

challenge of ensuring that these employees' rights are protected. In contrast, sub-contracting of core activities which tend to be more technical in nature enables companies to draw on the specialised experience of the sub-contractor in that particular area, minimising cost in developing capacity in areas that may be incidental to their key processes or not always a requirement for a particular contract and increasing flexibility. However, the greatest gains in this area accrue when a network of companies works together and share information over the long-term. Not building such relationships increases a company's risk of a sub-contracted activity not meeting their exact needs.

In addition, the increase in labour brokering, while being used to increase labour flexibility and avoid permanent employment contracts (an issue discussed under the issue of labour legislation below); labour brokering comes with its own risks. Some negative experiences of companies that were interviewed include the following:

- Loss of control over production
- Increased expenses incurred (directly employed setters can be more expensive if employed through labour brokers as opposed to being permanently employed)
- Loss of loyalty to the company Companies cannot develop long-term relationships and cannot use typical worker motivation programmes to improve productivity - one company complained of 'nomads'; workers who go from labour broker to labour broker in search of better work.
- Inability to train labour brokers' workers, as companies tend to be averse to invest in training such workers as they feel that returns will not be felt by the company.
- Inability to safely source skilled, specialised labour through labour brokers

However, it is clear that those companies facing strongly cyclical markets and greater uncertainty regarding future production demand have opted for use of labour brokers. It is also clear that they don't find permanent employment solutions such as short-time, an adequate mechanism to achieve the levels of flexibility they require.

#### **4.1.2 Race profile**

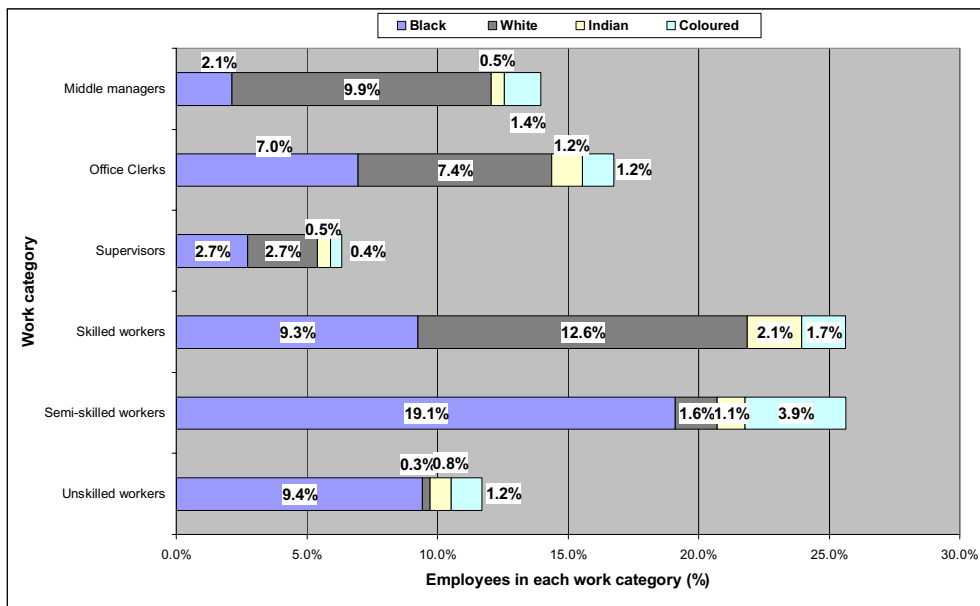
Figure 77 represents the relative proportions of the various races employed within the sector in each work category. The figure shows a predominance of semi-skilled and skilled workers, highlighting the skills requirement characteristic of the sector.

The unskilled and semi-skilled workers tend to be Black, while White workers dominate the skilled workers and middle managers' categories. However, compared to other sectors we

surveyed for this study there is an encouragingly even distribution of Black and White workers in supervisory and office clerk roles.

No historic baseline racial breakdown for the sector was available against which to compare the present data so it is not possible to determine the extent of change with respect to racial groups in the various work categories, but the current data suggests that employment equity remains a challenge for the sector, especially within engineering and management areas.

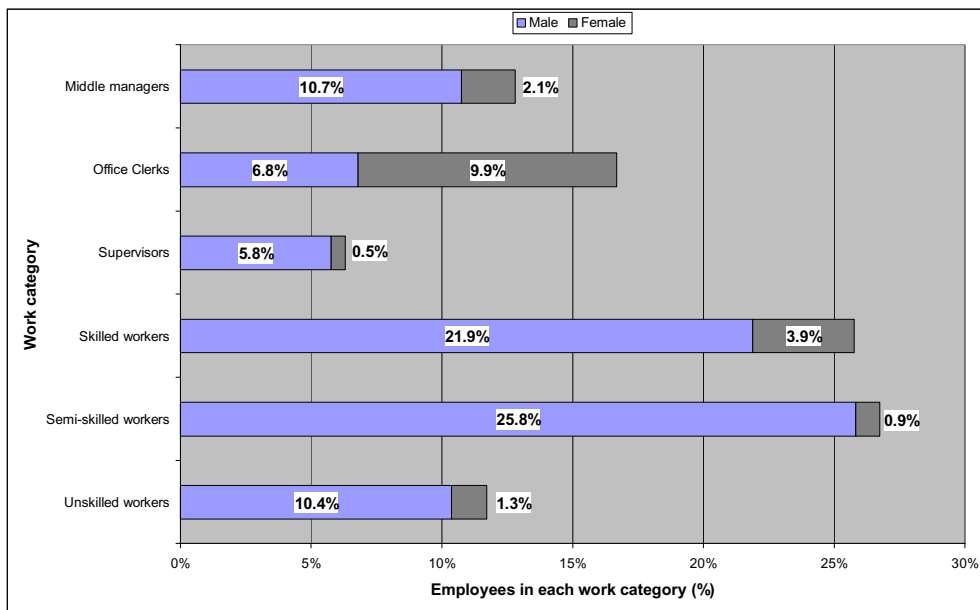
Figure 112: Survey employment categories by race



### 4.1.3 Gender profile

As reflected in Figure 113, men overwhelmingly dominate employment in the sector, while women are only significantly represented in the traditional domains of office work.

