IMPROVING ORGANIZATIONAL AND ECONOMIC MECHANISMS FOR THE GROWTH OF ELECTRONICS INDUSTRY AND ENTERPRISES IN UZBEKISTAN

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Abstract: *This article looks at how to improve the development of transformation processes in industrial businesses. The goal of this research is to evaluate the situation of the electronic sector in Uzbekistan and to provide ideas for its growth. According to the study's findings, Uzbekistan's electronic sector now has the most manufacturers in the region's industrial group. Furthermore, net sales and company revenue are increasing quickly in this area. In particular, studies were conducted in the study work on the creation of new production capabilities in the electrical sector in these years, as well as the initiate of infrastructure projects that will be carried out in the scope of the production expansion initiative.*

Key words: *Industry, management, electronics, electronics industry, transformation, electric equipment, engineering, enterprise, Uzbekistan*

INTRODUCTION

The world has been rapidly moving toward a significantly new sort of economy over the past few decades, with electronical and technological advances serving as the primary tool for its development and rising competitiveness.

Introducing and transforming the electronics industry is a global movement that influences on developed and developing nations simultaneously throughout the world, and electronic technologies are driving propensities that are important in accelerating the development of most nations' economic systems.

The growth of the industry in particular and the province's economy generally has been greatly aided by the firms in the electronic sector, which have encouraged productivity and business efficiency. The challenge for the foreseeable future is the requirement for proper strategies and solutions to boost the effectiveness of businesses in the electronic sector, guarantee long-term growth, and work towards a common goal of socio-economic development in Uzbekistan[1].

Without underestimating the importance of the recommendations of the survey results, it should be noted that in the electrical industry of Uzbekistan, it is necessary to improve the organization and economic mechanisms of electronics industry and related enterprises in order to improve the quality of products, taking into account the challenges of our time, to study it scientifically, methodically and practically.

Goals and objectives of the research.

The goal of the study is to examine the organizational and financial aspects of electronics industry and related enterprises based on international standards and best practices, to assess how this sector is currently organized in the Uzbekistan electrical industry, to identify methodological and practical proposals and recommendations that are based on science in order to improve the management mechanism of the current system, and to identify the most appropriate resources.

The following connected tasks have been established and are expected to be completed in order to reach the objective:

- investigation of theoretical and methodological facets of the electronic industry's structure;
- the interpretation of systematic and process approaches to the electronics sector;
- the methodological disclosure of the process assessment in the electronics market;
- the analysis of the indicators describing the formation and development of the electrical industry on the basis of official information sources;
- the assessment of the current state of normative and technical support of the electronics industry and related enterprises;
- enhancing the quality of equipment via the establishment of an innovation-focused field cluster and the enhancement of internal organizational structure and control mechanisms;
- formulating useful suggestions for the efficient management of the electronics market and manufacturing industry[2].

Considering the electro-technical industry's contribution to development: two key questions;

Two crucial issues must be answered in order to completely understand the role that manufacturing plays in development. First, what kind of organizational and economics mechanisms for using of electronics industries in Uzbekistan ? Second, how can effect transformation process for electronics industry while improving of economic growth for companies and how we can achieve international standards in this field ?

Literature review.

A number of laws, programs, and decrees have been made in Uzbekistan with the intention of boosting the electronic sector. For instance, the “Uzeltexsanoat” Association, one of the major contributor in organization and mechanisms of electronics industry in Uzbekistan:

The Radio Electronics, Electrical Engineering and Instrumentation Concern was reformed and established by Presidential Decree of 21 January 1994 on measures to further deepen economic reforms, protect private interests and develop entrepreneurship.

The Association “Uzeltexsanoat” in accordance with the Decree of the President №2123 the Republic of Uzbekistan of February 6, 2014 “On Measures to Improve the Organization and Further Development of the Management of the Electrical Industry of the Republic in 2014-2018” was reorganized into a joint-stock company.

