

An Analysis of the Russian Amber Market: Industrial Trends, Governance and Market Competitiveness



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ABSTRACT

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The paper quantifies trends, patterns and controversies in the industrial amber market. To achieve the common goal, the amber market was assessed taking into account geographic data and companies' technology entrepreneurship opportunities in order to determine the competitiveness of the suppliers from economies with large amber reserves. The analytical study integrates a statistical approach and technical analysis of data, including correlation. The statistical approach describes the structure of an amber mining company through estimated profits. In a comprehensive way, the estimated indicators explain the amber industry's production and economic activities, with an emphasis on the Russian Federation. The findings suggested that the Russian Federation, with its Kaliningrad Amber Factory with a weak business infrastructure, is the global leader in the amber market. The economic interests of the company's corporate governance focus on exporting raw amber and rebooting the production system based on transparent and legitimate economic relations, and the development of own jewelry production facilities. The findings can be used by companies to plan effective growth strategies and prepare for future challenges in the amber industry, as well as by companies that plan to implement startup ideas in the amber deposit areas. In particular, the strategies may include investing in new technologies, cooperation with scientific institutions, development of processing facilities, compliance with international quality standards and product certification, as well as effective marketing strategies. These measures can help solve challenges and increase the position of companies in this area in the global market. Aimed at supporting the sustainable development of the amber industry, these strategies will help it achieve greater stability and success in the future.

1. INTRODUCTION

The pandemic has affected all levels of the national economy. As in other sectors, mining companies were forced to respond to the pandemic, ensure the safety of their employees and reliable supply chains. In 2021, the extractive industries faced complex and diverse risks, of which commodity prices were the main risk [1], mostly in developing economies due to the importance of the commodity markets [2]. The pandemic, along with the new reality manifested in the uncertainty about infection levels in various countries, was ranked second [1, 3]. The top three are rounded off by economic downturn and uncertainty, which reflect the volatility of economic productivity in the pandemic era [1].

Amber is one of the most valuable natural resources, and its market has a great economic impact on both producing countries and global consumers. The growing demand for amber, especially in the field of art and jewelry, makes this resource the object of close analysis. Zabyelina and Kalczynski [4] argue that the amber market has always been subject to price fluctuations caused by changes in supply and

demand. In 2011, the global supply of raw amber accounted for 60% of the global demand, with the price of USD 900 per 1 kg. The lack of amber jewelry contributed to the development of the amber industry, investments and technologies. Currently, the situation has radically changed in the opposite direction, where the global supply of raw amber exceeds the demand by 60%, and the price ranges from USD 330 to USD 480 per kg [5]. The amber price depends on many factors, including size, age, color and transparency [4, 6, 7].

The growing amber production also has a serious environmental impact. Such mining methods as deforestation and open quarries can negatively affect the ecology of the areas of mining. In addition, the economic aspects of the amber market are also important. Price volatility and export difficulties can affect the incomes of amber-producing countries and consumers.

In addition, the amber market also has global implications and reflects the geopolitical context. The key aspects of the study are the relations between amber-producing and importing countries, as well as the impact of international trade agreements and sanctions on the market. A deep analysis

of these factors can help develop strategies for sustainable and equitable management of this natural resource at the global level.

The largest industrial amber deposits are located in the Russian Federation, Lithuania, Latvia, Poland and Ukraine. Amber mined in these areas is classified as Baltic amber or succinite. The researcher suggests that 90% of the world's amber reserves are deposited in the Kaliningrad region of the Russian Federation. From a legal perspective, amber is not a gemstone, and its illegal mining is subject to administrative sanctions. This results in a fundamental problem in the amber industry - the enforcement agencies' unwillingness to fight the existing corruption systems [8]. Hence, in economies with amber deposits, the fight against illegal mining and trade is becoming an urgent issue.

