# REPUBLIC OF AZERBAIJAN

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**ABSTRACT**

of the dissertation for the degree of philosophy

# Improvement of competitiveness of electrotechnical

# enterprises and forming their strategic development

Specialty: 5311.01 – Organization and management of

enterprises

Scienctific field: 53 - Economics

Applicant: Bakhishova Nargizkhanim Namiq

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The work was performed at "Economics and Statistics" department of Azerbaijan Technical University

**Scientific supervisor:** Doctor sciences of Economics, Professor

**Aslanzade Ilham Alici**

**Official opponents:**  Doctor sciences of Economics, Professor

Phd. on Economics, Associate Professor

Phd. on Economics, Associate Professor

Dissertation council BFD 2.38 of the Supreme Attestation Commission under the President of the Republic of Azerbaijan operating at the Azerbaijan State University of Oil and Industry.

Chairman of the

Dissertation council:

Doctor of Economics, Professor.

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Scientific secretary of

the Dissertation council:

Phd. on Economics, Associate Professor

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Chairman of the

scientific seminar:

Doctor of Economics, Professor

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**GENERAL CHARACTERISTICS OF WORK**

**Relevance and development of the topic:** Of supreme importance for the country's economy is meeting the demand for electrotechnical products in the country, especially in the circumstances of globalization proccesses prevailing around the world, regionalization and polarization actions in particular places. The condition that makes this issue indispensable is the necessity of using electronics and electrotechnical products in our lives and households, as well. Observations confirm that the electronics industry covers a wide range of areas, from semiconductors to quantum electronics, as well as nano electronics. At present, the constant increase in demand for computers, Information Technology and automation processes in various classes of society is an indicator of the importance of electronics industry not only in human life, but also in the economy. The introduction of electronics and electrotechnical products to our households in the modern day, their change in the direction of becoming an integral part of human life and increasing demand for these products as time passes give grounds to say that Azerbaijani enterprises should also take an active part in this process. Given that there are rich traditions and experience of our republic in this regard, some electrotechnical enterprises are still operating in the country.

The continuous increase of competitiveness in all sectors of the economy necessitates the improvement of the structure of the Azerbaijani economy and the implementation of a new industrial policy. Proggressive experience shows that the industrialization of the economy is important not only from an economic point of view, but also for employment of the population, increased income level, qualified workforce, scientific researchs and other issues. Taking heed of all this, the Azerbaijani government is also taking serious steps to develop the country's industry. Thus, by the decisions of the President of the country dated 26.12.2014, "The state of industrial development in Azerbaijan" covers the years 2015-2020, and on 06.12.2016, it determines the laws dated 2016-2025 "Heavy industry in Azerbaijan and machine-building industry, development of Azerbaijan 2020 future vision" plan, "2014-2018 State Program of socio-economic development of the regions of our Republic", stimulating the export of non-oil sector and manufactured products and the order of the President of the country in this regard suggests that there is a special emphasis on the development of the industry and the increase of competitiveness at the country level, as well as the creation of clusters in this field. Although competitiveness from a theoretical point of view is a comprehensive and profound issue, practically, implementation of competitiveness in the economic sphere is quite a complex economic proccess. Being subjects of economic struggle, enterprises use different methods to acquire a superior position in the competitive environment. As far as I'm concerned, the competitiveness of electrotechnical enterprises is more specific. It mainly covers important issues such as price, quality and functions of the product. For the electrotechnics industry, factors such as packaging, advertising and so on are not decisive. In modern conditions, where market principles are proved to be superior, competition acts as the most important catalyst of the economy. Therefore, the main nuances for ensuring the competitiveness of electrotechnical enterprises are their technical and technological characteristics, the current state of investment guarantee, import and export analysis of electrotechnical products. These issues make it necessary to increase the competitiveness of electrotechnical enterprises, determine the regulations in this field and form the strategic development. In this regard, being dedicated to the research of the mentioned problems, the research of the topic is also relevant.

**Object of the** **research** - The object of the study is the electrotechnical enterprises operating in the electrotechnical industry in Azerbaijan.

**Subject of the research** -is the study of theoretical and practical characteristics of the improvement of competitiveness and formation of strategic development of electrotechnical enterprises in Azerbaijan.

**Statement of the Purpose.** The main purpose of the dissertation work is to determine the directions of increasing the competitiveness and forming strategic development of electrotechnical enterprises in Azerbaijan on the basis of summarizing the relevant theoretical and practical views, taking into account the characteristics of the modern period, and making justified practical proposals and recommendations on these directions.

In order to achieve this aim, objectives of the study were defined and carried out in a logical sequence:

* Study and summary of approaches and conceptual views to the competitiveness factor in the enterprises;
* Identifying methodological aspects of the economic strategy on improving competitiveness;
* Tha evaluation of technical and technological characteristics of electrotechnical enterprises in Azerbaijan;
* Analysis of investment provision in electrotechnical enterprises in Azerbaijan;
* Evaluation of innovative activities of enterprises in Azerbaijan;
* Analysis of the import and export structure of electrotechnical products in Azerbaijan;
* Assessment of the relationship between the products of electrotechnical enterprises, the average monthly nominal salary of employees employed in electrical engineering enterprises, the number of employees employed in electrical engineering enterprises and the product of electrical engineering;and industrial products in Azerbaijan;
* Formation of a strategy policy to improve and increase the competitiveness the electrical industry in Azerbaijan.