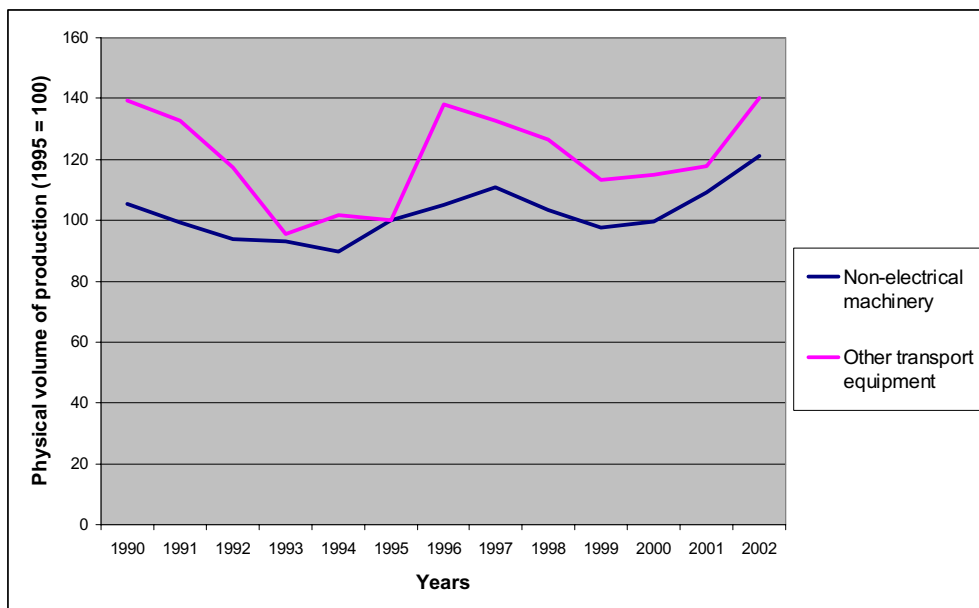
Figure 113: Survey employment categories by gender



## 4.2 Sales and production volumes

Official sources of production volumes for both non-electrical machinery and transport equipment showed fluctuations from 1990 to 1998, but have since risen at an increasing rate.

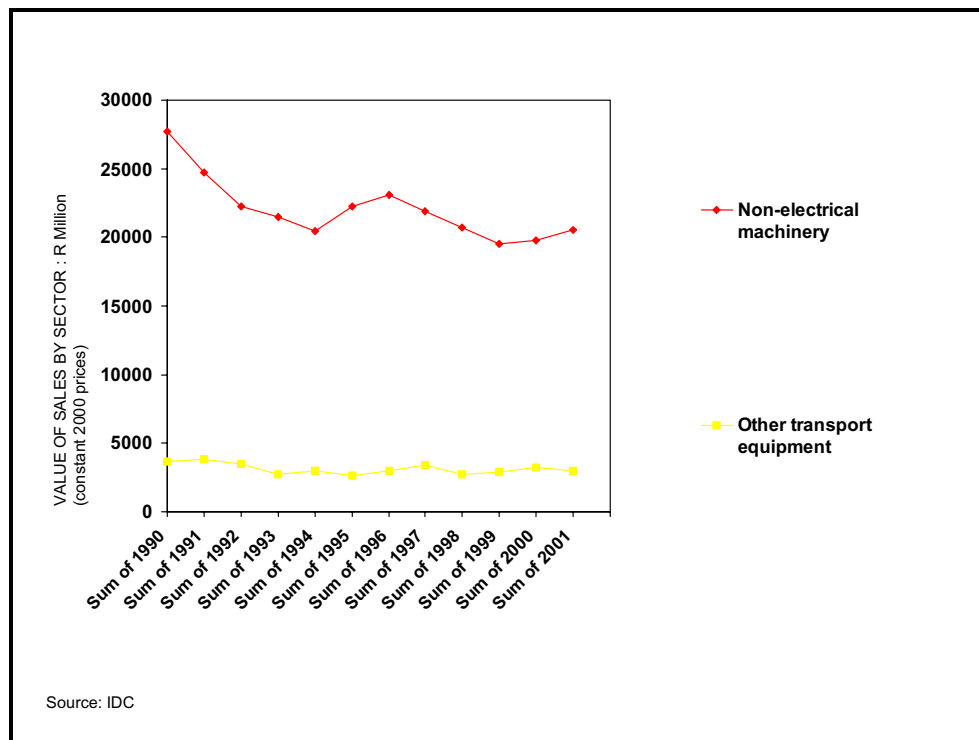
Figure 114: Production volumes trends of non-electrical machinery and transport equipment (1995=100)



Source: IDC

The trend in domestic sales since 1990, represented in constant terms, is reflected in Figure 115 and shows that turnover for non-electrical machinery declined by an average of 2.34% per annum between 1990 and 2001, while transport equipment decreased by 1.58% per annum over the same period. This contrasts with the rest of the metals and engineering industry which experienced an increase in sales over the corresponding period. The recovery in sales in 2002 in both sub-sectors can largely be attributed to increased returns from exports on the back of the devaluation of the Rand.

