global goods into our markets will be easier. Therefore, the discussion of competition and competitiveness is critical. We need a high level of competitiveness for entering the global market and not lagging behind the global economy and moving the country from developing to developed state (Sharafi, 2012). So doing such studies seems necessary. In this research two sub-hypotheses and one main hypothesis have been developed. No study has previously addressed this issue. According to the results of the analysis, we will discuss the hypotheses and the reasons for their confirmation or rejection.

In this research, a study into the extent of industry competitiveness with respect to Porter's competitiveness model was done in every five dimensions, which has not been dealt with for the foregoing industries in accordance with Porter's (1980) competitiveness model. This model provides us with a set of appropriate, measurable, perceivable, and objective criteria, which thoroughly facilitates the study of industry competitiveness. Hence, we chose this model

to measure competitiveness. In this research, we fully explained the dimensions of this model and studied the extent of the competitiveness of six crucial, vital and influential industries in the economy of every country, the case study of which is one of the towns of Ira. Each industry under study has a prominent contribution to the country's industry and the country has remarkable achievements in these industries, as we are competitive in respect of the industries at the domestic and global levels. Likewise, the industries have a great contribution to domestic and foreign competition. Thus, the present research was conducted by focusing on the industries in question.

2. Literature Review

Wong and Teoh (2016) investigated the impact of the destination country's competitiveness on the value of customer-oriented brand equity, and found that some of the functional characteristics of competitiveness emerge before competition in the destination country. The study of theories of various scholars and researchers shows that there is no single definition of competitiveness. In general, competitiveness can be considered as the capabilities and abilities that a business, industry, region, or country has for creating a high return rate in factors of production in international competition and maintaining their human resources at a relatively high level (Azarian, 2014). In other words, competitiveness means the ability to increase market share, profitability, value-added growth, and stay competitive in a fair and international arena for a long period of time. Competitiveness means the ability to increase production through the creation of high-level products and services that can give an appropriate response to global market criteria (Byun et al., 2017). Competition, especially in industrial markets, reduces prices, supplies goods with different characteristics and quality, and improves consumer access to goods and services. On the other hand, only those countries who boost competitiveness in their domestic markets will succeed in the global economy. In fact, firms entering the global market from a strong domestic competitive system have a

high chance of success in the global markets, given the low prices and the good quality of the products as the result of competition. In order to increase economic growth and development, the required conditions for this issue should be fulfilled (Mohseni and Shahiki-Tash, 2014). From the point of view of experts such as Michael Porter, industrial competitiveness intends to increase profitability by increasing productivity, and competitive advantages can only be obtained if more output is produced per unit of output than competitors (Porter, 2008). The structure of the market, the quality and intensity of competition, the effectiveness of competition and anti-monopoly rules and regulations, and the degree of customer-orientation are among the most important factors in the market efficiency of goods in different countries (Huggins et al., 2014). According to economic theories and historical experiences, the open, decentralized, and competitive economies have had better performance than other economic systems. In general, competition in all respects improves the performance of the economy and its efficiency. Rising competition in global markets has continued over the past two decades and has led to a number of problems such as losing market share and lowering profits for a number of companies (Tan et al., 2015). For improving competition, not only differentiation in human resources, facilities, service quality, customer-orientation and reputation is required, but also the moderating role of the industry-university-government network is important (Yoon et al., 2015). The ability of businesses or countries to generate export earnings is often seen as the main indicator of competitiveness and the ability to create wealth and prosperity (Rahman Seresht et al., 2011). According to Michael Porter, as well as others such as Lever (1999), Turok (2004), Camagni (2002) and Lengyel (2009), regions' competition can be different with the competition among countries in some respects including: (1) lack of financial and monetary policies for creating differences in the productivity and attraction of firms; (2) the mobility of manufacturing factors and, consequently, the migration of human resources and capitals in the absence of necessary conditions, and thus the potential of

the region reaching the end of the business (Sharifzadegan et al., 2015). Gupta and et al. (2016) concluded in their research that brand competitiveness was significantly influenced by marketing innovation.