On 4 January 2019, in accordance with Presidential Decree №4090 on measures for the further development and enhancement of the export potential of the electrotechnical industry, the Association of electrotechnical enterprises of Uzbekistan (Association “Uzeltexsanoat”) was transformed.

The main tasks of Association “Uzeltexsanoat” are:

(i)developing a sustainable industrial development strategy as a single complex for the processing of raw materials, the production and export of high-value-added finished products; (ii)research of the demand situation for electrical products in domestic and foreign markets, and on this basis implementation of comprehensive measures to promote the development of new types of products, saturation of the domestic market with domestic electrical products of high quality; (iii)assistance in wide attraction of investments, primarily foreign ones, for development of high-tech production of electrical products, modernization; (iv)taking comprehensive measures to improve the system of standardization and certification in the field of the electrical industry by harmonizing it with international requirements and standards; [3]

Turning to foreign expertise conducted on electronics sector of economy, in several nations, different initiatives, modules, and structures have been put in place to organize and change the electronics sector.

According to Azerbaijan experience on quality management structure of electronics industry which is considered to be one of the key component in organizational and structural aspect of this sector:

In the electrical industry, a quality product is a complex means of production that stands out for its technological, economic, social, and environmental qualities, holds a competitive advantage, fully satisfies consumer demands and international standards, is less susceptible to the influence of internal and external factors, and draws the buyer's attention with its appealing appearance and quality as a result of which it should be managed.

Materials and Methods

In order to eliminate the existing shortcomings in the process of organization and management of QMS (quality management structure)in the enterprises of the electrical engineering industry, a classification of normative and technical documents, as well as quality management bodies, which we consider necessary to apply, has been formed (Table):

Management of the activity of the body controlling the quality of products in the electrical industry [4]

Enterprises	Criteria	TNS that need to be applied in practice	Quality control official management (department, group)

Micro	-The number of employees is up to 10 people -annual income 200 thousand manat	Technical conditions, norms, standards	The main control is carried out by the manager, the principle of self-control is preferred.
Small	-number of employees 11-50 people -annual income from 200 thousand to 3 million manat	Technical conditions, norms, standards -Enterprise standard -National standard	Authorized specialist-manager for quality control
Medium	-number of employees 51-250 people -annual income from 3 million to 40 million manat	-National standard -Enterprise standard -Field standard -GOST, API, AS, ISO series	Authorized department for technical quality control Supervisors on the stages of the production process in the workshops Close coordination with other departments of the enterprise
Large	- number of employees is more than 251 people -annual income over 30 million manat	-National standard -Field standard, -ISO, GOST, API, AS	Deputy Director for Quality; Departments of quality management, quality planning and quality technical control. Experienced specialists in the field of production - testing, analysis of waste products, non-ferrous metal waste, product export, control of finished products in the warehouse
Source: The table is compiled in accordance with the author's proposals, taking into account international experience in Azerbaijan.			

According to the ideas of Hanh Song Thi Pham , Anh Ngoc Nguyen & Andrew Johnston based on Vietnams electronic industry:

Vietnam's membership of the WTO from 2007 enabled the country's electronics sector to grow significantly. By 2016, Vietnam was the 12th largest electronics exporter in the world and the third-largest in ASEAN (Ministry of Industry and Trade of Vietnam 2018). By 2017, the export turnover of electronic products exceeded $70 billion (Ministry of Industry and Trade of Vietnam 2018). As around 95% of the export turnover of electronic products belongs to foreign firms (Ministry of Industry and Trade of Vietnam 2016), the rapid growth of the Vietnamese electronics sector can be attributed to the multinational enterprises (MNEs) establishing their production hubs in Vietnam. By 2017, there were around 600 foreign electronics firms located in Vietnam, of which around 52% were the component and part producers (An 2017). Indeed, a majority of domestic enterprises operate in low-end segments of the electronics value chain, producing components, with the localization rate of only 20–30%.