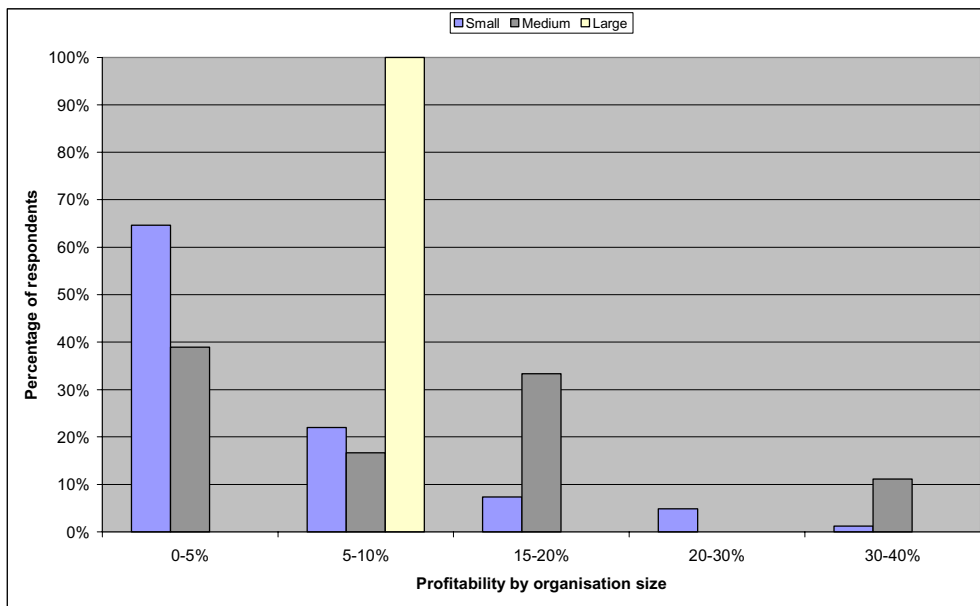
Figure 115: Turnover trends from 1990 to 2001 in machinery and transport equipment



### 4.3 Profitability

Figure 116 indicates that most companies in the industry have profit margins of between 5 and 10%. A greater proportion of small companies reporting margins of between 0 and 5% indicate that the industry has certain operating volumes beyond which margins increase. In general, companies make relatively low profit margins, which is indicative of the current state of the industry.

Figure 116: Industry profitability by size of organisation

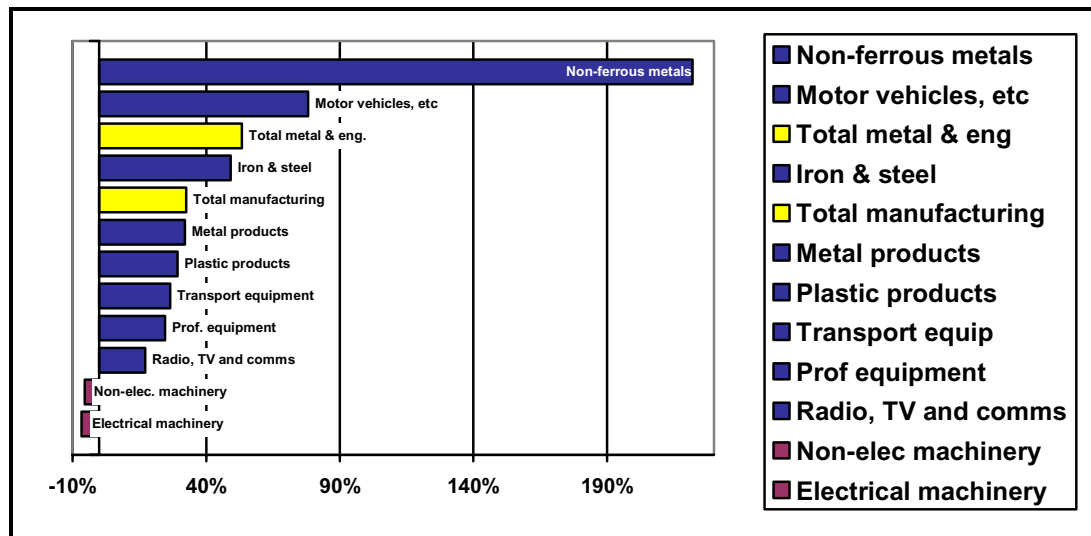


#### 4.4 Investment

In 1990, fixed capital stock levels for non-electrical machinery were R3.5 billion while transport equipment fixed capital stock levels were R1.7 billion. In 2001, non-electrical machinery fixed capital stock levels had actually reduced to R3.4 billion, in real terms, while fixed capital stock for transport equipment had increased to R2.2 billion.

An examination of investment levels, as measured by levels of fixed capital stock, reveals that non-electrical machinery has performed poorly since 1990. Despite achieving levels of sales ten times in excess of transport equipment and employing over seven times as many people than transport equipment, non-electrical machinery has attracted very little investment. In contrast, transport equipment has seen growth in fixed capital stock. On combining the two industries, there has been a 7.7% real increase in fixed capital stock in the machinery and equipment sector.

Figure 117. Real growth in fixed capital stock for metal and engineering, 1990 – 2001



Source: IDC

Table 21 shows that as a whole the sector invested 2.6% of revenue in new machinery during 2002. There was however a clear trend for larger companies to invest relatively more, indicating their relatively more capital intensive nature. This is relatively low compared to the other sectors in the Metals and engineering industry, which is likely to be in part due to the sector’s difficulty with respect to accessing process technology and the cost of finance, which was reflected in the survey.

