

# Managing Coal Enterprise Competitiveness in the Context of Global Challenges

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## Managing Coal Enterprise Competitiveness in the Context of Global Challenges

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### Abstract

Increased geopolitical tensions and economic sanctions imposed by the U.S., the European Union, and other countries against Russian sectors of the economy have caused a slowdown of economic growth in Russia and significantly restricted access to international capital markets, creating many problems for coal enterprises due to the rapid growth of competition. Russian and Indonesian coal companies need to adopt coping strategies and implement effective management practices to successfully counter the various global challenges facing the coal sector. The article aims to develop coal enterprise competitiveness management in the context of global challenges in 2022, as exemplified by Russia and Indonesia, considering the main role of these two countries in global coal exports. The management process was empirically assessed, and a comprehensive qualitative focus group session was conducted to achieve this goal. Fifty-five top managers of Russian and Indonesian coal companies participated in the focus group session to collect data for identifying all the factors and indicators to be accounted for in a holistic assessment of the companies' competitiveness. Suggestions were worked out for the development of coal companies in Russia and Indonesia, regarding current changes, to increase their competitiveness.

### Keywords:

Global Challenges;  
Competitiveness Management;  
Coal Industry; Integral Assessment;  
Strategy; Enterprise;  
Russia; Indonesia.

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## 1- Introduction

### 1-1- Research Background

As soaring natural gas prices have made coal more competitive in many markets, international coal prices have in turn risen, hitting three all-time peaks between October 2021 and May 2022. Sanctions and bans on Russian coal have disrupted markets, and issues with other major exporters have contributed to supply shortages. With other coal producers

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7 facing constraints in replacing Russian output, prices on coal futures markets indicate that tight market conditions are expected to continue well into 2023 and beyond [1].

The global challenges that will significantly affect the competitiveness of coal industry enterprises in 2022 are:

- The instability of the global coal market, which creates risks of financial imbalance and the threat of bankruptcy for some coal companies, an increase in the number of unprofitable enterprises, and the need to liquidate them;
- The increased competition in the world regional coal markets among exporting countries;
- A possible reduction in global coal consumption for environmental and climate reasons due to the transition of individual countries to low-carbon development strategies;
- The observed increase in the share of renewable energy sources and natural gas in the energy balances of developed and developing countries;
- The development of other innovative and alternative energy sources, primarily hydrogen energy, as opposed to oil, gas, and coal.

Global challenges produce many systemic problems and their respective consequences for the coal industry.

The main systemic problems include:

- The need to improve the financial stability of coal companies; insufficient use of the potential for growth in labor productivity and the risks of man-made accidents;
- Negative impact on the environment and risks of introducing environmental restrictions.
- The need to improve the coal companies' financial stability is determined by the following:
- High dependence on export deliveries of coal and the situation on coal markets during the decline in world prices;
- Low competitiveness of a part of coal exporters, associated with a significant distance from sales markets;
- The level of domestic demand and competition between coal fuel and natural gas;
- The prospect of reducing the consumption of traditional forms of coal due to the transition to the consumption of its deep processing products;
- Unbalanced growth of operating costs for the production, transportation and transshipment of coal products in ports;
- Placement of mining facilities, determined by the geographical location of coal deposits;
- Lower labor productivity compared to competing countries-coal exporters;
- Dependence on imports of foreign technological equipment.

Russia is one of the world leaders in the production and export of coal, ranking sixth in the world in terms of coal production after China, the USA, India, Australia, and Indonesia (Russia accounts for about 5% of world coal production) and third in coal export after Indonesia and Australia (on the international market, Russia accounts for about 15%). According to the Russian Ministry of Energy, as of the end of 2021, coal reserves in the Russian Federation exceeded 400 billion tons. According to the Russian Ministry of Natural Resources, coal reserves in the Russian Federation are located in 22 coal basins and 146 individual deposits. Hard coal reserves are estimated at 120.4 billion tons (of which 50.1 billion tons are suitable for coking); brown coal reserves total 146 billion tons. Anthracite reserves are accounted for at 9 billion tons. About 174.6 billion tons (63%) of coal reserves are suitable for open pit conditions.

Competitiveness is considered a specific feature because it defines the basic modules of an enterprise to function so that the company can achieve high profit [2] in compliance with its main function, which is to meet the needs and demands of the consumers. Currently, businesses are facing increased difficulty and complicated business development conditions to achieve a competitive advantage. These conditions include the changing dynamics of globalization, turbulence in the company's operations, intensity of competition, rapid technological advancements and the changing political and economic landscape [3]. Companies are said to achieve a competitive edge when their management quickly engages in a product-related market niche [4]. Having a competitive advantage is one of the strongest assets for an organization in a competitive market. It is the means by which the company gains major market share, a long-term position, high profit, and revenue in the market. Competitiveness allows companies to excel in terms of growth in this modern age. Organizations with a powerful competitive advantage can eventually run their enterprises compared to their rivals [5]. Therefore, if the company is not offering a unique value chain in production, management, warehouse, marketing, etc., it will operate its business in the short run.

Economic competition contributes to the formation, development, and implementation of competitive advantages and protects the company's viability [6]. These are all aspects of managing company competitiveness. These variables

influence the selection and usefulness of the study topic. Gaining insight into competitiveness has become the main application for companies. Various types of concepts used by industries include enterprise competitiveness and service and product competitiveness [7, 8]. Product competitiveness is a company's property. To compete in the market with other similar products already present, it is advisable to have a unique and innovative product. Different parameters are reflected by this property, such as the technology, price of products, operational costs, and other norms and standards [7, 9]. A company's ability to manufacture such goods and services, which can attract more customers than the products and services produced by other competitors in the market, is known as an enterprise's competitiveness. In the business landscape, competitiveness can be distinguished into two types [10]: factor-related competitiveness and result-related competitiveness. Factor-related competitiveness refers to the company's ability to take actions on the basis of effective competition, for instance, in response to a changing market condition, changes in demand, skillful use of the resources, tension between the major suppliers, or other non-accidental factors. Result-related competitiveness, as the name suggests, determines the results of the existing competition. These include market share or the financial performance of the company in comparison to others in the industry.

Many factors are considered in determining competitiveness, such as price, quality, durability, and a set of other characteristics, including technology, sustainability in production, and R&D [7, 11]. When two companies offer the same product and service and are proportionally competitive in all mentioned factors, their level of competitiveness will differ because one company can offer better goods and services compared to the other company. The company establishes its competitiveness by leaving its competitors behind in terms of technology of products or services, skills of the management and employees, strategic planning, the range of products offered to customers, quality control, and the quality of the management system [7]. This will result in more loyal customers, who are the main participants in the success of any business.

Competitiveness further discusses the ability of an organization to design, produce, promote, and market products and services offered by the company better or more cheaply than its rivals [12, 13]. The issues associated with creating organizational and economic systems, models, and techniques for studying them, finding procedural guidelines for effective competitiveness management, and evaluating the level of companies' competitiveness are particularly pertinent [14]. All organizations have a high need for enterprise competitiveness management because of the continuous changes in technology, consumer perception, the environment, uncertainty in the economy, and financial conditions throughout the world. An enterprise competitiveness system is considered effective when it ensures the company's stable position in the market by which it can develop its competitive edge in this continuously changing environment [14, 15].

The competitiveness of an enterprise is considered a critical element in the market economy, as it refers to the ability of the enterprise to adapt to changing market conditions and to hold a strong yet significant position in the long run. The findings reveal that formal strategic planning evolves along similar lines in different industries and companies; however, the rate of progress might vary [16]. The progression can be understood based on the four phases illustrated in Figure 1.