For example, illegal amber mining in the Kaliningrad Region in 2017 amounted to 70-100 tons per year, while 453 tons were produced legally. Hence, illegal amber mining amounted to 25-50% [7, 9, 10]. Ukraine (Polesia) has the second largest amber deposit in the world after the Kaliningrad region, where 150-200 tons are illegally mined per year, with only 4 tons produced legally. The price for 1 kg of illegally mined amber is approx. USD 1,000 [11], with a market price of USD 1,100 for Ukrainian raw amber and USD 1,500 for Russian raw amber [5]. The difference in price is explained by the fact that Ukrainian amber deposits are located near the surface, and mining is carried out by an inexpensive hydraulic method [11]. In the Kaliningrad region, open-pit amber mining is performed at a depth of 40 to 70 m [12].

The illegal mining of amber is mostly carried out by local residents living in poorly industrialized areas with high unemployment rates, with amber mining being the only source of income [11]. These areas are plagued with endemic corruption [13], which prevents channeling revenues from natural resources to communities and governments, especially in resource-rich economies. The environment is also deteriorating due to increased Greenhouse gas emissions and can become a serious problem for achieving the goals of the Paris Agreement under the United Nations Framework Convention on Climate Change [14].

Dunne et al. [15] point to a direct link between the amber market and the country's political, legal and economic structures. Therefore, the only way to combat the underground economy in the amber industry is to tighten laws and regulations that will protect the national interests [6, 8, 16, 17]. Silver [18] has revealed that economies in which amber mining is poorly regulated at the legislative level have high levels of informal employment and death from accidents among the working age population, which results in unsafe workplace management practices. In this context, the informal economy becomes a starting point for organized crime [4], which is not limited to laws, regulations, red tape or burdensome tax regulations. It is less visible than the official economy and is often ignored by the authorities. Researchers argue that the underground economy results in not only lost tax revenues. It also involves international organized crime, which maximizes illegal income by engaging in several commodity transactions, for example, the trade in amber along with cigarettes and drugs.

At the present stage, the amber market in the Russian Federation faces serious challenges, starting with the problem of illegal amber mining. Amber mining in various regions of Russia does not always comply with the necessary legal norms and environmental standards. This situation puts significant

pressure on natural reserves and leads to the destruction of forest ecosystems and biodiversity.

To solve these problems of the amber market, it is important to develop effective legal and environmental regulations. The latter includes strengthening production controls, setting quality standards, and developing sustainable market management strategies. International cooperation can also be useful for developing common approaches to solving the problems of the amber market. These measures can ensure the sustainability of its use as a valuable natural resource.

The considered case studies emphasize combating illegal amber trafficking within the context of imperfect national laws and regulations, the imbalance between demand and supply on the amber market and informal activities on the basis of expert judgements. The authors were the first to analyze the global amber industry, with statistical evidence and an assessment of growth opportunities in the amber industry.

The research focuses on the amber market of the Russian Federation. It is important to justify this choice. This market has significant value in various aspects:

1. Geopolitical context. Russia is one of the largest countries in the world and has a considerable influence on world events. The Russian amber market can be divided into regional subsystems that reflect geopolitical relations between internal stability and foreign trade.

2. Economic importance. Amber is a valuable natural resource with significant economic importance. The amber market can be a source of income for many people and companies in Russia. In addition, this market can impact the economic situation in the region.

3. Environmental issues. Amber mining can have a serious environmental impact on the natural environment. Some businesses may engage in illegal activities that affect biodiversity and pollute nature. This information can be important for understanding environmental issues and possible measures to address them.

4. Socio-cultural context. Amber has great historical and cultural value in Russia. It has been used in the manufacture of jewelry and art products and can be important for preserving traditions and heritage.

5. International aspect. The Russian amber market may have connections with international trade relations and international control. Research into this market can be important for understanding international relations and sharing resources.

All these factors demonstrate that the amber market in Russia has a deeper information value. Therefore, it can be an object of attention for analysis and research.