Behind this transformation is the Vietnamese government's 'Master Plan for the Electronics Industry' issued in 2016 which set out an ambitious vision for 2020, including: (i) generating half million new jobs, a significant portion of these being

engineers, technicians, and middle managers; (ii) complementing these jobs with the development of domestic research capabilities; and (iii) shifting the initial concentration on the production of low-margin consumer goods towards special-use electronic products and production of materials for use in components.[5]

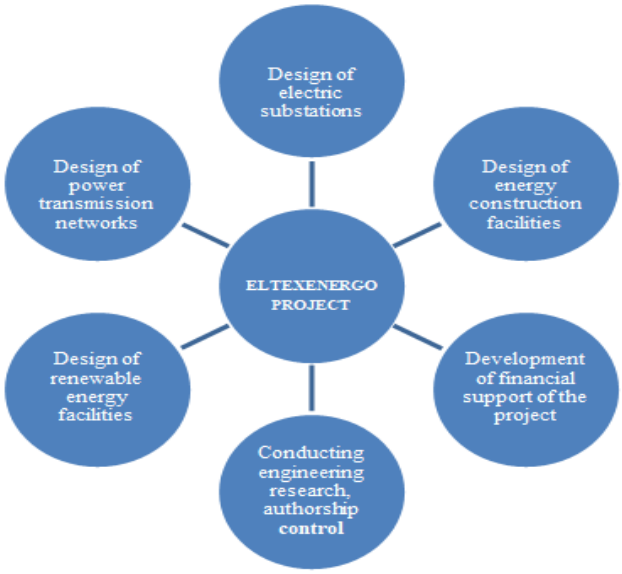
We find that after thirty years of market and trade liberalisation, giving investment incentives to attract foreign investors, the electronics industry has significantly developed and become one of Vietnam's chief export earner and the leading contributor to manufacturing value-added and employment. However, in terms of technological progress, Vietnam's electronics industry has made relatively limited achievements. Unlike the experience of Korea and Taiwan where local firms have driven the catchup process, but similar to Malaysia's experience (see Rasiah 2010), MNEs have dominated electronics production and exports in Vietnam. Many domestic firms have been able to produce inputs for use by international brands, but not been capable of developing their own brand names in the international electronics consumer market. We conclude that the market and trade liberalisation reforms alone did not deliver the desired technological upgrading for domestic firms in Vietnam's electronics industry. For this to happen, it would require careful policy design, analysis and coordination to ensure that incentives given in conjunction with the enforcement of responsibilities. In other words, it could be briefed that Vietnam's use of rent based policy measures was not implemented as well as it could have been.[6]

Discussion and results.

In accordance with the Decree of the President of the Republic of Uzbekistan "On measures to deepen economic reforms, protect private property interests and develop entrepreneurship" dated January 21, 1994, Uzbekistan took its first step into the electronics industry.

After this critical step of the country towards prospect of electronics manufacturing, the first organization, "Uzeltexsanoat", appeared on the land of the state. Later, the Association "Uzeltexsanoat" in accordance with the Decree of the President №2123 the Republic of Uzbekistan of February 6, 2014 "On Measures to Improve the Organization and Further Development of the Management of the Electrical Industry of the Republic in 2014-2018" was reorganized into a joint-stock company. In addition, "Uzeltexanoat" Uzbekistan radio-electronics, electrotechnics and equipment industry enterprises association includes a total of 36 enterprises and organizations such as "Elektrterm" leased production association, "O'zelektrapparat" scientific and industrial association, "Elektrsignal" scientific and industrial association and so on [7].

Designing and engineering center of Uzeltexanoat [8]



Moreover, Members of the Association's businesses specialize in four main areas of business: manufacturing cable-wire products, manufacturing industrial power and electric equipment (transformers, substations, switchboards, elevators, motorcycles and trailers, agricultural equipment, spare parts and components for automobiles, etc.), manufacturing home appliances and consumer electronics (TVs, refrigerators, air conditioners, etc.), and manufacturing elevators.