Table 31. Ratio of investment in new machinery expressed as a function of turnover for 2002 by company size

Company size	Investment in new machinery/turnover (%)
Small companies	2.6
Medium-sized companies	2.7
Large companies	3.2
<b>Average for sector</b>	<b>2.6</b>

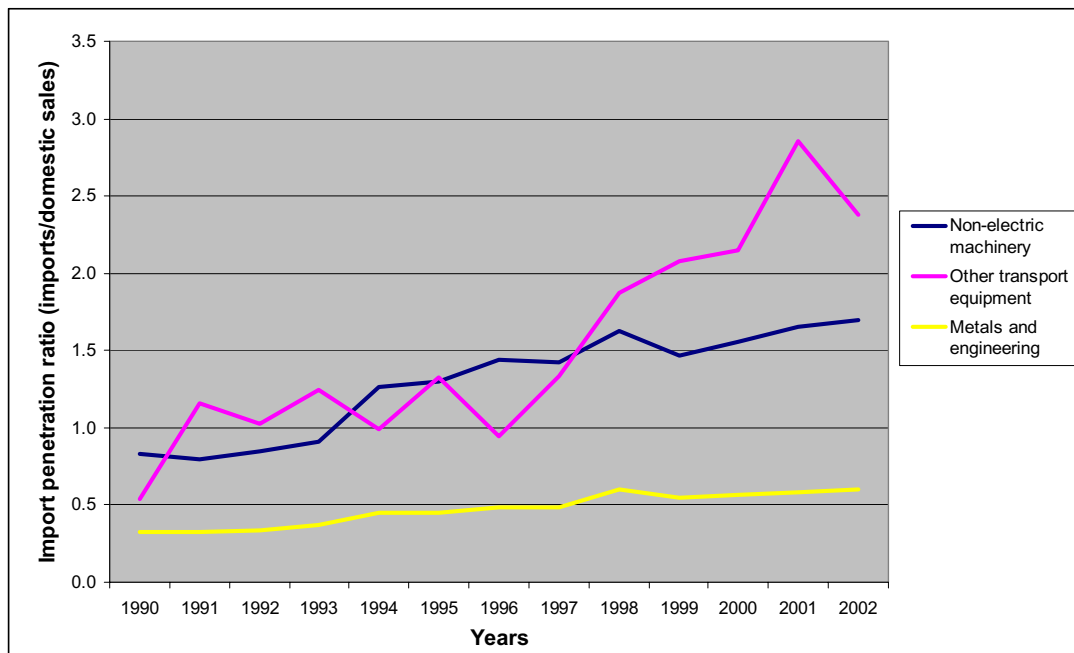
In contrast, the incidence of investment in new machinery was fairly high with 78.5% of all respondents having invested in capital equipment during 2002. 70.3% of companies were planning to invest in new machinery in the next year. It should be noted that the survey did not distinguish between new and second-hand or refurbished machinery.

## 4.5 Trade

### 4.5.1 Imports

Figure 118 illustrates that both the machinery and transport equipment industries have experienced significantly higher levels of import penetration than the overall Metals and Engineering industry. Transport equipment in particular exhibits particularly high levels of import penetration, which peaked in 2001 but has since decreased slightly in 2002. Although the levels of import penetration for non-electric machinery are lower than those for transport equipment, they nevertheless show an increasing trend. Import penetration has been one of the key factors in job loss in this sector over the decade.

Figure 118. Import penetration <sup>40</sup>trends from 1990 to 2002 of the machinery and equipment sector compared to the overall metals and engineering industry



Source: IDC, Bentley West/NALEDI analysis

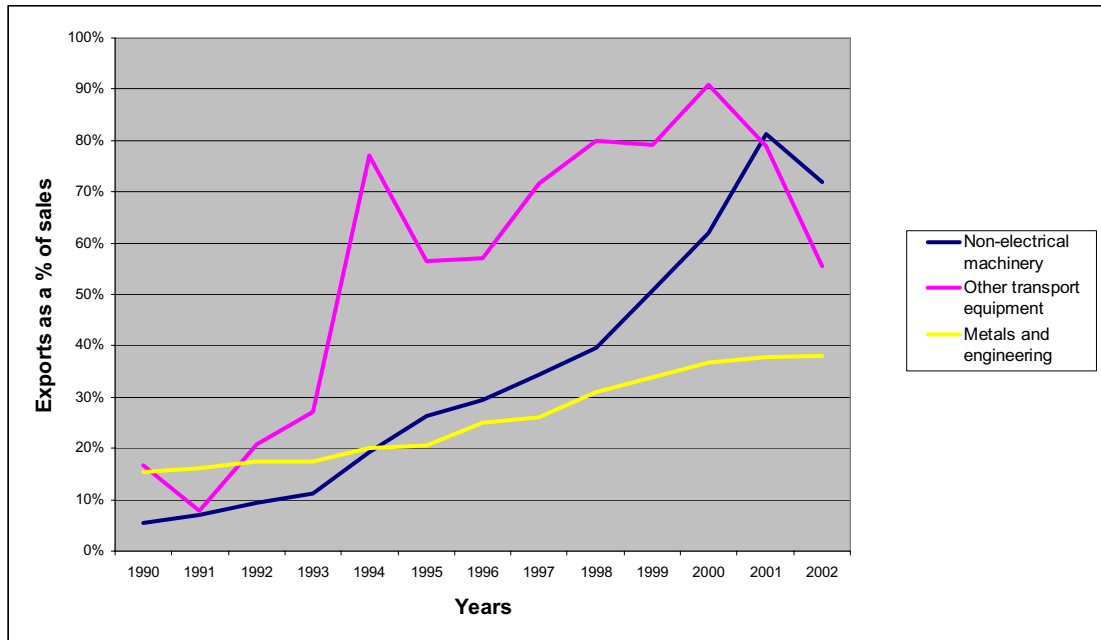
### 4.5.2 Exports

While our research uncovered some success stories in terms of exporting, the sector's increase in exports has largely been a response to the growing presence of imports. Domestic players were faced with a shrinking market share and responded by increasing exports, with Figure 54 showing that export revenues account for the majority of the revenues in the sector, which is not the case in the metals and engineering industry overall. However,