The paper is structured in five sections. The first section covers global and local issues in the amber industry. The second section describes the research methodology. The third section provides the author's quantified vision of the research subject. The fourth section compares the findings with other similar studies. The final fifth section, describes the revealed trends, patterns and controversies in the industrial amber market, specifying the practical implications of the results and focus of further research.

The paper quantifies trends, patterns and controversies in the industrial amber market.

Research objectives:

- review the global amber market based on large industrial deposits and technological capabilities;
- study the corporate governance approaches in the amber industry, using the case of the global leader in this market;

- quantification of trends, patterns and controversies in the industrial amber market.

2. MATERIALS AND METHODS

This study presents the key analytics of the amber market from the supply and demand perspectives, as well as the evolution of the amber products, the processing and distribution sectors, pertaining to analysis of profits in the official economy and the limiting factor of the black labor market. The study’s theoretical background includes methodological approaches developed by Lawton [6], Volchetskaya et al. [7], Zabyelina and Kalczyński [4]. The experiential part and statistics are based on these reports: Amber Factory [9], Mikhaylova et al. [19], WIPO [20], and the national laws and regulations of the Russian Federation [21].

The functioning amber factory is a key source of information on the volume of amber production and sales, as the main participant in the industry. The Russian government provides data related to the legal and regulatory aspects of the amber industry. Academic research by Mikhaylova et al. allows for a scientific analysis of the situation. WIPO provides information about intellectual property and patents in the industry. These sources were chosen because of their credibility, relevance to the topic, and ability to provide the necessary information for a comprehensive analysis of the amber market. This careful preparation and justification of the chosen sources increase the reliability and relevance of the analysis results.

The analysis involved the countries with large *amber reserves* and resources: Belarus, Germany, Denmark, Dominican Republic, India, Indonesia, Italy, Canada, Latvia, Lebanon, Lithuania, Malaysia, Mexico, Myanmar, New Zealand, Poland, Russia, Romania, U.S., Ukraine, France, Japan. The inclusion of these countries in amber market research was due to their role in the extraction, processing, trade, and use of amber. The sources of data on these countries: the World Amber Council, the International Amber Association.

The analysis covers the period 2015-2022. The choice of this period for the analysis allowed the authors to study the current dynamics of the amber market, considering the possible impacts of environmental, economic, and regulatory changes during this time. The assessment of trends and challenges in the market of this period can give insights into its current state and prospects.

Methodological tools include analytical review, statistical approach, graphical analysis, and correlation. The analytical review was used to analyze the main market parameters, such as supply and demand, development of amber products, and amber processing and distribution sectors. A statistical approach was necessary to collect and process statistical data on the amber market, including the volume of production, processing, and export, as well as financial indicators. Graphical analysis, as a means of data visualization, presented

the results of analysis in the form of diagrams, graphs, and other visual images. Correlation identified statistical relationships between various factors in the market, for example, between amber mining and profits from it.

The interpretation of the findings is presented in the form of tables and figures. The study presents a detailed analysis of the market based on the geography of amber deposits in the context of economies and by segments of entrepreneurship, corporate governance practices in the amber industry, trends, patterns, and controversies for this market:

- a detailed analysis of the amber market includes an analytical review of amber deposits with an emphasis on supporting technology entrepreneurship as the basis for the company’s competitive advantage, which contributes to faster development and launch of goods and services in the global market [19-21]. Indicators covered: the number of large industrial amber deposits by economies; the number of patents issued for the country. The analytical assessment of the amber market which gives a holistic view of the raw amber geography, giving rise to the demand and supply of the product in this market, as well as the view of patent statistics, which are responsible for the innovations and technological change in the national economy;

- corporate governance practices in the amber industry are considered and analyzed statistically in case of the Russia-based Kaliningrad Amber Factory, which owns 65% of the global amber resources [12].

