



Argentina

Milestone 4 Report - May 2017

MINING EQUIPMENT, TECHNOLOGY AND SERVICES (METS) SECTOR DEVELOPMENT PROJECT

(MTF 04 2016A)



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ABOUT THIS REPORT

This is the final report for the Mining Equipment, Technology and Services (METS) Sector Development Project (APEC 04 2016A) for the economy of Argentina. The report covers the findings of the primary research undertaken for this project, including a survey with 80 METS companies and interviews with 11 mining companies in Argentina. The survey was conducted from February – April 2017 both on-line and via the telephone. The mining company interviews took place in February-March 2017.

The report also brings in some of the secondary research undertaken during the first phase of this project.

This project has been funded by the Asia Pacific Economic Cooperation (APEC) through the APEC Mining Task Force's Mining Sub-fund. Austmine managed the project and worked closely with Australia's Department of Industry, Innovation and Science which was the project overseer and coordinated a project steering committee made up the economies of Chile, Peru, Papua New Guinea and Canada.

For more information on the survey methodology, see Appendix 1.

ACKNOWLEDGEMENTS

Austmine would like to thank the many METS companies who took part in the survey and the mining companies who participated in the interviews. Their contribution was vital to the completion and success of this project.

Austmine would also like to thank APEC and the Mining Task Force for funding this project and supporting the achievements of its objectives.

Austmine would also like to acknowledge GlobalData for conducting the METS survey and Akrom for conducting the mining interviews.

ABOUT AUSTMINE

Austmine is Australia's leading association of the Australian Mining Equipment, Technology and Services Sector. It promotes the global advancement of technology and innovation in mining, and proactively works to raise to profile of the METS sector in Australia and abroad.

Austmine's vision is for Australia to be the METS global innovation hub.

See www.austmine.com.au for more details

DISCLAIMER

The information presented in this report is based on information received from the surveys and interview conducted in February – April 2017. Comments and recommendations contained in this report represent the views of the authors and do not necessarily express the views of those surveyed or interviewed for the project.

SECTION ONE

METS PROFILE

This is the story of the Mining Equipment, Technology and Services (METS) sector. It is an exciting one as it is a truly home-grown, global success story.

The vibrancy of the sector is captured not only in the innovation, entrepreneurial spirit and technology that it brings to mining, but in the foundations it builds of industries of the future.

The METS sector has much to offer, but it must be fostered to ensure continued success.

INTRODUCTION

This report covers the findings of a survey undertaken with the Mining Equipment, Technology and Services (METS) sector in Argentina. It also includes the results of interviews conducted with 11 mining companies there.

The METS sector in Argentina is comprised of diverse group of companies. From manufacturing firms to construction engineering and environmental services, it is a highly diverse sector in both size and scope, but linked by a core competency in minerals and mining.

A typical Argentinian METS company is located in Buenos Aires and works throughout the country. The company's size is small, employing between 1-49 people. It works in the operational phase of mining and specializes in copper.

The last few years have been tough for companies with most experiencing a decrease in revenue because of the commodity downturn. One-quarter of the companies also had a reduction in employee numbers.

Of the companies surveyed, 90% are Argentinian owned with foreign invested firms having a parent in Argentina, the USA, Canada, Switzerland, Germany and France.

Argentinian METS provide a range of products and services to major mining houses throughout the country. This includes in such areas as construction, engineering, materials handling, minerals processing, geospatial mapping, automation, hydraulics, drilling accessories, security products, alternative energy, and environmental consulting. The breadth of the METS sector reflects the importance of mining in Argentina and represents the best elements of a modern economy.

This report based on the analysis of the survey undertaken and provides a comprehensive snapshot of what the Australian METS sector looks like – who's in it; how big it is; and, how far its footprint stretches. It looks at how METS companies have created their competitive advantage and explores what the future holds. It provides important insights not only for METS companies, but for other industries and Governments as key sector and firm level success factors can and should be replicated across multiple industry platforms to foster new thinking and approaches to industry development.

This report is also a wake-up call for those who dwell in the belief that mining is just about the minerals that are extracted and have missed the vast high-tech, knowledge-orientated industry which is perhaps the best value-add of mining itself. METS is the sustainable legacy of Australia's mining heritage, but it must be fostered to ensure continued success. It is not only important for the innovation, entrepreneurial spirit and technology that it brings to mining, but importantly for the foundations it builds for industries of the future.

Definition

METS (Mining Equipment, Technology and Services) companies provide specialized support and solutions to global miners and have a specialist knowledge and core competency in the mining and minerals industry.

CHAPTER 1

METS PROFILE

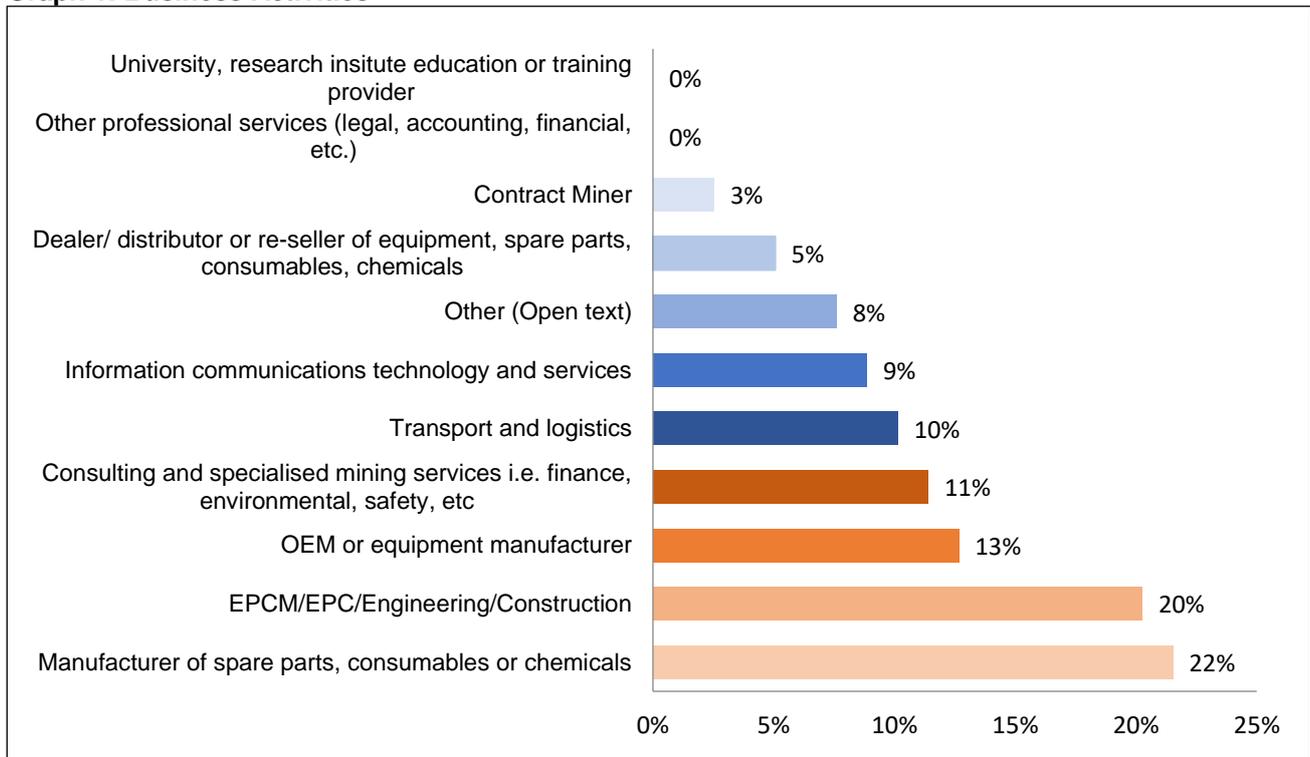
WHAT BUSINESS ACTIVITY THEY ARE INVOLVED IN

In considering the mining value chain, companies have been grouped into the following main business activities. Ninety-eight (92%) percent of the companies surveyed in Argentina identified with these business activities or types.

- EPCM/EPC/Engineering/Construction;
- Contract miner;
- Consulting or specialized mining services;
- Information communications technology and services (ICTS);
- Manufacturer of spare parts, consumables or chemicals;
- Original equipment manufacturer (OEM) or equipment manufacturer;
- Dealer / distributor or re-seller of equipment, spare parts or consumables;
- Other professional services (such as legal, accounting, financial);
- University, research institute, education or training provider;
- Transport and logistics.

Manufacturer of spare parts, consumables or chemicals are the most represented at 22% of respondents. EPCMs/EPCs closely follow them with 20%. Other common responses included OEMs (13%), consulting and specialized mining services (11%) and transport and logistics (10%).

Graph 1: Business Activities



*Other includes uniform suppliers, security and water management.

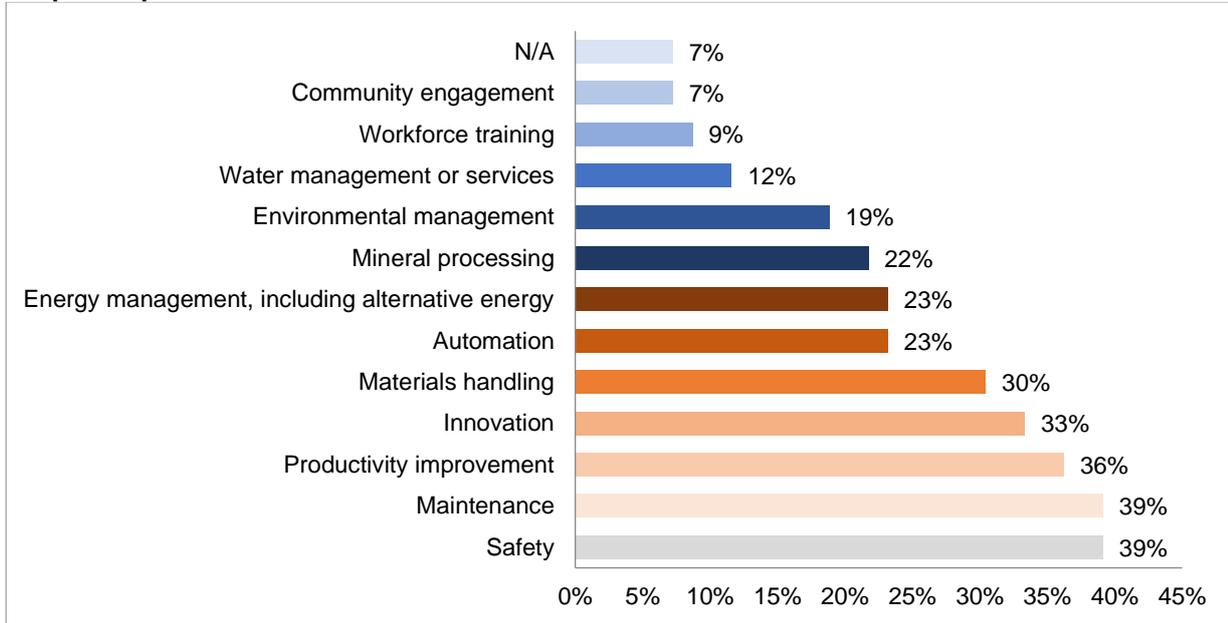
Question 17

Which of the following would you consider to be your company's main business activity within the mining industry? (79:80)

SPECIALISATION

To gain a further insight into the companies and what they do, the survey asked if they specialized in a range of services that trend wise of needed by miner's today. A high percentage, or 39%, said they specialize in safety and maintenance, whilst 36% specialize in productivity improvements, 33% in innovation and 30% in materials handling.

