# SEP_AIN3005

*by* Student Help

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# PART 1 LITERATURE REVIEW

**Abstract**

The literature review details the dynamics of the challenges arising for the mining industry due to the changing global landscape. The recent US-China trade war and the Russian-Ukrainian war pose significant challenges for the industry to sustain its profitability. Further, the review provides extensive examples from Rio Tinto to illustrate the challenges and opportunities in the present business landscape. The paper has critically evaluated the changes faced by mining industry in the current market of 2023.

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## Introduction

Mining occupies a pivotal role in the industries of several nations, despite innovations and the multiple benefits of global materials. The literature review volume in this paper has demonstrated the characteristics of the issues appearing in the mining sector as a consequence of rising international markets. The current trade war between the United States and China, as well as the Russian-Ukrainian conflict, provide substantial hurdles for the company's viability. Furthermore, the assessment gives countless instances from Rio Tinto to demonstrate the commercial enterprise landscape's difficulties and potential. To gain a better notion regarding the topic the paper has illustrated a critical evaluation based on the changes the mining sector is facing in 2023.

## Critical evaluation of the changing nature of the global landscape in 2023 for international business

There is no prospect that environmental, social, and governance aspects will grow more paramount to shareholders and companies in 2023, despite the reality that international threats and price inflation have surpassed environmental, social, and governance as the mining industry's biggest worries. According to Asgary *et al*. (2021), the most merger and acquisition movement in ten years is almost equal to the overall number of transactions from the previous year. The required resources of the emerging industry and the danger of fuel shortages are clear, therefore mining operations keep pursuing purchases and expenditures despite the current volatility they are facing.

As per Christian Nielsen *et al* (2022), the requirement for crucial minerals is on the rise for companies like Rio Tinto, current conditions are becoming more difficult, and new competitors are entering the market, all of which are causing the worldwide mining sector to go through the unparalleled transformation. Effectiveness is dependent on the top 40's capacity to guide the global development of a sustainable power while continuing to produce substantial profitable growth (Marin *et al*. 2021). In order to achieve this, mining should make the most of their solid existing legal standing in order to overcome obstacles such as tight production deadlines, volatile market fluctuations, headwinds, stakeholder needs, cost savings, and a lack of economical accessibility.

In 2023, developing genuine positive externalities for areas close to mining areas would be essential for major programs to succeed (Yang *et al*. 2023). The mining sector in particular Rio Tinto faced difficulties getting "permission to practice" from neighbouring areas. As asserted by Li *et al*. (2023), the opposition has halted work and caused several potential productions to be cancelled. Public resistance to mining will grow when no innovative companies have established that profit from the impact, as a large group of mineral deposits, are approaching the conclusion of their useful lives and inadequate funds would be reserved for environmental cleanup, innovative mines are expanding the industry's emission without inevitably creating more regional jobs because of technology, and soil salinity and violent storms have enhanced because of climate change.

As per Ampah *et al*. (2023), throughout the last ten years, the mining sector has measured information and monitored activities using traditional procedures and instruments. But, the industry has evolved recently, and starting in 2023, several businesses will begin to use big data approaches. The emergence of suitable objectives is critical, and mining companies would like their palaeontologists to have easy accessibility to geological and mineralogical statistics from general aviation gaps, heritage records, and government info. Miners have conventionally failed to manage this information due to its huge magnitude and broad range of server configurations. Miners nowadays are operating effectively to make sure that the information is computerized, organized, collated, readily available, and findable.

In the words of Abramitzky *et al*. (2023), information disclosure improves investors' confidence in the mining sector. Extraction businesses would need to gather and handle big quantities of information as companies streamline and computerize existing processes. The topic of what information must be disclosed and managed to make straightforwardness would then proceed to be hotly contested. In order to combat the loss of the fiscal policy, authorities would try to strive for the exposure of affiliate entities, and users should advocate towards improved revenue equitable manner. For instance, shareholders in mining companies, such as Rio Tinto, used the propagation of non-financial analysis to identify hazards of their extraction investments; public participation might very well keep on pushing businesses to be outside the legal requirement; and affected societies are highly involved in collecting information which captures the environmental consequences that influence people. Businesses would need to collaborate with other partners to

address the categories of information which must be given access and the proper structure for information leakage to maintain accuracy, usability, and effectiveness.

According to Nandiyanto *et al*. (2023), mining companies have amassed vast volumes of historical information that must be processed and given access to engineers. Miners use a mixture of the latest technological technologies and artificially intelligent training technologies to retrieve information into a hierarchical database schema, that is subsequently delivered to a main framework or web database. Further than the accessibility of large datasets, the actual benefit derives from recognising entire repetitions or being located close, which enables the target variable to be compressed while also ensuring miners do not spend energy on identical documentation.

Saura et al. (2023), have stated that mining technicians prioritize security, and there is never a shortfall of funding whenever it arrives to promote the security of staff on the job. In 2023, the latest digital vehicles will be equipped with the welfare of individuals and driving technologies such as automatic emergency braking and proactive traction control. The vehicle tracking system has produced exceptionally successful performance. On the other hand, wearables have become the main trend around the world, particularly in project management scenarios and workforces. The team members in a mining project have started to use wearables to keep track of their operations. Many digital technologies often are widely employed by mining companies to increase the performance and sustainability of their activities (Wang *et al*. 2023). The advancement of technology is accelerating, and mining companies are successfully collaborating with tools and innovation.