The statistical approach summarizes:

- collected analytical information on the factory’s structure (includes the factory and jewelry production) and the core indicators of production and economic activities (total amber reserves in the Primorsky quarry; the amount of mined amber, and specifically for jewelry production; total amount of raw amber sold by the factory: for export/and in the domestic market; sales of amber jewelry; amber losses when raw amber is sold by the factory) and their classification. The company’s block diagram describes estimated profits;

- trends, patterns and controversies of the analyzed market are identified on the basis of a quantification applied to the Russian amber industry [12] using the graphical analysis and correlations. The quantification covers a 5-year period (2015-2020) and includes data from the black labor market - the data on Primorsky quarry illegal entries for mining of amber and the financial performance in the official economy, which describes real incomes - the company’s net income for the calendar year. The collected raw data are visualized in the form of a bar chart or diagram, in order to arrange the resulting information on the trends in the industrial amber market and to assess the pattern of their distribution. Then, on the basis of raw data, hidden statistical patterns or controversies are identified using Excel's CORREL function. The input data for establishing correlations are presented below (Table 1).

Calculation formula: B3:G3 - the range of cells with the input data of the black labor market; B4:G4 - the range of cells with input data on the factory’s net income. Calculation result: $FX = \text{CORREL}(B3:G3; B4:G4)$.

Table 1. The input data for establishing correlations

1	A	B	C	D	E	F	G
2	Quantifications	2015	2016	2017	2018	2019	2020
3	Number of illegal entries into the amber mining areas	543	497	251	110	29	17
4	Net income, RUB million	144	418	1,759	1,174	975.6	620

2.1 Research limitations

The research is limited by insufficient statistics on the amber industry in the Russian Federation and other countries, as well as by absence of data on the underground economy pertaining to amber mining and lack of the academic community's interest in this area.

Research focuses on the flow of products and services on the global amber market, and describes trends, patterns and controversies in the global amber industry.

3. RESULTS

3.1 An overview of amber deposits

Available literature suggests that amber belongs to the widespread mineral resources and is a fossilized resin of conifers. According to the analytical study, amber deposits are found in 23 (11.6%) out of 197 countries. This suggests that the amber market is not large-scale and includes a small group of mining companies. The largest reserves of high-quality amber are concentrated in the Russian Federation, Poland, Belarus, the Dominican Republic, Myanmar and Japan. When it comes to the prospects for industrial development, the most significant deposits of amber are located in the Russian Federation in the Kaliningrad region (Primorsko-Palnikenskoye field) - total estimated reserves amount to 116,000 tons. Table 2 provides information on amber deposits in the context of technology entrepreneurship development in the amber industry.

3.2 Technology entrepreneurship in the amber industry

Table 2 suggests that Russia has the largest number of

patents for technological inventions in the amber industry among the analyzed countries (78 patents), and with Latvia and Mexico having the smallest number of patents (1 patent). However, whereas the technology entrepreneurship segment is assessed at the macro level of the Russian Federation, the arrangements for the development of technology entrepreneurship in the amber industry are insufficient. Technology entrepreneurship accounts for 0.02% of all activities pertaining to intellectual property, which does not contribute to the accelerated development and introduction of technological solutions on the global amber market. In the Russian Federation, amber is mined by Kaliningrad Amber Factory in the Primorsky quarry (on a continuous basis) and in Palnikenskoye field (from time to time). The company accounts for approx. 65% of the global amber market. Figure 1 shows the company's structure in the context of estimated indicators of production and economic activity in order to establish the structure and ratio of its internal links in proportion to profit.

The production system's estimated indicators (Figure 1) suggest that in 2020 only 0.5% of amber were produced out of 116,000 tons of the total reserve. Of the total annual production, 99.7% were sold in the form of raw materials; 0.3% in the form of jewelry products. More specifically, 1.4% of amber remains on the domestic market. The rest is exported, which makes it impossible to maintain best prices and generate income at the macro level. On top of that, sale of raw materials results in natural losses and shortages (amounting to 0.05%), in the absence of losses and shortages in jewelry production. Therefore, the Russian amber industry focuses on the global supply of raw amber, which provides added value in the process of its sale, without withholding income from best prices for amber products in the domestic market.

