



The Need of Mining Industry – A SWOT analysis

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Abstract

Mining Industry has accelerated economic growth since its inception. Currently the industry has been transformed in many ways and broken down barriers to complex challenges through automation in Mineral Exploration – Extraction - Processing and also in mining Environmental/Safety related concerns. But due to turbulence in mineral commodity prices, market volatility, increasing regulations, dwindling profits and changing global demand has created ‘an uncertainty phase’ in the mining industry. It has pushed mining companies to shift their strategies. Effective mining strategic decisions provide the appropriate operational actions at the right time. Mining industry today facing with unprecedented challenges and the present need of the industry is to turn all challenges into real business value. This paper aims to throw a light on the current “Need of the mining industry” by way of SWOT analysis.

Keywords: Mining, SWOT, strategy, management.

Introduction

Mining industry is going through a “phase of uncertainty”. It is being developed due to turbulence in mineral commodity prices, market volatility, increasing regulations, dwindling profits and changing global demand. It has pushed mining companies to shift their strategies, adopt new operating models and look for newer technologies which can boost production efficiency cost-effectively and safely.

During last decade mining industry is dramatically transformed, moving from conventional practices to mechanical practices of mining. This transformation has improved the operating efficiency and reduced the operating cost to some extent. But alongside the current fact is mining industry is facing more complex challenges than ever before either market driven or nature driven, for instance, commodity prices and deeper ore bodies. The current need of the industry is to turn all challenges into real business value.

In this paper, we have made an attempt to understand what is happening in the mining industry and what strategy is being followed to adhere the growing challenges.

A swot analysis has been carried out on mining industry trend. Major current focus areas of happening in the mining sector are:

Competitive Production: Efficient planning is required with aid of advanced technologies to improve the process efficiencies across the mining value chain from exploration to excavation to beneficiation and rehabilitation.

Health and Safety: Develop and implement new technologies in health and safety function to protect manpower and machinery.

Mineral upgrading and value addition: Ascertain minable resources and mineral reserves in a most cost effective manner. High grade resources are depleting so process should be improved to convert low grade resources into high grade.

Resource efficiency and Innovative culture: Develop and maximise opportunities by means of innovation/automation. Enhance cross functional competency¹⁻³.

Literature Review

Desktop base research study is carried out to analyse relevant literature which includes recent reports, books and articles available in the public domain. In general, the competitiveness of any economic sector can be benefited by developing new technologies and automated ways of working. Without any exception the mining sector is also dependable on technology and certainly can be benefited by its development.

Mining strategy is defined as the connexion between the mining business and its current and future business facets; it also determines the long run goals and objectives of the mining industry and courses of action and resource management for carrying the defined goals. There are different levels of strategy implied which are shown in figure-1 like:

Corporate Strategy: Defines the scope of mining business and markets in which it competes, it also includes the new

acquisitions, vertical integration and allocation of resources between the business units.

Business Strategy: Defines the firm competes within the mining industry or market, mainly focuses on the competitive advantage over its rivals.

Functional Strategy: It is mainly emphasizes on the resource management at the operational level.

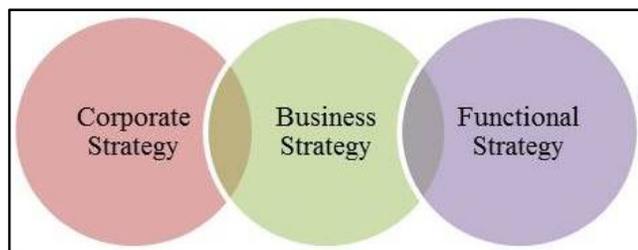


Figure-1
Levels of Strategy

The mining strategy endorses that collaborative technology development will play a major role for new innovations and improves the competitiveness of the mining sector. Common elements involved in the successful strategy plan are effective implementation, long term scope, simple and agreed upon objectives, profound understanding of the competitive environment and resource allocation. A scan of internal and external analysis of an organisation or industry is an important part of the strategic planning process. The SWOT Analysis framework is an important and useful tool to use in Strategic planning.