2009 saw a total of 372,7 billion sums (245 million USD) in output and services provided inside the "Uzeltexsanoat" system, representing a 117,2% increase over 2008. The main markets for the products are in the CIS and Central Asian regions, with exports in 2009 totaling 68,9 mln. USD [9].

Another one of the largest suppliers of the market of Uzbekistan is Artel. Artel Electronics was founded in 2011. Modern techniques and technology are used to make ARTEL household appliances, which are in line with current trends. By researching and putting to use the knowledge of global producers of home appliances, we develop cutting-edge, simple-to-use items that our customers genuinely love. The complete line of ARTEL household appliances is made in Uzbekistan and is a 100% national brand, meeting the highest quality criteria.

The hardware of the top global manufacturers, such as COMI, ULVAC, Inficon, and others, is installed in the ARTEL manufacturing facilities. These manufacturers specialize in the production of complicated home appliances and equipment for process lines. The production procedures are entirely automated thanks to high-tech equipment, and electronic monitoring systems are used to guarantee the integrity of transactions at every level.

Production revolution of the company:

- the production of gas stoves in the city of Tashkent (2011).
- production of televisions and air conditioners in Tashkent (2012).
- the production of refrigerators and electric mini-ovens in Tashkent (2013).

- production of automatic washing machines in cooperation with Samsung (2017).

- becoming an accredited supplier and partner of "Coca-cola Bottlers Uzbekistan" (2018). [10]

In 2020, Artel's export volume amounted to more than $80 million. The share of Artel in the market of semi-automatic washing machines in Kazakhstan and Kyrgyzstan reached 50%, and in Tajikistan - 70%. In addition, Artel's share of the cooker market in Kazakhstan reached 65%. Thus, the total amount of sales of Artel home appliances for 2020 reached $80 million.[11]

Philosophy of HR strategy - value model of artel's HR policy - 5k:

Our 5Ks are effective management of a team of professionals to achieve high results and strive for continuous development.

Quality is the main value of the company, emphasis on continuous quality control of products and business processes in the Company;

Competence - knowledge and experience of employees necessary for the successful operation of the company;

Communication is an open connection between employees, as well as between employees and company management to solve various business problems aimed at making a company profit. One of the communication tools is the use of modern information technologies;

Creativity - the creation and proposal of new ideas that are aimed at continuous improvement of both products and business processes in the Company;

Team spirit - the development and achievements of SE "ARTEL" depend on whether we are like-minded people who are united by common goals, traditions and culture of behavior. [15]

The implementation of 5 wide-accepted ways of transform electronics industry in Uzbekistan:

First, encourage a few significant international anchor companies to establish fully mobile production in Uzbekistan. like Nokia did in 2006, when it assisted a significant number of component makers in finding adjacent locations. Uzbekistan has a big enough local market, the necessary knowledge, and export potential to establish itself as a prominent mobile manufacturing hub. This approach for PCs right now may not be justified due to low PC penetration.

Two, support Uzbekistan component manufacturing facilities. We may begin by producing parts and components out of plastic and sheet metal. These make up 30–40% of the cost of the final product, and the country possesses the necessary knowledge.