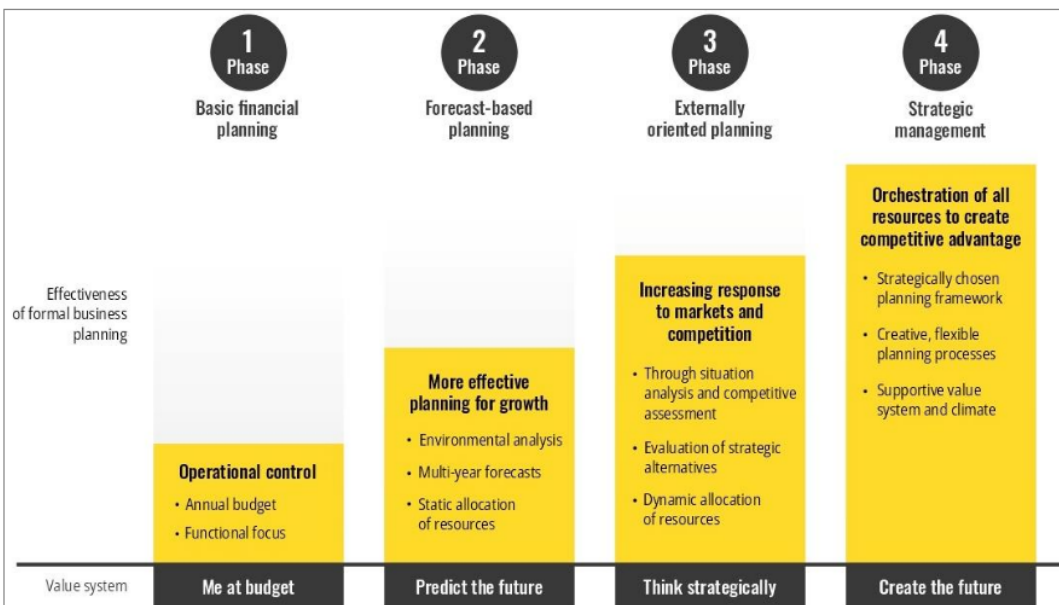


Figure 1. Four phases in the evolution of strategic and formal planning for achieving competitiveness

The four phases have been found to be useful in describing systems and processes to improve operational effectiveness, which ultimately leads to improved competitiveness management [16]. Hence, it has become a critically important factor to look into when considering market share and position. The failure of enterprise management can be determined by many factors, among which competitiveness is the most critical [17]. Environmental instability in response to the globalization process is deemed an active competitive problem for enterprises operating on a global level [18].

Since March 2022, Western countries have been actively restricting energy imports from Russia. On this account, prices on the world market are rising, and coal is becoming attractive again. In a crisis, cheap energy will be preferred to ecology without hesitation. In early April, the EU imposed an embargo on coal imports, and the ban itself only came into effect on August 10, 2022. The G7 countries also announced a reduction in dependence on Russian energy resources, including coal, whose import was limited by Japan, the USA, and the UK. Nevertheless, most countries continue to use coal: production and consumption are growing in the EU and US, and China is even planning to build new mines. According to the GlobalData forecast, by 2023, demand for coal in the energy sector will break the record of 2018. Against the background of the crisis, coal consumption in Europe increased by 12% last year. And in the United States, Asia, Africa, and Latin America, this increase was 17%. Russian supplies account for about half of the EU coal imports. Europe will reactivate coal mines to replace the import of Russian coal; all these activities are contrary to the plans for a "green-energy transition". The supply of coal to the EU from other countries is complicated. For example, Indonesia's capacity is limited, this country is mainly focused on the domestic market. Similar problems are being discussed in Australia. Alongside the above, Europe has been buying coal in record volumes since 2019—it is accumulating stocks before the start of the embargo. However, recently, investment in Europe's own coal industry has declined significantly. When old mines were exhausted, new ones were not opened, and it can be difficult for the remaining mines to increase production due to insufficient modernization. A complete replacement of Russian coal is indispensable without investing in infrastructure. At the same time, in its March 2022 report, the International Energy Agency called the transition from gas to coal a "short-term solution," which will increase harmful emissions but allow faster reduction of Russian gas consumption. However, this approach makes it illogical to increase investment in the coal industry.

### *1-2- Objective*

Our research pays special attention to the analysis of factors influencing the enterprise competitiveness management, and the search for procedural recommendations for this. Therefore, this research aims to investigate the procedural guidelines for the competitive advantage and competitiveness of coal industry enterprises in Russia and Indonesia. To achieve this goal, the following tasks were set:

- To analyze the economic nature of the competitiveness of coal industry enterprises;
- To determine the factors related to the competitiveness of coal industry enterprises;
- To evaluate the structural and functional model for competitiveness management at the coal industry enterprises in Russia and Indonesia;
- To develop recommendations for managing the competitiveness of coal industry enterprises in Russia and Indonesia in the Context of Global Challenges.

### *1-3- Significance of the Study*

This research is highly significant because of a limited number of studies and since some researchers did not specifically describe it in the context of the coal industry in Russia and Indonesia, which is especially important due to global economic sanctions against the Russian coal sector. Therefore, this research is of great help in the analysis of new procedural guidelines for enterprise competitiveness management in the coal industry in Russia and Indonesia. It highlights the guiding principles for effective competitiveness management, and illustrates factors related to the competitiveness of coal mining enterprises in Russia and Indonesia.

The reason for considering the coal industries of Indonesia and Russia is that these countries are major exporters of coal, and sanctions against Russia will affect global coal supplies, especially to European countries, which opens up opportunities for Indonesia to fill the demand gap by deliveries to countries that were once in the Russian supply chain. Thus, it can be concluded that the coal industries of the two countries are competitive now and, in the future, as Indonesia will try to increase coal exports to meet the demand of countries that have lost coal supplies from Russia. This research is intended to build an effective structural model for managing the competitiveness of coal industry enterprises operating in Russia and Indonesia. Therefore, companies can use this research as a tool to effectively manage the enterprises' competitiveness.

#### 1-4- Scope of the Study

The scope of this research is limited to coal industries located in Russia and Indonesia. The target audience of the conducted study is the employees working in coal firms who are familiar with enterprise competitiveness management.

The theoretical underpinning behind the usage of AS-IS and the TO-BE models is that these models work interconnected as AS-IS model represents the current state of the process under consideration, whereas, TO-BE model gives a peak into the future state. The primary purpose of the AS-IS model is to simplify, improve and eliminate the TO-BE processes [19]. Thus, for this study, the AS-IS model will represent this state of competitiveness management in the Indonesian and Russian coal industry. Whereas, the TO-BE model will draw on the findings of AS-IS model to recommend ways through which the coal industry enterprise competitiveness within these two countries can be improved.

Figure 2 illustrates the flow of processes from AS-IS to TO-BE as it enables the implementation of a continuous improvement initiative, which is crucial for success in the future.



Figure 2. Processes developing from AS-IS to TO-BE (developed by the authors)

#### 1-5- Structure of the Study

This research paper consists of five chapters. The first chapter is an introduction stating the research background, objectives, key research questions that need to be answered through analysis. It also describes the research significance, and structure. The second chapter is called a literature review, in which key variables of the research paper are described. The concept of the competitive enterprise management is discussed, guidelines are provided to achieve coal enterprise competitiveness management, and finding bottlenecks in achieving the desired competitiveness management. The third chapter describes a methodology which is associated with the methods, tools, and techniques used in the research. The fourth chapter provides results and discussion, assessing the results gathered from the survey. The final chapter contains conclusions in which the research objectives are reviewed. It also addresses limitations and provides recommendations for coal companies and other research writers.