Mansour Askari, in his research on ranking the competitiveness of small and medium industries in Iran, showed that in order to create competition among small and medium industries, a more effective and reliable method is needed to achieve a result; i.e. through improving the management, modification and optimization of production methods and increasing the productivity (Askari, 2009). Kaviani (2010) investigated the issue of competition between tourism services companies of Khuzestan Province with respect to Porter's five competitive factors and studied the existing conditions. They found that income can be earned considering the capacity and potential of tourism attraction in Khuzestan province, and it is possible to raise the income by adopting a suitable strategy for growth and gaining more market share, offering a variety of quality services and using brilliant ideas. In a research entitled "Analysis of the open source software industry in Iran using Porter's Five Forces Model" by Waqif and Chaman (2009), the medium of open source business software is analyzed and the findings reported the moderate threat of entry of new rivals, low bargaining power of the suppliers, high bargaining power of the buyers, the threat of substitute goods and the cold competition inside the market.

The foundation of competitive advantage is based on something unique that a firm has, and the key to success in the marketplace is the ability to create and sustain competitive advantage (Hossain et al., 2021). Knowledge resources and innovation are assumed to be indispensable for attaining a paintable competitive advantage for long-term success in the competitive business setting (Putu-Yandy et al., 2020). Considering organizational culture's strategic role in increasing Knowledge sharing that can improve the company's performance to drive competitive advantage is essential. A recent study emphasized the importance of Knowledge sharing to promote an innovative culture and sustain competitive advantage Besides, organizational

support gives a competitive position, achieves a degree of excellence in its performance by supportive culture and competencies of human skills that enable the adaption of procedural and scientific techniques to achieve competitive advantage and sustainable company growth that can depend on knowledge and innovation capabilities (Wayan et al., 2020). Collaboration and creation that significantly produce problem-solving skills, increases awareness of the sharer's decision making processes because knowledge-based assets are vital to the success of competitive advantage (Liu et al., 2020). Business financial and physical resources enhance the company's ability to channel unique invisible resources (e.g., innovation culture, competitive strategies, and managerial performance), mobilized Knowledge sharing, and innovativeness (Saif and Bin-Yeop, 2020).

Since there is little literature on this subject in Iran, it is essential to carry out further studies in this regard. Moreover, there are few studies on the topic of industry competitiveness. The aim of the present research was to investigate the competitiveness of industries with regard to Porter's competitiveness model in six industries namely chemical and cellulose, textile, power and electronics, automotive and auto parts, metal and casting, and food and pharmaceutical industries.

3. Methodology

This quantitative research is a descriptive survey in terms of method, and applied in terms of purpose. The data collection method is divided into two groups of field data collection (by a researcher-made questionnaire) and a library method. The statistical population of the study was six industries including chemical and cellulose, textile, electrical and electronics, automotive and auto parts, metal and casting, and food and pharmaceutical industries. The research was a descriptive survey and applied. The statistical population of the study consisted of 3372 employees of industrial companies in Ilam city. Considering that the study population in this study does not have the same dispersion, a random sampling method was used to classify

the sample size. Using the Morgan and Krejcie table (1995), 246 people were selected as the statistical sample. 246 questionnaires were randomly distributed among the active industries in six sectors of chemical and cellulose, textile, electrical and electronics, automotive and auto parts, metal and casting, and food and pharmaceutical industries in Ilam; of which 88 questionnaires were randomly distributed and assigned to the chemical and cellulose industry, 50 questionnaires to textile industry, 13 questionnaires to electrical and electronic industry, 8 questionnaires to automobile and auto parts industry, 30 questionnaires to metal and casting industry, and 58 questionnaires among the food and pharmaceutical industry in Ilam. Among the distributed questionnaires, 246 questionnaires were returned. To determine the reliability the Cronbach's alpha test was administered and the alpha coefficient was calculated 0.845, which is greater than 0.7, so the questionnaire items have acceptable reliability. To verify the validity of the research hypotheses, one-sample t-test and ANOVA test were used. All statistical analyses were performed using LISREL and SPSS statistical software.