Three, Establish a system of import credits for producers. Give them permission to import components duty-free for their usage based on the volume of manufacturing. At current time, not every component can be produced in Uzbekistan. In order to

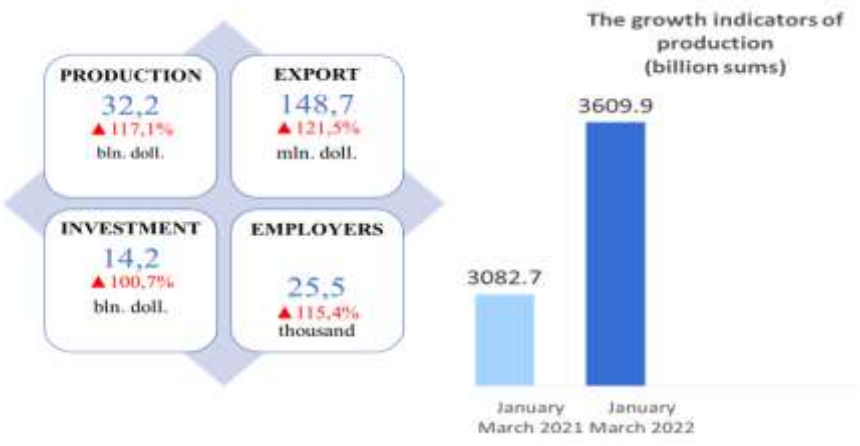
guarantee a timely supply of components, set up component hubs close to the ports. This will make it easier for thousands of units to complete their local and foreign orders. Business justification: 4-6 weeks for imports and high cost of storing in China, Hong Kong, and the UAE.

Bonded Cargo facilities will serve as component hubs. Vendors will be able to import and store components without having to pay duty as a result. The hubs will stimulate the growth of the indigenous electrical and IT hardware industry.

Five, Align the State and Center incentives. Numerous States provide considerable incentives, such as refunds of State GST. However, while making a decision, an investor takes into account the federal and state governments as well as other incentives. States should have these documents available when creating incentive programs.[13]

Uzeltexsanoat association, in turn, is making a significant contribution to the economy of Uzbekistan by carrying out transformation works in electronics. This is based on some of the methods of transformation mentioned above, in order to be competitive in this age of rapidly developing competition, in order to produce according to world standards.

According to recent statistics, today, 87 enterprises are members of the association, including cable and wire products - 15, household appliances - 43, and electrical engineering products - 29. Currently, the number of employees in the enterprise is more than 25,500. Depending on the results of January-March 2022, the volume of product production by joint enterprises reached $32.2 billion and a growth rate of 117.1 percent was achieved. A total of 148.7 million dollar products were exported to foreign markets. Compared to the same period last year, a 1.4 times growth rate was achieved within the framework of the investment program. 14.2 million dollar investments were absorbed.[14]



In addition, the Artel company is also making great strides towards development. It is making many transformations in this regard.

Project 1 Title - «Organization of production of mobile phones»

№	Product Title	Forecasted volume of production in 1st year of project implementation (in K pcs)
1	GSM standard Mobile phone 800 and 1800 with integrated video camera	1000,0

№	Project Cost, incl.	Unit	Cost	Sources of Financing			
				Own funds	FDI	Public funds	Credits
1	Construction works	Mln USD	2,5	-	2,5	-	-
2	Equipment	Mln USD	10,5	-	10,5	-	-
3	Floating capital	Mln USD	2,5	-	2,5	-	-
	Total:	Mln USD	**15,0**	-	**15,0**	-	-

Financial part (cost of the project:

Expected results from realization of the project: Volume of manufacture and sales revenues:

- ✓ Approximate sale price of the item - 60,0 USD;
- ✓ Approximate payback period of the project - 4 years

Product Title	1 year		2 year		3 year		4 year	
	Qty (K pcs)	Amount (Mln USD)	Qty (K pcs)	Amount (Mln USD)	Qty (K pcs)	Amount (Mln USD)	Qty (K pcs)	Amount (Mln USD)
GSM standard Mobile phone 800 and 1800 with integrated video camera	1000,0	60,0	1250,0	75,0	1500,0	90,0	2000,0	120,0

Project 2 Title - « Organization of production of acoustic systems »

№	Product Title	Forecasted volume of production in 1st year of project implementation (in K pcs)
1	Car Audio speakers	50,0
2	Loudspeakers for consumer electronics	10,0