Graph 2: Specialisation



Question 18

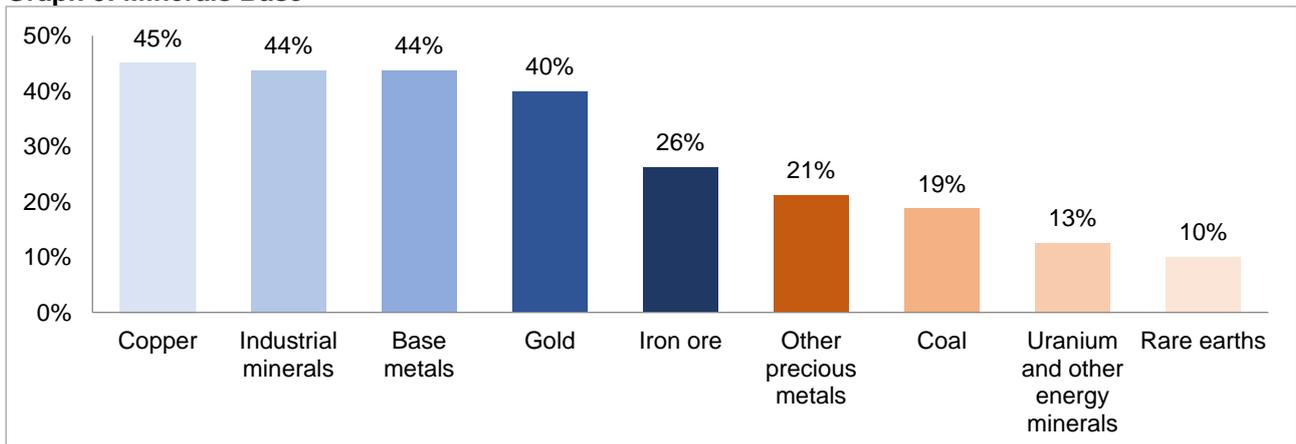
Do you specialize in any of the following? (69:80)

COMMODITY

The companies surveyed work across a range of minerals and commodity types. Copper is the primary commodity that Argentinian companies work in at 45%, followed by industrial minerals and base metals on 44% and gold at 40%. This is not surprising, given Argentina's abundance of a range of metals.

Most Argentinian METS work in more than one commodity. Only 24% of companies work in only 1 minerals base, with many of these companies working in industrial minerals. Astonishingly, 2% of Argentinian METS work in all of the surveyed commodities, showing the diversification of the businesses.

Graph 3: Minerals Base

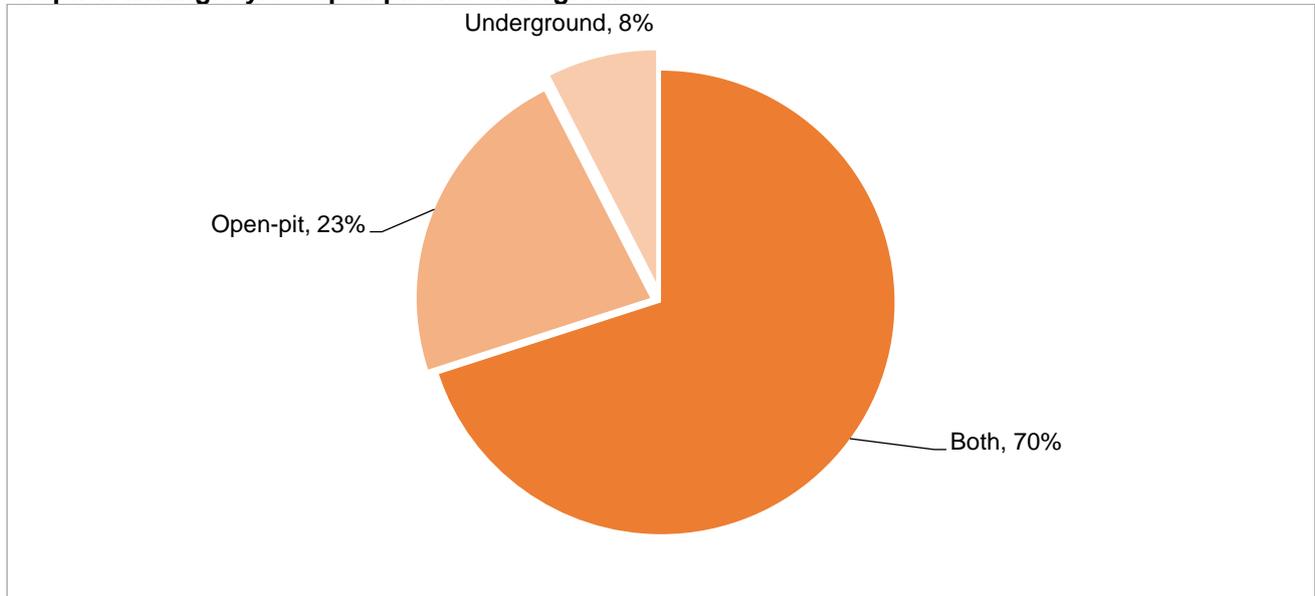


Question 13

In which minerals base does your company work? (79:80)

Along with the commodity in which they work, 70% percent of companies reported they work in both open pit and underground.

Graph 4: Mining Style – open pit and underground



Question 14

Do you work in open pit, underground or both? (80:80)

MINING LIFECYCLE

The companies surveyed work across all phases of the mining lifecycle, with the majority, 78%, working in operations. Over half, 54%, work in design & construction with a smaller percentage of METS working in each of the other 3 phases.

Forty-six (46%) of companies work across more than one phase of the mining lifecycle, while 8% work across all phases. This helps to mitigate risks during market downturns and allows companies to shift resources and focus as needed to accommodate cyclical fluctuations.

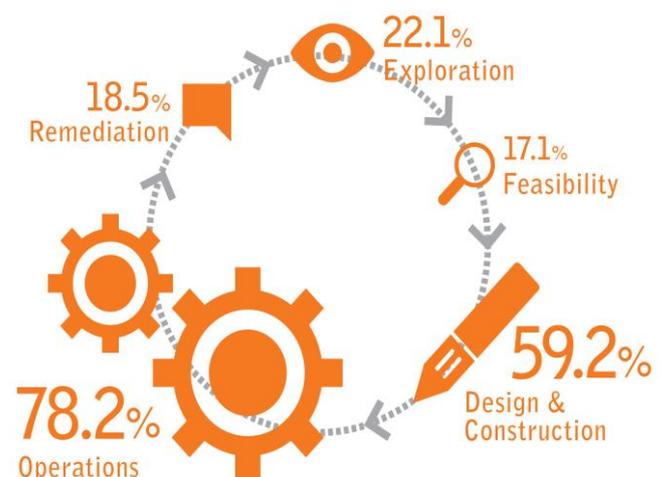


Figure 11: Mining Lifecycle METS % 1

Table 1: No. of Phases		
	No.	%
1 phase	43	54%
2 phases	27	34%
3 phases	3	4%
4 phases	1	1%
5 phases	6	8%
Total	80	100%

Question 12

In which part or parts of the mining lifecycle dos your company operate? (80:80)

SIZE OF FIRM

Total Annual Revenue

METS companies range in size from small engineering firms to large multi-national companies. Businesses were asked to report on their total annual revenue from their latest financial year. Results show that over 67% of companies have revenue of less than USD\$20m, with a little more than half of those (36%) reporting revenue of between USD\$0-5m. While the majority of firms are small companies, 9% are very large businesses and report an annual revenue of over USD\$1b per annum.

Table 2: Annual Revenue (USD @ 31 December 2016 or latest financial year)

Annual Revenue	No. of companies	%
\$0 to \$1.99M	12	27%
\$2M to \$4.99M	4	9%
\$5M to \$9.99M	7	16%
\$10M to \$19.99M	7	16%
\$20M to 49.99M	6	13%
\$50M to \$99.99M	2	4%
\$100M to \$249.99M	3	7%
\$250M to \$499.99M	0	0%
\$500M to \$749.99M	0	0%
\$750M to \$999.99M	0	0%
\$1B+	4	9%
Total company responses	45	100%
Don't know	35	
Total Companies	80	

Question 6

What was your company's total annual revenue for the financial year ended 31 December 2016 (or the latest financial year ended)? (80:80)

Note that responses were taken in local currency and then converted to USD.

As 44% of the companies could not answer this question, we have based our analysis on the 56% of the companies that were able to respond.

It should be noted that 75% of the companies surveyed reported that they experienced a decrease in revenue during the mining downturn. Based on the response of 5% of those companies, the average decrease in revenue was 27%. Companies during that period also experienced a decrease in profitability (42%), decrease in employee numbers (25%) and a loss of customers or projects (42%). It is unknown if companies are realizing a positive impact on their revenue or profitability as the market beings to recover.

Revenue from Minerals and Mining

Companies were asked “Q7: *What percentage of your total annual revenue is derived from your mining and minerals division or activity*” so a more accurate picture could be gained specifically on the revenue generated from their mining related activities.

The percentages reported show that 26% of firms derive over 50% of their revenue from sales to the mining industry. The average percentage reported as a total of overall revenue was 39%, with 9% of firms reporting they derive 100% of their revenue from mining.

These figures are very interesting as they signal that the Argentinian firms surveyed are quite diversified and show there is substantial room for growth for firms with lower mining revenue percentages.

Table 3: Percentage of Revenue from Mining

% of revenue	No. of businesses	%
< 10%	4	9%
10-19%	6	14%
20-29%	6	14%
30-39%	5	12%
40-49%	11	26%
50-59%	2	5%
60-69%	1	2%
70-79%	1	2%
80-89%	3	7%
90-99%	0	0%
100%	4	9%
Total company responses	43	100%
Don't know	37	
Total companies	80	

Question 7

What percentage of your company's revenue in that same year was derived from its mining and minerals division or activity? (80:80)

These results also show that METS companies have highly diversified business models and work across a range of industries. In fact, 89% of companies surveyed work in other industries. This is important for the sustainability of individual firms as it may allow resources to be shifted to take advantage of or lessen the impact of the boom/bust cycle of mining. Of those companies working in other industries, 55% work in oil & gas, 54% work in building and property management and 49% work in construction.

Table 4: Other Industries in which METS Work

% of revenue	No. of businesses
Oil & Gas	56%
Defence	9%
Renewables	34%
Building and property management	54%
Construction	50%
Electricity, water and other utilities	40%
Agriculture	29%
Consulting (other)	14%
Other	21%

Question 22

What other industries/activities do you work in? (70:80)

These figures also bode well for companies looking to become mining suppliers by transferring their skills from other industries. There is room for growth, therefore, at both a company and industry level and METS provides an important opportunity for diversification for those currently outside the sector.

Revenue from Mining by Business Activity

Contract mining and dealers/distributors derived the highest percentage of their revenue from mining, however, they had very small sample sizes. Of those with a greater amount of companies included in the survey, consulting and specialized mining services was top with 57% followed by EPCM/EPCs with 41%. Among the business activities that derive the least revenue from mining was manufacturers of spare parts, consumables and chemicals (18%) and transport and logistics (25%).

Table 5: Percentage of Revenue from Mining by Business Activity (Mean)

Business Activity	Mean
EPCM / Engineering / Construction	41%
Contract mining*	100%
Consulting	57%
ICTS	27%
Manufacturer of spare parts, etc	18%
OEM and equipment manufacturer	27%
Dealer/distributor*	70%
Other professional services	n/a
University, research institute, training	n/a
Transport and logistics	25%

*Note: Small sample size

Employee Numbers

The majority of firms (64%) employ less than 100 people with 51% reporting that they employ less than 50. These employment figures correlate with the reported revenue figures and the dominance of small companies in the sector.

