



Mining risk function of the future

Technology driving value and efficiency

The significant competitive advantage gained through adopting a modern and technology driven approach to the mining risk function enables a greater focus on emerging risks and can establish the resilience needed in a rapidly changing world.

KPMG's Global Outlook for 2019 into risks and opportunities highlights the top five global mining risks to be:



[Link to KPMG Global Mining Risk Report](#)

In Australia, in particular risks pertaining to social licence to operate and corporate trust have continued to build momentum and focus in executive and boardroom discussions.

Increasingly, mining companies and their counterparts are seeking more agility in risk management whilst simultaneously looking to reduce costs. Management and boards are also asking questions about how strategic risks focus on, compare against, and map to, well-grounded operational risk profiles.

In the first article of [The mining risk function of the future](#), we explored how the risk function needs to evolve as longstanding practices are no longer the ideal approach to deal with today's threats. We surfaced the impetus for evolution of risk functions as well as the characteristics expected of the risk function of the future. Now, in this second article, we explore how adopting a modern and technology driven approach to risk can deliver value and elevate the risk function to an integral part of the business.

The journey of transformation to a value creating risk function of the future will differ widely across different mining organisations, and indeed each organisation will need to independently determine their pathway to this future state based on their current maturity. Notwithstanding this, there are some common opportunities which are discussed herein. Notably, these opportunities are scalable and available to large and small companies alike. Indeed, many smaller companies are embracing these opportunities more readily as they grow and look to mature and build the risk function of the future now.

Limitations in traditional mining risk approaches

Misalignment between top down and bottom up risk management

Traditionally, operational risks are well understood, reported and managed in mining through "bottom up" processes. This is particularly true in relation to health and safety related risks. Yet, strategic risks continue to be maintained independently and are often disconnected from the operational risks as a separate "top down" process.

Risk networks are not understood

The interconnectivity of risks or possible flow on contagion within the risk network are not considered because risks are identified, rated and managed independently rather than as part of the holistic risk network.

Focus is on managing the downside risk using historical data

Understandably in industries that focus on health and safety, risk is compliance and safety orientated with the risk function historically adopting the role of policing to avoid downside risk and ensure compliance. Most importantly, this keeps people safe and organisations compliant however these great systems and structures are seldom being harnessed to their full potential to add value.

With the increasing pace of change a real-time view of all the risks underpinning decision making is needed. Decision makers need to be able to understand what the various implications might be of the decision based on the environmental factors today as well as an understanding of what tomorrow is expected to bring. Planning in an increasingly connected world requires an understanding of what is on (and over) the horizon to create competitive advantage but predictive risk management requires data that has not traditionally been constantly analysed for this purpose.

Rethinking the risk structure in mining

As discussed in the first article of [The mining risk function of the future](#), in most organisations, risk management is typically achieved through multiple functions working on (and reporting) their individual risk profiles in silos. The risk function of the future will need to deliver a holistic view of the organisation by cutting across silos. KPMG sees the need for a technology driven approach to streamline multiple processes and consider the interconnectedness and aggregation of risks across the whole organisation. A risk function powered by automation and real-time data facilitates timely insight and proactive management of risk across the whole organisation, thus creating clear value to the organisation by making it more sustainable and resilient for the future whilst simultaneously establishing more efficient risk management processes.

The added advantage of using technology in this way is that the responsibility for risk management is pushed to the front line managers to manage their own risks. This enhances risk based decision making at this level whilst simultaneously freeing up the risk function to focus on value adding, future focussed and strategic risk work.

Technology driven approach to risk

Governance, Risk and Compliance (GRC) software solutions are maturing fast. Furthermore, the cost of such systems has decreased significantly with the advent of cloud computing. No longer are time consuming and costly implementation projects needed. In addition to this saving, the cost (implementation and usage) of some of the most sophisticated systems can equate to the equivalent cost of just one risk team member per annum and these systems are often able to “do the work” of at least one person, when reporting capability, integration and analysis is considered. This efficiency opportunity is especially the case where organisations are still tracking risks through spreadsheets with analysis and reporting performed manually.