Table 2. Overview of the amber market in Russia and the world, 2020

No.	Country	Amber Deposits	Quantity of Patents
1	Belarus	Mikashevichsko-Zhitkovichskoye, Polesskoye field	X
2	Germany	Hannover, Bitterfeld, Usedom	28
3	Denmark	Skagen	X
4	Dominican Republic	La Toca, Pescado Bobo, La Bucara, Los Higos, Los Cacaos de Tamboril, Palo Quemado, La Cumbre, El Arroyo	X
5	India	Cambay	X
6	Indonesia	Jambi Mine, Lampung	X
7	Spain	Alava, Cave of El Soplao	X
8	Italy	Sicily	X
9	Canada	Herbal Lake Alberta, Cedar Lake, Banks Island, Cornwallis Island, Ellesmere Island	X
10	Latvia	Liepaja	1
11	Lebanon	Hammana, Dahr al Baydar, Jezzine	5
12	Lithuania	Klaipeda	X
13	Malaysia	Merit Block	X
14	Mexico	Simojovel, Solistahuacán, San Andrés Duraznal, Pantello, El Bosque, Totolapa, Juitiupan, Tuxtla Gutiérrez	1
15	Myanmar	Tanay	X
16	New Zealand	Oakland	X
17	Poland	Danzig, Jaroszuw Clay Mine, Belchatow brown coal mine	2
18	Russian Federation	Kanin Peninsula, Taymyr Peninsula, Sakhalin, Palnikenskoye field	78
19	Romania	Colti	X
20	U.S.	Malvern, Nantucket Island, Glendive, Issaquah, Sayreville Clay, Avalik, Alaska, Raritan Bay, Georgetown	6
21	Ukraine	Klesovo-Perzhanskaya, Karpatsky, Nizhny Dnepropetrovsk, Dubrovitsko-Vladimirskaya, Verkhnedneprovsk, Manevitskaya,	2
22	France	no data	5
23	Japan	Kuji, Hirono	5

Source: Mikhaylova et al. [19], WIPO [20], Government of the Russian Federation [21]