Financial part (Estimated cost of the project):

Expected results from realization of the project: Volume of manufacture and proceeds:

[15]

№	Project Cost, incl.	Unit	Cost	Sources of Financing			
				Own funds	FDI	Public funds	Credits
1	Construction works	Mln USD	1,0	-	1,0	-	-
2	Equipment	Mln USD	2,5	-	2,5	-	-
3	Floating capital	Mln USD	1,0	-	1,0	-	-
	Total:	Mln USD	**4,5**	-	**4,5**	-	-

Product Title	1 year		2 year		3 year		4 year	
	Qty (K pcs)	Amount (Mln USD)	Qty (K pcs)	Amount (Mln USD)	Qty (K pcs)	Amount (Mln USD)	Qty (K pcs)	Amount (Mln USD)
Car Audio speakers	50,0	1,0	100,0	2,0	250,0	5,0	500,0	10,0
Loudspeakers for consumer electronics	10,0	0,5	20	1,0	40	2,0	50,0	2,5

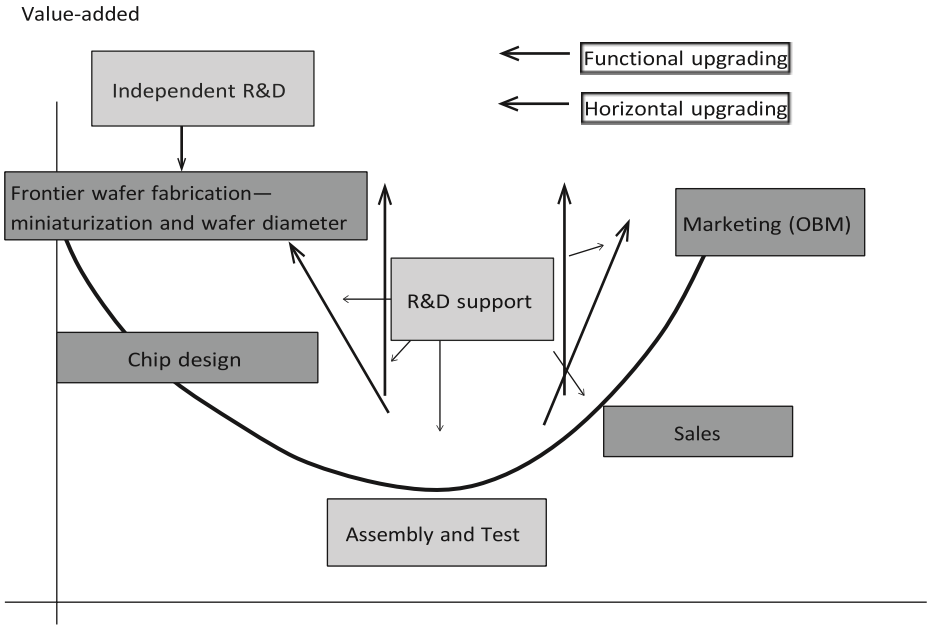
Conclusion and recommendations

After studying the organizational and economic mechanisms for planning the development of the economy with the aid of the electronics industry, we may conclude that the processes of transformation demand attention from the private sector of the economy as well as from the state. The most crucial element in the growth of the nation's economy and the continued improvement of the standard of living for its citizens is the establishment of sufficient businesses and factories to supply the

growing demand for electronic products. Even while the number of businesses and organizations making electronic goods is growing across the nation, there are still not enough of them to satisfy the high level of consumer demand.

A significant portion of the nation's GDP is contributed by the export of several electronics-related goods. On the other hand, while certain electronic devices' components are made in the nation, the majority of them are imported, which has a negative impact on the nation's economy. The key to resolving this issue is to learn from and implement in our own businesses and factories the modules and structures of the nations that have successfully organized clusters in this industry.