## 2- Literature Review

### 2-1- Enterprise Competitiveness Management

The concept of competitiveness in organizations or businesses refers to the ability of a company to create a balance between the quality and price of a product or service to achieve and maintain high levels of customer satisfaction due to the price or quality factors provided to stay ahead of the market competition. However, the competitiveness of any business depends upon the mixture of its qualitative and quantitative resources available to provide higher standard goods to the customers. The most important factor in gaining competitiveness over others is the formulation of effective strategic planning [20]. This planning should revolve around certain factors emphasizing the strengths and weaknesses of the company. Moreover, it refers to exploring the opportunities for the company to grow and involves mitigating the threats associated with the achievement of the competitive advantage. In addition, an accurate forecast of the current market conditions and upcoming market trends or factors that can impede business growth is necessary for effective strategic planning [21]. Any business cannot succeed unless it is aware of future changes in the market, which can be after the price, the raw material supply, or the finished good itself. Competitive management requires the use of effective methods and techniques that can pave the way for efficient management decisions. These techniques or indicators can include the following aspects: market potential, level of efficiency, business reputation, or its financial and economic position.

In the bargain, technological implications also play a major role in achieving competitive advantage over others. Innovative technologies help in the escalation of the research for the market competition [22, 23]. While assessing the competitiveness of certain business, it is also necessary to consider the aspects like after-sale services or the supply of the resources. These specific factors add the majority to high customer satisfaction. However, the use of these techniques of measure to achieve competitiveness should be applied to every sphere of the business. In the context of the Russian economy, several approaches help in measuring the competitiveness of business. Some approaches include SWOT analysis, competitor analysis, number of outlets, expert evaluation, etc. [24]. Hence, every enterprise that aims to achieve competitive advantage over its rivals must have a unique or distinctive business plan. Business must develop a strategic model based on an open innovative model to increase efficiency by overseeing the strategy execution, and turning the company's vision into the company's operational practices.

### ***2-2- Discovering the Coal Enterprise Competitiveness Management***

The term *coal enterprise competitiveness* refers to the ability of an enterprise to produce coal based on cost or quality characteristics providing a competitive advantage over the other businesses in global or domestic markets [25]. Russia ranks 3rd position in producing energy resources worldwide and accounts for almost 10% of the world production of energy resources. Russia comprises almost 22 coal basins and 128 individual coal fields; therefore, it has remained one of the most significant sources in terms of energy and fuel production. The integration of efficient methods and techniques is crucial for estimating the current and future competitiveness of Russian coal and improving the competitiveness. However, no specific methods have been developed to achieve that [25]. The research on the competitiveness of coal enterprises is conducted based on certain levels of competitiveness. Some of the indicator levels include country competitiveness, coal enterprise competitiveness, competitiveness of a specific division or branch of coal, the competitiveness of the coal basin and competitiveness of the coal enterprise, and lastly, competitiveness based on quantity of coal production.

In addition, the researchers also claim the need to integrate the knowledge-based systems in the coal business or enterprises to achieve global or domestic market competitiveness [26]. Coal businesses occupy resource-based and labour-intensive operations, which are even of extremely low quality with extremely difficult geological conditions. Today with the advancement and industrialization in the energy sector, this sector also demands the maintenance of the standard quality and integration of green/environmentally friendly coal-retrieving technologies [27]. That is why to maintain sustainability and development in the future for coal businesses, these companies must integrate strategic planning to gain a competitive advantage over others; therefore, a knowledge-based system is necessary for these coal companies to operate. Hence, both aspects of knowledge management and the core factors comprising the qualitative and quantitative factors are needed for the development and successful enlargement of these coal enterprises. As coal will remain an essential factor in the energy systems worldwide, this sector should integrate the changes in the world to have a competitive advantage over other energy resources [28]. Due to globalization, the industries must adopt environment-friendly techniques, and the changing world paradigm of the free-market concept.

### ***2-3- Guidelines for Achieving Coal Enterprise Competitiveness Management***

The key to achieving a competitive edge in any business lies in actions based on integrated strategic management techniques. The company should exhibit flexible and adaptable strategies, comprising the domestic and global policies. As a result, ensuring sustainable development provides a competitive advantage. This strategic management should include techniques to identify or forecast the future threats to business so that the business can mitigate these negative impacts ahead. The strategic plan should also be able to monitor the competitors and the competitive advantage periodically. The strategic management goals should efficiently comply to achieve the organizational goals by considering social, economic, and environmental aspects [29]. The other method for effective business management is the balanced scorecard that indicates the significant shortcomings or lack in performance or business competitiveness. This process first determines the aspects on which the company's future developments rely, which allows the business management to focus on these resources to bring efficiency. In addition, the other merit of using balanced scorecards for competitive enterprise management is that they transform the intangible means into measurable means in the strategy [30].

Moreover, the evaluation of the company's potential to gain a competitive advantage also depends on the company's stability in using its means and resources. This dynamic competitiveness can be assessed through the following models, including the estimation of the individual potential, the integration of a mathematical model, or the score rating system. However, when it specifically comes to the coal business, certain other indicators can also help in evaluation: overall production or overall sales of the business, the share of the specific coal business in the country's export, the product quality and price factor, etc. The first criterion of estimation in coal industries is based on the quantity they produce, and the range of coal variety the company produces or the company's share in the total coal productibility of the company's total exports. The quality of the coal produced is another aspect for measuring the competitiveness of the business [31]. The third aspect indicating the increase in the company's competitive advantage or competitiveness in the market is the

coal prices, including the selling and production prices of the coal. In addition, the aspects like long-term coal dispense to electric-producing sectors also show the competitiveness of the business in the markets. These long-term contracts also include state delivery contracts under which the business must deliver an enormous supply of coals to meet the municipal or the country's demands. Moreover, the other significant indicators of business's competitive management refer to the degree of its technological advancement, and the ecological considerations, including if the company's business practices abide the environmentally friendly policies, etc. However, Russian Federation aims to increase at least 60-% production of coal by 2030. The coal enterprises in Russia must integrate more advanced coal processing plants and less dependence on labor intensive techniques to achieve this goal [32].

#### 2-4- Competitiveness of the Coal Companies in Russia and Indonesia in 2022

Indonesia, the world's largest exporter of thermal coal, is also the most flexible. In 2021, it increased its exports by 27 Mt to 434 Mt, exporting more than twice as much as Australia (199 Mt).

Bumi Resources, Adaro Energy, PT Aneka Tambang Persero Tbk and Indika Energy are the biggest coal companies in Indonesia. Bumi Resources made a record revenue of 5.42 billion dollars in 2021. The management of Bumi Resources has also planned to produce 78-83 million tons of coal in 2022 [33]. On the other hand, their competitors, Adaro Energy and PT Aneka Tambang Persero, generated revenue of 4.0 and 2.7 billion dollars in 2021. Many other firms in Indonesia operate on a small scale. However, the competition is also gradually increasing among the coal mining firms in Indonesia. The country's coal-producing firms have changed their strategies as they want higher returns to facilitate the government in the achievement of the coal production goal [34]. The government of Indonesia also influences the importance of coal export to the European countries, which have increased the demand for coal mining companies in Indonesia, and all these coal mining firms have set higher output targets [33].

