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SCIENTIFIC REPORT

COVID-19 SUSTAINABILITY OF THE CABLE INDUSTRY: RESULTS AND TRENDS

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ABSTRACT

Purpose. The purpose of the article is the analysis of the resilience of the cable industry to the negative impacts of the Covid-19 pandemic.
Research methods: observation method, method of assessing the dynamics of statistical data, method of comparative analysis.
Results. It was revealed that the work of cable enterprises was directly influenced by actions to block and temporarily stop production; as well the cable industry has been severely impacted by falling demand from other industries for which it supplies products. The article establishes that for Russia such industries were the construction industry, the oil industry, mechanical engineering, energy enterprises and aircraft manufacturing enterprises. These enterprises sharply reduced production volumes in mid-2020, which negatively affected the supply and production of cable products. The article also analyzes the influence of such a factor as changes in prices for raw materials cables' production.
Conclusions. In general, it was concluded that despite the difficult economic conditions, the cable industry in Russia did not suffer as much as other sectors of the country's economy, since the business model of the cable industry has elements of sustainability.

Key words: *Cable industry, Covid-19, sustainable development, Business Resilience, factors of influence; sustainability*

JEL Classification: *L60; L16*

INTRODUCTION

The Covid-19 pandemic has affected all elements of the economy's structure, although the crisis was more noticeable in some industries and spheres of activity, while in other industries indicators and working conditions have changed more weakly. However, the real interaction and interdependence of most sectors of the economy with each other in a globalized world is high and complex. This is expressed both in the individual influence of entire sectors of the economy on each other, and in the total influence on other sectors and industries.

One of these industries, which is important for many other industries, is the cable industry. Cable products are used as components in the production of all technical products (from light bulbs to spaceships and weapons), as a main component in power lines and electrical networks and in many other areas of production and everyday life. The important role and influence of cable production on the development of electric power industries, including alternative energy, on improving energy efficiency and energy saving of various companies, enterprises and organizations is emphasized in modern studies [1-2]. Within the framework of the "Green smart city" concept the place and role of cable products is discussed in the context of calculating the total and maximum demand for power from consumers, determining methods for distributing and transferring the bulk of the power to a distribution substation and other issues related to ensuring the operation of the entire power grid of a smart cities [3].

In turn, the cable industry is quite dependent on the activities of other sectors of the economy, as well as on the macroeconomic indicators of the world development and national economies. This relationship is clearly seen when analyzing the supply chain network for cable products for different industries and sectors [4]. Accordingly, the Covid-19 pandemic has also affected the activities of cable industry enterprises.

METHODS

An integrated analytical approach was used to study the main trends and dynamics of the cable industry development. This approach includes methods for processing and analyzing statistical data by types of products and main directions of products supply, including export volumes. These indicators are important from the point of view of assessing the impact of Covid-19 in the international context. This analysis allows to draw conclusions about the possible impact of the economic situation in other countries on the production activities of the cable industry in terms of changes in the structure and volume of products produced. The method of comparative analysis was also used and the data on the production volume by the main commodity groups were evaluated.