As mentioned above, the key benefit of utilising technology is that this enables risk management to move out of the corporate office and into the business. It becomes the responsibility of the managers in the business to actively manage risk rather than just to report on it. The people on the ground become truly accountable, rather than a risk team to the side, this shifts the culture and embeds risk management into the way that managers work, make decisions and report.

A value-creating mining risk function

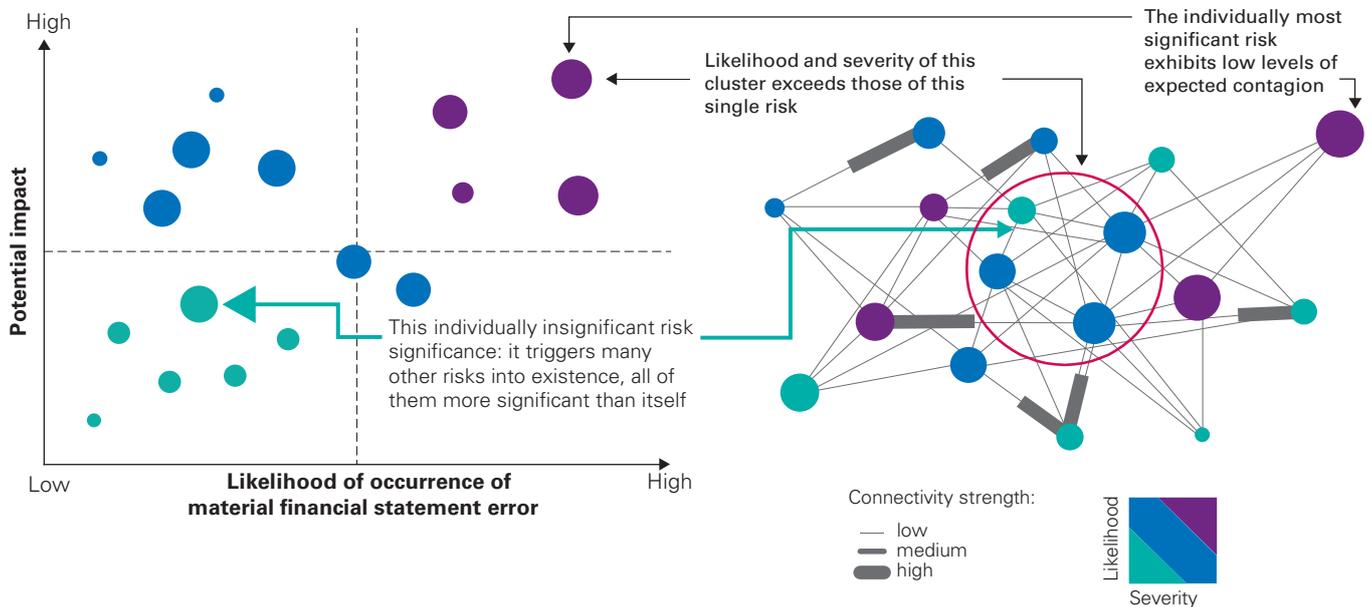
VUCA (Volatility, Uncertainty, Complexity and Ambiguity) is commonly used in leadership circles to describe the nature of the current ever changing world. VUCA can be positive for those able to demonstrate **Vision, Understanding, Clarity, and Agility**¹.

- **Vision** by the Risk Function of the Future cutting across silos using new approaches to streamline multiple processes and consider the interconnectedness and aggregation of risks such that the holistic picture is understood. The elevation of the risk function such that there is a Chief Risk Officer within the Executive Team also serves to align risk with the strategic initiatives of the business helping all decisions and considerations to incorporate both the upside and downside.
- **Understanding** the four dimensions of risk. Algorithms and technological advancements are already available to identify, connect and visualise risk in four dimensions: likelihood, severity, connectivity and velocity. A four-dimensional view enables consideration of the contagion effect of risks as illustrated in figure 1. Interconnectedness assists with more holistic risk management by illuminating which risks impact each other and the relative strength of connections. This is relevant because organisational failures are seldom the result of a single risk event, but more typically the consequence of a number of related risks materialising simultaneously.