Table 6: Employee Numbers (@ 31 December 2016 or latest financial year)

Employee Numbers	No. of companies	%
1-19	20	25%
20-49	21	26%
50-99	10	13%
100-249	19	24%
250-499	7	9%
500-749	0	0%
750-999	0	0%
1000-4999	2	3%
5000-9999	1	1%
10,000+	0	0%
Total	80	100.0%

Question 8

How many full time employees did your company have in Argentina on 31 December 2016 (or the latest financial year ended)? (80:80)

When looking employee numbers by business activity, Information communications technology and services companies tend to be the smallest with 57% of them only having 1-19 employees. This is followed by consulting with 56% of companies in the 1-19 bracket, whilst EPCM/EPCs are also relatively small with 69% of firms in the 20-49 range of employees.

Table 7: Business Activity by Employee Numbers (percentage)

Business Activity	1-19	20-49	50-99	100-249	250-499	500+	Total
EPCM / Engineering / Construction	19%	69%	0%	13%	0%	0%	100%
Contract mining*	100%	0%	0%	0%	0%	0%	100%
Consulting	56%	11%	0%	11%	0%	22%	100%
ICTS	57%	0%	14%	14%	14%	0%	100%
Manufacturer of spare parts, etc	24%	18%	12%	29%	18%	0%	100%
OEM and equipment manufacturer	0%	10%	30%	60%	0%	0%	100%
Dealer/distributor*	50%	25%	0%	25%	0%	0%	100%
Other professional services	n/a	n/a	n/a	n/a	n/a	n/a	n/a
University, research institute, training	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Transport and logistics	0%	38%	25%	0%	38%	0%	100%

***Small sample size**

AGE

The oldest company in the survey was established in 1854 and has been operational for 163 years, while the newest company was established in 2009. The oldest company identified itself as an EPCM/EPC working in both open pit mining and underground, working in iron ore, copper, gold, base metals, precious metals,

industrial minerals and rare earths. It is a medium to large sized company with 100-249 employees. The newest company identified itself as a Manufacturer of spare parts, consumables or chemicals working in both open pit and underground mining and servicing all surveyed commodities apart from rare earths. It is a relatively small company with 20-49 employees.

The median age of the companies surveyed is 29 years, with a mean of 25 years.

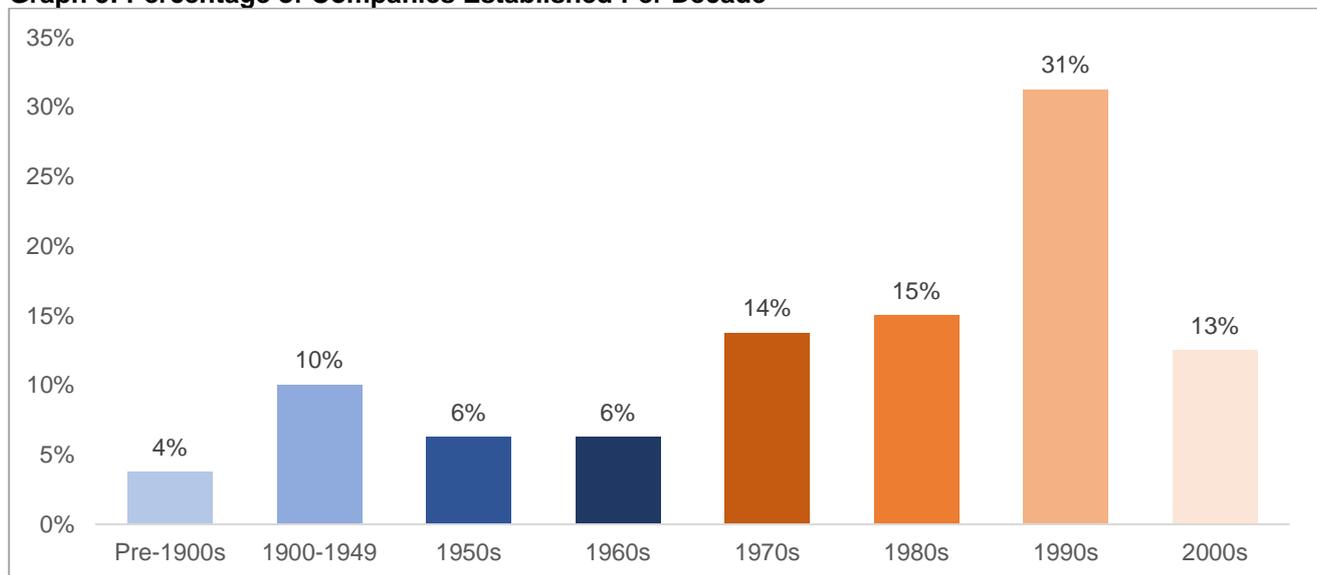
Table 8: Age of Companies

	Year	Age
Oldest	1854	163
Median	1984	33
Mean	1976	41
Mode	1996	11
Newest	2009	8



The decade of the 1990s showed the most growth in company with 31% established. Fifteen percent (15%) were established in the 1980s and 14% in the 1970s.

Graph 5: Percentage of Companies Established Per Decade



Question 4

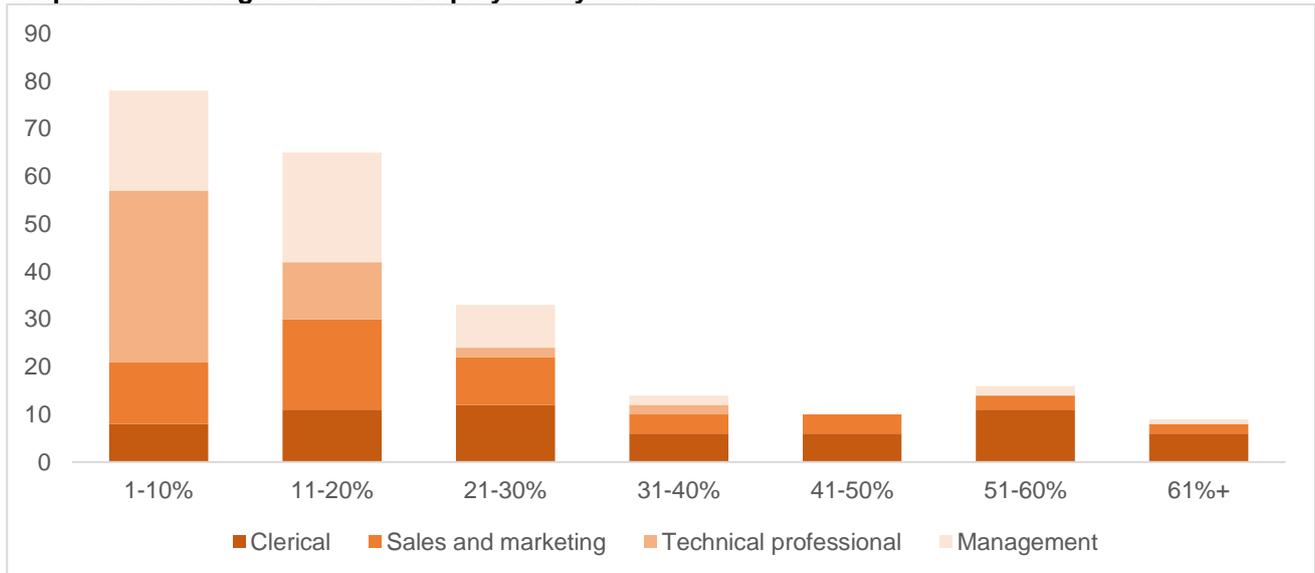
In what year was your company established? (80:80)

GENDER DIVERSITY

Gender diversity issues were explored in the survey and 3 specific questions were asked related to this topic.

Ninety-six (96%) of companies reported that they have females employed. Seventy-five (75%) percent of these employ females as clerical staff, 69% employee females in sales and marketing roles, 65% employee females as technical professionals and 73% employee females in management. While the percentages of females employed may be low with the majority of companies reporting they employ between 1-10% across the various categories, it is pleasing to see that females are filling roles other than those classified as clerical.

Graph 6: Percentage of Female Employees by Role



Question 9

What percentage of your workforce is female in clerical, sales and marketing, technical professional and management roles as at 31 December 2016? (80:80)

Question 10

Do you have any specific recruitment strategies to attract females to your workforce? (80:80)

Ninety-eight (98%) percent of companies reported that they do not have specific recruitment strategies to attract females to their workforce. Of the two companies that do, one has a workforce of +61% female employed across clerical roles, whilst the other has above average employment of women in clerical and management roles.

Question 11

What do you think are the major barriers for women trying to advance their careers in this sector? (80:80)

Forty-four (44%) percent of those surveyed think there are no major barriers to career advancement for females in the mining industry. A further 49% either did not answer the question or said they did not know. The remainder of the respondents acknowledged that barriers exist. Key amongst these are difficult working conditions, health reasons such as working with lead, qualifications, a stigma that females are more suited to clerical roles and a lack of female-friendly programs.

CHAPTER 2

INTERNATIONAL ACTIVITIES

EXPORTERS

Fifty-nine (59%) percent of companies responded in the affirmative when they were asked, (Q32) *Does your company export products, services or technologies to other countries?*

Key export regions include South American with 77% of those exporting to this near region. This is followed by Central America (32%), North America (30%) and Western Europe with 28%.

A breakdown of export regions is as follows:

Table 9: Export Regions, % of Companies

Region	%	Region	%
North America	30%	South East Asia	6%
Central America	32%	South Asia (India)	15%
South America	77%	Central Asia	9%
East Africa	4%	Middle East	9%
Central Africa	6%	Western Europe	28%
Southern Africa	11%	Eastern Europe	13%
West Africa	6%	Southern Europe	13%
Oceanic and Antarctic	19%	Northern Europe	13%
North Asia	6%		

Question 35

To which of these regions does your company export or are you planning to export? (47:80)

Of total companies surveyed, 6% said they intend to start exporting in the next 1-2 years.

Question 33

If you do not export, does your company plan to export in the next 1-2 years? (34:80)

Revenue Derived from Exports

Companies were asked “Q34: *What percentage of your total annual revenue is derived from exports.*” Companies reported on average that 22% of their total annual revenue was derived from exports. This was based on a response from 26 companies.

Table 10: Percentage of Revenue Derived from Exports

% of export revenue	No. of companies	%
1-20%	15	58%
21-50%	11	42%
50%+	0	0%
Not answered	9	



Exporter by Business Activity

The highest number by business activity that exports according to the survey are EPCMs (27%), followed by manufacturers (24%), and contract miners (16%).

Table 11: Exporter by Business Activity (percentage)

Business Activity	No. of companies	%
EPCM / Engineering / Construction	12	26%
Contract mining	0	0%
Consulting	3	6%
ICTS	5	11%
Manufacturer of spare parts, etc	13	28%
OEM and equipment manufacturer	4	9%
Dealer/distributor	2	4%
Other professional services	n/a	n/a
University, research institute, training	n/a	n/a
Transport and logistics	6	13%
Other	2	4%
Total	47	100%

Exporters by Employee Numbers

Companies of all sizes export, but it is interesting note that high percentage of small companies which are exporting.

