

Collaborating in real-world research

QUT Business School research partnerships with industry
Mining Equipment, Technology and Services Sector



QUT Business School

QUT Business School has a critical mass of researchers engaging with the key challenges of the Mining and METS sector. Our capacity to draw together specialist research teams across all disciplines and faculties allows us to engage comprehensively with industry issues. In collaboration with Austmine, CSIRO and Brisbane Marketing, we are working to identify mechanisms for improving communication and coordination across the METS sector to address current challenges and problems which require business research solutions.

These challenges include:

- streamlining technology and business processes to make our METS firms more globally competitive
- realising the unique opportunities for international and domestic growth
- expanding into new market industries
- increasing performance and efficiency in infrastructure and processes
- creating career pathways to attract and retain a skilled workforce
- skill development and new training methodologies to address the current skill shortage.



Technology and business process

A key strength of Australian METS firms is their activity in developing highly specialised and innovative technology.

We know that 58 per cent of METS firms* are investing in R&D to develop new, cutting-edge products. The opportunities to provide niche technology solutions are high. However, the complexity of the mining sector procurement processes hampers international growth and favours firms already embedded in global distribution networks.

How can efficiencies be improved?

- .. We investigated the hurdles impeding Australian METS firms capturing an international market for their mining equipment and technology and discovered that procurement and technology acquisition processes and the financial/investment context make it difficult for firms to grow big enough to develop their own global distribution networks.
- .. Research conducted by QUT indicates that a reduction of unnecessary regulation and compliance costs in the mining sector can lead to improved performance and generation of long-term sustainability.
- .. Researchers have examined how companies worldwide contribute to the high cost of technology innovation in the resource sector and what inhibits the rollout of new technologies.

*2013 Australian Mining Equipment, Technology and Services sector (METS) Benchmarking survey.

‘Solutions to the challenges which global miners face can be provided by our highly innovative METS sector.’

Alan Broome AM, Former Chairman - Austmine

International and domestic growth

Currently comprising more than 270 diversified or specialist firms—many of which are “young” and privately owned—the sector has huge development potential.

The majority reported their revenue and employee numbers increased over the past 12 months and 55 per cent currently export internationally*.

How are these unique opportunities realised?

- .. We are interested in the long-term viability of the Australian mining industry and in helping new mining ventures succeed. Analysing data on nascent mining ventures between 1980 and 2011, a current three-year study will look at why new ventures succeed or fail, and how junior mining entrepreneurs find and select the right opportunities.
- .. Recognising METS firms as active innovators, we are looking at how they can increase their innovation output. Results show that capitalising on the expertise of external consultants, increasing their number of business partners, and acquiring and using new knowledge support the ability of a company to venture internationally.
- .. Our research examines the nature of competition, commercial transactions and the level of standardisation of products and services at key points along the mining value chain and how they affect supplier firm access to global markets.

Expansion into new market industries

The METS sector comprises a diverse range of firms, from manufacturing to engineering and professional services.

How can firms attract and retain new clients?

There are opportunities to expand into new markets, to further diversify product service range and to establish more offshore operations. METS firms rate the close working relationship with their customers as their key competitive advantage and a source of innovation.

Researchers working on these critical business problems have found that a firm can leverage internet technologies to enhance communication, knowledge and business networks to increase its overall international market sales growth and enable business-to-business client retention.

Performance and efficiency

Despite this solid growth, METS firms face economic challenges—increased competition from overseas suppliers, a looming market downturn, and high costs of business compliance and operations within Australia.

Firms need efficient processes and infrastructure to remain competitive in the long run.

- .. In open production systems such as mines, achieving optimal productivity and efficiency is difficult to model and evaluate. Working with Synengco, researchers are looking at ways to model asset usage and maintenance in mines. They are developing a simulation that will allow mining companies to “road test” future high-cost decisions to optimise output and increase efficiencies, whilst reducing greenhouse gas emissions.
- .. Improving performance and lowering maintenance costs is important for the owners of large and expensive assets. Researchers have developed a process to redesign organisational processes, providing significant ongoing cost savings.
- .. Using economic production models to calculate varying measures of efficiency, researchers in efficiency productivity analysis and ecological modelling have examined production systems.