**Theoretical and methodological bases of the research** are consisted of the laws, orders, decrees on development of industry in Azerbaijan, as well as works of foreign economist-scientists on increasing competitiveness in enterprises and formation of Strategic development, views of local economist-scientists, their scientific statements, reports of international organizations, theoretical and practical views on the development of electrotechnics.

**Research methods.** Statistical economic, monographic, purposeful planning and other methods were used in the dissertation.

**Main statements for dissertation.**

* There is a serious need for the development of electrical engineering industry as one of the main areas of industry in Azerbaijan;
* İdentifing the evolution of the theory on the improvement of competitiveness in enterprises;
* Providing special support to this direction of the development trajectory of the country's economy and the global world as a whole due to the year-by-year increase in the demand for the products of the electrical engineering industry;
* Determining the methodological aspects of the formation of economic strategy for increasing competitiveness.
* There is international experience in the development of the electrical engineering industry, and it will be very useful to use them skillfully;
* Studying technical and technological characteristics of electrotechnical enterprises and the attraction of investment resources for the development of electrical engineering industry in Azerbaijan and evaluation of innovative actions of electrotechnical enterprises in Azerbaijan;
* Paying special attention to innovative approaches in the electrical engineering industry and studying the current state and development trends, identifying problems and determining the development prospects of electrotechnical industry in Azerbaijan.

**Scientific innovation of the research** is to determine the priorities of the development of the electrotechnical sector, stemming from the existing characteristics of increasing the competitiveness of enterprises in Azerbaijan. The following can be cited as the elements of the scientific innovations of the research:

* Development of new theoretical and methodological approaches to the problem which was investigated on the studies of scientific works of foreign and national scientists on the evaluation of competitiveness of enterprises has been shown;
* The competitive position of electrotechnical products was assessed;
* The SPACE Matrix on the assessment of competitiveness positions in the electrotechnical sector has been established in the modern era;
* The multiplicative-accelerative effectiveness of investments in industrial enterprises was calculated;
* The revealed comparative advantage (RCA) index was calculated;
* The SWOT-analysis of the enterprises operating in the field of Electrical Engineering in Azerbaijan was evaluated;
* The Foreign Trade condition index on electrotechnical industrial products was calculated;
* An econometric relationship has been established between investment in electrotechnical enterprises, the average monthly nominal salary of hired employees in electrotechnical enterprises, the number of hired employees in electrotechnical enterprises and the product of electrotechnical products;
* The directions of determining the development strategy of electrotechnical enterprises in Azerbaijan are indicated.

**Practical significance of the study.** Theoretical and methodical statements, proposals and recommendations in the dissertation work will enable to accelerate the implementation of new tasks for Azerbaijan industrial sector by applying them on improving the system of investing in innovative production in the industry, as well as in the field of electrotechnics, production of competitive electrotechnical products and increasing the volume of investment.

**Application of the findings of the study.** The main statements, results and proposals of the dissertation were discussed at international and national conferences held in 2018-2024.

During the research period, the topic of the dissertation was accepted in accordance with the general direction of scientific research conducted at Azerbaijan Technical University. The main provisions and results of the research, the justified proposals were presented in scientific seminars.

**Published materials on the results of the study**. The main provisions, conclusions and proposals of the dissertation were discussed at international and nationwide conferences held in 2018-2024. The main results and provisions of the dissertation were reported at 5 international conferences held in Azerbaijan and foreign countries, 10 articles on the content of the dissertation were published in local and foreign scientific journals. The dissertation was performed at the Department of “Economics and statistics” of Azerbaijan Technical University.

**Structure and volume of the dissertation.** The dissertation consists of introduction, 3 chapters, conclusions and suggestions, list of literature and 176 pages (41035 signs), introduction (1740 signs), chapter I 7723 signs, Chapter II 17754 signs, Chapter III 7341 signs, conclusion (3514 signs), list of used literature (1721 signs). The dissertation includes 25 pictures and 53 tables.

**STRUCTURE OF THE DISSERTATION**

**Introduction**

**CHAPTER 1. Theoretical and methodological basis of formation of competitiveness in industrial enterprises**

1.1. Development of the theory of competitive development of enterprises

1.2. Methodological aspects of development of economic strategy to improve competitiveness

1.3. Analysis and evaluation of the current state of competitiveness in the electrotechnical enterprises

**CHAPTER 2. Analysis and evaluation of the current state of competitiveness level in the electrotechnical enterprises**

2.1. Technical and technological characteristics of electrotechnical enterprises and analysis of their investment provision

2.2. Evaluation of innovation activities of enterprises

2.3. Analysis of the import and export structure of electrical engineering product characterization of the current system of regulation

**CHAPTER 3.** **İmplementing strategic development strategy of electrotechnical enterprises.**

3.1. Modeling the relationship between investment in electrotechnical enterprises and electrotechnical product

3.2. Definition of development strategy of electrical engineering enterprises in Azerbaijan.

**MAIN STATEMENTS FOR DISSERTATION**

1. **İdentifying the evolution of the theoretical development of competitiveness in enterprises.**

Observations show that in our time, creating a competitive advantage in comparison with other countries, whether it is a developed or developing country, remains one of the main goals of the economic development policies and strategies of these countries. In this regard, an analysis of his theory on the development of competitiveness, a look at the path traveled on the evolution of competition is also relevant from the point of view of the subject of research.

In an environment of competitive struggle, market participants have the opportunity to achieve success, as well as the risk of losing or even becoming completely bankrupt. Therefore, entrepreneurs and companies always try to get ahead of each other in various production and service issues, improve their technical and economic indicators, and benefit from advertising propaganda at a more complete pace.