4. Findings

The findings of the research show that 0.15 of the sample was female, 83.8 male, and 1.2 did not specify their gender. Moreover, 16.7 of the sample had a diploma, 10.6 had an associate diploma, 42.7 had undergraduate degree, 20.3 had Master's degree, 0.02 had doctoral degree, and 7.7 provided no answers. 3.7 of the sample consisted of managers and the other 96.3 were employees. 30.1 of samples were under 30 years old, 39.4 between 30 and 40 years old, 20.3 above 40 years old and 9.8 provided no answers. Moreover, 0.36 were in chemical and cellulose products industry, 0.20 in textile industry, 0.05 in electrical and electronic industry, 0.03 in automotive and auto parts industry, 0.12 in metal and casting industry and 0.24 in Food and pharmaceutical industry. The Kolmogorov-Smirnov test was used to check the normality of the data, and the results are provided in Table 1. The hypotheses of this test were as follows:

Table 1. Kolmogorov-Smirnov Test Statistics

Variable		chemical & cellulose	food & pharmaceutics	Textile	metal & casting	power & electronics	automotive & auto parts
Intensity of competitive rivalry	Prob	0.432	0.344	0.555	0.116	0.395	0.322
	Z	0.765	1.321	0.788	1.111	1.678	0.987
Threat of new entrants	Prob	0.122	0.658	0.434	0.227	0.540	0.455
	Z	0.911	0.932	1.311	1.939	0.999	0.890
buyer bargaining power	Prob	0.344	0.985	0.443	0.688	0.139	0.769
	Z	0.567	0.866	0.680	0.887	0.590	0.960
supplier bargaining power	Prob	0.221	0.157	0.211	0.094	0.431	0.344
	Z	1.765	1.090	1.690	0.923	0.890	0.789
Threat of substitute products or services	Prob	0.098	0.988	0.455	0.398	0.590	0.543
	Z	0.879	0.878	0.785	0.887	0.990	0.672
Competitiveness Industries	Prob	0.455	0.455	0.689	0.367	0.433	0.287
	Z	0.786	0.910	0.895	0.782	0.910	0.679

Source: research findings

According to the table, the results of the Kolmogorov-Smirnov test shows that all significant values are greater than 0.05, so the H0 assumption on the normality of the data is confirmed. Therefore, we use parametric tests to test the research hypotheses.

Testing the main hypothesis of research

Based on Porter's competitiveness model, the level of competitiveness of the manufacturing industries is desirable.

Table 2. Single sample t-test for the competitiveness of industries

	Test Value = 3						
Variable	**t**	**Df**	**Mean**	**Mean Difference**	**Prob**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Intensity of competitive rivalry	4.991	245	3.25	0.253	0.000	0.153	0.353
Threat of new entrants	6.148	245	3.31	0.318	0.000	0.216	0.420
buyer bargaining power	10.378	245	3.50	0.504	0.000	0.408	0.600
supplier bargaining power	12.89	245	3.80	0.808	0.808	0.684	0.931
Threat of substitute products or services	13.429	245	3.77	0.778	0.000	0.664	0.892

Source: research findings

According to the first column of the above table, the significance level of the single-sample t test is 0.000, which is smaller than the alpha level of 0.05, so the H1 assuming a favorable condition of the industries is confirmed in the dimension of competition intensity. The average competition intensity is 3.25, which is more than the average of the test. According to the second column, the significance of one-sample t-test is 0.000 which is smaller than the alpha level of 0.05, so the H1 test confirms the proper situation of the industry in the dimension of entry of new companies. The average entry of new companies is 3.31, which is higher than the average of tests. According to the third column, the significance level of one-sample t-test is 0.000 which is smaller than the alpha level of 0.05, so the H1 indicating a favorable condition of the industry in terms of buyers bargaining power is confirmed. The average entry of new companies is 3.50, which is higher than the average test. With regard to the fourth column, the significance level of one-sample t-test is 0.000, which is smaller than the alpha of 0.05; thus, the H1 indicating a favorable condition of the industry in the dimension of bargaining power of suppliers is confirmed at at the of 0.01. The average entry of new companies is 3.80, which is higher