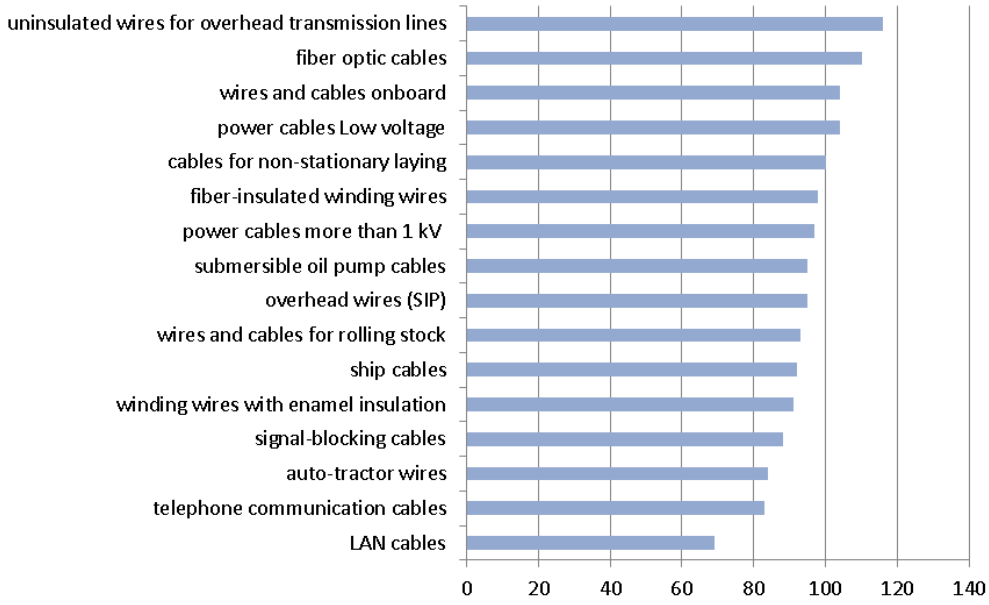
The peculiarity of the reporting on the results of the cable industry enterprises is that the reports are presented in two dimensions: 1) in value terms; 2) in tons of copper

used for the manufacture of products. Therefore, the method of observation and assessment of the dynamics of actual data on prices for copper as the main raw material for the cable's products production was also used for the analysis.
The research is based on statistics and market data on cable industry.

RESEARCH RESULTS

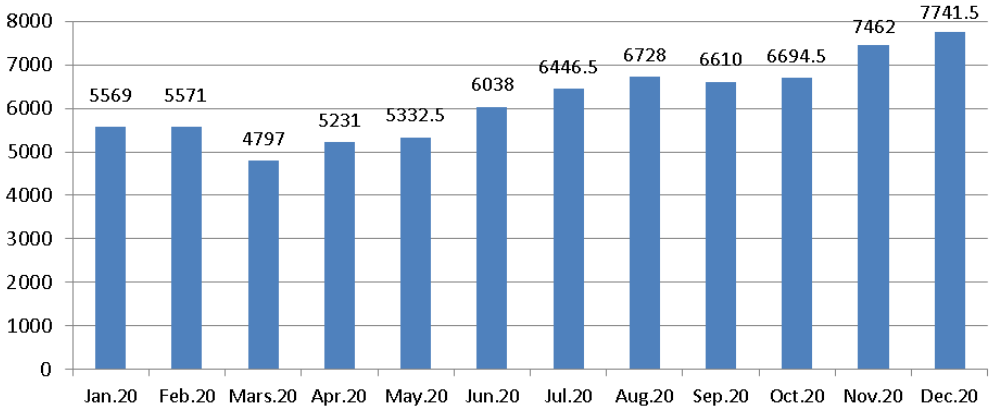
An assessment of the cable industry resilience in Russia in the context of Covid-19 has showed that, in general, the industry did not suffer from the lockdowns, closing of enterprises, reduction in traffic and other negative for business factors and actions of the governments of many countries.
The production volume of the 5 main types of cable in 2020 increased compared to 2019, while the rest slightly decreased according to the data of the Electric Cable Association. In particular, a steady and large increase in production was shown by all types of cable products with an energy purpose: insulated wires for overhead transmission lines, overhead wires (SIP), power cables with a voltage of no more than 1 kV Low voltage, power cables over 1 kV Power cable (Fig. 1).
This is explained by the fact that even in the conditions of COVID-19 the production and sale of electrical wires and cables have the highest stability, since it is this sub-industry that "can make a potential contribution to sustainability in terms of energy efficiency" [1, p.1].
In terms of assessing the impact of the main elements of the price structure of cable products formation, an analysis of the cost of copper is used, since 50% of the cost of the cable is the price of copper. In addition, the rate of major world currencies affects the prime cost of cable products. Thus, the prices for cable products generally depend by 80-90% on the exchange rate and on the situation in the copper market. The dynamics of the cost of copper as the main material for cable in 2020 is shown in Figure 2.
Figure 2 shows a significant rise in copper prices towards the end of the year. Compared to the beginning of the year prices rose by about $ 2,200, or 39%. In March-April-May there was a slight (relative to the final annual data) decline in prices due to the slowdown in business activity around the world. The growth in copper prices observed in 2020 allows predicting an increase in prices for cable products.
Talking about industry dependence, most of the demand for cable products falls on 4 sectors: oil and gas industry, mining, construction and energy. An analysis of these states of the industries during the pandemic has helped to explain the situation in the cable industry [7].
In general, the pandemic was accompanied by a sharp decline in economic activity and a collapse in energy prices. There was a reduction in the demand for oil with an excess of its supply. The volume of the global oilfield services market decreased by about 19% in 2020 and the Russian market - by 20-25% [8]. As a result, the demand decreased and, accordingly, the production of oil submersible cables, power cables for oil production equipment, control and signal transmission cables, cables for operation in difficult conditions, cables for electric heating of oil production equipment and