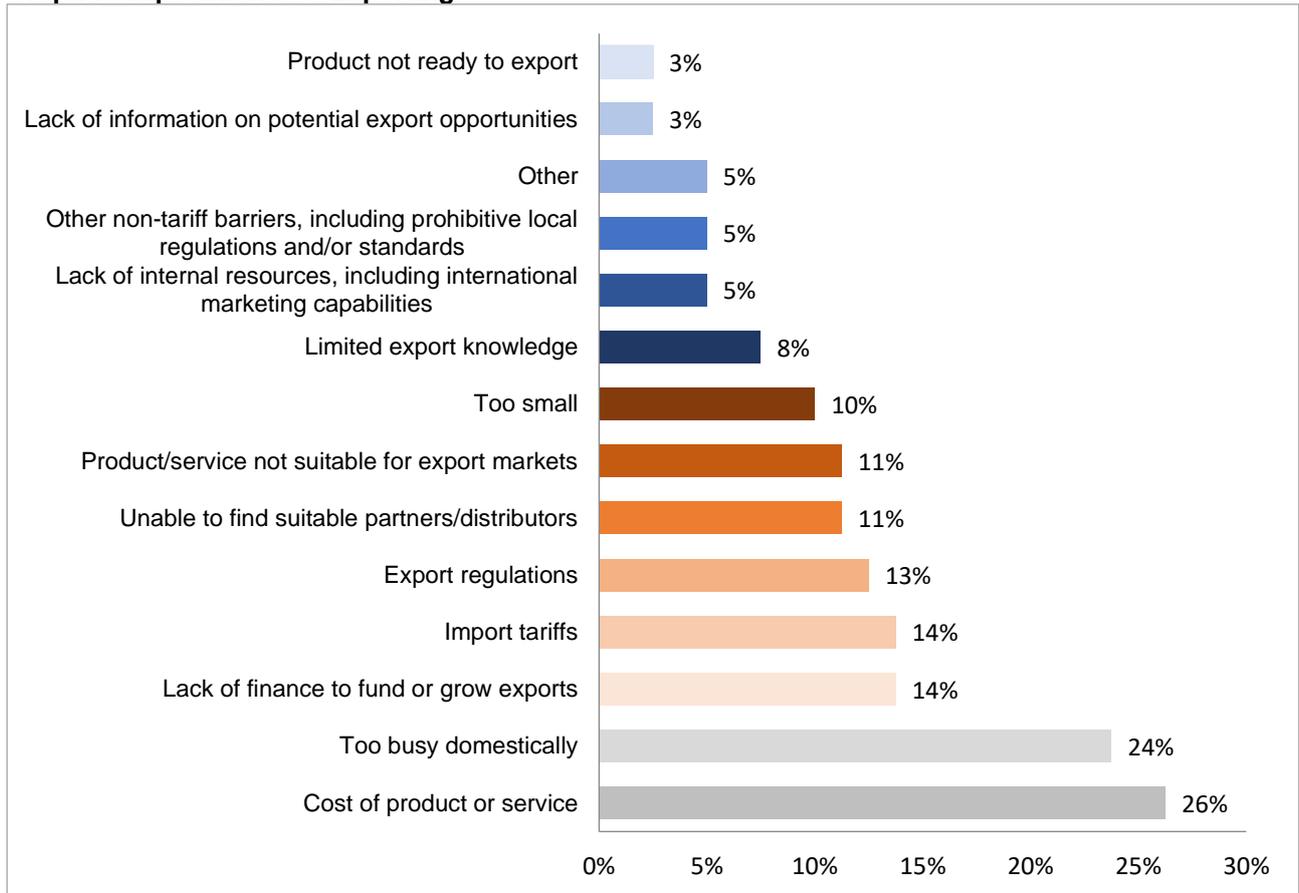
Table 12: Employee Numbers (@ 31 December 2016 or latest financial year)

Employee Numbers	No. of companies	%
1-19	10	21%
20-49	14	30%
50-99	7	15%
100-249	10	21%
250-499	6	13%
500-749	0	0%
750-999	0	0%
1000-4999	0	0%
5000-9999	0	0%
10,000+	0	0%
Total	47	100%

Impediments to Export

Survey participants identified a number of impediments to commencing or expanding their export business. The most commonly identified impediments included the cost of the product or service (26%), too busy domestically (24%), a lack of finance to fund or grow exports (14%) and import tariffs (14%).

Graph 7: Impediments to Exporting



Question 36

What are your greatest impediments in commencing exporting and expanding your current export market? (choice of 3) (78:80)

SECTION TWO

1.0

METS COMPETITIVE ADVANTAGE

Mining and METS go hand-in-hand and it is no coincidence that the Australian METS sector is a global success story. Australia's rich natural resources and large domestic mining industry have allowed METS companies not only to flourish, but develop in such a way that sustainable competitive advantage has been created.

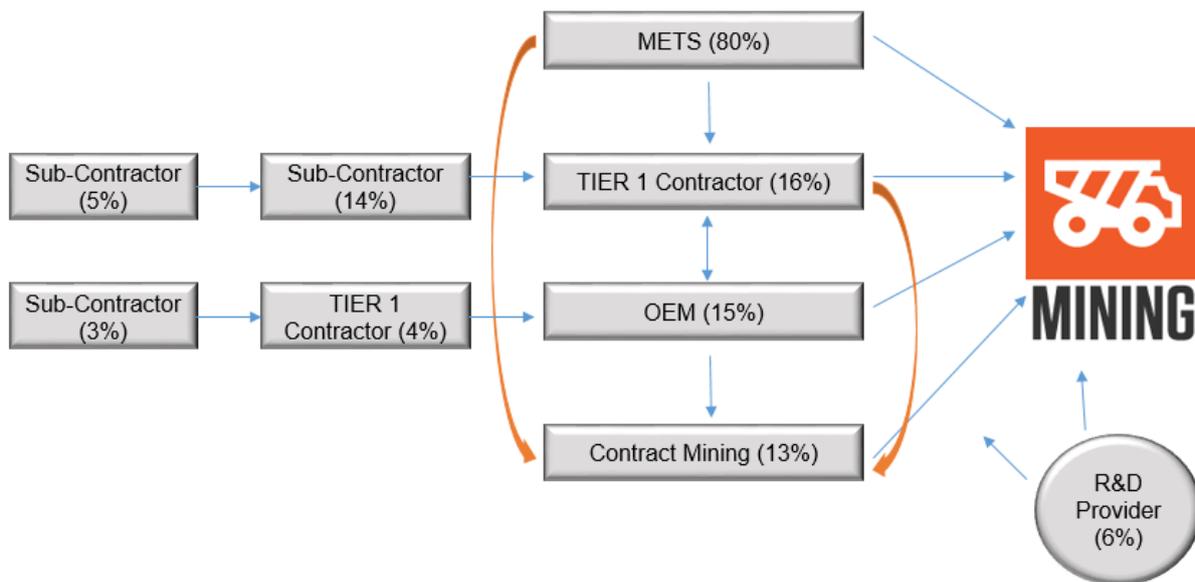
CHAPTER 3

CUSTOMER - SUPPLIER INTERFACE

THE SUPPLY CHAIN - METS

METS work with a range of customers and supply into global mining houses at many different levels. Surprisingly, 80% of METS work with mining companies directly. METS also supply to other METS including Tier 1 contractors, sub-contractors, contract miners and OEMs.

Figure 2: Supply Chain



Question 15

Where does your company operate in the mining supply chain? (80:80)

Given the diversity of the customer interface, it is difficult to define a structure or primary channel into global mining houses for METS companies. Indeed the chain is a web of connections that interface when and where as needed.

How and where METS companies work with and interface with mining companies directly was asked in the survey. Fifty-seven (57%) percent said they work with the mine site directly and also the corporate headquarters. Thirty-three (33%) percent said they work with a buying office located in Argentina, and 19% work with a buying office in a 3rd market. 11% work via an e-market place.

Table 13: Working with a Mining Company

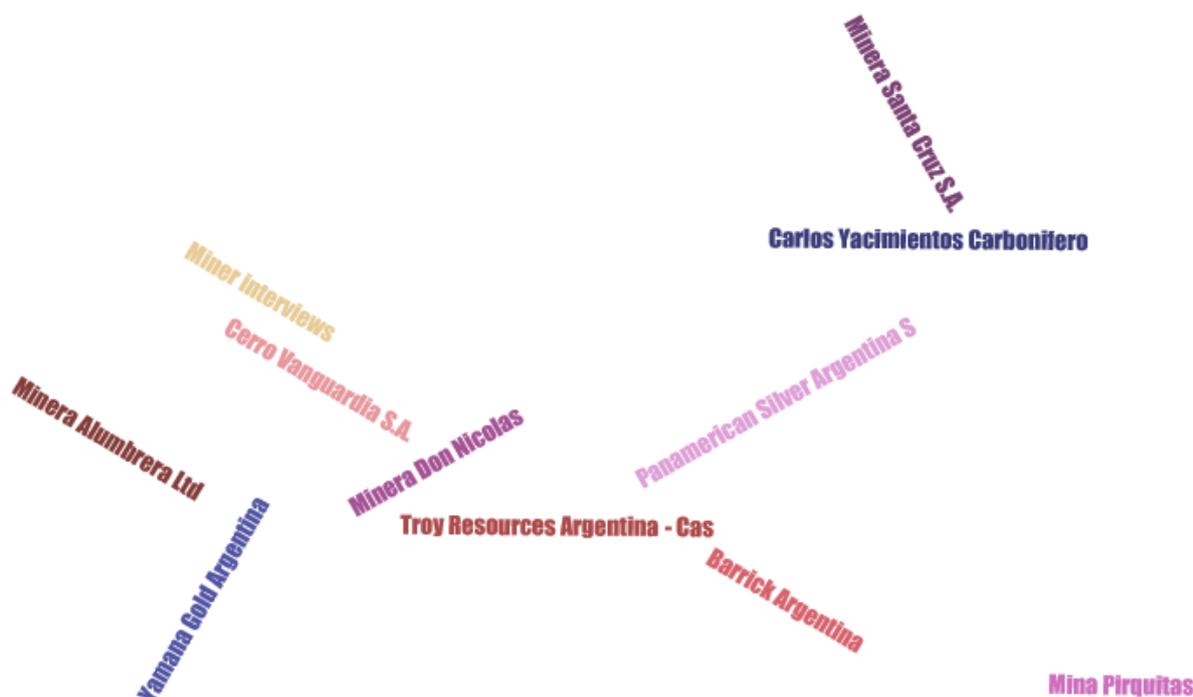
Mining Company Access	%
Work directly with the mine site	57%
Work with their corporate headquarters	57%
Work with a buying office in Argentina	33%
Work with a buying office in a 3 rd market	19%
Work via e-market place	11%

Question 16

When working with a mining company directly, do you work with (70:80)

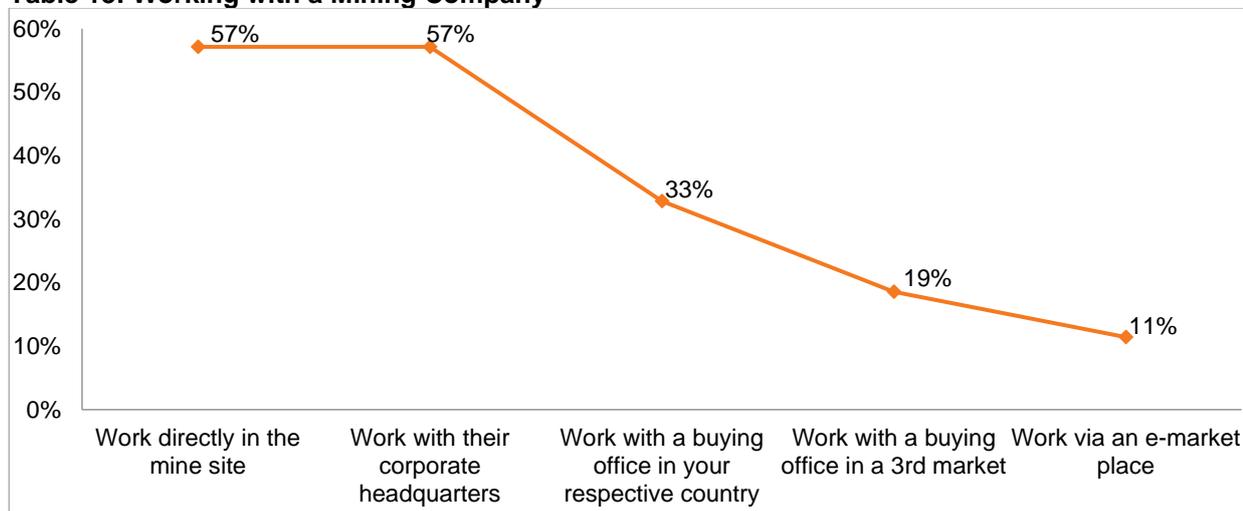
THE SUPPLY CHAIN – MINERS

The miners interviewed in Argentina are mainly the major producers with large-scale projects and substantial supply chains. Some of the same companies were interviewed several times, but with different individuals corresponding to different mine sites or projects to obtain a more localized view of supply chain issues.