As a result of the evolution of the world economy and taking into account the provisions of the theory of Comparative and absolute advantages P. Krugman, M. As a result of research conducted by Porter and other Western scientists, new views and theories of the economic category “comparative advantages” have emerged. So, according to Samuelson P.E. the advantages of countries are formed in the equipment of those with production factors, production technologies, factors arising from the differences in the economic structure of countries, different levels of capital, political conditions in the country. Economist R.Dornbush and S.According to Fischer, it is formed when countries export certain types of products cheaper than other countries.

**2. Technical and technological characteristics of electrotechnical enterprises and analysis of their investment provision (4. P.62-68).**

The electrotechnical industry is one of the important sectors of the machine-building industry of Azerbaijan. This branch of industry consists of enterprises specializing in the production of power transformers, low-power mobile power plants, electric motors of various models with a capacity of 100 kW and above, motors with a capacity of 1 to 250 kW, electrical and radio wires, cables and other electrical products for various purposes. Enterprises of the electrotechnical industry are distinguished by the fact that in a market economy they more or less maintain their activities and adapt to new conditions. Thus, a number of products produced in this industry received the certificate of the Turkish Standards Institute (FSE), which is accepted in 45 countries of the world. In addition, the international intergovernmental organization for environmental and scientific - technical cooperation in the field of electrotechnical industry – “Interelectro” BET operates, and Azerbaijan is one of 17 countries cooperating with this organization at the government level. At the level of firms and companies, 18 more countries cooperate with this organization. Currently, there are 46 IEC standards applied in Azerbaijan, which cover the requirements for the quality of electrical wiring, uninterrupted power supply system, electrical insulation, power transformers.

According to the data of the Statistical Committee of the Republic of Azerbaijan, the table below shows the share of the country's total industrial production in the field structure of the electrotechnical sector.

**Table 1. The area structure of industrial production, based on the actual prices of the respective years relative to the overall result, in percentage**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicators** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** |
| **All industries** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |
| **Processing industry** | **24.4** | **21.9** | **25.1** | **31.8** | **28.8** | **21.0** |
| Production of Computer, Electronic and optical products | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 |
| Production of electrical equipment | 0.4 | 0.4 | 0.5 | 0.6 | 0.4 | 0.2 |

As can be seen from Table 4, the share of electrical engineering industrial output is not even within the limit of any percentage of gross industrial output. It is also interesting to determine the size of the value of the products produced by electrotechnical industrial enterprises. Therefore, let's take a look at the volume of production of products of electrotechnical industrial enterprises.

**Table 2. The main indicators of the work of enterprises engaged in the production of computers and other electronic equipment**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indicators | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** |
| Number of operating enterprises-total | 23 | 26 | 31 | 32 | 32 | 35 |
| state | 8 | 8 | 9 | 9 | 7 | 7 |
| non-state | 15 | 18 | 22 | 23 | 25 | 28 |
| Production of the main types of products in kind | | | | | | |
| Notebooks, pieces | - | - | - | 9841 | 22272 | 21735 |
| Desktop computers, pieces | - | - | 118 | 1025 | 4669 | 1717 |
| Measuring devices, pieces | 263452 | 192382 | 250817 | 208377 | 234598 | 187663 |

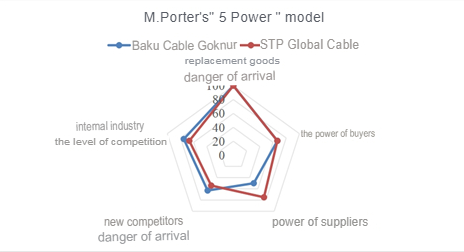
**Table 3. The main indicators of the work of enterprises producing electrical equipment**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indicators | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** |
| Number of operating enterprises-total | 48 | 54 | 61 | 63 | 69 | 80 |
| state | 5 | 5 | 4 | 4 | 4 | 4 |
| non-state | 43 | 49 | 57 | 59 | 65 | 76 |
| Production of the main types of products in kind | | | | | | |
| Power transformers, pieces | 1259 | 1443 | 3258 | 1663 | 887 | 606 |
| Other electrical wiring, ton | 5093.4 | 3733.2 | 3232.4 | 5662.6 | 8831.3 | 10410.5 |
| Household refrigerators and freezers, pieces | 2094 | 1520 | 1473 | 670 | 3066 | 1918 |

“Gok-Nur Baki LTD”, “ATEF group of companies”, “Azerkabel”, OJSC “Elektroterm LLC”, “Star LTD” LLC , “Nexus” LLC (Ultra Computers) and others can be listed as electrotechnical industrial enterprises that provide private development of electrotechnical industry in the country. "Baku Cable Goknur" LLC was chosen as the main research object in my dissertation. “Baku Cable Goknur” LLC, which produces cables of various sizes and voltages, is a manufacturer of electrical engineering products of the Republic of Azerbaijan. Established in 2003,” Baku Cable Goknur " LLC is one of the largest companies operating in the field of Electrical Engineering. "Baku Cable GOKNUR LTD" company was established in 2003. LLC produces insulated mounting cables, flexible cables, multi-strand, flexible copper conductor cables, fireproof halogen-free cables, low-voltage cables of various types and sizes that meet world standards.

STP Global Cable is a resident of Sumgayit Chemical Industrial Park, operating since 2009, and is one of the largest enterprises in the region producing more than 25,000 types of cables. High quality cables produced by "STP Global Cable “are exported to Russia, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Turkey and Ukraine under the name” Made in Azerbaijan". STP's cable produces products such as electrical rods, low and high voltage power cables, halogen-free installation wires, connecting wires and cords, telecommunication cables, tension cables, rubber-insulated flexible power cables, uninsulated and insulated air-electric transmission lines, winding installation wires.