The analytic framework for analyzing technological upgrading in the semiconductor industry is shown in Figure7.3. The first dimension of technological upgrading follows the functional elements of catch up in which semiconductor firms integrate front- and back-end operations, while some relocate or upgrade to participate in R&D, integrated circuit (IC) design, and wafer fabrication. The former can be referred to as functional integration and the latter as functional upgrading. Integration activities are not classified as functional upgrading if they are limited to the merging of low value-added activities—for example, the addition of assembly to test activities in wafer fabrication. Instead, they are referred to as functional integration without upgrading.



Stages in value chain

Figure7.3. Value chain of ICs, Source: Drawn by author from interviews with firms.

The second dimension of technological upgrading follows from the deepening of the same functional activities as semiconductor firms absorb best practices, which include cutting edge inventory and quality control systems, and adaptive engineering and R&D support to upgrade functional activities to raise plant productivity. Training

and skills development ensure high level of competency among the workers to perform continuous improvement at the workplace.[16]

REFERENCES:

1. Muminova, E. A., Uraimzhonov, A.R. (2022). Improvement of transformation processes development mechanisms of electro technical industrial enterprises and expansion of their economic potential in the field in Uzbekistan. SJ International journal of theoretical and practical research, 2 (9), 57-65.
2. A.F.Ilham, R.K.Iskandarov (Specialty: 5312.01 "Sectoral economy"). Improvement of organizational and Economic mechanisms of quality Management system in the electrical Engineering industry of Azerbaijan(Ganj-2021).
3. Official website of "Uzeltexsanoat" https://uzeltech.uz/en/association/
4. A.F.Ilham, R.K.Iskandarov (Specialty: 5312.01 "Sectoral economy"). Improvement of organizational and Economic mechanisms of quality Management system in the electrical Engineering industry of Azerbaijan(Ganj-2021) http://www.aak.gov.az/upload/dissertasion/_qtisad_elml_ri/Avtoreferat_F_A__2021,_15_may1.pdf .
5. The book named "The Practice of Industrial Policy" edited by John Page and Finn Tarp.United Nations University World Institute for Development Economics Research (UNU-WIDER) Katajanokanlaituri 6B, 00160 Helsinki, Finland www.wider.unu.edu .
6. Hanh Song Thi Pham , Anh Ngoc Nguyen & Andrew Johnston Journal Of The Asia Pacific Economy https://doi.org/10.1080/13547860.2020.180905 .
7. Decree of the Cabinet of Ministers of the Republic of Uzbekistan, No. 144 dated 17.03.1994 https://lex.uz/uz/docs/-807180#-807209 .
8. Official website of "Uzeltexsanoat"https://uzeltech.uz/wp-content/uploads/2022/09/White-Blue.-Colorful-Business-Mindmap-Brainstorm-5.png
9. Investment proposal for the project "Organization of production of mobile phones" by "Uzeltexsanoat" authorities https://www.jp-ca.org/data/investmentoffers/fiezprojectsdescription/electronics/electronics..pdf
10. "Artel" company's official website.https://www.artelgroup.org/manufacture/
11. "Gazeta.uz" official web page. https://www.gazeta.uz/ru/2021/01/09/artel/
12. "Artel" company's official website, strategy category . https://www.artelgroup.org/hr-strategy/ .
13. Ajay Srivastava, 5 ways to transform electronics industry September 09, 2022 - Updated 09:21 pm IST https://www.thehindubusinessline.com/opinion/5-ways-to-transform-electronics-industry/article65867418.ece

14. Official website of “Uzeltexsanoat”, category of statistics. https://uzeltech.uz/uz/statistika/

15. Investment proposal for the project “Organization of production of mobile phones” and ““Organization of production of acoustic systems” by “Uzeltexsanoat” authorities https://www.jp-ca.org/data/investmentoffers/fiezprojectsdescription/electronics/electronics..pdf

16. “The Industrial Policy Experience of the Electronics Industry in Malaysia” by Rajah Rasiah.