

Key messages

01. Disruption and volatility make it imperative for mining companies to clarify how they plan to drive value into the future and how they intend to respond when prices inevitably drop again. To thrive into the future, mining companies will need to challenge the status quo by soliciting a diversity of opinions and taking the risk to do things differently.
02. Technology and artificial intelligence (AI) will play a key role, not only in helping companies envision future scenarios, but in identifying risks at an enterprise level and transforming the supply chain. Moreover, advances in finance platforms, sensor technology, autonomous vehicles, cloud-based solutions, and analytics are paving the way for the design of a digital mine.
03. Understanding the needs and perceptions of people both inside and outside the organization will be critical. Companies must build a more diverse workplace and address succession planning, while fostering loyalty and retention among existing employees. At the same time companies must do more outreach to local communities, governments, and consumers so they can be more transparent and receptive.



Rethinking mining strategy **Embedding the discipline to deliver measurable value across the cycle**

- Mining companies have typically anchored their strategic planning on producing the highest volumes of ore at the lowest possible cost. However, in today's environment, companies must take an ever-expanding range of issues into account when setting corporate strategy.
- Consumers, governments, and communities are becoming more vocal and irrevocably altering industry dynamics. As a result, corporate social responsibility (CSR) initiatives are now morphing into stakeholder engagement programs, and social license to operate is becoming a pivotal strategic issue that will either differentiate mining companies or derail them.
- Looking at these factors alone—consumer awareness, social license to operate, geographic risk, and access to input commodities—it becomes clear that mining companies must take an ever-expanding range of issues into account when setting corporate strategy if they hope to create competitive portfolios robust enough to generate value across multiple scenarios. This is especially critical as the industry shifts into a new stage of growth.



The frontier of analytics and artificial intelligence **Moving up the maturity curve**

- Although mining companies are exploring and investing in analytics and AI, there is still a long way to go. Three horizons in AI are emerging and, to date, most organizations are working in Horizon 1, where machine intelligence requires human assistance and interpretation.



Managing risk in the digital era **Exploring a new approach to controls and risk management**

- To move up the analytics maturity curve into Horizons 2 and 3, organizations must answer progressively complex questions. The first is “what happened?” The second is “why did those things happen?”, this allows organizations to identify the root causes.
- Only with this foundation in place can organizations answer the third question: “what will happen?” This is the key that empowers organizations to predict variability, mitigate emerging risks, and manage stakeholder expectations.
- The current risk landscape is characterized by a host of issues such as mounting tariffs and sanctions, potential trade wars, cyber threats, uncertain tax and royalty regimes, rising input costs, heightened scrutiny from the investment community, environmental disasters, and infrastructure breakdowns.
- To stem this tide, mining companies must take their cue from organizations that take a more holistic view of risk. Increasingly, these leaders are moving towards the next generation of internal audit, Internal Audit 3.0.
- This approach should help mining companies address risk at an enterprise-wide level, rather than assessing isolated risks at the functional or mine site level, and develop appropriate controls to both mitigate and manage the expanding array of risks they face.



Digitizing the supply chain **Why innovation requires integration**

- The mining supply chain is ripe for transformation, as supply chain improvements remain incremental instead of delivering innovations designed to optimize mining operations.
- To create a more interconnected and responsive supply chain, mining companies need to stop thinking in linear terms and imagine instead a circular system that we call the digital supply network (DSN).
- The ultimate goal is to leverage advanced algorithms, AI, and machine learning to turn data into insights that allow companies to reduce their capital expenditures, respond to changing project requirements quickly, and optimize mine planning to integrate real-time changes.



Driving sustainable shared social outcomes **Finding value beyond compliance**

- Until recently, mining company's social spend has been seen as a cost of compliance, rather than a way to deliver measurable and sustainable benefits to host countries and communities. If mining companies hope to drive different social outcomes, that dynamic has to change. A social enterprise is an organization whose mission combines revenue growth and profit-making with the need to respect and support its environment and stakeholder network.
- Finding value beyond compliance is no easy task. It requires miners to listen more closely to their constituents to determine what stakeholders truly want, and then to shift their operational processes in response.

- To deliver on the social breadth of these programs, mining companies cannot work in isolation. Instead, they should look for opportunities to collaborate with other companies working in the region.

- in five key areas:
- Delivery models
 - Data and technology
 - Project controls
 - License to operate
 - Collaboration



Exploring the water-energy nexus **Making the case for a systematic approach**

- True value from energy management can only be derived by addressing the triple bottom line of social, environmental, and financial performance. This requires companies to approach energy management as an integrated corporate initiative.
- Yet energy isn't the only input at risk. Mining companies must now contend with water scarcity as well as risks associated with excess rainfall, which can result in flooding.
- With a constant knowledge of how every drop of water is being used, and an understanding of all the parameters associated with its use, mining companies can manage water in the way they have begun to manage electricity, as a valuable resource.



Decoding capital projects **Learning from past mistakes**

- Burdened by years of sub-par returns, cost overruns, and impairment charges, many mining companies opted to concentrate on maximizing output from their existing operations rather than investing in new mine supply and exploration.
- This resulted in supply shortages for commodities such as copper, zinc, cobalt, lithium, and gold. But with the cycle turning, mining companies will need to engage in a wave of new capital projects to offset production declines and meet demand.
- To overcome these challenges, mining companies must build their maturity



Reimagining work, workers, and the workplace **A blueprint for the future**

- The mining industry is facing a changing talent landscape, with digitization necessitating new skillsets, a massive generational shift when considering C-suite succession planning and a younger generation of workers who measure loyalty to an employer in months instead of years.
- To prepare for this imminent future, organizations need to clarify not only their business goals and aspirations, but also the role that their talent strategy should play to deliver on them.
- They will also need to identify the workers of the future by considering what the employee experience will look like, and the role that innovation will play in that experience. Finally, they must reconceive how employees will interact with each other and conduct their work, be it in a physical location or remotely.



Operationalizing diversity and inclusion programs From theory to practice

- The mining industry is not attracting sufficient numbers of diverse candidates, and to shift this balance, companies will not only need to change their talent attraction and retention policies, they will also need to change historical perceptions about the mining industry.
- Instead of approaching the issue by adopting point initiatives, they must design integrated programs to tackle the challenge holistically. This extends into the area of talent retention, because when companies do attract women, they often struggle to retain them.
- In tandem with shifting the way they operate, mining companies must take steps to amend their public image. This starts with the image they portray on their reports and in their advertisements.



Demanding provenance EVs and battery minerals provoke the desire for provenance

- Rising demand for electric vehicles (EVs) is increasing demand for EV battery materials such as cobalt, lithium, graphite, and copper.
- However, socially-conscious consumers are now questioning the provenance of raw materials. As a result, downstream customers, such as automotive manufacturers and technology giants, are demanding ethically-sourced minerals.
- This is putting unprecedented pressure on mining companies to create a more transparent interface with their customers and driving the adoption of technologies such as blockchain to enhance the traceability of commodities.

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