than the average test. With respect to the fifth column, the significance of t-test is 0.000 which is lower than alpha level of 0.05, so the H1 indicating a favorable condition of the industry in terms of the threat of entry of substitute products is confirmed. The average threat of entry of substitute products is 3.77, which is higher than the average of tests. The average obtained for the competitiveness of the chemical and cellulose industry is 3.3, food and pharmaceutics 3.7, textile 3.6, metal and casting 3.6, electrical and electronics 3.2, and automotive and auto parts 3.7. The t-values obtained for competitiveness of different industries are greater than the absolute value of 1.96 and the level of significance for the competitiveness of different industries is less than the error level of 0.05. Therefore, H1 is confirmed, that is, the level of competitiveness of the manufacturing industries with regard to Porter's competitive model has a favorable condition and the main hypothesis of the research is confirmed.

Sub-hypothesis 1: The competitiveness indices of the manufacturing industries have a favorable condition.

Table 4. Shows the results of a single-sample T-test for testing the first sub-hypothesis. In this table, for all aspects of competitiveness in different industries, a single-sample t-test was conducted to determine the condition of each industry in terms of competitiveness indicators. The condition of the metal and casting industry, electrical and electronics, automobile and auto parts are not favorable in terms of the index of competition intensity, since the obtained average score is less than 3 (the average of test). The condition of the chemical and cellulose, metal and casting, and electrical and electronic industries is not favorable in terms of entry of new companies, since the average score is less than 3. The condition of the electrical and electronics industry is not favorable in terms of the threat of entry of substitute products because its average is less than 3. According to the table, since the level of significance for some industries in the competitiveness indicators is greater than 0.05; thus, it is concluded that sub-hypothesis 1 is not confirmed. That is, firms' condition in all indices of industrial competitiveness is not desirable.

Table 3. Single sample T-test for industry competitiveness

Industries / Variable	chemical and cellulose			food and pharmaceutics			Textile			metal and casting			power and electronics			automotive and auto parts		
	T	μ	Prob	T	μ	Prob	T	μ	Prob	T	μ	Prob	T	μ	Prob	T	μ	Prob
Competitiveness Industries	4.1	3.3	0.000	7.12	3.7	0.000	7. 8	3.6	0.000	6.5	3.6	0.000	6.7	3.2	0.000	4.7	3.7	0.000

Source: research findings

Table 4. Single sample T-test for competitiveness indicators

Industries / Variable	chemical & cellulose			food & pharmaceutics			Textile			metal & casting			power & electronics			automotive & auto parts		
	T	μ	Prob	T	μ	Prob	T	μ	Prob	T	μ	Prob	T	μ	Prob	T	μ	Prob
Intensity of competitive rivalry	3	3.1	0.000	3.4	3.2	0.000	2.9	3.5	0.000	0.79	3	0.43	0.5	2.8	0.05	1.9	3.3	0.09
Threat of new entrants	1	3	0.30	6.5	3.5	0.000	5.2	3.5	0.000	1.8	3.3	0.08	0.19	3	0.85	3.4	3.5	0.01
buyer bargaining power	2.8	3.2	0.006	9.4	3.7	0.000	6.3	3.6	0.000	3.1	3.4	0.004	4	3.4	0.002	4.4	3.9	0.000
supplier bargaining power	3.9	3.5	0.000	11.9	3.9	0.000	12.1	3.8	0.000	6.8	3.9	0.000	8.3	3.9	0.000	3.9	3.8	0.006
Threat of substitute products or services	4.3	3.4	0.000	14	2. 5	0.000	6.4	3.8	0.000	8.1	4.2	0.000	1.7	3.1	0.100	2.5	3.8	0.037

Source: research findings

Second hypothesis test: Comparison of the overall competitiveness of industries

Table 5. ANOVA test to compare the competitiveness of industries in general

	Sum of Squares	Df	Mean Square	F	Prob
Between Groups	8.375	5	1.675	4.857	0.000
Within Groups	82.769	240	0.345		
Total	91.144	245	-		

Source: research findings

According to Table 5. it is clear that the F-value obtained is 4.857 which has a significant level of 0.000 and is less than 0.05. Therefore, H1 is confirmed and it is concluded that the overall competitiveness of Ilam's industries is significantly different. Considering the meaningfulness of Ilam's overall competitiveness situation, the LSD (Least significant difference) Follow-up test has been conducted to determine which of the industries have made the difference in terms of competitiveness.

