



Past, Present and Future Insights to be shared



As the incoming President of SAIMM, I have been reflecting on my 34-year career in the mining industry and the lessons I have learned; lessons I can leverage to lead SAIMM and support the industry during my tenure. Writing this month's journal comment provides an opportunity to share part one of some of these insights.

Each role, as well as the individuals and teams I have worked with throughout my career, have shaped and expanded my experience and perspectives on how to make a difference and add value.

I began my journey as a young engineer, developing and commissioning new mining operations in Africa for a multinational mining house. Later, I pivoted to mine optimisation modelling and software development, aiming to transform mine planning as the co-founder of multiple startup businesses.

This experience reinforced my understanding of the technical and safety challenges in the mining industry, the inherent risks and variability in ore body characteristics, and the complexities of managing a dynamic, interconnected value stream of activities to mine and process ore. Additionally, a lack of management focus, caused by an overwhelming number of improvement projects and initiatives that are often poorly implemented, means that many of these efforts fail to add value.

Later in my career, after being exposed to the tools of Lean Six Sigma and the Theory of Constraints, I learned that using the right decision-making tools enables management to focus on the right leading indicators that add value. However, it would be remiss of me not to mention that none of these methodologies alone adequately address the challenges in mining. In fact, some principles of Lean can limit performance due to the inherent variability in ore and processing.

The mining industry also faces significant challenges in implementing new technology. We often underestimate the people-related challenges involved and fail to effectively design and manage the necessary changes in work processes, roles, and employee buy-in. The promises of Big Data and Industry 4.0 (IR4) are recent examples of this. In my opinion, current change management thinking and execution is not adequate for our rapidly changing future business landscape.

A common phrase I have heard over the years is: 'Our mine is unique and more challenging, so what worked at mine XYZ won't work here'.

To determine whether we can learn from other industries, I explored insights from the automotive sector, particularly Toyota's leadership in systems thinking, which leverages Lean Six Sigma and a people-centric approach. The automotive industry has seen massive productivity increases over the past decade, whereas the mining industry has experienced a decline over the same period. A recording of my keynote address, 'Has Technology Generated ROI?', from the 2015 International MPES Conference, is available on YouTube, where I discuss these insights further.
<https://www.youtube.com/watch?v=qDN3lGrijas>.

Over the past eight years, in a new business venture, I have been able to test and refine these hypotheses across multiple industries worldwide. Whether in chocolate or biscuit manufacturing, a tissue paper mill and converting line, the production of lab-grown diamonds, product lifecycle management for high-tech equipment R&D and manufacturing, or ore moving through a value stream, the challenges remain the same. Each industry has its own technical requirements, whether in chemical engineering, metallurgy, or mining engineering, but the fundamental challenge of managing and maximizing the flow of material through a complex system of interconnected activities, as well as the impact of performance variability on this flow, is identical across industries.

What was even more revealing was that these challenges persist regardless of technological sophistication. Whether in a greenfield digital manufacturing facility equipped with expert control and real-time data reporting in dedicated operating centres or a brownfield operation reliant on paper and Excel spreadsheets for data collation and reporting, the same issues exist. In fact, we found that, in many instances, more real-time data creates more noise, uncertainty, and reactive responses to variance, leading to a further dilution of management focus – leadership time in a day is also a constraint. In many cases, general managers of production facilities spend over 75% of their time explaining yesterday's poor performance.

In every example, production success is driven by individual effort; people working hard across all engineering disciplines and business functions, often relying on a handful of 'heroes' to achieve equipment reliability and production targets. One clear symptom of this is the excessive number of meetings employees at all levels attend weekly; meetings that serve no clear purpose and produce no agreed upon outcomes.

With all the technological advances in the world, we have neglected to focus on the people within this increasingly complex business system. The advent of artificial intelligence will also have a profound impact and must be designed into the future operating model.

In my next journal comment I will begin to unpack the learnings and requirements of an integrated operating model that addresses these challenges.

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