It is no surprise that miners in Argentina work with a wide range of suppliers, generally with a list of suppliers in their hundreds. The majority of their suppliers (51%) were classified by miners as national, or companies with the capabilities to service miners throughout the country. Thirty-one (31%) percent of their suppliers were classified as local and 18% are foreign-owned multinationals.

Table 13: Working with a Mining Company



Suppliers cover the breath of business activities as outlined in previous chapters, and they are mainly medium to large companies vs. small companies and multi-nationals. While female employment issues were raised in relation to their suppliers, the miners could not answer questions related to this as they lacked knowledge in this specific area.

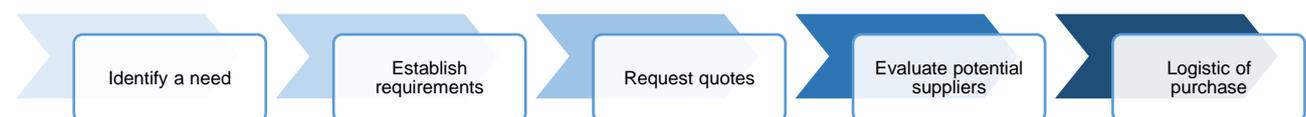
Current critical challenges for Argentinian miners revolve around reducing overall costs through optimization and innovation and improving energy efficiency. Leveraging technology, including automation and greater use of machines, are other key challenges. Receiving goods and services on time from suppliers is another key challenges, along with better quality controls. Ensuring a sufficient supply of technically skilled labour is another major challenge for Argentinian miners. In all these areas, they are looking for suppliers to assist them.

Basic Procurement Structure

All of the miners operate their own mines (versus using a contract miner), and have a centralized supply chain structure, although there is flexibility to make local purchases if needed. All companies have an overarching supply chain management division that oversees the majority of the procurement function. This division is further broken down into specialty areas including contracts management and/or logistics. Depending on the stage of the project, the responsible department handles the relationship with each supplier. With the exception of one miner, all of the companies had local content requirements that are internal policies.

Procurement is carried out in a number of ways including a pre-qualification process, sole source tenders, competitive tenders and ad hoc purchases to fulfill short term requirements. At a very basic level, most of the miners described their procurement cycle in the following way:

Figure 3



Contract terms vary depending on the product or service being procured. All miners use a variety of terms from less than 12 months to longer term contracts of 4-5 years.

Supplier Selection

Miners use a range of sources to identify suppliers. This includes drawing on their own experience, historical data, past purchases, directories, internet searches and tradeshows. They also use the experience and recommendations from other companies as a means of sourcing potential suppliers.



In selecting suppliers from a more holistic point of view, the miners stressed the need for a track record in safety and financial stability. Other important considerations are experience, location, availability and legal and environmental compliance. ISO certification was also mentioned as an important pre-qualifier by a number of miners. Miners do provide some training to improve supplier performance, but this was mainly in the area of safety. Technical assistance and project management were other areas where training is provided.

Of course, the need for the supplier's product or service is ultimately why the purchasing decision is made. Miners were asked, "how strong is the need to purchase products or services based on costs vs. quality or innovation? What are the major considerations in regards to choosing products or services? Cost is the main driver in a purchasing decision, particularly for generic items. Quality too is important, and mentioned for specialized equipment, technical items and longer term purchases. Innovation, in this case, was not an important consideration by miners.

What Miners Want from their Suppliers

Supplier Attributes and Value-Add

Miners were asked to rate on a scale of 1-10 the importance of certain attributes versus the attributes they believed their suppliers actually possessed. The most important attributes for miners related to high quality of the product or service, having a safety management system in place, being a proactive problem solver, having an environmental management system in place and understanding the miner's needs.

A summary of the ratings is provided in the next table from the most important attribute to the least.

Table 15: Supplier Attributes

Attribute	Importance to miner	Supplier delivering	Difference
High quality	9.2	7.6	-1.6
Safety management system	9.8	7.5	-2.3
Proactive problem solver	8.6	7.5	-1.1
Environmental management system	9.8	7.4	-2.4
Digital solutions	8	7	-1
Future needs	8.2	7	-1.2
Tendering skills	8.5	6.8	-1.7
Cheapest price	8.2	6.7	-1.5
Responsive	9	6.6	-2.4
Important partner	7.7	6.4	-1.3
Project management skills	7	6.3	-0.7
Understands needs	8.7	6.3	-2.4
New technologies	8	6.3	-1.7
Quality management system	8.5	6.1	-2.4
High quality after sales services	8.4	6	-2.4
Continuous improvement	7.6	5.9	-1.7
Innovative solutions	8.2	5.8	-2.4
On-time delivery	8.3	5.6	-2.7
Value proposition	8.6	5.6	-3
Value for money	8.1	5.2	-2.9

Question 20

On a scale of 1 to 10 how important is it for your suppliers to have the following attributes (1 being not at all important, 10 being extremely important) (80:80)

Question 22

On a scale of 1 to 10 how would you rate the following attributes of your key suppliers (1 being very low, 10 being exceptional) (70:80)

As seen above, there is a significant room for improvement for Argentinian METS. However, the highest priorities of miners correlate quite well with the areas that the METS are doing the best in, showing that they have an understanding of the needs of miners. As noted previously, price is very important to Chilean miners and takes prominence during the purchasing position.

Miners were also asked, “Q21: *are there any other attributes which you would consider relevant?*” Of those who responded the main issues highlighted was financial stability, an understanding of the complexities of the mining environment and supply chain, product certification and the credentials of suppliers.

Miners were asked, “(Q24) *in which way do your suppliers add the most value?*” The responses to this question were varied, but common themes were delivering a high quality of good or service, providing an urgent and quality response to their needs and solving their most pressing problems. Specific comments included:

- Improving delivery time;
- Delivering high quality products and services at good Price;
- labour productivity development and improvement;
- managing changes;
- Understanding company needs;
- put the effort in creating long term partnerships instead of putting the focus on spot sales.

Supplier Improvements

There were a range of supply constraints identified by the Argentinian miners. The most common of these were import restrictions creating costly delays and additional costs, poor quality from local suppliers, a lack of local stock and a lack of competition.

When asked, “(Q25) *in what areas do they (suppliers) need to improve,*” the following areas were noted:

- Delivery time;
- Increasing productivity;
- Reducing costs;
- Quality management;
- Quality and availability of after-sales service;
- Labour productivity and skills development;
- Better understanding the needs of miners.

Miner’s were also asked, “(Q30) *how can your suppliers be more relevant to you?*” Responses were themed around ensuring that suppliers deliver on-time and at a sufficient quality, monitoring and testing equipment, being proactive in solving miner’s problems, understanding industry needs and reducing costs. Specific comments included:

- Improving and maintaining quality standards;
- Adding value to the rest of the national industry;
- Being sustainable;
- Labour productivity development and improvement;
- Monitoring and testing;
- Implement continuous improvement programs;
- Developing partnership skills.

CHAPTER 4

CAPABILITIES AND COMPETITIVE ADVANTAGE

ATTRIBUTES

To better understand the capabilities of firms, the survey explored key attributes by asking the companies to rate these on a scale of 1-10. This is then compared with the responses which the miners provided when asked about important attributes of their suppliers.

Table 16: Supplier Attribute Ratings vs. Miner's View about Attributes

Attributes	METS	Miners	Difference
Value for money	8.54	5.2	-3.34
On-time delivery	8.45	5.6	-2.85
Innovative solutions	8.51	5.8	-2.71
Continuous improvement	8.51	5.9	-2.61
Understands needs	8.87	6.3	-2.57
High quality after sales services	8.45	6	-2.45
Responsive	8.9	6.6	-2.3
Value proposition	7.9	5.6	-2.3
Quality management system	8.37	6.1	-2.27
New technologies	8.35	6.3	-2.05
Project management skills	8.31	6.3	-2.01
Important partner	8.05	6.4	-1.65
Future needs	8.44	7	-1.44
Tendering skills	8.16	6.8	-1.36
Proactive problem solver	8.84	7.5	-1.34
High quality	8.85	7.6	-1.25
Digital solutions	8.12	7	-1.12
Environmental management system	8.42	7.4	-1.02
Safety management system	8.39	7.5	-0.89
Cheapest price	7.46	6.7	-0.76

Question 23

On a scale of 1 to 10 how would you rate the following attributes of your company (1 being never, 10 being always) (80:80)

Question 24

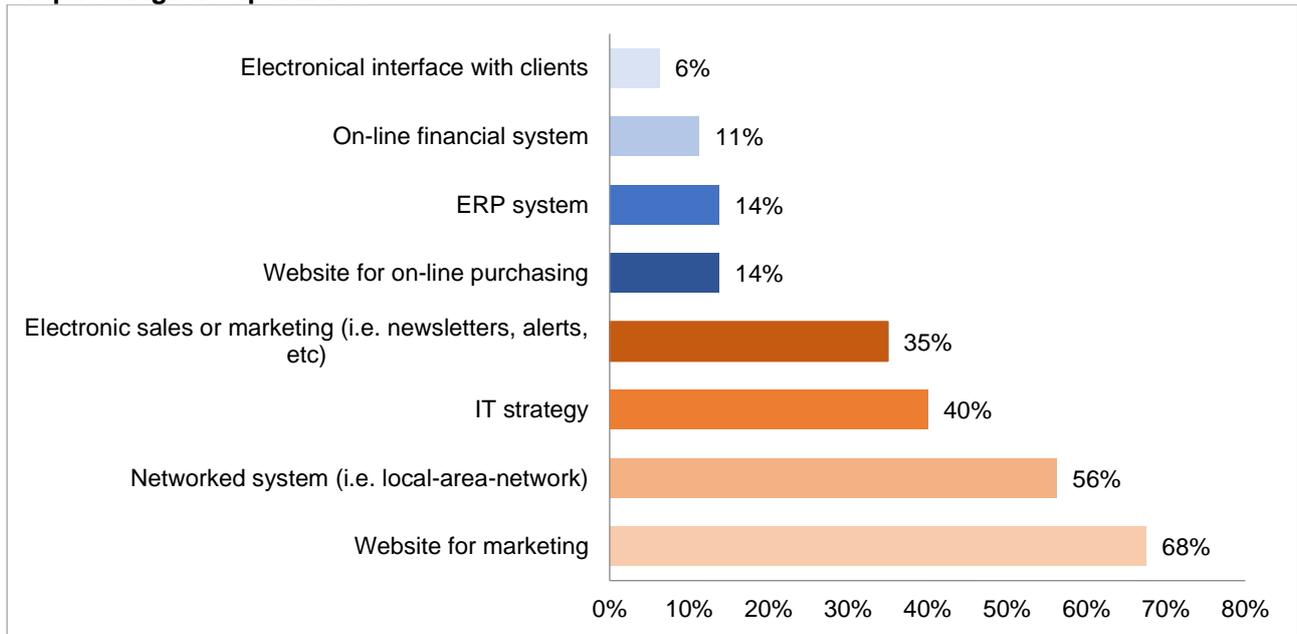
On of scale of 1 to 10, how well-developed are the following attributes of your company (1 being not at all, 10 being exceptional) (80:80)

This table shows that there is significant improvement for METS in areas that miners have expressed as being critical to their business. This includes delivering value for money, delivering on-time, understanding their needs and being responsive. However, this gap is much smaller in other areas that miners have identified as a priority such as delivering high quality and being a proactive problem solver.