Methodology

Optimal utilization of mineral resources can be achieved by reworking and implementing new technologies through best mining practices, geoscientific research and development, exploration and sustainability. These may comprise techno economic and geoscientific development in the mining industry, strengthening the mechanisms for regulating the mining and curbing illegal mining projects, improving the functioning of government and private mining authorities, effective supervision and improving performance, encouraging new technologies, research and development projects, maintaining relationships and partnerships with rich mining domain countries across the globe, expanding mineral survey and exploration zones by classifying of special economic zones, single window authority for mine lease approvals, human resource management and capacity building¹⁻³.

Global Mining Industry Trends shown in Figure-2: In the recent years following trends have emerged in the mining industry: i. Increasing demand with respect to supply and rising the cost of mining, ii. Expansion of exploration activities across the globe,

iii. Adopting progressive policy measures to enhance the mining activities in their countries.

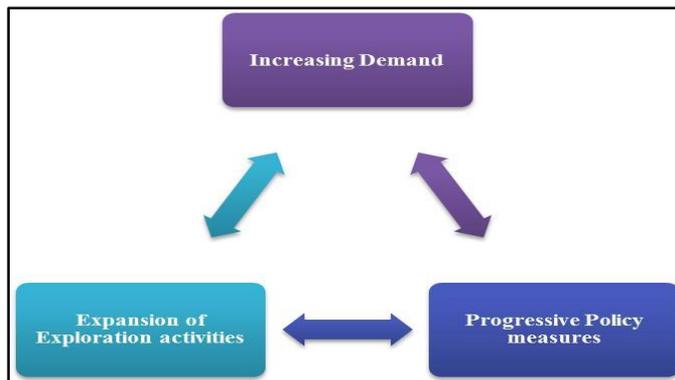


Figure-2
Mining Industry Trends

These trends are setting the tone of production and concurrently generating unique challenges as well. In some aspects and for future outlook, it is good for the growth of the industry. Rising challenges bring opportunities as too and a well-toned strategy is required to meet and decipher growing challenges.

Effective mining strategic decisions provide the appropriate operational actions for the mining sector at the right time. Mining industry today deal with unprecedented challenges, opportunities and threats, the objective of the SWOT analysis is to highlight the key strengths, weaknesses, opportunities and threats for the industry by analyzing publicly available information. This SWOT analysis will translate conclusions into strategic actions so that mining industry can execute opportunities and defend against threats.

The internal and external factors most substantial for the mining sector for future are referred to as strategic factors; these are grouped into strengths, weaknesses, opportunities, and threats shown in Figure-3.

Results and Discussion

Strengths: Mining industry has high values and bestowed with significant mineral resources available on the earth to go for. It is not necessary every country does have plenty of resources but every country plays a role in the production of mineral resources by consuming in some ways. An example, Australia plays a major role in the production of minerals at a global scale. The countries which are rich in some kind of mineral resources do not necessarily use them all themselves. As an alternative, countries often export the mineral resources that they have plenty of and import those which they require. The gap between the operational sites and software technology can be fulfilled by integrated planning and optimization, many of the advanced countries are following this. Global policies across the industry derive the clear path for future growth.

Strengths	Weakness	Opportunities	Threats
<ul style="list-style-type: none"> •Huge mineral resources availability •Global policies across industry •Integrated planning •Skilled resources •Sustainability •Operational efficiency •Cost savings 	<ul style="list-style-type: none"> •Risk management •Poor communication across stake holders •Schedule constraints •Regulatory constraints •Business interruptions •Current innovation deficit 	<ul style="list-style-type: none"> •Focus on innovation •Technology development •Capability development •Local joint ventures •Merger and acquisitions •HSEC improvement 	<ul style="list-style-type: none"> •Energy and water usage •Commodity volatility •Transportation and infrastructure •Less focus on research & development •Import and export of minerals •Local politics •Unstable economy •Resource nationalism •License to operate •Natural disasters

Figure-3
SWOT Analysis

Skilled professionals like geoscientists, mining engineers etc. with cross functional competency are available in the market and could be fully utilized. Commercial mining investments and integrating sustainability are leading trends from global mining companies. Pursuing opportunities and maximising the positive effects in the operational sites and integrating sustainability principles to improve the processes to pursue growth and adding values to the mining industry can lead to the operational efficiency and cost savings.

Weakness: Inadequate risk management due to many internal and external factors in the mining companies like unplanned events at the mining sites can cause serious loss of production and sometimes may cause serious injuries or even kill people. This can delay projects for long runs or even can lead to complete closure. Inadequate process and quality Management due to resource constraints, schedule constraints can delay material supply and hamper operations significantly.