<sup>40</sup> Rand value of imports/ Rand value of sales

the increase in exports is not necessarily due to increased competitiveness, as producers were forced to seek markets elsewhere, faced with their shrinking domestic market. It is assumed that the growth in domestic market share of sales can be attributed to protection against imports offered by Rand devaluation, allowing local companies to regain some market share.

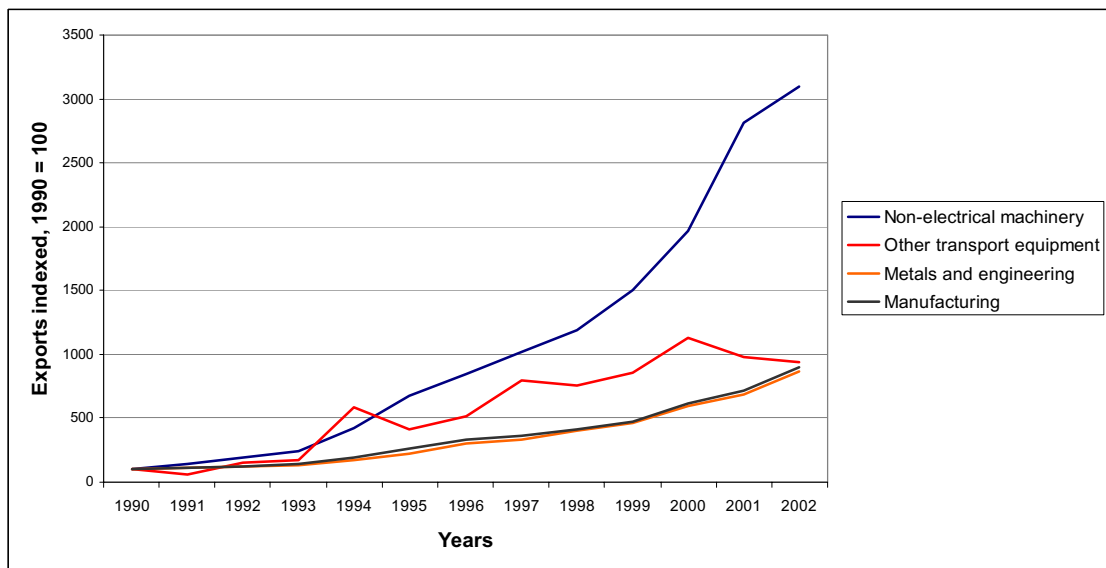
Figure 119: Exports as percentage of total sales in the non-electrical machinery and other transport equipment industries



Source: IDC, Bentley West/ NALEDI analysis

Mining equipment forms the majority of products exported, as South Africa has strong domestic design and production capabilities in this type of specialised machinery, particularly with respect to ultra deep-level mining. Defence equipment is also exported. Associated producer services such as support and maintenance are also increasingly finding export opportunities, especially within the Sub Saharan region. Figure 120 shows that exports of non-electrical machinery and transport equipment have far outperformed the average for both the metals and engineering industry and the total manufacturing sector. According to IDC data, the value of exports for non-electrical machinery have been growing faster than overall manufacturing and total metal and engineering.

Figure 120. Relative indexed performance of the real value of exports for the machinery and equipment sector compared to total metals and engineering industry and total manufacturing, 1990 – 2002 (1990 = 100)

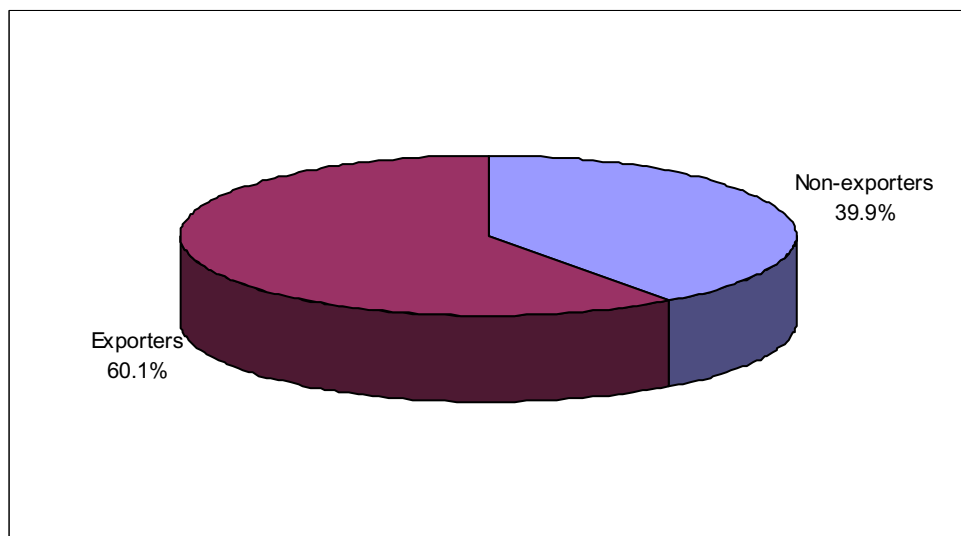


Source: IDC

Non-electrical machinery’s exports accounted for only 5.6% of total metal and engineering exports in 1990, but accounted for 20% by 2002. Transport equipment’s exports increased less dramatically, accounting for 2.3% of all Metals and engineering exports in 1990, and 2.5% in 2002. Exports are mainly high value-added non-electrical machinery products and there is a significant amount of re-exporting, especially into African markets.