Digital Capability

Given the current macro technology trends and the importance of digital capabilities as it relates to mining, METS companies were asked about their digital capabilities. The majority of respondents said they had a website for marketing (68%), with a bit over half indicating that they had a networked system (56%). Percentages are much lower for more sophisticated on-line interactions, including quite a low percentage at 11% of those who have an on-line financial system.

Graph 9: Digital Capabilities



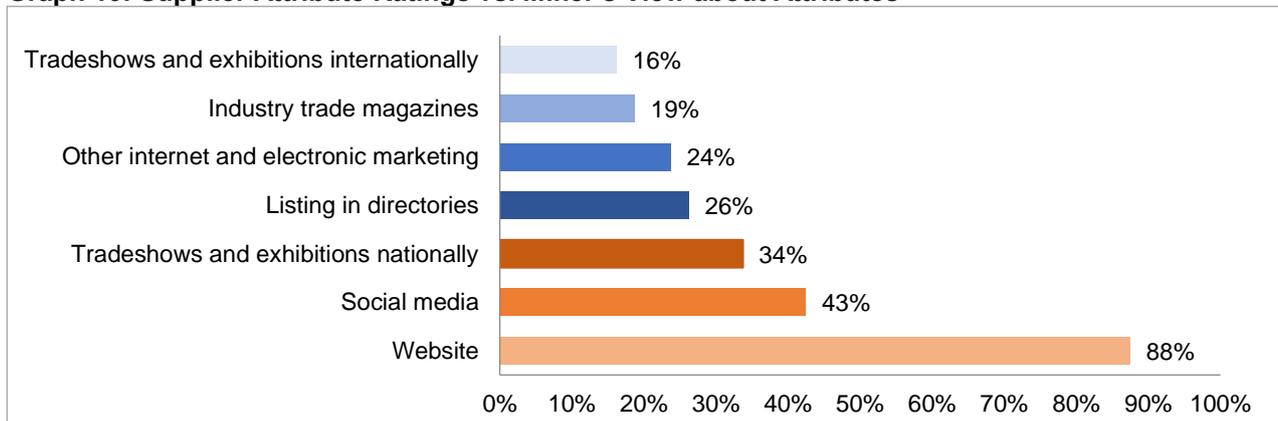
Question 25

Regarding your digital capability, do you have? (80:80)

Marketing Tools

The survey also asked about what marketing tools are the most effective. Overwhelming 88% noted a website. Social media was the next most effective marketing tool with 43% responding to this, 34% noted tradeshows and exhibitions nationally and 26% responded with listings in directories.

Graph 10: Supplier Attribute Ratings vs. Miner's View about Attributes



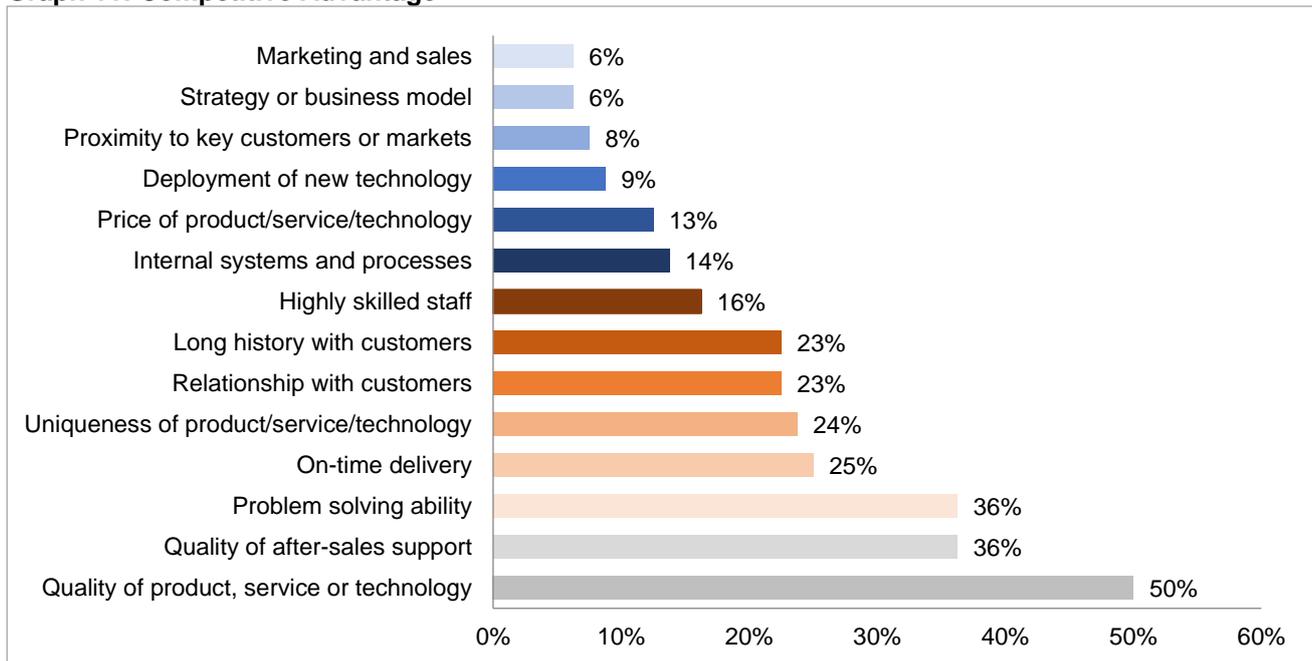
Question 26

What are your company's most effective marketing tools? (80:80)

COMPETITIVE ADVANTAGE

When asked about competitive advantage, 50% of METS surveyed reported that the quality of their product, service or technology was their key competitive advantage. Closely linked to this, 36% of respondents said that the quality of their after-sales support was a key competitive advantage. Other areas commonly noted included their problem-solving ability (36%), on-time delivery (25%) and the uniqueness of the product, service or technology (24%).

Graph 11: Competitive Advantage



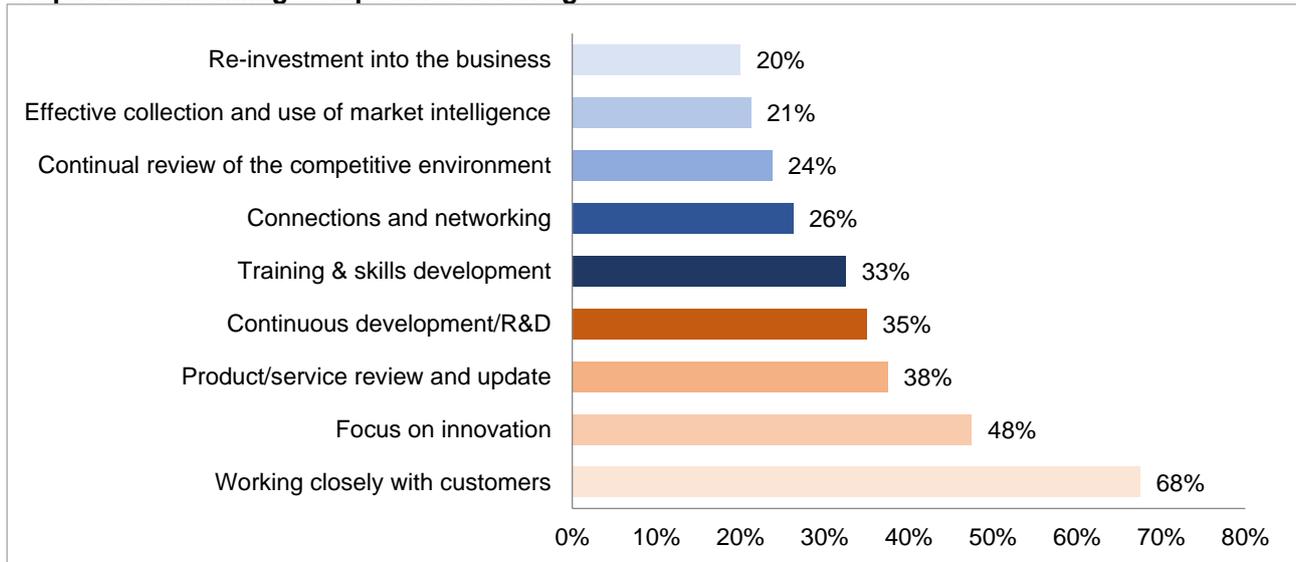
Question 19

What do you consider to be your company's key competitive advantages? (select up to 3) (80:80)

MAINTAINING COMPETITIVE ADVANTAGE

Sixty-eight (68%) Percent of companies reported that they maintain their competitive advantage by working closely with customers. Forty-eight (48%) percent reported they focus on innovation, and 38% said they continually review and update their products and services.

Graph 12: Maintaining Competitive Advantage



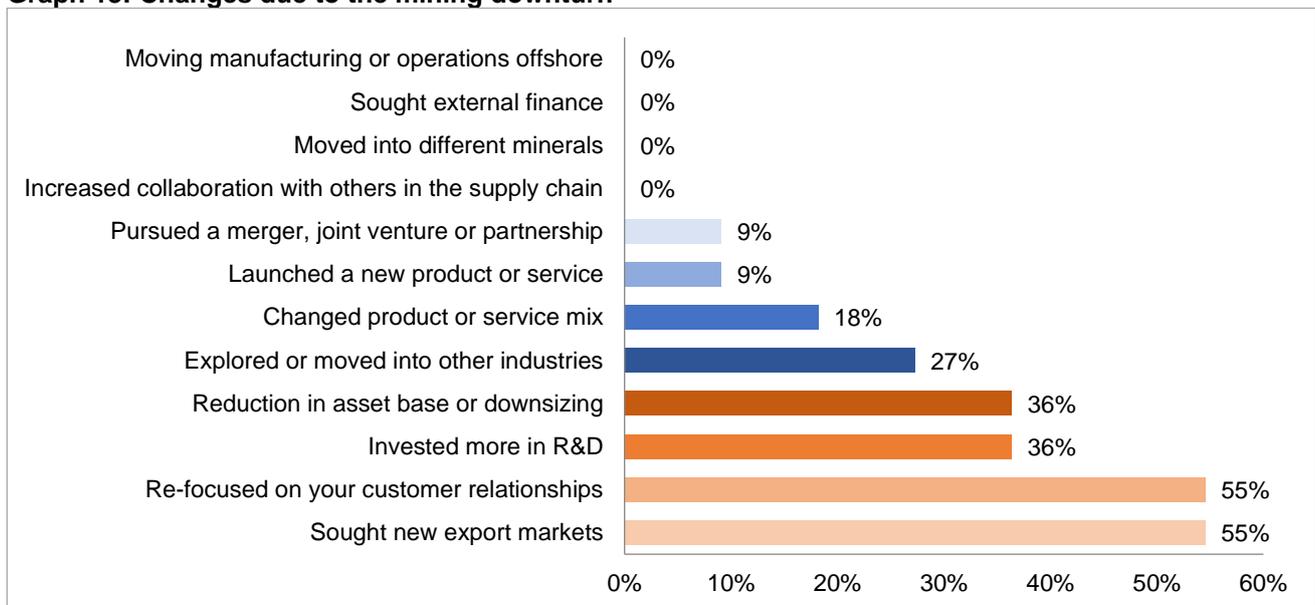
Question 20

How does your company maintain competitive advantage? (80:80)

Importantly, as well, Argentinian METS companies invest in their future. They invest in their staff with training and skills development (33%), they re-invest back into their business (20%), and 35% invest in R&D.