Inefficient communication and stakeholder management may arises because of too late or too early communication with the stakeholders, wrong stakeholders in the project or sometimes the management will not give importance for the contribution of stakeholders. This may break transparency and honesty in the stakeholder relationships.

Regulatory constraints mainly relates to obtaining the mining and exploration licenses, these are driven by both national and international governing bodies. In current scenario, mining rules and regulations are often subject to change and highly governed by country specific. It is always difficult for global mining companies to cope up with local country specific regulatory affairs.

Mining industry is explicitly complex because of the extent and range of the mining operations. Due to this nature, safety is always a prime concern for the industry. If not managed properly it can pose a potential risk to health and safety.

Frequent strikes, carelessness at mining sites, lack of trained people and frequent equipment failures can cause business interruptions⁴.

In most of the countries still mining operations are following old technologies; very few companies are focussed on innovations⁵. Conventional ways of mining is common in under developed countries and to some extent in developing countries also. Many companies are bit rigid to transform from older practices to newer ones, probably because of investments. But in longer run investment in innovation can bring cheer to the companies drastically.

Opportunities: Embedding effective management, tracking project risk factors, prioritizing the operational excellence and capabilities development at mine operations can improve the efficiency levels. Focus on innovations is essential to deal with current operational challenges and convert them into opportunities. It is incredibly valuable across the mining business spectrum from exploration to extraction, safety, environment and mine closure. In fact, investment on innovation defines a company’s vision towards futuristic opportunities. Industry management should encourage openness for new approaches and adopting new technologies in order to expand their knowledge and grow business.

Mining firms need to focus on futuristic solutions rather than just working on the existing methodologies. Industry has to focus on pain points and technology can play a major role in solving these pain points. It is not necessary mining companies has to develop all required technologies. Instead it can be better developed in collaboration or joint ventures with other industries like IT, ITES etc. Automated trucks in the mine operation in Australia are an example of how technology can bring a revolution in the production in a most cost effective way. Data analytics in mining is one of the technologies which mining companies are working on with ITES companies. A systematic

look at the data patterns can assist in better planning and execution of the projects.

Capability development is crucial for continuous operational improvement. Every mining company need to do process benchmarking for rating the operational performance compared to the major industry leaders. This can highlights the greatest potential change for improving the short term and long term process improvement⁶. Mining at any commercial aspects needs lots of energy and the costs are increasing day by day. But there are opportunities for saving the energy with the help of technological advances, proper equipment maintenance, use of renewable energy in the exploration, excavation and processing operations⁷. The mine waste which includes overburden, tailings, slags and sludge can be reduced by improving the environmental performance, use of recycled materials and reducing the consumption of minerals, but it also depends on the type of mine waste and geology at the mining site^{8,9}.

There are several reasons for mergers and acquisitions taking place in the mining industry which may include operation and financial, re-alignment of organisation, regulatory constraints, stakeholders and management problems. This can create an opportunity for empowerment deals in the industry¹⁰ and can generate new employment by expanding the mining activities. Improving robust healthy and safety management system by continued work between HSE team and stakeholders, eliminating or mitigating the hazards/risks at the mining sites can provide a better platform in improving the HSEC.

Threats: Water scarcity and energy shortage is the one of the biggest threat for any mining operation. Many mining companies have either shut down or shifted their operations due to lack of water and energy. Some companies are running down in production due to water and energy scarcity. For instance, there are many good projects in Africa which are lying idle because of water and energy shortage. In fact, shortage of water and energy is creating serious consequences for the environment and economic values.

Commodity price competition among the global mining companies is one of the major threats prevailing in the industry. Mining companies are experiencing price and commodity volatility frequently, this may affect to the company's budget. Due to commodity volatility companies cannot plan future project appropriately and rapid fluctuating prices sometimes results in shutting down of operation. To illustrate briefly, a number of mining projects are closed in Australia in year 2014 and some are on the verge of closing in this year due to instable commodity prices. Many small to medium mining players have gone out of the business and survival of remaining ones in current scenario is critical. Take example of iron ore, the prices returning to a long-run average level from the unsustainable peaks of recent years. Such turnaround in the market has forced many companies to reshape their business.