“Baku Goknur Cable” LLC and “STP Global Cable” LTD were selected to assess the threat levels of each competitive force proposed by Michael Porter. For the convenience of visualization, we moved the numbers proportionally on a scale from 1 to 100. You can see the result below.



**Figure 1. Analysis of competitiveness of two enterprises**

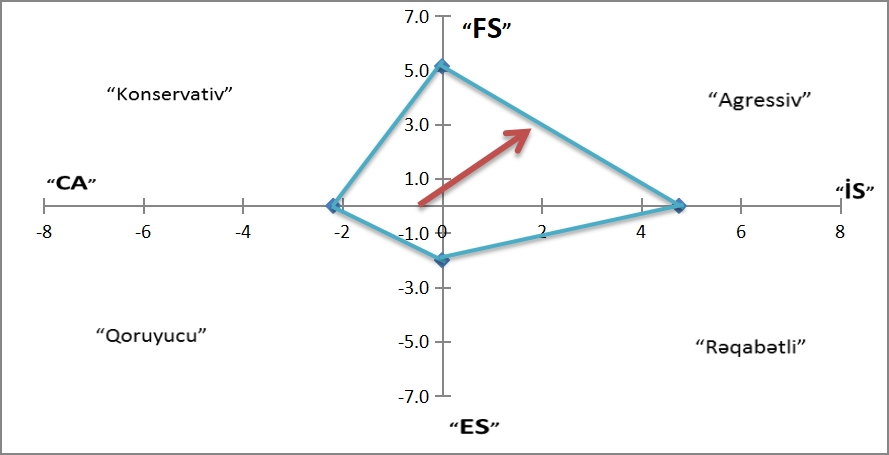
In conclusion, the analysis of both enterprises shows that one of the main characteristic features of the electrotechnical industry in the country is the horizontal integration of this area. This means that the influence of suppliers on the one hand and large consumers on the other is very strong on the electrotechnical industry. Porter's Five Forces analysis shows that these forces are highly competitive in the electrotechnical industry and as a result, these forces determine the development strategy of the industry.

The result of the SPACE Matrix carried out by” Baku Cable Goknur " LLC was obtained and reflected in the graph. The results of my analysis showed that the existing strategy position of”Baku Cable GOKNUR LTD " is aggressive. points received for the financial strength of the enterprise (financial strength - FS) 5,1. This means that the industry in which it operates is stable and attractive, and also has favorable, stable economic conditions. The results of the analysis suggest that” Baku Cable GOKNUR LTD " has a healthy financial position and can gain leadership in this area by taking a large segment of the market by investing these funds in research and development programs.

**Figure 2. Results of the SPACE matrix model**

Direction vector coordinates as shown in Figure 4, “Baku Cable GOKNUR LTD”has a successfully adopted aggressive strategy, along with which the organization is well tuned to its chosen industry segment. This position demonstrates the ability of the company to maintain a competitive advantage through its financial power. It gained its competitive advantage thanks to competent marketing, increased market share, strategic management and a sound financial position. The general results of the analysis suggest that the organization” Baki Goknur " LLC it is advisable to choose strategies for diversification, leadership in costs in the direction of increasing competitiveness.

In the dissertation work “STP Global Cable” LLC SPACE Matrix is used to determine the most profitable and effective strategic position of the company. The calculation results obtained on the basis of the assessment by experts are reflected in the table. The results of my analysis showed that the existing strategy position of “STP Global Cable” LLC is as aggressive as the same”Baku Cable Goknur “LLC. Increasing or diversifying production potential requires large capital expenditures. The results of the analysis suggest that” STP Global Cable” LLC " has a healthy financial position and can gain leadership in this area by taking a large segment of the market by investing these funds in research and development programs.



**Figure 3. "Vector of strategy of STP Global Cable LLC.**

As we can see from the picture, the vector coordinates correspond to the aggressive strategy for LLC “STP Global Cable”. This means that the financial strength of the company has its advantages and fights these advantages by taking an aggressive position. It gained its competitive advantage thanks to competent marketing, increased market share, strategic management and a sound financial position. For the implementation of priorities and indicators development strategies, the development and application of new solutions is necessary for “STP Global Cable” to achieve the strategic goal of increasing its future successful activity and competitiveness. The general results of the analysis suggest that it would be advisable to choose strategies for leadership and vertical integration in costs in the direction of increasing organizational competitiveness.

In general, one of the first steps to determine the future development of any field in the international arena is to conduct a SWOT analysis in this area (Strengths-strengths, Weaknesses-weaknesses, Opportunities-opportunities, Threats-threats).