Fig. 1. Using risk connectivity to understand contagion²

Traditional, two dimensional risk map

Inter-connected view



¹Leaders Make the Future: Ten New Leadership Skills for an Uncertain World (Author: Bob Johansen)

²KPMG's Dynamic Risk Assessment

Take for example a mining company with disparate operating sites. Gathering the risks from all sites and mathematically aggregating the risks and mapping to the strategic risks will develop a whole of organisation risk picture. As decision making is a core piece of risk management, a holistic approach will enable business decisions to be assessed in terms of how they will flow into the risk profile and if the overall risk is reduced or vice versa. An example of this could be decisions regarding sensitive decisions regarding rehabilitation or water management across multiple sites and/or jurisdictions.

Understanding interconnectedness also enables management to understand which risks have the most numerous and strongest connections and therefore, where resources should be allocated for maximum benefit to these vulnerabilities.

Understanding velocity enhances resilience through creation of time-bound action plans matched to the speed of impact of relevant risks.

– **Clarity** through Aggregation, Analytics and Big Data

- *Aggregation and removing the disconnect between strategic and operational risks*

Companies typically have a high level strategic risk register and a detailed operational risk register which is exponentially larger.

Where multiple locations, subsidiaries, sites, business units etc. (collectively, “business units”) exist, there are often similar risks for each of these. If, for example, we consider a risk typically found on strategic registers regarding water. What we usually observe is that significant resources are applied to ascertain the level of risk pertaining to the various components of the water risk at each business unit. This is however often lost in consolidation such that the overall water risk reported up the reporting chain by Risk is a subjective assessment only, due to limited alternative options. Applying algorithms to achieve defensible aggregation, and reliable clarity as to the overall risk exposure, is now a possibility.

Similarly, strategic risks are often rated subjectively using a top down approach which takes little heed of the rigorous operational risk processes in place. Whilst operational risks are updated regularly, strategic risks are usually only updated quarterly at best. Mapping the interaction between operational and strategic risks so that changes in the operational risk profile highlight related changes in the strategic risk profile can assist in addressing this inconsistency.

- *Real-time analytics to predict the unknown unknowns*

Applying real-time information in decision making, and even predictive analytics, is already possible but is still not widely used. Often these tools are owned by the Strategy and/or External Affairs teams who may apply Artificial Intelligence (AI) and software to scan and analyse public sentiment and similar. This needs to be accessible across organisations so that key business decisions aren’t made without a real-time risk assessment. Similarly, data of this nature should be used to provide early warnings as to trends suggesting emerging risks or structural breaks.

- *Big Data unveiling the truth*

Historically statistics and select data has been relied on to analyse risks. This has created inaccuracy, confirmation bias and false truths. Conversely, Big Data considers all available data. How to extract and use the data is worthy of another entire article however, it’s important that the Chief Risk Officer is sitting at the table discussing how projects around Big Data can also benefit risk management, and not just traditional operational performance.

- **Agility** by recoupling Risk and Strategy. In recent years Risk and Strategy have increasingly been looked after separately within organisations. Risk is often an outcome from Strategic Planning sessions, rather than a key consideration in the process. To derive greater value and resilience from risk management, it should be an input into the Strategic Planning so that strategies developed take current and emerging risks (and related opportunities) into account.

To build agility, emerging risks and structural breaks should be applied as scenarios to present opportunities for strategic divergence in the event that the emerging risk develop. In this way, a company will have a set strategy but agree upfront how this will adapt if indicators pertaining to various emerging risks transpire. Agility, through the ability to quickly, and seamlessly shift strategy will be a competitive advantage. The critical success factor will be Risk and Strategy teams working hand-in-hand.

Applying network theory, analytics and AI creates an opportunity for risk management to drive strategy, reduce costs and add rigour to decision making.

The significant competitive advantage gained through thinking about risk differently and incorporating greater focus on emerging risks can establish the resilience needed in a rapidly changing world.

Conclusion

There has never been a better time to rethink risk management. New approaches supported by technology and data combined with an elevation of the risk function will enable resilience and ultimately can create competitive advantage. To derive value from having **Vision, Understanding, Clarity, and Agility** in a world of uncertainty, mining companies shouldn't hesitate in commencing on the journey to transform their risk functions into the Risk Function for the Future.

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