Table 6. LSD Follow-up Test

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
chemical and cellulose	food and pharmaceutics	0.399	0.000
	Textile	0.360	0.001
	metal and casting	0.279	0.025
	power and electronics	0.062	0.731
	automotive and auto parts	0.389	0.074
food and pharmaceutics	chemical and cellulose	0.399	0.000
	Textile	0.038	0.733
	metal and casting	0.120	0.364
	power and electronics	0.461	0.014
	automotive and auto parts	0.009	0.965
Textile	chemical and cellulose	0.360	0.001
	food and pharmaceutics	0.038	0.733

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
	metal and casting	0.081	0.550
	power and electronics	0.422	0.026
	automotive and auto parts	0.028	0.897
metal and casting	chemical and cellulose	0.279	0.025
	food and pharmaceutics	0.120	0.364
	Textile	0.081	0.550
	power and electronics	0.341	0.090
	automotive and auto parts	0.110	0.638
power and electronics	chemical and cellulose	0.062	0.731
	food and pharmaceutics	0.461	0.014
	Textile	0.422	0.026
	metal and casting	0.341	0.090
	automotive and auto parts	0.451	0.093
automotive and auto parts	chemical and cellulose	0.389	0.074
	food and& pharmaceutics	0.009	0.965
	Textile	0.028	0.897
	metal and casting	0.110	0.638
	power and electronics	0.451	0.093

Source: research findings

Comparison of competitive intensity of the industries

Table 7. ANOVA results of comparing competitive intensity of the industries

	Sum of Squares	Df	Mean Square	F	Prob
Between Groups	8.113	5	1.623	2.641	0.024
Within Groups	147.473	240	0.614		
Total	155.586	245	-		

Source: research findings

According to Table 7. It is clear that the F-value obtained is 2.641, which has a significant level of 0.024 and is less than 0.05. Therefore, H1 is confirmed and it is concluded that the overall competitiveness of Iran's industries have a significant difference with each other. Considering the meaningfulness of Iran's overall competitiveness situation, the LSD follow-up test has been conducted to determine which of the industries have made the difference in terms of competitiveness.

Table 8. LSD Follow-up Test

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
chemical and cellulose	food and pharmaceutics	0.062	0636
	Textile	0.369	0.008
	metal and casting	0.103	0.534
	power and electronics	0.364	0.132
	automotive and auto parts	0.143	0.619
food and pharmaceutics	chemical and cellulose	0.062	0.636
	Textile	0.306	0.044
	metal and casting	0.166	0.347
	power and electronics	0.427	0.087
	automotive and auto parts	0.081	0.784
Textile	chemical and cellulose	0.369	0.008
	food and pharmaceutics	0.306	0.044
	metal and casting	0.472	0.010
	power and electronics	0.733	0.004
	automotive and auto parts	0.225	0.451
metal and casting	chemical and cellulose	0.103	0.534
	food and pharmaceutics	0.166	0.347
	Textile	0.472	0.010
	power and electronics	0.261	0.330
	automotive and auto parts	0.247	0.429
power and electronics	chemical and cellulose	0.364	0.132
	food and pharmaceutics	0.427	0.087
	Textile	0.733	0.004
	metal and casting	0.261	0.330
	automotive and auto parts	0.508	0.157

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
automotive and auto parts	chemical and cellulose	0.143	0.619
	food and pharmaceutics	0.081	0.784
	Textile	0.225	0.451
	metal and casting	0.247	0.429
	power and electronics	0.508	0.157

Source: research findings

According to the follow-up test table, there are significant differences in terms of the overall competitiveness of industries among the chemical industry with textile industry, and textile industry with the electrical and electronics, and metal and casting industries.