These findings are consistent with the responses received when the survey asked, “*what strategies has your company adopted to combat or leverage the changes due to the mining downturn?*” The majority of firms said that they re-focused on their customer relationships (55%) and also sought new export markets (55%). Other common answers included investing more in R&D (36%), reducing their asset base or downsizing (36%) and moving into other industries (27%).

Graph 13: Changes due to the mining downturn



Question 31

What strategies has your company adopted to combat or leverage the changes due to the mining downturn?” (11:80)

CHAPTER 5

INNOVATION AND COLLABORATION

INNOVATION

As noted in Chapter 1, 33% of Argentinian METS said they specialize in innovation, showing that this is a focus for them. However, 5.8 was the mean attributes rating in response to “provides innovative solutions,” as rated by Argentinian miners. This means that whilst METS are endeavoring to be innovative, they still have work to do to match buyer expectations.

R&D Spend

Companies were asked about R&D spend. Sixty-six (66%) percent of the companies reported that they spent money on R&D in the past financial year, with 55% of those only spending between \$0-\$50,000. Companies who employ between 20-49 employees were those most represented with the majority of those spending between 0-50,000.

Table 17: R&D Expenditure by Employee numbers (percentage)

R&D Expenditure USD	1-100	101-500	500+	Total
\$0-\$50,000	36%	19%	0%	55%
\$50,000-\$100,000	17%	9%	0%	26%
\$100,000-\$250,000	4%	2%	2%	8%
\$250,000-\$500,000	2%	6%	0%	8%
\$500,000-\$1,000,000	0%	0%	0%	0%
\$1,000,000+	0%	2%	2%	4%

Question 40

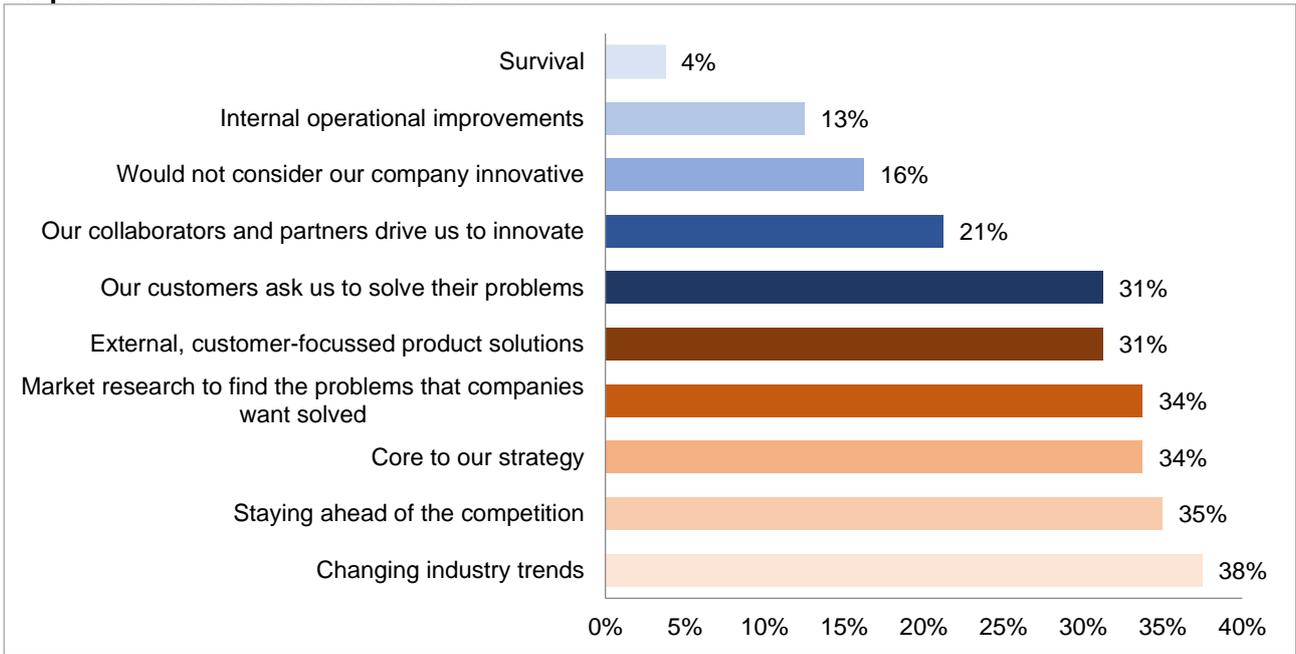
How much did your company spend on R&D in the last financial year? (80:80)

Percentages calculated on the 66% that responded.

Main drivers of Innovation

Thirty-eight (38%) percent of companies reported that changing industry trends were their main drivers of innovation. Thirty-five (35%) percent said they were innovative to stay ahead of competition. A further 34% said that innovation was core to their strategy. Thirty-four (34%) percent also said market research to find the problems that companies want solved drives innovation. Meanwhile, 31% said that customers asking them to solve specific problems and customer-focused solutions drive innovation.

Graph 14: Main drivers of Innovation



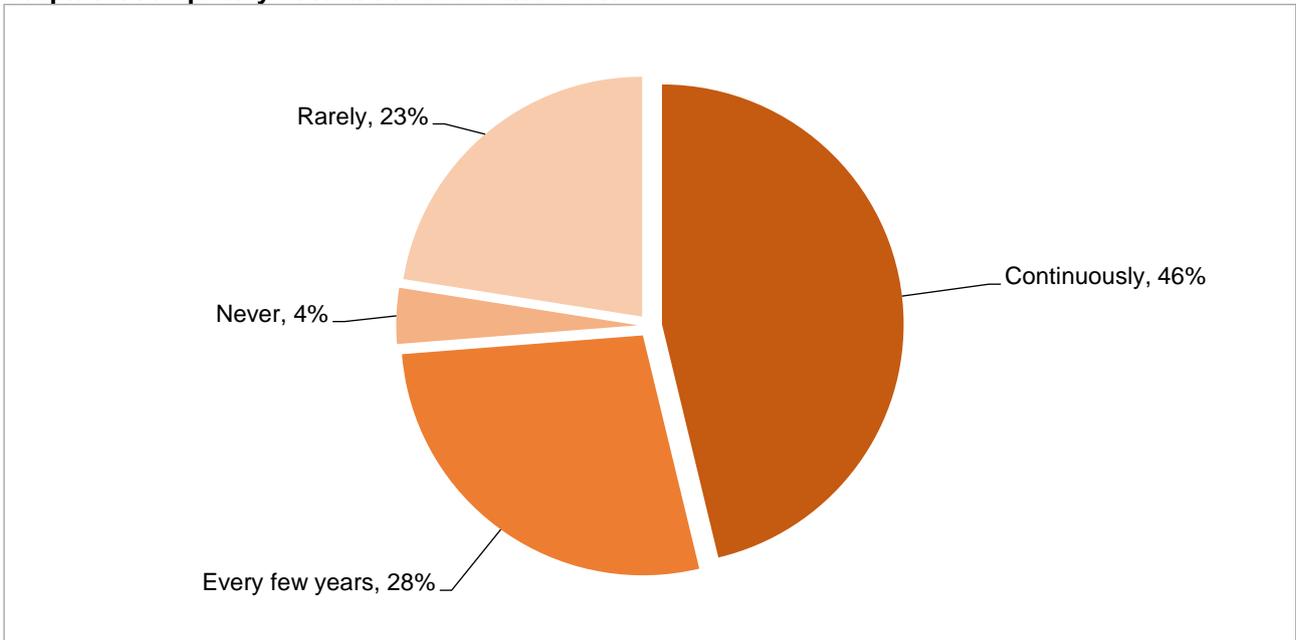
Question 42

What are the main drivers of innovation in your company? (80:80)

New Products or Services

Forty-six (46%) of companies said they are bringing out products continuously, with 28% of respondents noting they bring our new products and services every few years.

Graph 15: Frequency of New Products and Services



Question 43

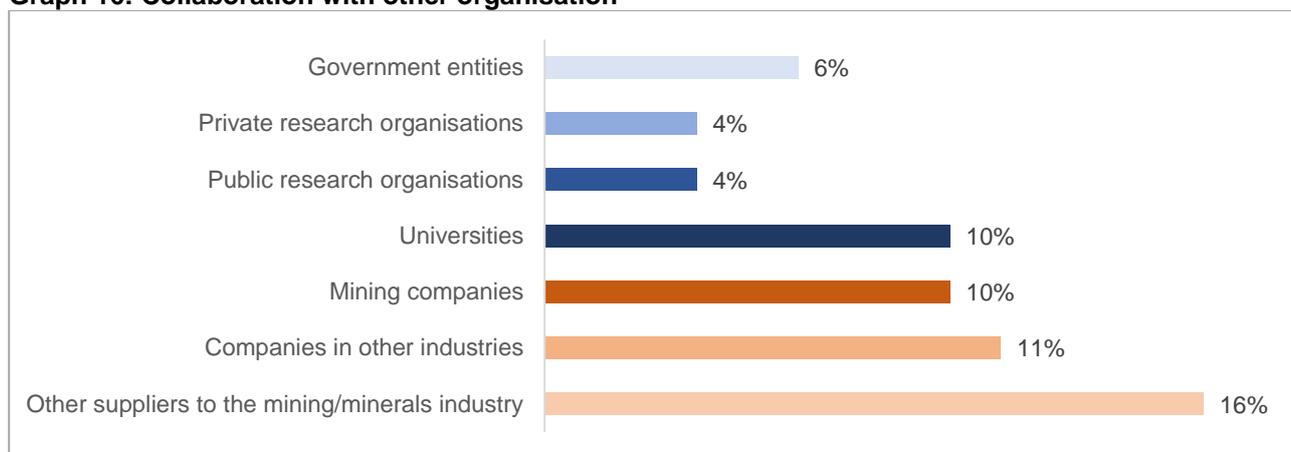
How frequently does your company bring out new products and services? (80:80)

It is interesting to note that of the 46% bringing out products continuously, 62% of those are companies employing less than 100 people. Only 3% of companies who said they are continuously bringing out new products and services employ over 500 people.

COLLABORATION

When asked “(Q37) Do you have any formal alliances with your customers?” 29% of respondents said that they do have formal alliances. Similarly, what asked about collaboration, 25% said they collaborate with other companies. Sixteen (16%) percent of those collaborate with other suppliers to the mining industry, 11% collaborate with companies from other industries, and 10% collaborate with mining companies and universities. Companies also collaborate with public and private research institutions, private research organisations and government.