Siberian Coal Energy (SUEK), Siberian Business Union Coal (SBU), SibAnthracite Group and VostokCoal are some of the biggest coal producers in Russia. According to a report by *Statista*, Siberian Coal Energy Company (SUEK) can produce 107 million metric tons per annum, and with the addition of the new contract, the proposed production capacity is likely to hit 129 million metric tons per annum. The future contracts will play a crucial role in increasing the competition, and according to the presented data, VostokCoal has the largest capacity of proposed coal mines, at 38 million metric tons per year, which indicates how VostokCoal can create dominance in the Russian coal market by their current strategies.

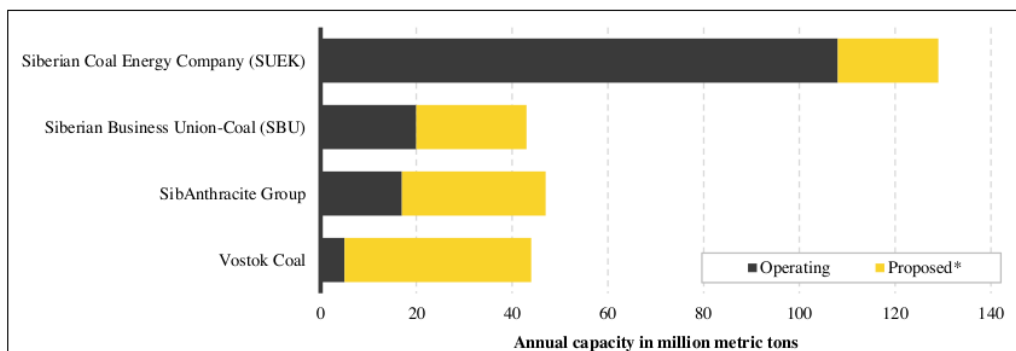


Figure 3. Annual capacity of coal mines in Russia [35]

The operating and financial results of Russian coal companies in 2022 are largely dependent on the balance of supply and demand for coking coal on the domestic and global markets. This balance determines prices of coking coal, affects sales volumes, and is largely driven by changes in steel and coke production, changes in coal production capacity, and other factors, which, in turn, depend on the state of the Russian and global economies. The end consumers are large domestic and foreign producers of steel and coke. Thus, companies' sales depend on the condition of the Russian and world markets of ferrous metallurgy. Russia remains a priority sales market for Russian coal companies. Important factors affecting the balance of supply and demand include the Indonesian ban on coal exports in January 2022, adverse weather conditions in Indonesia and Australia, geopolitical tensions in the world, disruption of supply chains, high cost of natural gas, Covid-19 restrictions in China, and falling steel prices. On the supply side, the market balance is influenced by the activity of foreign competitors. Russian coal companies have to maintain their competitiveness mainly through cost reduction programs, optimal price/quality ratio, long-term contracts, and development of relations with current and potential clients. In the first half of 2022, the logistics costs of Russian coal companies increased dramatically due to the redirection of supplies from Europe to Asia. In addition, Russian coal products are supplied abroad at a discount that exceeds 30% for some product items.



Russian companies Mechel and Rospadskaya focus on metallurgical coal and have historically supplied part of their products to the Asian region, which made it easier for them to restructure their business. With the embargo imposed, Europe is replacing Russian coal with supplies from other regions, which keeps steam coal prices high. This allows Russian companies-exporters to maintain profitability, even if they sell coal to the market at a large discount (about 30%). In 2022, Russia will not be able to fully redistribute coal flows. After the embargo, the Europeans will take coal from other destinations - the United States, Australia, Colombia, South Africa, reducing supplies to Asia and freeing up the market for Russian coal, but the lack of transport infrastructure may become an obstacle. In general, the export of coal from Russia in 2022 will decrease by 15-20 million tons compared to 2021 and will amount to 171-175 million tons.

At the same time, coal exports from Russia to Asia may increase in the autumn-winter period, especially if the region's economies continue to grow. The consumption is also expected to grow in the future. India will remain the most promising market, while China may stabilize, and imports from Russia may increase due to redistribution of flows from Australia. The IEA expects the demand for coal in India to grow by 7% this year as the economy grows and the use of electricity increases. In China, coal demand fell by 3% in the first half of 2022 due to the resumption of quarantine in some cities, but, in the second half of the year, the IEA expects the demand to increase to last year's level. China and India together consume twice as much coal as the rest of the world, with China alone accounting for more than half of the global demand. With the Chinese economy recovering, the global coal consumption in 2023 could surpass the record of 8 billion tons reached in 2013.

The above will support the competitiveness of Russian coal companies in 2022, and, taking into account the planned export performance in 2023, ensure competitiveness growth in 2023.

#### ***2-5- Bottlenecks in Achieving the Desired Competitiveness Management***

The bottlenecks in any business can prove to be the reason for the unproductiveness. Recognizing these bottlenecks is crucial for any business to run successfully and maintain productiveness through their processes, resulting in increased outputs with the known cost of production. The concept of bottlenecks was first developed and discussed in Goldratt, and Cox [36]. According to Goldratt, and Cox [36], the bottlenecks can be any means that possesses more capacity than the demand present for that resource. Moreover, these bottlenecks can be found in every system and process, and they should be used to the maximum of their capacities once the management recognizes them. According to Lima et al. [37], the bottlenecks are categorized into three major divisions, which include simple ones that are understood as only one bottleneck during the entire period considered. The second type covers multiple bottlenecks, which include several bottlenecks in the system that are fixed for the entire period considered. The third type includes the shifting bottlenecks, this case denotes no single bottleneck for the entire period; the bottleneck is instantly shifting between one station to another. Analytical approach and the computer simulations are used to identify these bottlenecks. These approaches help in the identification of the bottlenecks in long-term or complex business plans.

In the context of the mining businesses or coal manufacturing enterprises, the theory of constraints (TOC) is used to identify bottlenecks. Over time, this approach has become a useful and managerial tool. The TOC approach consists of four major steps: recognizing the bottlenecks, exploiting the barriers, bringing everything under these barriers or limitations, and finding the actual bottleneck. Many coal mining enterprises believe that the mining process is itself a bottleneck; however, these bottlenecks are mostly shiftable from one process to another [38]. The recognition of these bottlenecks is anticipated to spur the business management to take action to resolve these issues, which seem to create a hindrance in productivity. In addition, the previously underutilized resources can also enable the coal enterprises to identify the lacks or bottlenecks.

#### ***2-6- Research Gap***

The research on the competitiveness in the coal industry has focused on the analysis of a single country using other models. For instance, Wu et al. [39] focused on analyzing China's coal industry competitiveness using Porter's diamond model, which indicated increased potential of competitiveness in the Chinese coal industry. Similarly, Afanasieva et al. [25] investigated the indicators to assess the coal enterprise competitiveness based on the Competitiveness Assessment Theory. The study put forth the criterion of production, marketing, personnel, technology, management, ecology and sales efficiency as the indicators to determine the coal enterprise competitiveness [40]. In the international context, Chen et al. [41] used a combination of unascertained theory and clustering theory to determine the influencing factors of the coal industry in an international competitiveness scenario. The study focused on China's coal industry indicated the influence of the business environment, supporting industries and personnel as the first-grade indexes in the evaluation of international competitiveness. However, there is a lack of literature on determining the competitiveness of the coal industry in Russia or Indonesia and there is little to no literature on comparing the competitiveness of these two countries

given the changes in the business environment. Moreover, most studies use the Diamond model or any other theory to measure and evaluate the competitiveness. Thus, this study aims to fill the gap by providing a comparative analysis regarding the coal industry competitiveness while using the AS-IS and TO-DO model.