**Table 4. SWOT analysis of electrical engineering enterprises in Azerbaijan.**

|  |  |
| --- | --- |
| **FACTORS** | |
| **THE STRENGTHS OF INTERNAL FACTORS** | **WEAKNESSES OF INTERNAL FACTORS** |
| * The presence of traditions in the country in the development of electrical engineering * Supporting innovations * High labor potential * Developed infrastructure. * Availability of raw material base * Availability of able-bodied and skilled workforce * Favorable geographical position * Quick formation of technical skills in the working force. * The existence of great scientific potential | * Lack of financial resources * Lack of new electrotechnical products and assets * Low level of service in this area (marketing, sales, etc.) * Weakness of innovation activity * Failure of the quality of electrical engineering products to meet international standards * Dependence on imports * His education does not meet modern requirements * Average quality of product. * Narrow range of manufactured products * Weak competitive environment * İssues in attracting capital * Limitation of scientific expenses * Weak development of copyright |
| **POSSIBILITIES OF EXTERNAL FACTORS** | **DANGERS OF EXTERNAL FACTORS** |
| * Improvement of legislation * Increased interest of entrepreneurs and investors * The creation of innovative high-tech clusters * the usage of scientific and technological progress achievements * Increase customer satisfaction with electrical products * And state support for the electrotechnical industry. * Expanding the range of production of electrotechnical products * mulification of innovation activities * And improve the quality of electrical products and comply with international standards * training of qualified personnel and qualification of employees artırılmassisteminin inkişafı. * Economic cooperation with foreign leading electrical engineering enterprises | * Lack of personnel and the outflow of qualified personnel abroad. * Strong competitiveness of imported similar foreign electrotechnical products * dependence on the exchange rate of advanced developed countries * The economic crisis * the strengthening of competition in the global electrotechnical market * a decrease in demand for manufactured national products. * Increasing the price of imported raw materials and components by suppliers * the needs of customers, the inability to determine quickly changing tastes and new requirements. * Lagging behind innovative development. * Tightening of standards related to environmental protection |

The results from the gzit-Matrix show that the weaknesses of the electrotechnical industry are highly affected by such threats as a shortage of personnel and an outflow of qualified personnel, an economic crisis, an intensification of competition in the global electrotechnical Market, an increase in the price of imported raw materials and components by suppliers, a lag behind innovative development, a The results of the Matrix show that in order to increase the competitiveness of the electrical industry, special attention should be paid to the development of a future development policy aimed at increasing the knowledge and technical skills of the staff in this area, supporting innovations and increasing scientific potential.

**5. Calculation of multiplicative efficiency of investments in the industrial areas.** In order to calculate the multiplicative efficiency of investments in the industrial areas, it is necessary to establish the investment function.

It should be noted that the model for establishing the relationship between investments in fixed assets in the industry and the volume of output produced in the general industry using the Dustur of (2.1.5) is given as follows:

**Picture 4. The dependence of the volume of industrial output on investments directed to the industry**

The results of the regression equation we received show that the multiplier is equal to 3.36. This means that each manat of investment in fixed assets in the industry in Azerbaijan will increase the volume of products produced in the industry by 3.36 manat units. That is, for every 1 manat increase in investment, the projected GDP growth will increase by 3.36 Manats.

According to Keynes's theory, the more current GDP increases, the part of accumulation will increase on other equal terms. In the long term, their accumulated wealth is equal to investments, that is, the growth of GDP affects the growth of investments. Let's construct the function of dependence of investments on GDP and calculate the regression equation:

**Picture 5. dependence of investments in industry on the volume of industrial output**

The results of the regression equation we received show that the accelerator is equal to 0.13. This means that the volume of products produced in the industry in Azerbaijan will increase by 0.13 manat per manat of investments in fixed assets in the industry.

In my opinion, if we use this factor in terms of improving the investment provision of electrotechnical enterprises, then it will serve both to improve the technical and technological characteristics of these electrotechnical enterprises and to increase the volume of products. In general, the state can influence the multiplier effect through fiscal policy. In order to increase the result of the multiplier, the state can finance the expansion of production, develop infrastructure subsidize scientific tools.

**6. Evaluation of innovation activity of electrotechnical enterprises in Azerbaijan.**

In order to examine the innovation activities of industrial enterprises, whether in Electrical Engineering or in the country, it is important to first consider the volume of the innovation product according to the level of innovation.

**Table 5. Volume of innovation product according to the level of innovation in the industry (thousand Manats)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A product that has undergone significant changes or has become a new application** | | | | |
| **2017** | **2018** | **2019** | **2020** | **2021** |
| All industries | **14676.7** | **28952.2** | **21698.1** | **11759.7** | **60977.2** |
| Processing industry | **14676.7** | **28736.9** | **19202.4** | **9344.2** | **58133.8** |
| Production of computer and other electronic equipment | 9990.3 | 19937.9 | 6073.2 | 4742.0 | 1239.4 |
| Production of electrical equipment | - | - | - | - | - |

Both in our country and in other countries, the result of innovation activities of enterprises is reflected mainly in the development of science-intensive products and practically in the growth of consumers in terms of purchasing these products. The mentioned factors cannot be reflected either in the assortment or in the scientific competence of the products produced in our country. So there are problems in the innovation activities of enterprises operating in our country.

**7. Calculation of the conditional index of foreign trade in electrical products.** To find out the reasons for the increase or decrease in the country's exports and imports, let's look at the commodity structure of exports. That is, let's look at the export commodity structure of the country's electrotechnical industrial product.

**Table 6. Export commodity structure of the country's electrotechnical industrial product, one thousand US dollars**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Groups of goods** | **2018** | **2019** | **2020** | **2021** |
| **Total** | **19,489,068** | **19,635,202.8** | **13,732,637.3** | **22,206,671.1** |
| Machines, mechanisms, electrotechnical equipment, parts | 42,998.6 | 43,921.6 | 49,752.5 | 36,786.3 |
| Nuclear reactors, boilers, equipment and mechanical devices, parts | 21,596.0 | 33,804.0 | 17,423.6 | 18,749.4 |

If we look at the commodity structure of imports of similar products of the electrotechnical industry, we can see that the share of products of the electrotechnical industry in imports is greater than in exports.