Comparison of entry of new companies

Table 9. ANOVA test results to compare the entry of new companies

	Sum of Squares	Df	Mean Square	F	Prob
Between Groups	10.294	5	2.059	3.264	0.007
Within Groups	151.373	240	0.631		
Total	161.668	245	-		

Source: research findings

According to Table 9. It can be seen that the F-value obtained is 3.264, with a significant level of 0.007 and an error level of 0.05. Therefore, H1 is confirmed and it is concluded that the situation of entry of new companies in the industry has significant differences. Considering the significance of entry of new industries, the LSD test has been conducted to determine which of the industries has made a difference in terms of entry of new firms.

Table 10. LSD Follow-up Test

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
chemical and cellulose	food and pharmaceutics	0.435	0.001
	Textile	0.403	0.004
	metal and casting	0.203	0.227
	power and electronics	0.075	0.757
	automotive and auto parts	0.497	0.091
food and pharmaceutics	chemical and cellulose	0.435	0.001
	Textile	0.031	0.837
	metal and casting	0.231	0196
	power and electronics	0.510	0.044
	automotive and auto parts	0.062	0.836
Textile	chemical and cellulose	0.403	0.004
	food and pharmaceutics	0.031	0.837
	metal and casting	0.200	0.277
	power and electronics	0.479	0.062
	automotive and auto parts	0.093	0.757
metal and casting	chemical and cellulose	0.203	0.227
	food and pharmaceutics	0.231	0.196
	Textile	0.200	0.277
	power and electronics	0.279	0.304
	automotive and auto parts	0.293	0.354
power and electronics	chemical and cellulose	0.075	0.757
	food and pharmaceutics	0.51	0.044
	Textile	0.479	0.062
	metal and casting	0.279	0.304
	automotive and auto parts	0.572	0.115
automotive and auto parts	chemical and cellulose	0.497	0.091
	food and pharmaceutics	0.062	0.836
	Textile	0.093	0.757
	metal and casting	0.293	0.354
	power and electronics	0.572	0.115

Source: research findings

According to the follow-up test table, the chemical industry with the food and pharmaceutics, and textile industries has significant differences in terms of the entry of new firms.

Comparing the condition of the bargaining power of buyers

Table 11. ANOVA test results of comparing the bargaining power of the buyers

	Sum of Squares	Df	Mean Square	F	Prob
Between Groups	11.108	5	2.222	4.062	0.001
Within Groups	131.270	240	0.547		
Total	142.377	245	-		

Source: research findings

According to Table 11. It is clear that the F-value obtained is 4.062, which is significant at the level of 0.001 and is less than 0.05. Therefore, H1 is confirmed and it is concluded that the bargaining power of the buyers is significantly different with each other. Considering the importance of the bargaining power of the buyers, the LSD follow-up test was conducted to determine which of the industries made a difference in terms of the bargaining power of the buyers.

Table 12. LSD Follow-up Test

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
chemical and cellulose	food and pharmaceutics	0.478	0.000
	Textile	0.392	0.003
	metal and casting	0.196	0.210
	power and electronics	0.158	0.488

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
	automotive and auto parts	0.666	0.015
food and pharmaceutics	chemical and cellulose	0.478	0.000
	Textile	0.085	0.548
	metal and casting	0.281	0.092
	power and electronics	0.320	0.174
	automotive and auto parts	0.188	0.500
Textile	chemical and cellulose	0.382	0.003
	food and pharmaceutics	0.085	0.548
	metal and casting	0.196	0.252
	power and electronics	0.234	0.325
	automotive and auto parts	0.274	0.332
metal and casting	chemical and cellulose	0.196	0.210
	food and pharmaceutics	0.281	0.092
	Textile	0.196	0.252
	power and electronics	0.038	0.880
	automotive and auto parts	0.470	0.112
power and electronics	chemical and cellulose	0.158	0.488
	food and pharmaceutics	0.320	0.174
	Textile	0.234	0.325
	metal and casting	0.038	0.880
	automotive and auto	0.508	0.133

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
	parts		
automotive and auto parts	chemical and cellulose	0.666	0.015
	food and pharmaceutics	0.188	0.500
	Textile	0.274	0.332
	metal and casting	0.470	0.112
	power and electronics	0.508	0.133

Source: research findings

According to the follow-up test table, the chemical industry with automobile, food and pharmaceutics, and textile industries has significant differences in terms of buyers' bargaining power.