### 3- Research Methodology

This section provides a road map for the overall research and assists in managing the research project effectively [42]. The fundamental objective of this research paper is to examine enterprise competitiveness management in the coal industry in Indonesia and Russia. Coal is the most used energy commodity after oil worldwide. Almost 35% of the overall electricity in the world is produced using coal. Indonesia and Russia are included in the top ten coal-producing countries as the total coal production of Indonesia and Russia in 2018 accounted for 497.8 and 352.6 million metric tons, respectively [43]. There are almost 86 coal mines in Russia. However, more than 600 coal mining companies operate in Indonesia. PT Kideco Jaya, PT Bumi Resources Tbk, PT Indotambang and PT Berau are some of the major coal producers in Indonesia, as 45 percent of the total Indonesian coal comes from these producers [44]. Sangatta Mine, Borneo Indobara Mine and Tutupan Mine are the major coal mines in Indonesia. Similarly, almost 18 % of the total world's coal reserves belong to Russia [45]. However, Europe is the main target market for Russia's coal in terms of exports [43]. Furthermore, it provides procedural guidelines for enterprises. The fundamental objective can only be attained with the implementation of the appropriate methodology. Therefore, the detailed methodology of this study is given as follows.

#### 3-1- Research Philosophy

Research philosophy generally deals with the development of the data as it assists the researchers in conducting an in-depth analysis by answering all questions related to the research problem [46]. This research is based on the interpretivism philosophy as the main focus of the study is to develop a methodology for managing the competitiveness in the coal industry with a focus on Indonesia and Russia. Due to the interpretivism research approach, this study emphasized numerous previous studies based on human research. The interpretivist research approach also focuses on the subjective approach to discovering the research phenomena [47]. That is the reason the nature of this study is more inclined toward the qualitative approach. Hence, the interpretivist philosophy also assisted in determining the methodology for managing the competitiveness in the coal industry. Thus, it helps in the generation of desirable outcomes.

#### 3-2- Research Design

For this study, a qualitative research design is selected to support the research philosophy. Usually, two types of research methodologies facilitate achieving the desired results [48]. The quantitative research approach deals with numerical data. However, qualitative research deals with open-ended and non-numerical data. The main objective of this research is associated with the secondary and non-numerical data; thus, qualitative research is opted. Several benefits of using this research approach include saving time and resources. One of the main reasons for using the qualitative research design is that it does not require the usage of extensive strategies in terms of sampling [48]. The extensive discussions and the provision of detailed information make the research design an optimal choice in identifying the role of competitiveness management in the coal industry. Hence, this research design was assumed to be relevant to investigating the procedural guidelines for enterprises in the competitiveness management in the coal industry.

#### 3-3- Research Approach

Several approaches are used in qualitative research, but the case study approach is considered one of the effective ways as it can be applied for qualitative and quantitative research [49]. This research is based on the case study approach as it can generate more knowledge on the research topic regarding the procedural guidelines for enterprise competitiveness management in the coal industry. In this research, the case study approach is considered appropriate as it offers the researchers to discover complex phenomena by recognizing the key distinctive components that can also have a significant on the overall outcome [50].

8 The main purpose behind the selection of the case study-based qualitative approach for this study is that it can deliver rich information on the research topic, which consequently provides understanding for further investigation of the research topic [50]. Moreover, the approach of inductive reasoning is used as inductive reasoning refers to the approach of research in which specific observations lead to a general conclusion or results. Hence, the researcher decided to use a qualitative case study approach to investigate the research phenomenon to yield comprehensive insight to develop a methodology for managing the Competitiveness of the coal industry with a focus on Indonesia and Russia.

#### 3-4- Data Source and Collection

Two types of data and information are used in the entire process of investigating the research phenomenon. These data can be gathered from primary and secondary sources. The data which are extracted from the primary sources are

known as primary data [51]. It is first-hand data are used to investigate the problem. However, Secondary sources include the data that already exists and was collected by someone else earlier [52]. This research is based on primary data as the research aims to establish a methodology for managing the Competitiveness of a coal industry by specifically focusing on Indonesia and Russia.

To collect data for the imperious evaluation of the enterprise competitiveness management in the coal mining companies in Russia and Indonesia, the researcher incorporated focus group method. In particular, focus group interview session involved fifty-five top managers from the coal mining firms in Russia and Indonesia. The managers were asked various questions to identify all the factors and indicators that must be considered for a holistic assessment of the competitiveness of coal mining companies. The managers involved in the focus group session engaged in comprehensive discussions to analyze the existing procedures incorporated for the assessment and management of competitiveness in the coal mining companies, the existing weaknesses in the incorporated procedures and approaches and the appropriate and ideal approaches that should be incorporated for a more holistic assessment and management of competitiveness in the coal mining companies.

### 3-5- Data Analysis

Data analysis is one of the crucial stages because the appropriate data analysis leads to a desirable conclusion [53]. The data analysis of this study is based on the thematic approach as it is considered the best approach for the interpretation of the concepts and themes. Thematic analysis was used to analyze the qualitative data by interpreting the themes, concepts, meanings and relationships within the variables [54]. Thematic analysis can be done with the help of available themes and keywords that were collected in the process of data collection [53]. In this study, a thematic analysis was conducted to identify the major themes and ideas across the interview scripts of the managers.

The entire methodology is illustrated in Figure 4.



Figure 4. The methodology flowchart

### 3-6- Ethical Considerations

This study has followed most of the ethical aspects, including the reasonable presumption of consent from the study subjects. On the other hand, over-exaggeration of information was attempted to be avoided during the process of data

collection. That was the reason citation was added for the data that were obtained from the different sources, and proper acknowledgment information was also used in the study. All the results and findings were irrespective of the bias factors. Furthermore, the results indicate the credibility of the data as the miscommunication was avoided. Transparency was maintained along with ensuring the trustworthiness of the presented data. Hence, it was ensured that during the process of data collection, the privacy factor of the participants did not affect, and the collection of reliable data indicated the effectiveness of the results.

#### 4- Results and Discussion

A thematic analysis of the focus group of 55 interviews session was conducted, which enabled to identify the major themes and ideas across the datasets and develop coherent guidelines for managing enterprise competitiveness in the context of the coal industry. The semi-structured interview guide used for the focus group is attached in Appendix I. The major themes identified from the focus group interview scripts are as follows.