other special types of cables. Demand for geophysical cables has decreased due to a decrease in investment programs for geophysical research. At the same time, the requirements of customers for technology and operational activity are increasing in this market that is reflected in the activities of related industries.



Source: [5].

Figure 1. Dynamics of production of the main types of cable industry in 2020 (in% to 2019)



Source: [6].

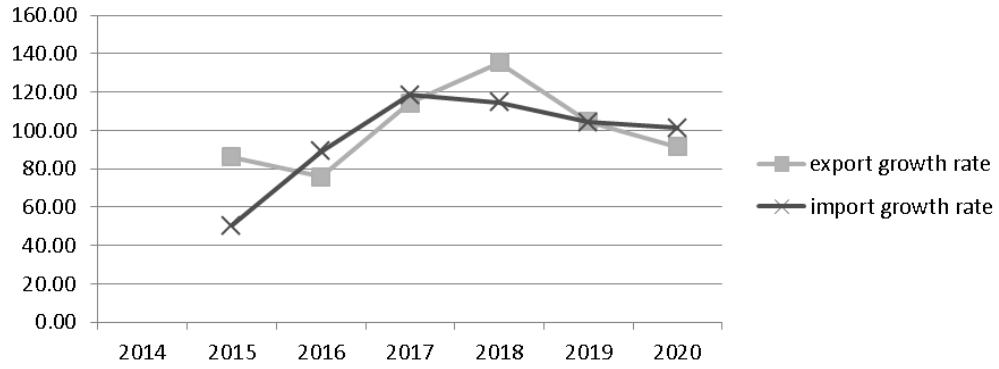
Figure 2. Copper price dynamics by months for 2020, USD per ton

The construction industry in Russia has not experienced a destructive impact. State support in the field of housing and social construction led to an increase in the share of construction in the domestic market by the end of the year, as well as to the construction of new medical infrastructure facilities. Therefore, the production of cable types used in construction remained at the same level and has even increased.

As for the functioning of other sectors of the economy, in 2020 there was a significant reduction in consumption in the sectors of mechanical engineering, metallurgy, railway transport, as well as in small and medium-sized enterprises. This was facilitated by a break in the work of the enterprise and a partial transition to a shorter working week. At the same time, the overall decline in demand from these industries for cable products amounted to about 3%, which is also not significant.

The second important direction of analysis, allowing giving a more accurate assessment of the degree of the cable industry resilience in 2020, is the analysis of the structure and dynamics of foreign trade in cable and wire products. First of all, it is a question of exporting products..