Mining business is highly dependent on transportation and infrastructure facilities. A huge CAPEX is required to establish these facilities. Profit margins of a mining company are extremely reliant on transportation; in other words closer to port higher the profits. Transportation and infrastructure is also subjected to local rules and regulations. Environment clearance for such facilities is a big hurdle and long term process. Nowadays it has converted into a 'threat'. Nobody can be sure they will get the required clearances. An example, a major mining company in eastern Australia is waiting for environmental clearance of ore transportation and infrastructure from pit to port since last five years. Yet it is not certain whether they will get or not. This kind of delay or uncertainty develops frustration among mining companies and sometimes leads to walk-out from the projects, certainly, a threat to development or business.

Resource nationalism and license to operate are nowadays another big threat for mining companies. Every country now wants to protect their mineral resources for their own need and in their own way. It has created impact on global import and export of mineral commodities. Country specific policies reforms are changing rapidly and to some extent are not in favour of global mining business. Companies have to pay more royalties on trade and taking ore from country to country is getting difficult day by day. Recently, a global mining company has walked out from an African nation due to local mining laws. License to operate in many countries is one of the biggest challenges for the mining companies. It sometime takes five to ten years to get permit nod. Waiting for approvals for such a long time is an impatiently affair – who will bear this risk?¹¹

Mining companies need to focus on allocation of funds for innovations and own research centres for the research and development activity for continuous improvement and adding value to business. Local politics, change of policies from governments and political risks play a major role in import and export of minerals since the mineral policy varies from country to country, this can impact the foreign trade connexions with other countries¹². Natural disasters such as flood, earthquake, volcanic eruptions, tsunamis or hurricane can cause significant business interruption and can impact on the company's insurance and coverage¹³.

Conclusion

Our SWOT analysis provides the basic framework of key challenges facing by the mining industry to improve business performance. A tradition of continuous improvement and tracking of sustainable cost savings and revenue enhancements in the industry can expand the mining business¹⁴.

By virtue of this study, the author suggest following core areas which require instant attention to focus on for the "growth of the mining industry", i. Eco-friendly mining, ii. Low cost of production, iii. No-compromise on health and safety.

Indeed it can be achieved by implanting sublime strategy, newer technologies and innovative ways of working. And, in essence, this is the “Need of the Mining Industry”.

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References

1. Ali Gorener, Comparing AHP and ANP: An Application of Strategic Decisions Making in a Manufacturing Company, *International Journal of Business and Social Science*, 3, 11, (2012)
2. Heather Swanepoel, Greg Johnson, Yong The, Using an Integrated Planning and Optimization Solution to Meet Mining Challenges in a Volatile Market, (2014)
3. The Mining Sector Innovation Strategies Implementation Plan, An initiative of the Department of Science and Technology, South Africa, (2015)
4. Top 10 Causes of Business Interruptions, Janco launches a CIO and IT Managers Blog, Janco Associates, Inc., (2015)
5. Wilfred Visser, The lack of innovation in mining, *The International Resource Journal*, (2013)
6. Process Benchmarking Paves the Way to Process Improvement, The Hackett Group, Inc., (2015)
7. EandMJ News, Identify Energy Efficiency Improvements to Cut Operating Costs, *Engineering and Mining Journal*, (2015)
8. How are waste materials managed at mine sites, miningfacts, Case Study Bulletin 2004, cited June 22, (2012)
9. Mining, What you can do, Saskatchewan econetwork, (2014)
10. W.K. Osae, C.J. Fauconnier and R.C.W. Webber Youngman, A value assessment of mergers and acquisitions in the South African mining industry—the Harmony ARM gold example, *The Journal of The Southern African Institute of Mining and Metallurgy*, Volume 111, (2011)
11. F.T. Cawood, Threats to the South African minerals sector—an independent view on the investment environment for mining, *The Journal of The Southern African Institute of Mining and Metallurgy*, 111, (2011)
12. Political Risks, one of the threats in International Business, Political Risks in Import Export Business, how to export import, (2015)
13. Cecilia Jamasmie, Global mining industry faces unprecedented threats: report, Info Mine, (2013)
14. N. Pavan Kumar, Review on Sustainable Mining Practices, *International Research Journal of Earth Sciences*, 2(10), 26-29, (2014)