Graph 16: Collaboration with other organisation



Question 38

Do you collaborate with other companies to develop products/services or increase your offering?
(80:80)

Miners too noted they collaborate with their suppliers in a number of ways. The main area that Argentinian miners collaborate with their suppliers is to solve specific problems at their operations that require a unique solutions. Other areas of collaboration include: development of new products or services; working together to come up with innovative ways in doing things; and planning for the future together.

MAINTAINING CONNECTIONS

Industry Associations

Forty-five (45%) percent of those surveyed said they were a member of a chamber of commerce of business association. When asked specifically which organisation, the majority responded that they were a member of a Chamber of Commerce. Other organisations that were noted in the survey include:

- ISO
- CAMBRAS
- CAFMEI
- Local Bodies
- Chamber of industrial metallurgists

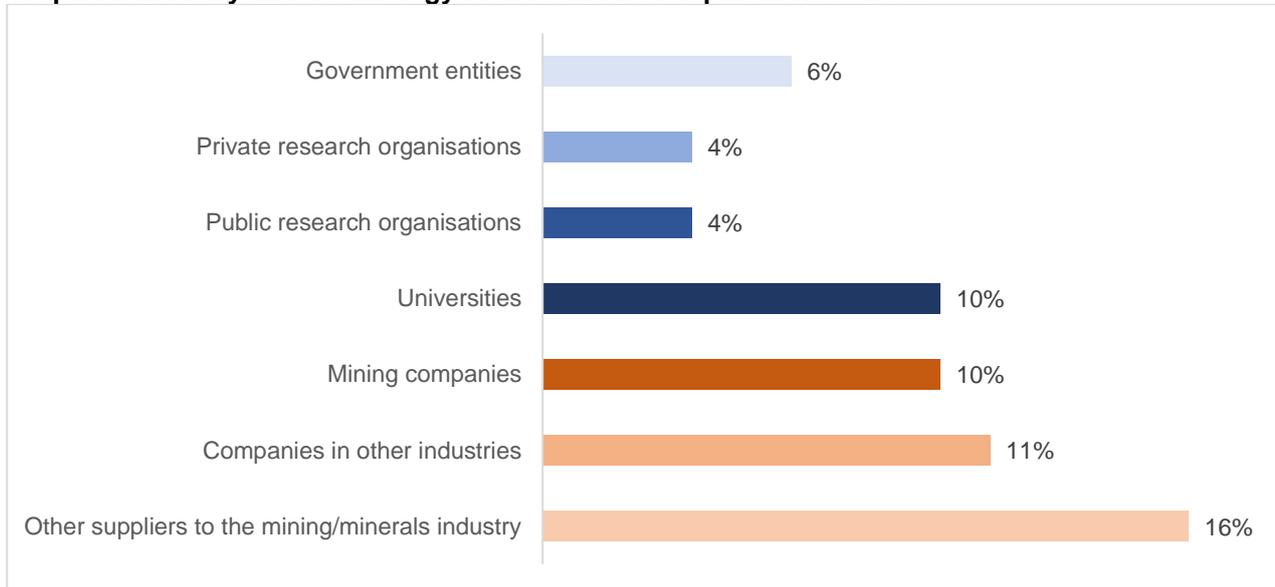
Question 41

Are you a member of any business associations, industry bodies or Chamber of Commerce? If yes, which ones? (80:80)

Staying Informed

When asked “(Q27) which of the following resources do you, personally, use to keep up to date with industry and technology trends and developments,” 65% indicated social media (Twitter, LinkedIn, discussion forums, etc) was the predominant way they stayed informed. Fifty-nine (59%) indicated that attending seminars, conferences and events was their primary source of information, whilst 55% favored industry magazines.

Graph 17: Industry and Technology Trends and Development Resources



Question 27

Which of the following resources do you personally use to keep up to date with industry and technology trends and developments? (80:80)

SECTION THREE

METS OUTLOOK

While METS companies are enjoying solid growth, many significant challenges loom. The mining sector is at a tipping point with cost pressures and increasing depth and diminishing ore grades threatening Australia's competitive advantage as a mining nation. Further, the slowdown in the Chinese economy and low commodity prices means that the business environment will be very tough in the foreseeable future.

CHAPTER 6

CHALLENGES AND OPPORTUNITIES

CURRENT CHALLENGES

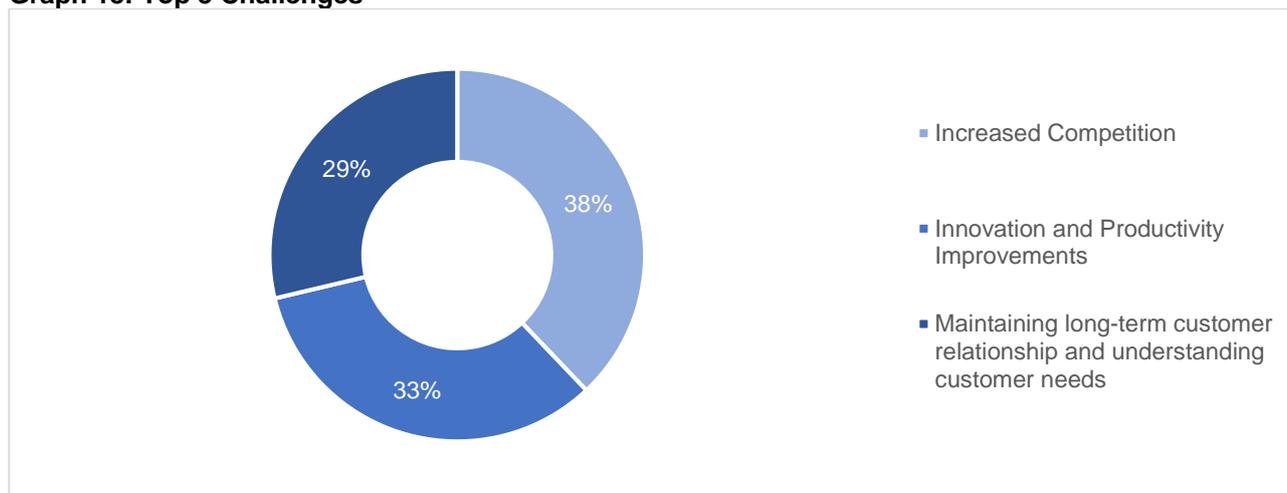
Survey participants were asked via an open ended question to name the *top 3 current challenges* for their business. These responses were grouped by analyzing common themes and issues.

The number one challenge as identified by 33% of the companies was increased competition. This was linked to maintaining low costs to compete in a global environment, retaining market share and increased market entrants.

Innovation and the ability to integrate new technologies to improve performance was identified as the number 2 challenge, as stated by 29% of the companies. Here companies sighted the challenge of rapid innovation and technological complexity which were emerging. Companies also noted difficulties with managing a vast range of data sets, acceptance of technology by clients, finalizing new developments and new product manufacturing complexities.

The 3rd challenge identified was maintaining long-term customer relationships and understanding customer needs, with 25% responding that this was a key challenge. Comments linked to this included difficulties with ensuring a common high standard of customer service and maintaining their reputation.

Graph 18: Top 3 Challenges



Graph 19: Other challenges



Question 45

What are currently the 3 biggest challenges for your company? (80:80)

It is interesting to note that many of the challenges related to internal business processes or improvements which need to be made versus challenges caused by external factors.

It should be noted that 36% of those surveyed did not answer this question, and 41% of those who responded only noted one challenge.

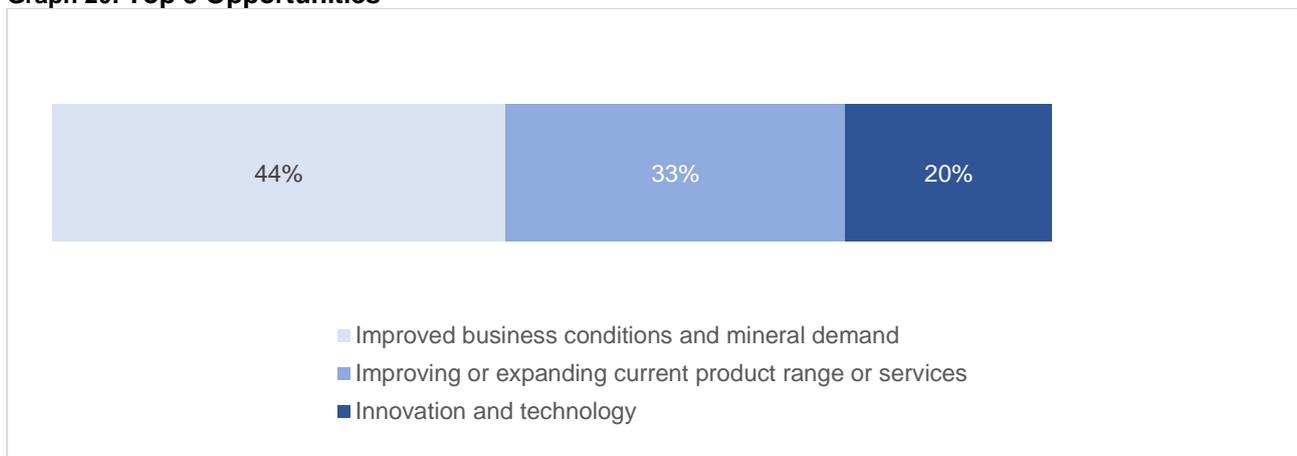
CURRENT OPPORTUNITIES

In the same vein, survey participants were asked via an open ended question to name the *top 3 current opportunities* for their business. These responses were grouped by analyzing common themes and issues. Improved business conditions and demand for mineral commodities was the key opportunity as seen by 44% of those surveyed. This included increased exploration, new investments in mining, improved infrastructure and a rise in the price of some metals.

Improving or expanding current product range or services was the 2nd opportunity identified by 33% of respondents. Opportunities identified included offering supporting services to products, developments of new products, new product lines and customizing existing offerings.

The 3rd opportunity identified by 20% of respondents was innovation & technology. There was a particular focus on the increased role of IT in the mining sector, applications of new technologies for mining and integrating new technologies into production processes.

Graph 20: Top 3 Opportunities



Graph 21: Other challenges



Question 44

What are currently the 3 biggest opportunities for your company? (80:80)

Many of the opportunities identified have also been recognised as challenges, and concentrating on these commonalities could have a strong impact and more immediate outcomes.

It should be noted that 20% of those surveyed did not answer this question.

TRAINING PRIORITIES

Linked closely to opportunities and challenges is the training which companies want to undertake. Survey participants were asked via an open ended question to list their current training and skills development priorities. These responses were grouped by analyzing common themes and issues.

By far the top priority is in technical training, with 54% of respondents nominating this as their top priority. This includes areas such as engineering, maintenance, water management and telecommunications. In fact, within these respondents, 31% flagged improving engineering capabilities as a top priority.

International business knowledge and capability was surprisingly also identified as a top training need by 42% of the companies. This included areas such as learning a foreign language, export guidelines and import and export regulations.

Innovation and technology was also a top training need by 25% of the companies. This included robotics, building awareness of industry trends and changes and new battery technologies.

Other training priorities mentioned included:

Graph 22: Training Priorities



Question 47

Please list your current training and skills development priorities. (Top 5) (80:80)

These training priorities correspond to those identified by the miners when asked what skills do you feel your suppliers should be developing now, and what skills should be developed to meet your future needs?

Miners responded that companies now should be working on improving quality and technology development. Responses when asked what capabilities suppliers need to develop 10 years out from now were related to technology, including a focus on automation; technical skills and project management.

When asked what products or service are needed to be developed to meet your future needs, the response were largely focused on new technologies and on-time delivery. Miners also flagged monitoring and testing, being proactive and better understanding their needs as areas needing further development.