Figure 121 reflects survey results that show that the bulk of the sector’s employees are now to be found in companies that are active in export markets.

Figure 121. Percentage of employees in exporting and non-exporting companies in 2002



It is also important to understand where exports are destined. Figure 122 illustrates that SADC and the rest of Africa are the predominant export destinations for small exporting companies, while Europe is the second largest export destination.

Figure 122: Export destinations for small companies in 2002

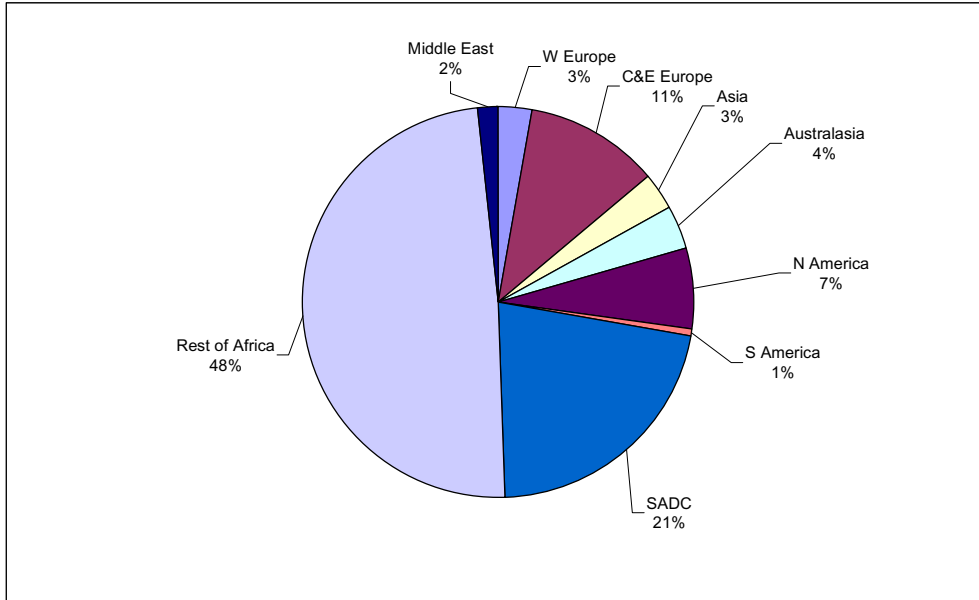


Figure 123 illustrates the export destinations for medium-sized companies, which is very similar to small companies.

Figure 123: Export destinations for medium-sized companies in 2002

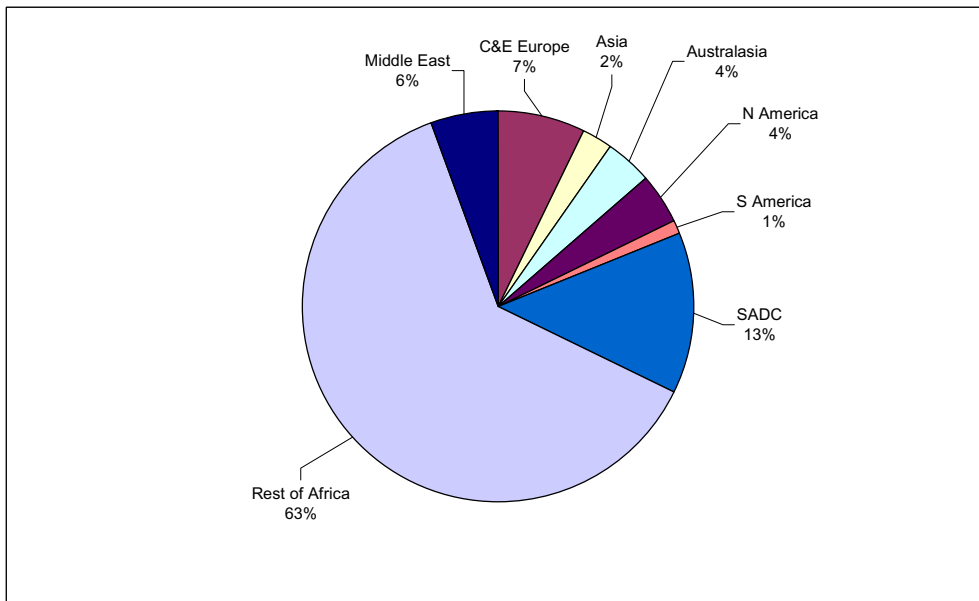
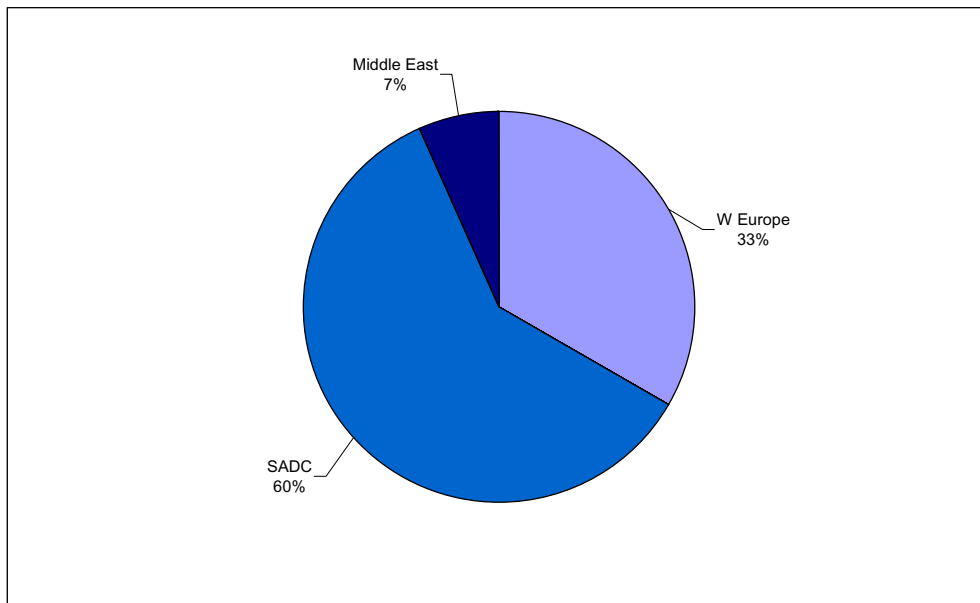