**Table 7. Import commodity structure of the country's electrotechnical industrial product, one thousand US dollars**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Groups of goods** | **2018** | **2019** | **2020** | **2021** |
| **Total** | **11,465,914** | **13,667,475** | **10,732,038.8** | **11,705,786.7** |
| **Machines, mechanisms, electrotechnical equipment, parts** | **2,589,007** | **2,661,026** | **2,536,673.0** | **2,749,104.2** |
| Nuclear reactors, boilers, equipment and mechanical devices, parts | 1,808,245 | 1,637,134 | 1,567,478.3 | 1,763,638.3 |
| Electrical machinery and equipment, apparatus, parts | 780,762.1 | 1,023,891 | 969,194.7 | 985,465.9 |

This difference manifests itself, first of all, in the volume of imported electrotechnical industrial products. That is, in 2014-2021, there is an increase in the share of most imported industrial products. We believe that the growth of imports of electrical industry products is due to the demand for it.

At the same time, looking at the range of exported products, it is possible to obtain statistical data on liquid pumps and electric energy in the structure of exports. That is, the range of exported electrotechnical industrial products is quite limited. The second important difference in the import of electrotechnical industrial products is related to their range. That is, the range of products in the structure of imports is much wider.

In the work, the obvious comparative advantages of exported products in the country were calculated.

**Table 8. Calculation of RCA of exported products in country**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **type of product** | **RCA  2018** | **RCA 2019** | **RCA 2020** | **RCA 2021** | **RCA 2022** |
| Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral resources | 7.084 | 8.285 | 9.485 | 7.657 | 5.681 |
| Plastics and products from them | 0.179 | 0.274 | 0.343 | 0.546 | 0.304 |
| Edible vegetables and certain roots and tubers | 3.209 | 3.156 | 4.226 | 2.635 | 1.691 |
| Aluminum and products from it | 0.577 | 0.693 | 0.872 | 0.785 | 0.499 |
| Cotton | 1.778 | 2.694 | 4.213 | 4.334 | 2.172 |
| Electrical machinery and equipment and parts; voice recorders and loudspeakers, television | 0.008 | 0.012 | 0.008 | 0.006 | 0.007 |
| Copper and products from it | 0.208 | 0.154 | 0.203 | 0.239 | 0.099 |

As the results of the calculations show, among the exported products, the Balassa index for tomatoes, potatoes, cabbage, other vegetables and cotton was more than 1. In other words, the locally produced products of the oil and agricultural sectors are recognized and competitive in world markets. At the same time, Salt, sulfur, stone, wood and wood products, products made of copper and copper, including electrical machinery and equipment and their parts, and other domestic products, the Balassa index was less than 1. And this suggests that the listed products do not have obvious comparative advantages.

In the international arena, one of the steps it takes to produce any product within any country is to carry out calculations with the trade Condition Index. To calculate the trade Condition Index for Electrical Engineering Industrial Products, three groups of goods covering the electronics industry in the country's exports for 2010-2021 were analyzed based on the 14 groups of goods included. The results of the analysis give reason to express a number of interesting ideas about the trade in the country's electrotechnical industrial products

**Table 9. Dynamics of the foreign trade Condition Index (according to Lasperes) on electrotechnical industrial products**

|  |  |  |  |
| --- | --- | --- | --- |
| **Years** | **Export price index** | **Import price index** | **Foreign trade condition** |
| **2010** | 0.3 | 1.4 | 0.2 |
| **2011** | 0.5 | 2.1 | 0.2 |
| **2012** | 0.4 | 0.37 | 1.1 |
| **2013** | 0.7 | 0.43 | 1.6 |
| **2014** | 1.1 | 0.36 | 2.75 |
| **2015** | 0.1 | 0.39 | 0.3 |
| **2016** | 0.1 | 1.8 | 0.06 |
| **2017** | 0.385 | 1,2 | 1,2 |
| **2018** | 0.323 | 1,1 | 1,3 |
| **2019** | 0.245 | 1,5 | 0,9 |
| **2020** | 0.15 | 7.81 | 0.019 |
| **2021** | 1.06 | 4.60 | 0.23 |

**Source: <http://www.stat.gov.az>**

Our studies on the trade Condition Index show that the country's trade Condition Index has changed in favor of foreign countries in the studied years. The analysis shows that in 2010-2021, the low prices of the export price index in comparison with imports indicate that the exported products were sold at low prices, while being characterized by extremely low quality in the world market. At the same time, the low prices of the export price index compared to imports indicate that the exported products were sold in the form of raw materials on the world market. This suggests that there is little fuss about exported products.

An analysis of the import price index shows that the products imported into the country were cheaper in 2012-2015. In 2016-2019, export prices rose relatively, while the import price index fell relatively. Such a low level of the import price index can be explained by several reasons that imported products are of extremely poor quality, and these products are also very cheap. Therefore, the products imported to Azerbaijan are cheap. The rise in the import price index in 2017-2021 suggests that the country has a huge demand for imported products, mainly electrical engineering.

**8. Modeling of relationships between investment in electrotechnical enterprises and electrotechnical product and the number of employees working in electrotechnical industries.**

To study the statistical dependence of the volume of production of Electrical and electrical equipment on investments in the production of Electrical and electrical equipment, let's look at the linear regression equation.

*y=a0+a1x1+a2x2+a3x3*

here, *y* - is the volume of production of Electrical and electrical equipment (mln manat), *x1* – is the investments directed to the field of Electrical Engineering (mln manat), *x2* –is the number of employees employed in the electrical industry (thousand people), *x3* – is the average monthly nominal salary of employees employed in the electrical industry (manats).