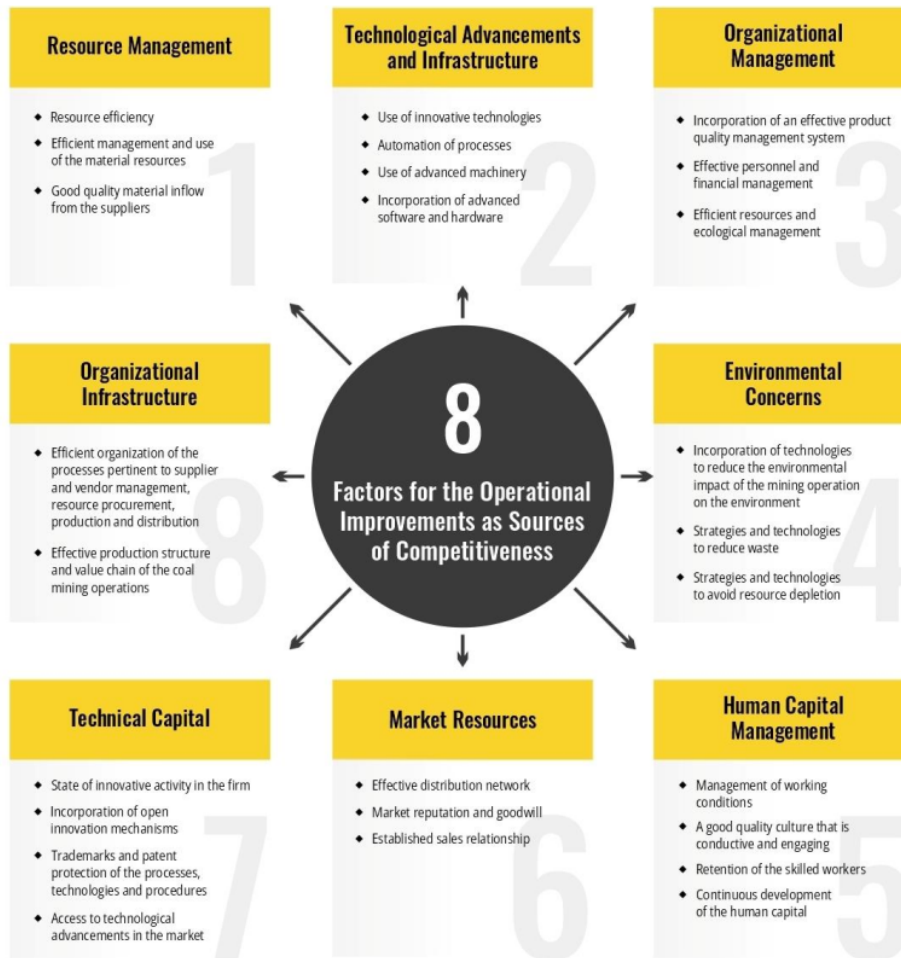
##### 4-1- Factors to Consider for Building and Managing the Competitiveness/Competitive Advantage

From the analysis of the focus group session involving 55 managers from the coal industry in Russia and Indonesia, many factors were found that can be incorporated for the development and for holistic assessment of the enterprise's competitive advantage. The inclusion of the parameters for the holistic management of an enterprise's competitive advantage in the coal industry is based on the suggestions and assessments of the managers who participated in the study. As per Garcia et al. [55], to develop and manage the competitive advantage of the mining company, it is imperative to incorporate a holistic approach that is based on many important aspects, such as operational performance, technological advancement, resource management and the overall value chain for coal mining that integrates industry-related and resource-related activities. In this regard, describing the factors that must be considered when building the competitiveness of the coal mining company, all the managers in the study asserted the importance of going beyond cost reductions, including the internal activities for the operational improvements. From the managers' responses, the researcher deduced that in the present times, it has become important while maintaining the competitiveness of the coal mining enterprise to consider the activities that are aimed at the improvement of the operational performance rather than merely focusing on cost reductions. Most coal mining enterprises focus on cost as the major factor for achieving a competitive advantage in the industry, which has become an obsolete approach in the contemporary world. In the present times, the management must pay greater attention to the internal resources, capabilities and knowledge of the enterprise to enhance the competitiveness of the enterprise in the industry.

This postulation was found to be in line with the findings of the literature. The competitiveness analysis of coal industry in Russia as of 2020-2021 indicates lower prices among energy sources, steady demand, lower price volatility and export diversification as the main contributing factors. This emphasizes the reliance of the industry on cost management [56]. In the context of Indonesia, freight rates, vessel options and logistical aspects remain the reasons why Indonesia is considered to enjoy a competitive advantage [57]. It is asserted that since earlier times, the value creation and the competitiveness of the mining enterprises were based primarily on industry-related activities aimed at reducing the costs of their operations, which could create competitive advantage for the enterprises by enabling us to establish pricing leadership in the industry. However, given the advancements in the economic and technological environments in the present times, focusing merely on the cost is not enough. Rather, major factors that influence the value creation and competitiveness of mining enterprises are considered to be focused on activities providing proper management and improvement of operating results, such as technological advancements, innovation, and resources efficiency [58]. Therefore, the development of activities that improve the operational performance of the enterprise is found to be a prerequisite for achieving and maintaining competitiveness in the mining industry.

One of the major factors in this regard is the efficient management of the resource. As a respondent asserted, *"just like in any other industry, in the mining industry, the competitiveness of the enterprise is based on the various resources combining tangible and intangible assets held by the firm. This includes all the resources such as the human capital, knowledge, innovative process, material inputs, firm structure and infrastructure, technological infrastructure, goodwill and market resources, patents and trademarks, all of which together enable the enterprise to achieve competitive advantage over the competing firms and thus act as a source of competition for the enterprise."* This response can be supported by the findings of Lazarenko et al. [58], asserting that the internal resources possessed by the firm are important for enabling the firm to increase its productivity and attractiveness in the market. Thus, instead of mere cost reductions and price decisions, the competitiveness of the coal mining companies is more dependent on their overall operational improvements.

In this context, the analysis of the 55 managers' responses helped identify the eight factors that must be considered managers for managing the firm's competitiveness in the industry. The following schematic model represents the identified factors and the pertinent focus areas for coal mining firms (Figure 5).



**Figure 5. Factors for the enterprise competitiveness assessment and management (developed by the authors)**

Figure 5 presents the factors that must be considered by the managers to build and manage the competitiveness of the coal mining enterprises. The schematic model is based on the suggestions and experiences of the managers from Russian and Indonesian coal companies. The aforementioned parameters are relevant for the coal companies that can be incorporated for a more holistic approach toward the assessment and management of the enterprise competitiveness in the coal industry. The model presents industry-related and resource-related parameters that collectively contribute to better resource, asset, environment, strategic and personnel management. Analyzing the present competitiveness landscapes of Russia and Indonesia reveals some of these factors on the basis of which the countries enjoy competitive positioning in the global coal industry. However, the private and competitive sector of Russia underwent many reforms and the crisis due to which the independent companies were left with no unified strategy to support further development. Moreover, the future competitiveness of the industry in Russia depends on the development of transport infrastructure as a means to facilitate export. Also, infrastructure is required to support the clean coal technologies domestically which is currently absent in Russia [56]. This conclusion further emphasizes the findings of the focus group study to leverage the factors mentioned in Figure 4. Likewise, infrastructural development also remains crucial for developing promising enterprises in the Indonesian coal industry [57]. Thus, the factors suggested in the aforementioned figure can be incorporated for improving the enterprise competitiveness of the coal companies and can be used to analyze and review the overall competitiveness to identify areas of improvements.

#### **4-2- Major Indicators of the Enterprise Competitiveness**

The 55 managers were asked to specify the major indicators that are considered to reflect the enterprise competitiveness in the coal mining industry. In this regard, one of the major indicators of competitiveness is found to be the production volume of the coal mining enterprise. In this context, 45 respondents asserted that “*competitiveness in*

*the coal industry is closely linked to the production capabilities of the firm. This entails the production volume, the range of the products, coal exports to other countries, the cost of production and production quality. It is imperative to consider various dimensions of the area to incorporate a holistic approach toward the assessment of the enterprise competitiveness."*

10 respondents added to this by stating, *"Management dimension of the production must also be considered when assessing the competitiveness of the coal mining enterprise from the perspective of the production."*

In line with these responses, it is worth noting, as argued in Afanasieva et al. [25], that the competitiveness of the coal mining enterprises is embedded in the ability of the enterprise to produce and offer various coal raw materials and products, thereby being able to effectively fulfill the demands of the customers in terms of volumes, quality and desirable delivery terms, including the pricing and the periods of execution. Thus, all the relevant dimensions of production must be considered in assessing and managing the competitiveness of the coal mining enterprise. In this context, it is also important to note that in the assessment and management of the competitiveness of the coal mining enterprise, it is important to go beyond mere production as a respondent posited:

*"Although being among the major indicator, production is not the sole identifier of the coal mining enterprise competitiveness. In fact, there is a myriad of indicators that must be considered when assessing the coal mining company's competitiveness"* This aligns with the findings of Ponomarenko [59], stating that it is imputative to provide a more holistic and complex reevaluation with the competitiveness of the coal mining enterprise that is only possible by considering various indicators that reflect all the operational aspects of the company. In this regard, the management must maintain a list of standard criteria and indicators for assessing and maintaining the competitiveness of the coal mining enterprises.