Figure 124 shows that large companies' export destinations contrast with those of small and medium companies in that although SADC is a prominent destination, shows that large organisations export 60% of their output to the SADC, while exporting 33% of their produce to the Europe.

Figure 124. Export destinations for large companies in 2002



The results show that regardless of company size, Africa has become the most important market for this sector.

Our survey showed greater optimism for future growth in exports. This optimism could reflect the timing of the survey coming after the depreciation of the currency, which since 2001 has enhanced the competitiveness of South African exports. It is very important to note that the strengthening of the Rand during the early part of 2003 has negatively affected exports' competitiveness and manufacture of machinery and equipment has since decreased<sup>41</sup>.

Given current trends in the sector where it appears that although many companies are exporting, the revenues earned from exports tend to account for only a small proportion of total revenues, the sector is likely to continue to experience incredible pressure from imports in the area of domestic manufacturing; impacting negatively on employment over the medium-term. The challenge lies in accessing niche export markets through differentiated products for

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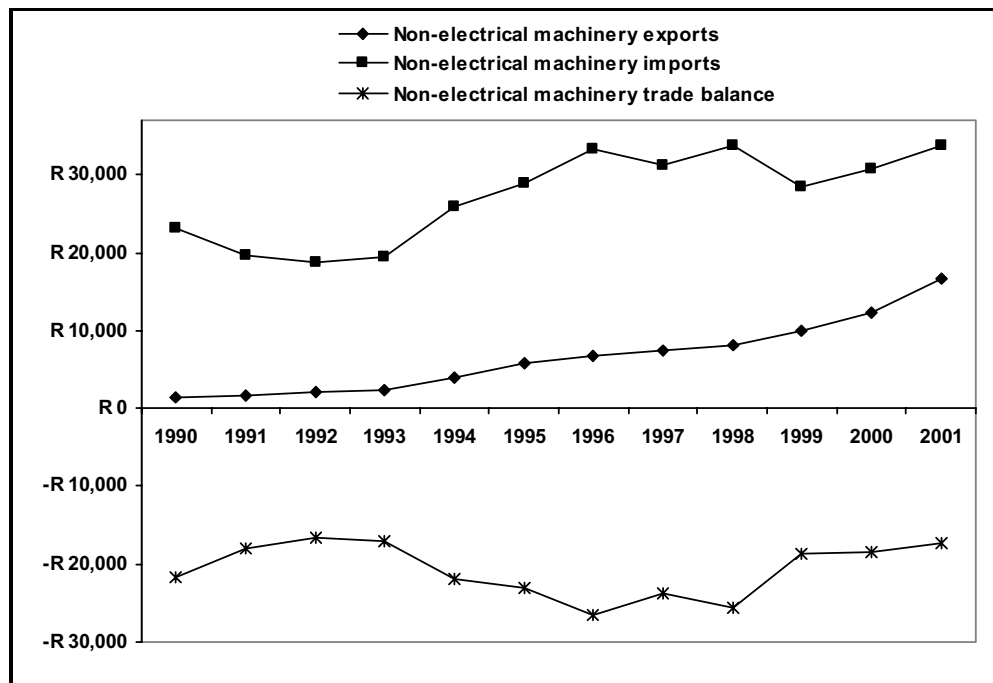
<sup>41</sup> Manufacturing output (in volume terms) during the three months prior to February 2003 was 7.2% lower than the previous three months.

which a premium price can be charged, resulting in enhanced margins for the sector, which will assist in retaining and creating employment.

**Trade balance**

The rapid growth in non-electrical machinery exports, particularly the two growth spurts in 1994/1995 and 2000/2001 have resulted in a stabilising of the trade balance. Although, imports still strongly outstrip exports in value, the trade balance has evened out and if the growth in exports is maintained, then the trade balance may begin to improve over the medium term, as shown in Figure 125.