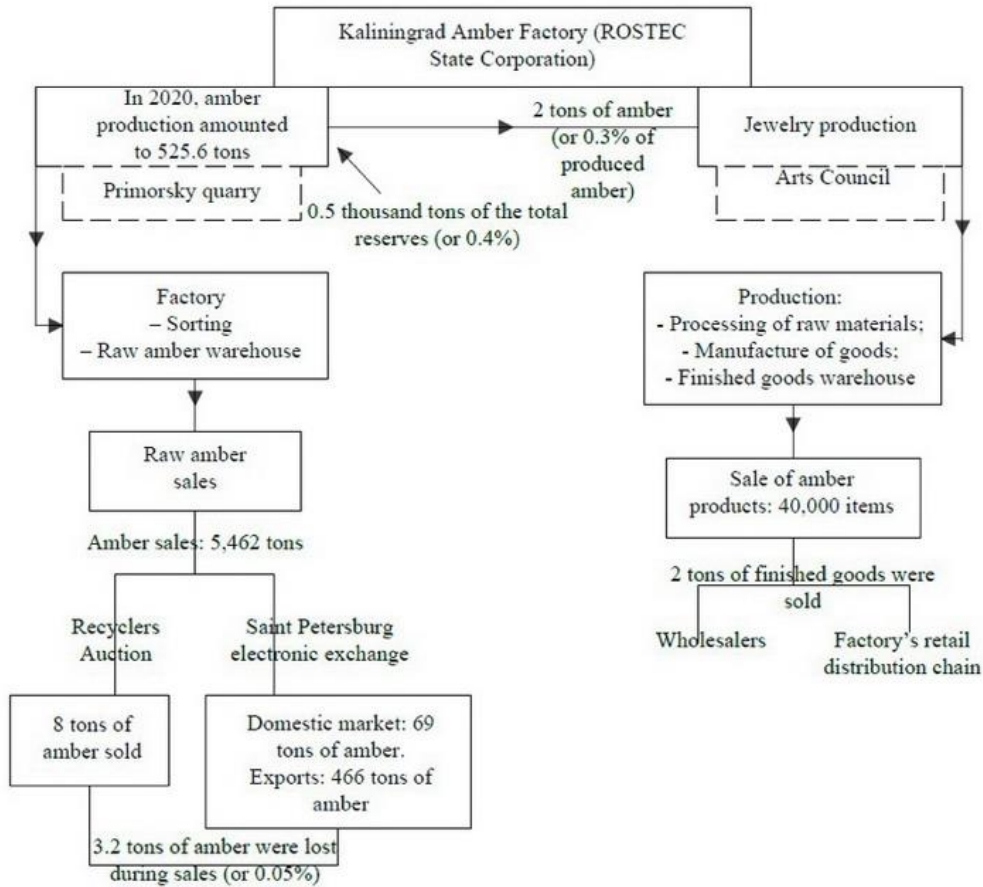


Figure 1. The company's amber production system

Source: Amber Factory [12]

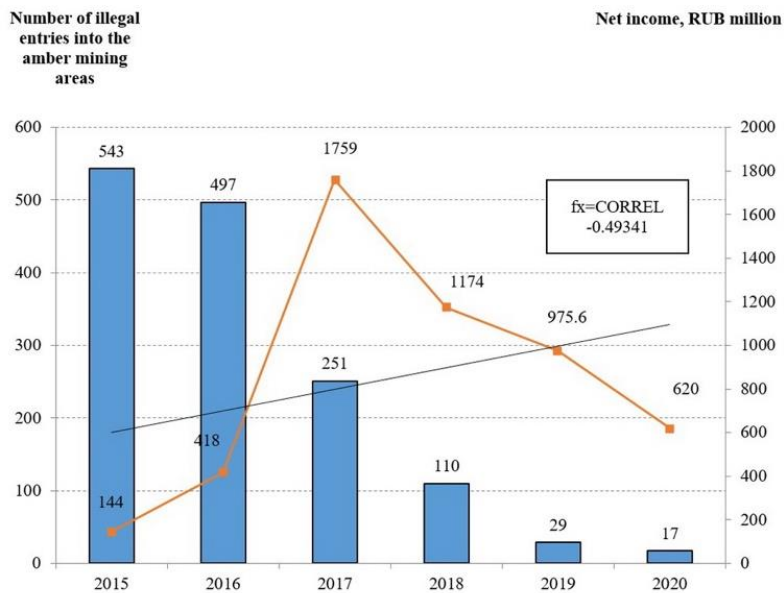


Figure 2. The Russian amber industry: trends, patterns and controversies

Source: Amber Factory [12]

3.3 Trends in the Russian amber industry

In order to present the actual picture of the research subject, with an emphasis on the Kaliningrad Amber Factory (Russian Federation), two types of economic activities were quantified (Figure 2):

- the black labor market - everything that is illegal - is measured by the number of illegal penetrations into the amber mining areas;
 - real income flows - everything that is taken into account by official statistics - the company's net income, respectively.
- Figure 1 showed that over the past five years the black labor

market in the amber industry tended to shrink, and in 2020 amounted to 3.1% of legal amber mining amid falling real income of the plant. Poor financial performance of production operations during the analyzed period, except for 2017, was caused by two factors: in 2015-2016, severe underground economy for amber mining was observed (from 497 to 543 illegal entries into the amber quarry area), which contributed to uncontrolled exports of goods and services from the Russian Federation; in 2019-2020, the pandemic's impact on all sectors, including the amber industry. To identify the relationship between the revealed trends and regularities in the amber industry, the correlation coefficient between the two data sets (the number of illegal entries into the amber mining area and the company's net income) was estimated. The correlation coefficient calculated with the CORREL function in Excel using the formula: $FX=CORREL(B3:G3; B4:G4)$ had a negative value (-0.49341), suggesting the adverse effect of the two types of economic activity on the factory's production system.