**Table 11. The volume of electrotechnical industrial products, investments in fixed capital in the electrotechnical industry, the number of employees in the electrotechnical industry**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **İllər** | **(*x1*)** | **(x2)** | **(x3)** | **(*Y*)** |
| **2010** | 19 | 4 | 283,05 | 415.9 |
| **2011** | 0 | 3,5 | 285,05 | 505.9 |
| **2012** | 17,3 | 3 | 286,05 | 575.3 |
| **2013** | 12,4 | 7,2 | 417,5 | 674.7 |
| **2014** | 18,5 | 7,3 | 483,35 | 660.7 |
| **2015** | 31,2 | 6,3 | 504,8 | 550.2 |
| **2016** | 18,7 | 5,2 | 537,2 | 488.1 |
| **2017** | 36,8 | 5,5 | 539,95 | 736.2 |
| **2018** | 46,5 | 5,9 | 547,75 | 295.1 |
| **2019** | 44,7 | 6,5 | 611,3 | 317.1 |
| **2020** | 17,6 | 6,6 | 676,4 | 290.1 |
| **2021** | 5,8 | 5 | 653,3 | 258.8 |
| **2022** | 2.6 | 4.4 | 743.8 | 237.7 |

**Table 12. Feedback on the volume of electrical industry products and investments in fixed capital in the electrical industry and the number of employees in the electrical industry (EVIEWS)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: MEHSUL | | |  |  |
| Method: ARMA Maximum Likelihood (OPG - BHHH) | | | |  |
| Date: 06/10/24 Time: 15:19 | | |  |  |
| Sample: 2005 2022 | | |  |  |
| Included observations: 18 | | |  |  |
| Convergence achieved after 11 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -37.33633 | 21.14053 | -1.766102 | 0.1078 |
| ISCI | 21.26655 | 4.054355 | 5.245359 | 0.0004 |
| INVEST | 1.403373 | 0.366835 | 3.825622 | 0.0033 |
| EMEKHAQQI | 1.126197 | 0.146124 | 7.707123 | 0.0000 |
| @TREND | 59.59726 | 5.509987 | 10.81623 | 0.0000 |
| DUMMY2014 | 123.7961 | 8.895957 | 13.91600 | 0.0000 |
| AR(1) | -0.665045 | 0.213435 | -3.115912 | 0.0109 |
| SIGMASQ | 322.6986 | 250.0544 | 1.290514 | 0.2259 |
| R-squared | 0.965090 | Mean dependent var | | 188.1000 |
| Adjusted R-squared | 0.940653 | S.D. dependent var | | 98.93185 |
| S.E. of regression | 24.10099 | Akaike info criterion | | 9.535924 |
| Sum squared resid | 5808.575 | Schwarz criterion | | 9.931645 |
| Log likelihood | -77.82332 | Hannan-Quinn criter. | | 9.590489 |
| F-statistic | 39.49312 | Durbin-Watson stat | | 2.239202 |
| Prob(F-statistic) | 0.000002 |  |  |  |

Linear relationship between investments directed from the data in the table and the number of employees employed in the electrotechnical industry it will be obtained as

y=1.403x1 + 21.266x2 + 1.126x3 – 37.33.

At the end of our analysis, the following results were obtained:

1. An increase of 1 unit of investments directed to the field of electrical engineering increases the volume of the product produced in the field of electrical engineering by approximately 1.4 units.
2. An increase of 1 unit in the number of workers employed in electrical engineering enterprises in the field of electrical engineering increases the volume of products produced in the field of electrical engineering by approximately 21.26 units.

An increase of 1 unit in the average monthly nominal salary of salaried workers in electrical engineering enterprises increases the volume of products produced in the field of electrical engineering by approximately 1,126 units.

**9. Identification of current state and development trends of electrical industry in Azerbaijan.**

The development strategy should be determined in terms of the development of electrical engineering enterprises in Azerbaijan, increasing production volumes, expanding the sales market and selecting new target segments. In the development strategy, the following must be fulfilled:

In the “conclusion” section of the dissertation, the conclusions we have reached and the proposals we put forward can be summarized as follows:

|  |  |  |
| --- | --- | --- |
| **(direction 1) development of infrastructure necessary for industrial enterprises** | development of a system for training qualified personnel for electrotechnical enterprises | * creation of a modern system of professional development and retraining of employees, engineers and management staff in this field; * development of higher and secondary vocational education system. |
| creation of a network of scientific research centers | * Creation and development of scientific research centers * establishment of free trade zones |
| Improving the quality of public services | * simplification of export procedures;   - improvement of the legislative framework in the field of improving the business environment  -support in domestic electrical engineering products meeting foreign standards and requirements;   * support for the promotion of national electronics products in foreign markets. |
| **(2nd direction) economic stimulation of electrical engineering market participants.** | increasing investment attractiveness in the field of improving the business environment | * formation of the venture ecosystem * creation of infrastructure that ensures venture activity |
| Regulation of trade | * Customs regulation * Cost subsidization * offering preferential credit to consumers of locally produced products * application of tax benefits * insurance of state contracts that ensure the participation of national companies in large projects. |
| Technical regulation | * - adoption of technical standards * to adopt requirements and standards limiting the entry of mass-produced products into the Azerbaijani market. |
| Information stimulation | * social advertising paid from the state budget * speeches, publications, open and closed publicity about the achievements of the electrotechnical industry * use of domestic products by government officials |
| Protection of intellectual property in the field of science and engineering. | * Protection of intellectual property in the territory of Azerbaijan; * protection of intellectual property of local enterprises and citizens abroad; * Support for local enterprises and citizens to obtain patents for their inventions in the territory of Azerbaijan; * Support for local enterprises and citizens to obtain patents for their inventions in foreign countries. |
| Development of cooperation and cooperation | * Interdisciplinary cooperation   - international cooperation   * formation of clusters * Establishment of the Association of Producers |