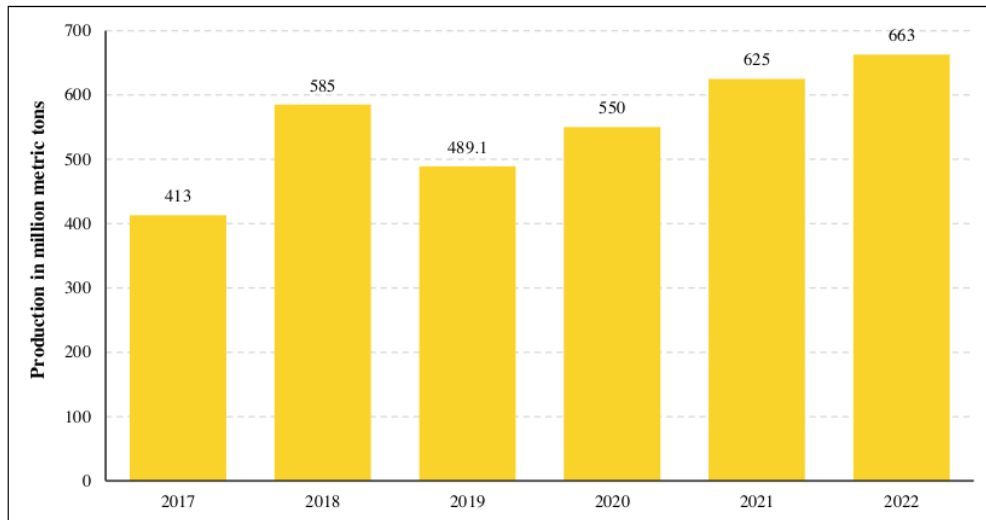
The analysis of the indicators suggested by all managers participating in the study enabled to identify 12 major indicators categorized into 6 categories. These indicators are suggested to be used by the managers as the assessment criteria for the competitiveness of the coal mining enterprise for maintaining the enterprise competitiveness. As per 55 respondents, *a good practice would be to establish a benchmark for all indicators and assess the performance of the enterprise across all indicators to determine whether the performance meets the established benchmarks."* Thus, these indicators can assist in the holistic assessment of enterprise competitiveness.

Figure 6 presents the indicators of the coal mining enterprise competitiveness identified from the focus group discussion.



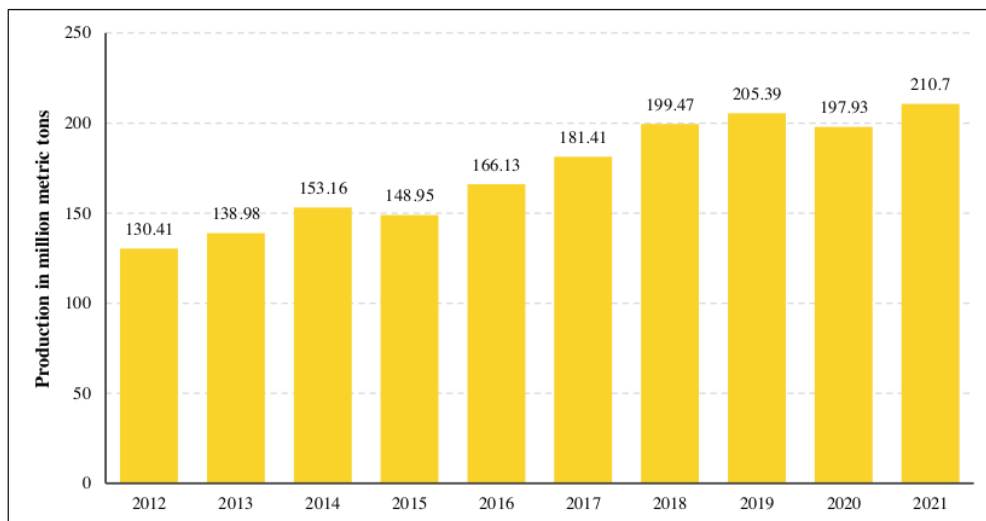
**Figure 6. Indicators for assessing the competitiveness of a coal mining enterprise**

At present, a review of the literature on the attractiveness of the coal industry in the two countries reveals that the attractiveness of the Indonesian coal industry lies in the shorter project gestation period in the country, for instance, in licensing and environmental aspects [57]. Whereas, the strength of the Russian coal industry is based on production and demand management, particularly in the Asia-Pacific region [56]. According to the annual report of PT Adaro Energy Indonesia (the largest coal miner), it exported around 300,000 tons of coal to Spain and the Netherlands. Many other European countries have decided to strengthen their ties with Indonesia for the provision of coal, which has increased the overall demand for coal. Due to this, the concerned authorities decided to produce 663 million tons of coal in 2022 (Scheduled to end in 2022). Specifically, 497 million tons for export satisfy the international demand for coal, which is three times more than its domestic demand [60]. The overall increase in coal production in Indonesia and the data on Russia's exports are presented in Figures 7 and 8.



**Figure 7. Indonesia's coal production [35]**

The above figure indicates that in 2017, the total production of coal in Indonesia was around 413 million metric tons, which is estimated to reach 663 million metric tons in 2022. On the other hand, the export volume of coal in Russia has also gradually increased from 130.41 million metric tons to 220.7 million metric tons during the period of 10 years (2012–2021). But it is expected that the Russian coal export volume will face a severe decline in 2022 (almost 30%) due to the sanctions against Russia. Therefore, a competitive edge will be provided for Indonesia's coal industry.



**Figure 8. Russia's coal exports [35]**

Russia is expected to experience the biggest drop in coal exports in 2022 as a result of international sanctions and the EU's import ban. South Africa's and Australia's exports are set to decline as well because of disrupted railways and unfavorable weather conditions, respectively. We expect Indonesia to increase exports by 15 Mt. However, even with more exports from the United States and a few other countries, such as Mozambique and Tanzania, the market is set to remain very tight [1].

The underlying trends in global coal markets—increasing self-sufficiency in China and India, a weak economic outlook, high import demand in Europe, and a very tight supply of coal with a high calorific value—are set to persist in 2023. We forecast that China's coal imports will decline by another 20 Mt as higher prices and efforts to increase domestic supply continue. However, Chinese imports are always subject to uncertainty.

Indian coal imports are set to continue to grow, but less rapidly than in 2022, as Coal India, the largest state-owned coal company, and captive producers (who produce coal for their own use) are expected to boost domestic coal production to record levels. High gas prices are expected to continue to push up demand for coal imports, particularly in Europe and Northeast Asia, in 2021. However, the supply of coal with a high calorific value is forecast to remain tight because of the difficulties other exporters face in compensating for the volumes that Russia will not supply due to bans and sanctions.