4. DISCUSSION

4.1 Global amber market analysis

The amber market is narrow and covers only 11.6% of the world. The analysis of the global amber market indicates the importance of an effective strategy for the development of this industry. The strategy can play a decisive role in the economic success of countries with rich amber reserves. However, it is important to note that this market currently covers only a limited part of the global volume. The development of an effective strategy for the use of amber resources is becoming a critical challenge for countries with potential in this area.

Increased participation in the global amber market can provide new opportunities for economic growth, infrastructure development, job creation, and improvements in the living standard of the population. However, this process also requires careful strategic planning and cooperation between the government, businesses, and the public. The analysis of the amber market can serve as a basic foundation for further research and development of effective strategies for using this natural resource.

4.2 Russian amber industry

The Russian Federation has the greatest opportunities among the participants in this market, with its large deposits in four geographical locations: Kanin Peninsula, Taymyr Peninsula, Sakhalin, Palmnikenskoye field. Currently, amber is widely mined at the Palmnikenskoye deposit by the Kaliningrad Amber Factory. The analysis also covers the achievements of the global amber market participants pertaining to the development of technology entrepreneurship. Despite the fact that the Russian Federation leads in terms of amber deposits, its amber industry essentially does not harness the country's existing knowledge, suggesting a weak business infrastructure at the company level and describing the amber industry as an exporter of raw materials. Shpakovskaya [22] argues that one of the reasons for the incomplete materialization of economic strength is attributed to the backwardness of marketing tools, which can be offset by comprehensive development and competent use of digital technology in marketing strategies.

4.3 Innovation and technology in amber industry

As the main institutional solution for the industry's innovative development, Pirogov [23] and Trifonov [24] suggest to build an innovative amber cluster, as a cutting-edge effective form combining the research, business opportunities and government capabilities on the basis of public-private partnerships. Malashenkov [25] reviewed the main phases of development of the Russian and global amber industries, suggesting that in recent years the company has undergone large-scale changes, involving the transition from the largest exporter of raw amber to the global leader in amber processing. The financial performance analysis of the Kaliningrad Amber Factory suggested that the production system's economic interests focus on sale of raw amber, and not on making amber products. Kelly [26] argues that the existing amber market has become a mass market and suffers from an oversupply from the Kaliningrad Amber Factory. Therefore, the excess supply exerts downward pressure on the prices. At the moment, the concentration of the amber market takes place in China, which prepares the ground for China to become the primary price setter for amber [27]. In 2016, Kaliningrad Amber Factory entered into a deal with a Chinese jewelry company for the supply of 680 tons of amber during 3 years, or 227 tons per year [27]. Yet, the factory used 2 tons of raw amber in own jewelry production in 2020, which is 113 times less. Therefore, the corporate governance at Kaliningrad Amber Factory focuses on the legitimate mining of amber and large supplies at a low price, on average USD 480 per 1 kg [5]. Furthermore, Kaliningrad Amber Factory's brand is a part of Rostec's portfolio, with one of the key tasks being the introduction of the technological structure and digitization of the Russian economy. The analysis revealed a contradictory conclusion about the impact of illegal amber mining on the factory's real income. On the one hand, the reduction in illegal amber mining has led to a decrease in the factory's real income. The primary reason is that the factory has historically relied on the availability of illegally extracted and cheap amber to support its operations. The sudden suppression of illegal mining disrupted the supply chain and caused a shortage of unprocessed amber, thereby decreasing the factory's profitability [12].

On the other hand, the factory's decision to switch to a legitimate full-cycle format was a strategic response to changing global dynamics. This transition aimed to bring the factory in line with international standards, increasing transparency and ensuring long-term sustainability. However, this process required significant investment in legal mining activities, technology, and environmental compliance, which initially affected the factory's financial performance.