**The challenges and opportunities for the mining industry due to changes in the global business landscape**

There has been increased emphasis on sustainability within the operations of the mining industry. International businesses need to consider global geopolitical trends such as the relationships among countries to develop their strategy (Cavusgil *et al*. 2019). Earlier, there was a dominance of European nations and the USA in the mining industry. However, the mining industry today features the dominance of China as a provider of valuable metals. In this context, the

contemporary global landscape is marked by the recent US-China Trade war that has resulted in changes leading to a strained supply of essential rare earth metals like gadolinium, cerium, and lanthanum (Makortoff, 2019). Thus, mining businesses need to protect their Asian supply chains to maintain access to valuable metals that are critical to their business operations. For instance, Rio Tinto produces metals for cars, batteries, and lithium for electric vehicles which need rare earth metals (Rio Tinto, 2023). In this context, it is critical for Rio Tinto to isolate itself from global geo-political events like the US-China trade war to maintain favourable business prospects in the current global business landscape.

Further, the mining industry can benefit from the local contemporary politics surrounding the mining industry to grow its renewable metal mining industry. According to Brauers *et al*. (2020), the current mining policies of the UK indicate changes for phasing out coal mining and replacing the energy needs of the nation with renewable sources. In this context, the mining industry has an opportunity for expanding renewable-focused operations in 2023 by using metal to provide the inputs for electric vehicles and making electric batteries. Changing global landscapes have a profound impact on the economic condition of the UK, which can influence the business of Rio Tinto due to factors like inflation. The recent Russian-Ukraine war has disrupted the energy supply chain causing inflation in the UK due to rising prices for energy including oil (Mbah and Wasum, 2022). The rising energy prices can lead to increased expenditure for the business operations of the mining industry as it relies heavily on energy to conduct mining and metal processing activities. Thus, the Russian-Ukraine war poses a great challenge for the mining industry because of the resultant inflation in the UK's economy.

Further, inflation can also result in the decreased spending capacity of consumers and businesses in the UK because of increased expenditure on energy leading to lower business prospects for the company. International businesses can benefit from expanding to nations having great economic growth like the Asian countries in the present times (Collinson *et al*. 2020). Similarly, mining organisations have an opportunity to expand to Asian countries like Vietnam to improve their business prospects. Further, Marinov and Marinova (2021) conclude that the COVID-19 pandemic has caused a significant economic burden in the UK because of GDP (Gross Domestic Product) loss and decreased productivity. Rana and Shrivastava (2021) also explain the importance of emerging markets to ensure the international expansion of business. Thus, the mining industry faces challenges due to the negative consequences of the pandemic. For

example, Rio Tinto can utilise the growing GDP of the UK to improve its business prospects by utilising the increasing spending capacity of clients to make more sales.

Socially, the mining industry is both a provider of valuable jobs to local people but is also a contributor to increased health issues. Monaghan *et al*. (2022) explain that mining prospects in the current times include the growing potential of geo-energy in the form of thermal energy from unviable coal mines. However, utilising the thermal energy from unviable coal mines would require extensive water analysis to determine the level of health and safety that can be maintained for associated workers. Thus, the mining industry can generate favourable social outcomes by creating jobs to extract valuable thermal energy. However, thermal energy extraction may result in the development of health hazards for employees working in the area because abandoned coal mines are likely to have some level of contamination and pollution. According to Deresky (2022), achieving a balance with local cultures can help international businesses to achieve success. Thus, the mining industry faces cultural challenges to improve its business operations by adhering to the cultural principles of local populations. Mining operations are a cause of significant pollution generation including noise pollution due to the usage of heavy machinery for drilling and extraction processes (Baffoe *et al*. 2022). In present times, mining organisations are vulnerable to public criticism due to unethical social practices like operating heavy machinery near residential areas. Therefore, businesses face a challenge in choosing suitable locations to avoid any social protests. For example, Rio Tinto needs to avoid residential areas while building mines to avoid social protests due to unethical decisions.

Technological innovations have resulted in the growing business potential in deep sea mining in recent years. According to McVeigh (2023), all major nations across the globe acknowledge the potential of deep sea mining in enhancing access to rare metals and thereof, seek to implement global regulations in the area. Thus, the mining industry can benefit from partaking in deep sea mining activities in 2023 by developing a joint effort with the UK government to ensure compliance with all emerging regulations and legislations. Technological changes through innovation in Artificial Intelligence (AI) and quantum computing can help mining organisations fully utilise the potential of deep sea mining by using advanced computing algorithms to accurately identify metals in the deep sea. For instance, Rio Tinto can utilise AI to automate its mine drilling operations and mitigate human errors which is a great opportunity to improve productivity and avoid accidents.

Present trends in the global business landscape feature a growing concern over sustainability and the ethical use of natural resources. However, legal aspects for deep-sea mining are still not finalised as prominent nations continue to negotiate for the formation of a new frontier in mining operations (McVeigh, 2023). Therefore, the mining industry faces challenges to keep up-to-date with the latest legal developments to ensure that it can comply with all new requirements and capitalise on the opportunities in the deep-sea mining business. Further, the Mining industry has been a cause of environmental degradation because of the generation of air pollution due to drilling and extraction of coal along with sound pollution because of the usage of heavy machinery and explosions. According to McKie (2023), deep-sea mining can severely degrade the biodiversity of the sea topologies and exacerbate the prevailing climate change crisis. Thus, the mining industry faces significant challenges to implement sustainability within its operations in 2023. For example, Rio Tinto can capitalise on deep mining prospects by seeking governmental support in the UK to expand its business size.

**Conclusion**

From examining the volumes of this literature review it can be concluded that digital advancements have taken over the world including the mining sector. Companies like Rio Tinto are investing to implement advanced techniques and innovative vehicles to make the procedures more swift and secure for the workers. As a result, the companies can easily meet deadlines and extract large amounts of minerals in a shorter time. Nonetheless, due to the current changes in 2023, the mining sector can face both opportunities and challenges.

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