#### 4-3- Importance of Human Factors in Managing the Enterprise Competitiveness

A major theme in the scripts of the focus group interviews was found to be the importance of human factors in enterprise competitiveness; almost all the managers in the focus group session emphasized the importance of human factors for managing the competitiveness of the firm. 55 respondents asserted that *"in the mining industry, the firms need to keep their skilled workforce retained to achieve a competitive edge among the competing firms."* Another manager added to this by stating, *"Human capital in the mining companies is the major component for knowledge development and innovation that leads to the achievement of a competitive advantage in the market."*

These opinions are supported by the existing literature, as well. According to Rastogi [61], knowledge and human capital in the organization help determine the innovative capabilities of the organization. Human capital characterizes the knowledge reserve and management of the enterprise. It also determines and facilitates the outcomes of the Knowledge Management System in terms of facilitating innovation in the enterprise, developing the capabilities and skills of the firm, streamlining the procedures and processes, and developing the expertise and knowledge in the competitive areas. These results of the human capital and knowledge management ultimately help in the improvement and enrichment of the quality of the enterprise production processes and the product. Thus, the human capital of the enterprise enables and produces flexible orchestration of the firm's innovative powers, capabilities, abilities/skills, lean processes, and expertise and facilitates their efficient usage for enhancing the company's competitiveness [62].

#### 4-4- Environmental Management for Enhancing the Enterprise Competitiveness

Lastly, another major theme was found to be the rising emphasis on environmental management for increasing the competitiveness of the enterprises in the mining industry. The *coal industry* affects the environment and depletes non-renewable resources. Therefore, it is compulsory for the managers to incorporate such practices that enable the enterprises to reduce the impact of their mining operations on the environment [63]. In this context, 45 managers in the focus group discussion asserted that *"in the present times, with the rising environmental awareness among the masses, it has become imperative for coal mining firms to reduce their impacts on the environment to enhance the industry's attractiveness and maintain goodwill."* 10 responses were added to this discussion by stating that *"incorporating environmental concerns into the operations of the coal industry leads to the achievement of economic value by increasing enterprise competitiveness. The management of the environmental concerns has emerged as one of the major components of the firm's competitive position in the market."*

These responses are also well supported by the existing literature. The adoption of strategies and mechanisms for contributing to environmental sustainability enables the firms to demonstrate their responsibility toward the environment to their existing and potential customer bases, which influences their image positively in the minds of the consumers, thereby increasing the competitiveness of the firm in relation to other industry players [64]. Companies with environmental policies can enhance their competitive advantage by incorporating innovative strategies and technologies and developing energy-saving mechanisms, thereby reducing their negative impact on the environment, which in turn gives them a competitive edge in the industry [65]. Thus, all in all, the management of environmental concerns is yet another important area of enterprise competitiveness management in the context of the coal industry.

## 5- Conclusions

### 5-1- Findings of the Study

This paper discusses the guidelines and mechanisms for managing and maintaining the competitiveness of the enterprises in the context of the coal mining industry in Russia and Indonesia in the context of global changes and new sanctions against Russia in 2022.



9 The global thermal coal market is expected to remain extremely tight in the third and fourth quarters of 2022 as the EU ban comes into force. The shift to Russian coal by major importers, including China, Southeast Asian countries, and India, should balance markets to some extent but is limited by logistical bottlenecks in Russian eastbound rail freight capacity.

Conclusively, it was deduced that competitiveness is a broad notion, and thus, the management and assessment of competitiveness must incorporate a holistic approach considering various factors and indicators. For managing the competitiveness of the coal mining enterprise, it is imperative to focus on the operational improvement of the enterprise, considering areas such as resource management, technological advancements and infrastructure, organizational management, environmental concerns, organizational infrastructure, technical capital, market resources, and human capital management. These findings are in line with the previous studies, as asserted in the aforementioned results. It is found that the competitive advantage of the mining company can be determined by considering many important areas, such as operational performance, technological advancement, resource management, and the overall value chain for coal mining. It was also found that, for a holistic assessment of the coal mining enterprise's competitiveness, it is important to consider industry-related and resource-related activities. Traditionally, enterprise competitiveness management has focused on industry-related activities aimed at the reduction of operational costs. Thus, the competitive advantage could only be achieved by reducing operational costs that could create a positive spillover effect for the company's prices, thereby providing a price advantage in relation to the competitors. The industry-related activities included the downstream activities in the value chain, such as pertinent to engineering, operations, logistics, and marketing, with the major focus on reducing the cost of these industry practices. Nonetheless, this paper has proposed that, in the context of the present advanced technological era, focusing on industry-related activities for cost reduction is not sufficient. Rather, the competitiveness of mining companies should be focused on resource-related activities aimed at improving operational effectiveness and efficiency.

Moreover, a holistic indicator list was proposed for assessing the enterprise's competitiveness, and it was suggested to establish a benchmark for the indicators and assess the performance against it to determine whether the performance meets the established benchmarks. The indicators are associated with areas of production, personnel, technology, management, sales efficiency, and environment. Lastly, a strong emphasis on the development of human capital and environmental strategies is significant for managing the competitiveness of coal mining enterprises.

This paper contributes to the existing literature pertinent to the domain of enterprise competitiveness and a competitive advantage in the industry. The paper provides a thorough understanding of the factors impacting the competitiveness management of the coal industry, as the significant indicators (contributors) of competitiveness were found to be similar in the Russian and Indonesian contexts. The article offers valuable insights to the managers and practitioners of coal companies, highlighting that by strengthening the above-mentioned domains, the competitiveness of the industry can be improved.

### ***5-2- Limitations and Recommendations for Future Research***

In the future, the researchers can draw on the findings and improve the generalizability of the indicators by focusing on the coal industry in developing nations, which will provide a somewhat clearer picture regarding the indicators of managing competitiveness in a global setting. The limitations of the study include time and resource constraints, along with the researcher's confined focus on the coal industry in Russia and Indonesia, which restricts the generalizability of the research findings. Moreover, since the study is based on the opinions and perceptions of the managers working in the coal industry in Indonesia and Russia, there is a lack of comprehensiveness in determining the appropriate guidelines for maintaining and managing competitiveness in the coal industry. Thus, it is recommended that a more comprehensive approach be taken in the future to efficiently incorporate the representativeness of various countries and industries for a more detailed analysis of competitiveness management.

## **5 6- Declarations**

### ***6-1- Author Contributions***

Conceptualization, E.R. and K.O.; methodology, M.K.; software, A.K.H.; validation, N.W.; formal analysis, D.A.K.; investigation, I.E. and A.K.; resources, E.R. and A.K.H.; data curation, A.K.H.; writing—original draft preparation, A.K. and M.K.; writing—review and editing, K.O. and I.R.; visualization, H.S.; supervision, E.R.; project administration, I.E. All authors have read and agreed to the published version of the manuscript.

### ***6-2- Data Availability Statement***

Data sharing is not applicable to this article.

### ***6-3- Funding***

The authors received no financial support for the research, authorship, and/or publication of this article.

**6-4- Institutional Review Board Statement**

Not Applicable.

**6-5- Informed Consent Statement**

Not Applicable.

**6-6- Conflicts of Interest**

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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## **Appendix I: Focus Group Interview Guide**

The following questions were used as starters and probes for the focus group discussions:

- What are the factors that managers must consider for building and managing the competitiveness/competitive advantage?
- What operational factors are important for the enterprise competitiveness management?
- What industry-related factors are important for the enterprise competitiveness management?
- What is the role of resource efficiency in the enterprise competitiveness management?
- What are the major indicators that must be considered for the enterprise competitiveness
- How are environmental concerns considered in the context of enterprise competitiveness management?

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