Comparison of the bargaining power of industry suppliers

Table 13. ANOVA results of comparing the bargaining power of industry suppliers

	Sum of Squares	Df	Mean Square	F	Prob
Between Groups	6.700	5	1.340	1.397	0.226
Within Groups	230.294	240	0.960		
Total	236.994	245			

Source: research findings

According to Table 13. It is clear that the F-value obtained is 1.397, which is at the significance level of 0.226 and greater than the error level of 0.05. Therefore, H1 is rejected and it is concluded that the suppliers bargaining power does not differ significantly across industries.

Comparing the threat of entry of substitute products

Table 14. ANOVA results of comparing the threat of entry of substitute products in industries

	Sum of Squares	Df	Mean Square	F	Prob
Between Groups	25.509	5	5.102	6.924	0.000
Within Groups	176.846	240	0.737		
Total	202.354	245			

Source: research findings

According to Table 14. It is clear that the F-value is 6.924, with a significant level of 0.000 which is less than 0.05 error level. Therefore, H1 is verified and it is concluded that the situation of the threat of entry of substitute products is significantly different across industries. Considering the significance of the threat of entry of substitute products, the LSD has been conducted to determine which of the industries has made a difference in terms of the threat of entry of substitute products.

Table 15. LSD Follow-up Test

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
chemical and cellulose	food and pharmaceutics	0.637	0.000
	Textile	0.343	0.025
	metal and casting	0.745	0.000
	power and electronics	0.339	0.200
	automotive and auto parts	0.372	0.242
food and pharmaceutics	chemical and cellulose	0.637	0.000
	Textile	0.294	0.077
	metal and casting	0.107	0.578
	power and electronics	0.977	0.000
	automotive and auto parts	0.265	0.413

Industry (I)	Industry (J)	Mean Difference (I-J)	Prob
Textile	chemical and cellulose	0.343	0.025
	food and pharmaceutics	0.294	0.077
	metal and casting	0.401	0.044
	power and electronics	0.683	0.014
	automotive and auto parts	0.028	0.930
metal and casting	chemical and cellulose	0.745	0.000
	food and pharmaceutics	0.107	0.578
	Textile	0.401	0.044
	power and electronics	1.08	0.000
	automotive and auto parts	0.372	0.276
power and electronics	chemical and cellulose	0.339	0.200
	food and pharmaceutics	0.977	0.000
	Textile	0.683	0.014
	metal and casting	1.08	0.000
	automotive and auto parts	0.711	0.071
automotive and auto parts	chemical and cellulose	0.372	0.242
	food and pharmaceutics	0.265	0.413
	Textile	0.028	0.930
	metal and casting	0.372	0.276
	power and electronics	0.711	0.071

Source: research findings

According to the follow-up test table, the chemical industry has a significant difference with the food and medicine industries, textiles, metals and casting in the aftermath of the threat of entry of surplus commodities.

Table 16. Ranking the industries based on overall competitiveness

Industries	mean	rank
chemical & cellulose	3.32	5
food & pharmaceutics	3.72	1
Textile	3.68	3
metal & casting	3.60	4
power & electronics	3.25	6
automotive & auto parts	3.71	2

Source: research findings

Table 16. Shows the ranking of Iran's industries competitiveness index based on the average of the index. The food and pharmaceutical industry, and the electronics and electrical industry ranked the highest and the lowest in this regard, respectively.