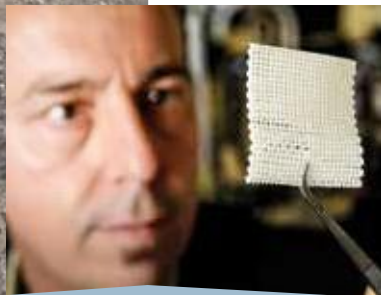
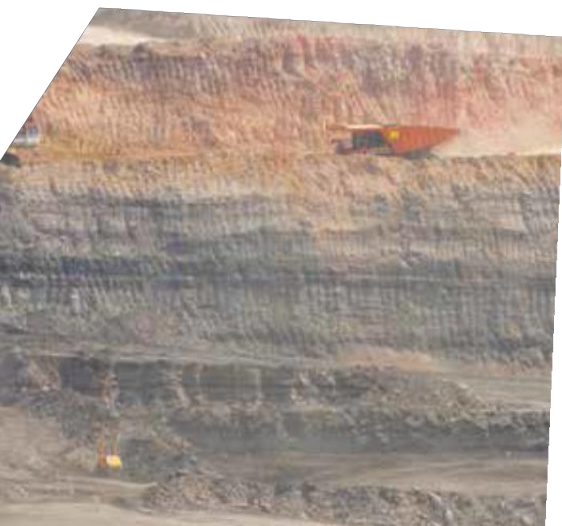
Finding and retaining skilled staff

One of the most significant challenges for METS firms is the recruitment and retention of skilled staff.

With the growth of offshore offices and remote work sites, issues of safety, a shortage of skilled labour force and creating career pathways pose problems for the sector.

How can the work skill shortage be met?

- .. Little work has examined career paths in project management, but QUT Business School researchers have examined and analysed the processes that create career pathways from junior to senior management positions. They have also linked the competencies of successful managers and use this skill set to validate a measurement of project success.
- .. Our researchers developed an organisational tool, competency framework and career planning tool for asset engineers.
- .. Our expertise in human resource management and recruitment and selection practices provided a basis for improved attraction and retention strategies for technical staff in the Australian rail industry.



‘We can create a sustainable METS industry that will survive long after Australia’s dominance as a mining nation.’

Alan Broome AM, Former Chairman - Austmine

Improved work-force skills and training

The skills shortage offers opportunities for the sector to improve operations and business through skill development and new training methodologies.

How can the industry increase skills and safety?

- .. QUT researchers developed a self-assessment skills audit toolkit to enable organisations to assess skills shortages and develop possible strategies to address them. The toolkit can be used to assess the strengths, weaknesses and needs of a skills base and to identify potential solutions that are appropriate for the sector and the location.
- .. In partnership with businesses, QUT researchers are developing a comprehensive method of reducing people risk relating to engineering and resource projects with a contingent workforce. The research has identified more than 50 types of people-related risks which will be used to develop solutions that are critical to the future development of projects.
- .. Researchers have developed and tested e-learning modules and e-learning resources to build a skills base for the Australian rail industry.
- .. Researchers have produced solutions that can be used to audit and improve internal communication strategies that help develop positive employee engagement and retention and—in some instances—improve the effectiveness of change management initiatives and the implementation of workplace health and safety.

How can we work together?

We are interested to share our knowledge foundation with industry and government to contribute to solutions.

This might include:

- .. a one-off project conducted over a short or extended period
- .. longer term collaborations to undertake regular research (e.g. annual/biannual surveys)
- .. entering into an agreement to leverage available external funding to cover the cost of research of wider interest (e.g. via Australian Research Council grants)
- .. providing access to candidates undertaking research higher degrees (masters or PhD) to collect data on topics of mutual interest
- .. a contribution to a current research project of mutual interest.

Contact us

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