The volume of Russian exports of cable and wire products in 2020 amounted to about $ 404 million, which is 8.9% less than in 2019 according to a study by a marketing agency [9]. The main share in the structure of Russian exports of cable and wire products in value terms in 2020 is represented by electrical conductors for voltage under 80V (40.5%). The export of some types of cable has even increased. So in 2020, the growth of the fiber-optic cable segment amounted to + 28.5%. This type of cable is actively used by telecommunications and communications enterprises. The main buyers of Russian-made cable and wire products in 2020, as in previous periods, were Kazakhstan (28.8% of exports), Belarus (24%), as well as the United States, India and Romania. The dynamics of exports and imports of the cable industry in 2015-2020 is shown in Figure 3.



Source: [5].

Figure 3. Growth rates of exports and import of the cable industry, % to previous years

The analysis has showed that the Covid-19 pandemic also had a certain positive impact on the structure of cable production in Russia. So, many enterprises purchase raw materials and materials in Europe to produce optical cables. Since the epidemic began in the EU earlier than in Russia, this led to a decrease in prices for the corresponding raw materials. As a result, Russian enterprises have had the opportunity to purchase imported materials at a price lower than the usual one by about 20%. This has allowed many companies to improve their business resilience and operational efficiency.

Another interesting and positive consequence of the pandemic was that with the reduction in the production of cable products, the waste of copper and aluminum has decreased. Many scrap collecting enterprises suffered deficits and losses. This factor influenced the growth of primary aluminum consumption at UC Rusal. Many enterprises that previously used cheaper but lower quality secondary aluminum have switched to primary aluminum in the face of shortages. This had a positive impact not only on financial indicators, but also on the quality of the final products of aluminum consumers, which also increased the stability of the business.

The demand for the fiber optic cable group in 2020 continued to grow. The development of the fiber optic cable market is the part of the development of Russia. The fiber optic cable has important potential as telecommunications companies plan to roll out 5G networks and IT companies to create supercomputing and data centers over the next 10 years.

Also, worth highlighting is the development of products for the alternative energy. Solar energy has good prospects for development in Russia [10]. The production of cable and wire products for the nuclear industry is also expanding, where customers want a cable with a service life of 60 years. This is accompanied by long-term tests lasting about two years, where the aging of materials' samples and products is checked at temperatures from 100°C to 200°C [10]. But these are innovative products that form the basis of the economy and serve as the basis for further development. Therefore, an emphasis on innovative processes is a long-term strategy for successful operation.

CONCLUSIONS AND FURTHER RESEARCH

Modern economic conditions are such that a crisis or pandemic engulfs all spheres of human activity. Interdependence and mutual influence is observed, to one degree or another, in all industries. This aggravates existing problems or, conversely, helps to find common solutions. Crisis phenomena in one industry are immediately reflected in other industries, and the development that has begun spreads its impact on adjacent segments of the economy.

Analysis of business sustainability in the cable industry has showed a high uneven development of individual sub-branches and segments of cable and wire products. Part of the cable industry subsectors were able to maintain production volumes and even increase in the context of the global lockdown and the growing crisis in many sectors

of the world economy. These are sub-branches of production and sale of electrical wires and cables, as well as fiber-optic cables.
Those companies in the cable industry that use an innovative approach, focus on environmentally friendly and safe production, apply digitalization of production and sales, and focus on economy and energy conservation also have a positive trend. It is the new technologies that make the cable industry more viable and promising.
Further research will be devoted to clarifying data on the performance of enterprises in the global cable industry in 2020-2021, as well as analyzing changes in its structure and composition.
The number of cable manufacturers and suppliers numbered about 500 organizations before the outbreak of the pandemic. The cable market is oversaturated and highly competitive, where the struggle is mainly limited to price. In these conditions the consequences of 2020-2021 may turn out to be such that many enterprises will cease their activities without a sufficient margin of safety. For example, three major players in the cable market filed for bankruptcy by the end of 2020. There may also be an enlargement of players due to the absorption of smaller ones. There is now a large overcapacity on the market with new players appearing on a regular basis. Changes in the structure and composition of agents in the cable industry can generally affect the sustainability of this business.

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