5. Conclusion

The adoption of the export development strategy and its diversification is the main target of developing countries. A country that exports a lot has good public welfare. However, in recent years, Iran's non-oil exports have increased and industrial goods have a greater share in exports. However, the figure of Iran's exports of goods and services has been 4 billion and 754 million dollars over the past years. Therefore, it is seen that there is still no formulated program for identifying and strengthening various industries with a potential relative advantage. Therefore, it seems that conducting studies such as this research, in which various industries are evaluated and ranked in terms of different indicators, can be used as appropriate tools to advance increasing non-oil exports and industrial development and to be effective in formulating strategic policies. Porter's five forces model is a strategic and within-organization tool that is used to analyze the attractiveness (value) of industrial structures. This model is undoubtedly one of the most commonly used strategic business tools and has proven its efficiency over the years. The main objective of this research is to "examine the competitiveness of the manufacturing industries in accordance with Porter's competitiveness model" in six categories including chemical and cellulose, food and pharmaceutics, textile, metal and casting, electrical and electronics, automobile and auto parts at the city of Ilam. Research findings show that according to Porter's competitiveness model the competitiveness of industries is at a desirable level. The results of the first sub-hypothesis show that the condition of industries is not desirable in all indicators of competitiveness. Also, the results of the second sub-hypothesis show that the overall competitiveness of Ilam's industries is significantly different. Given the results obtained in the

competitiveness discussion, it was found that industries do not have a desirable condition in terms of competitiveness indicators; and considering the demands, they do not have the necessary focus on competitiveness indicators. We can increase the demands by creating relative advantage at these industries in order to witness a boom in these industries. Incorrect and inadequate advertising, low demand, lack of focus on improvement of industrial products were a set of factors that led to the rejection of the first sub-hypothesis. Also, products with no competitive advantage or with a competitive advantage in the period under study had high fluctuations, which is due to the lack of proper focus on these products. Also, the demand side has not been sufficiently addressed in these products, and they have been thinking about temporary and short-term programs and have not taken market research into consideration. According to the findings of the second sub-hypothesis, no proper introduction of these industries has been made at national level in order to maintain and improve the competitive position of the industries; and given the market demand, they have not been placed in their proper position and demand for these industries has been declining. Industries need to pay attention to the fact that through research, market and demand trends rise. Moreover, the government can connect producers to the target market to boost the provincial industries by setting up exhibitions and act as a bridge between producers and the market.

According to the results of testing the hypothesis, the following suggestions are provided:

1. Given the results of the first sub-hypothesis, for competitiveness improvement, it is recommended that the studied companies introduce themselves using new media such as social networks, internet sites, industrial magazines, TV advertisements, billboards, etc.
2. Government invests in industries that are in a better position according to the results of competitiveness.
3. Given the results of the first sub-hypothesis, the examined industries focus on the position of the company and its brand for increasing the demands for it.

4. Policymakers and legislators take effective steps to review the laws and regulations in the field of production.
5. Managers of companies pay attention to political restrictions (sanctions, international relations, etc.) as well as restrictions of laws and regulations within the country and manage these restrictions for competitiveness.
6. The company has to move step by step in order to increase competitiveness; because the competitiveness process is not a one-day process that can be quickly integrated into a new technology, it is a continuous and time-consuming process.
7. In the field of attractiveness of competition, managers of companies should review and modify the product specifications (design, size, packaging, etc.), product brand and name, promotional and distribution activities, and pricing.
8. In the area of attractiveness of competition, the company's focus should be on the structure of competition and the position of the company.
9. Given the results of the first sub-hypothesis, discovering the hidden needs of customers and finding the right ways to respond to the hidden needs of customers by providing new products and services.
10. Given the extent of the market and the inability of companies, it is necessary for executives to establish an effective information system and provide domestic enterprises with the necessary information.
11. Company directors are suggested to plan and take measures in the realm of access attractiveness according to cost indicators, political indicators, and legal restrictions.
12. Production of premier products for gaining a competitive distinction in the market.
13. Proper marketing planning in line with customers' easy access to corporate products.
14. Given the confirmation of the first hypothesis of the research, we suggest a stricter study of the market in order to identify and monitor changes in accordance with the application of new marketing methods to attract new customers.

15. Use of new product packaging methods by considering the price factor which is one of the key factors for customers.
16. For competitiveness improvement, we recommend that the company adopt a strategic view to demand attractiveness and do more in favor of macroeconomic indicators.
17. Given the results of the second sub-hypothesis and its confirmation for further improvement, we recommend company directors cooperate in the field of building a joint distribution network, a joint supply network of raw materials, a joint research and development network, and a joint marketing network.

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Conflicts of interest

The authors declare no conflict of interest

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