1. 1. Other characteristic features that we have seen from the international experience regarding the development of the electrical engineering industry are shown below:

- first of all, the electrotechnical industry has the opportunity to create more added value than any other industrial sector of the economy, as we can see from the experience of developed countries;

- products of the electrical engineering industry have control functions, which increases its importance from the point of view of management;

- it becomes necessary to use the achievements of electronics for the efficient organization of the activities of most economic sectors as well as state institutions, in other words, the demand for electrotechnical products in the fields of oil, aviation, machine-building, chemical and other industries is increasing,

-increasing the specific weight of the electronics industry in the growth of global GDP in the last ten years;

- as a result of the above, electrical engineering makes up 30% of the total investment placed in the industry in many countries of the world.

2. The electrotechnical industry is one of the important branches of the engineering industry of Azerbaijan. This branch of the industry includes enterprises specializing in the production of power transformers, low-power mobile power stations, various models of electric motors with a power of 100 kW and above, motors with a power of 1 to 250 kW, electrical and radio wires, cables and other electrical products for various purposes. consists of

3. The analysis shows that in 2022, the production of computer, electronic and optical products will be 50.8 million manats or 0.1% of the total industrial product, the production of electrical equipment will be 186.9 million manats or 0.2% of the total industrial product did. On the other hand, the value of the products of electrotechnical industrial enterprises in the last ten years is not more than 0.1% in the GDP, which proves that serious investments are needed to develop the technical and technological characteristics of the electrotechnical industry.

4. In order to assess the threat levels of each of the competitive forces proposed by Michael Porter, Porter's model was tested on companies "Baku Goknur Cable" LLC and "STP Global Cable" LLC. As a result, the analysis of both enterprises shows that one of the main characteristics of the electrotechnical industry in the country is the horizontal integration of this field. This means that the influence of suppliers on the one hand and large consumers on the other is very strong on the electrical engineering industry.

5. The SPACE matrix is used to determine the most profitable and effective strategic position of the companies "Baku Cable Goknur LTD" and "STP Global Cable" LLC in the dissertation work. The general results of the analysis suggest that it is appropriate to choose diversification and cost leadership strategies in order to increase the competitiveness of the organization "Baku Göknur" LLC, while it is appropriate to choose cost leadership and vertical integration strategies for "STP Global Cable" LLC.

6. The results obtained from the SWOT-matrix show that the strengths of the electrotechnical industry in the country are the presence of traditions, support for innovation, high labor potential, developed infrastructure, availability of raw materials, availability of able-bodied and qualified labor force, favorable geographical location, rapid development of technical skills in the workforce. formation is the presence of great scientific potential. The results obtained from the SWOT-matrix show that the weaknesses of the electrotechnical industry are highly affected by threats such as the lack of personnel and the flow of qualified personnel abroad, the economic crisis, the strengthening of competition in the global electrotechnical market, and the weakness of innovation activity.

7. The results of the regression equation we obtained show that the multiplier is equal to 3.36. This means that each manat of investment directed to the fixed capital in the industry in Azerbaijan will increase the volume of the product produced in the industry by 3.36 manat units. The results of the regression equation we obtained show that the accelerator is equal to 0.061. This means that for every 1 manat of industrial production in Azerbaijan, the amount of investment in fixed capital in the industry will increase by 0.061 manat.

8. If we look at the volume of innovation products according to the level of innovation in the industry, we will see that the volume of products that have undergone significant changes or are newly introduced does not continue with increasing dynamics. Thus, in 2018, the share of innovations that underwent significant changes in the production of computers and other electronic equipment was 68.9%, in 2019 it was 28.0%, in 2020 it was 40.3%, and in 2021 it was 2%..

9. The analysis of the commodity structure of export of electrotechnical products shows that in the studied period of 2018-2022, machines, mechanisms, electrotechnical equipment, electrical machines and equipment, apparatus, their parts changed between 0.2% and 0.4%. Thus, the specific weight of electrical engineering products in the structure of exports is not even a percentage. During the analyzed period, the export of electrotechnical industrial products was 100 mln. Not so at the US dollar level. If we take a look at the commodity structure of the import of electrical engineering industry by similar products, we will see that the specific weight of electrical engineering industry products in imports is higher than in exports.

10. The calculation of the Revealed Comparative Advantage (RCA) index suggests that electrical engineering products, computers and other electronic equipment and their parts, and other domestic products have a Balassa index of less than 1, which means that these products do not have obvious comparative advantages.

11. A development strategy should be defined in terms of development of electrotechnical enterprises in Azerbaijan, increase of production volume, expansion of the sales market and selection of new target segments. According to the development strategy, infrastructure development necessary for electrotechnical industrial enterprises and economic stimulation of electrotechnical market participants should be carried out. According to the mentioned development strategy, it will be possible to neutralize the threats by using opportunities such as economic cooperation with foreign advanced electrotechnical enterprises in the country's electrical engineering field, state support to the electrical engineering industry, stimulation of innovation activities, expanding the range of electrical engineering products, improving their quality, and conforming to international standards.

**The main content of the research is reflected in the following scientific works published by the author:**

1. Bakhishova N.N, "Evolution of the theory of development of competitiveness of enterprises". Research and training center on labor and social problems. Labor and social problems, Collection of scientific works, Baku. 2017 № 2 (20) p. 152-161

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