The challenge is to balance the short-term economic benefits of illegal activities with long-term sustainability and legitimacy. Although illegal amber mining could temporarily increase the factory's revenue, it also posed legal and environmental risks. The transition to a legitimate business is a step towards sustainable growth and global competitiveness, but it comes with challenges. Consequently, the factory's path from dependence on the black labor market to a full-cycle logistics business model remains a subject of discussion in the industry. Kostikova et al. [28] explored the issues of illegal mining, black market and illegal exports of raw amber. The researchers analyzed trends in the development of the Russian amber industry, with the findings pointing to the lack of a consistent strategic approach to the industrial amber market

until 2016. Kostikova et al. [28] argue that the connection between the amber industry and the national economy has been lost, and the amber industry regulation is far from perfect. The findings pertaining to quantification, more specifically the correlation in terms of this study, explain the revealed contradiction as the transition of the factory's production and economic activities to a full-cycle legitimate business format, which is described by a transformational contradiction.

In the study, the obtained correlation coefficient was negative. This result indicates a negative impact of the number of illegal entries into the amber mining zone on the production system of enterprises. This issue is an open contradiction since the black labor market associated with illegal amber mining affects the legitimate activities of businesses and decreases their real profits. This situation is due to the structure of businesses. The latter rests on the concept of a transparent and legitimate company. This company operates in a globalized environment and undergoes drastic changes, including organic growth, technological transformation, and increased productivity by optimizing the production system. Thus, illegal amber mining negatively impacted the legitimate activities of enterprises. It decreased their profits and became an obstacle to the implementation of a transparent and legitimate company.

5. CONCLUSIONS

The findings of the analysis suggest that the Russian Federation has large industrial amber deposits and a poor technology entrepreneurship in terms of the amber industry infrastructure. In the global amber market, the Russian amber industry is operating in the environment of natural competitive advantages attributed to reserves and resources, though with limited business infrastructure, which does not make it possible to improve competitiveness of the offer for participants in this market. Kaliningrad Amber Factory is the main state-owned mining company in the Russian amber industry. The company's structure includes a factory producing raw amber and jewelry products. The company directs its economic interests to export raw amber. This approach causes losses in the sale but creates additional value. The current level of the underground economy as compared to the legitimate amber production tends to shrink amid logical fall in amber industry's real incomes due to oversupply in the global market and COVID-19. These principles of probabilistic and statistical processes taking place in the industrial amber market have their own reasons, which, when taken together, led to controversies between the two types of economy - the underground and official economies. It can be argued that the controversy results from the fact that the factory became a company with transparent financial reporting in a full-cycle format, which is described by a contradictory nature. The findings summarize the key points of the article, with the main focus on the contradictions between the illegal and official economies in the Russian amber industry.

This study provided a deep insight into the essence of this dispute, pointing out that a decline in underground amber mining may cause a temporary decline in the factory's profitability. However, this step is important in the context of the factory's transition to an official and sustainable business model that meets international standards and promotes sustainable development. This contradiction demonstrates the importance of balancing short-term economic benefits with

long-term sustainability and legitimacy in the amber industry.

There is a crucial need to improve technological entrepreneurship and increase the competitiveness of the Russian amber industry on the world market. For this purpose, it is important to invest in the development of new technologies, cooperate with scientific institutions, develop modern processing capacities, adhere to international quality standards and product certification, develop effective marketing strategies, support young entrepreneurs, ensure the sustainability of production and cooperate with other countries for joint market development and exchange of experience. This comprehensive approach can lead to sustainable and long-term success in the amber industry.

Application of the findings will contribute to the efforts taken by policymakers and other stakeholders who benefit from key analysts of the amber market in order to eliminate the economy's informal sector.

Future research on the amber industry's risks and its contribution to national income can build on current findings and develop them to address gaps in existing knowledge. In particular, research should broaden the analysis of risks affecting the amber industry, such as climate change, legislation, and market demand. Additional studies will better reveal what factors may threaten the sustainability of the industry.

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