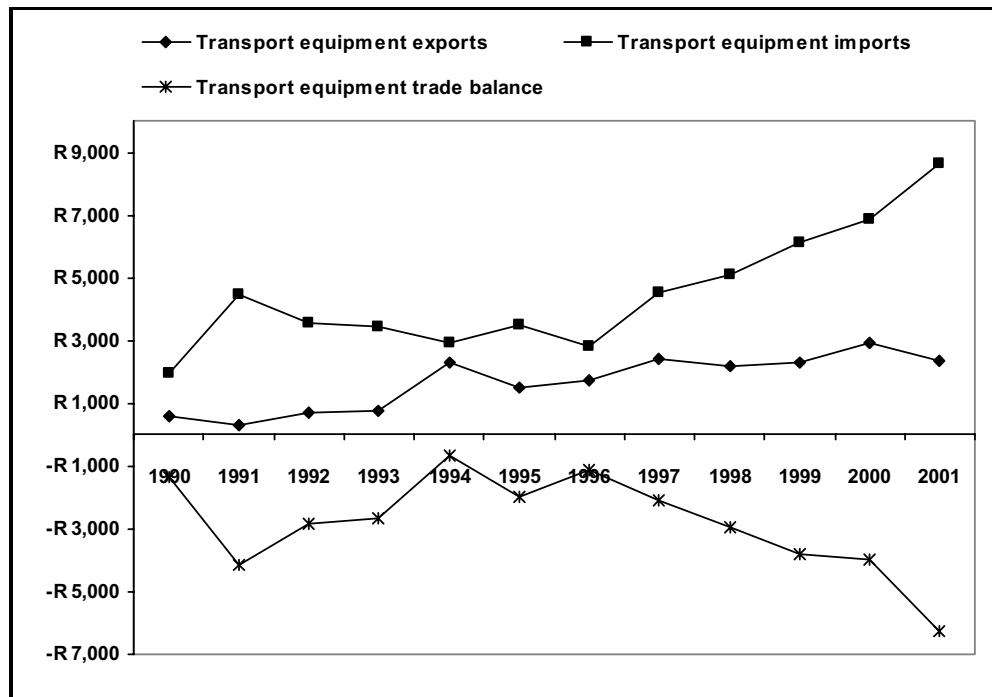
Figure 125. Value of trade in and trade balance for, non-electrical machinery, 1990 – 2001 (Constant 2000 R Millions)



Source: IDC

In contrast, the transport equipment sector has failed to grow exports while simultaneously being subject to considerably increasing import penetration leading to a steadily worsening balance of trade, as shown in Figure 126. The decline of the shipbuilding industry has underpinned this trend.

Figure 126. Transport equipment - value of trade and trade balance, 1990 – 2001 (Constant 2000 R Millions)



Source: IDC

In summary, the increasing import penetration in transport equipment, along with a relatively smaller increase in exports is responsible for the declining trade balance, while non-electrical machinery exhibits a stable but negative trade balance.

The high levels of import penetration and increasing rivalry in the domestic market have forced producers to export, although they remain very dependent on their dwindling share of the local market. There is also a degree of re-exportation of imported goods, especially importation of goods from developed countries, which are then exported to African countries, along with associated services such as support and maintenance. These African exports are regarded as an extension of the local market by some domestic players as often the equipment is for South African companies who are engaged in projects in the region and wish to use the same equipment they use in South Africa.

The change in the sector away from manufacturing towards services and the aftermarket implies that players need to make a fundamental shift in the way in which they compete, if employment is to be retained and created in the sector.

## 5 DRIVERS AND IMPEDIMENTS OF EMPLOYMENT

### 5.1 Employment profile

As described above, each company's employment changes between 1999 and 2002 were graphed (see Figure 109) in order to establish an upper quartile of job champions and a bottom quartile of job losers. Their employment characteristics are analysed below.

Figure 127. Proportion of employment accounted for by job champions and job losers, 2002

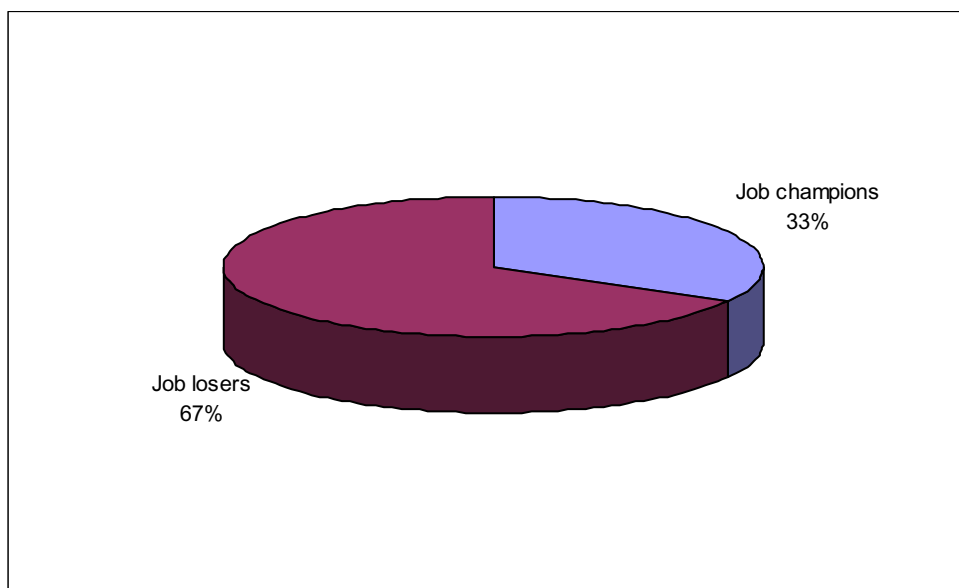


Figure 127 shows that job losers account for by far the greatest share of employment in the sector, which is in line with the general decline in employment in the overall sector.

### 5.2 Supply-side factors

#### 5.2.1 Input materials

Accessibility of competitively priced, input materials is a critical in order to facilitate industry growth and employment. Accessibility of input materials is not a prohibitive factor for the sector, but the cost of input materials was rated as problematic by 75% of the sector. This is

supported by Figure 128, which illustrates that manufacturers' largest input cost is input materials.

Figure 128. A breakdown of the costs of production in the manufacture of machinery and equipment

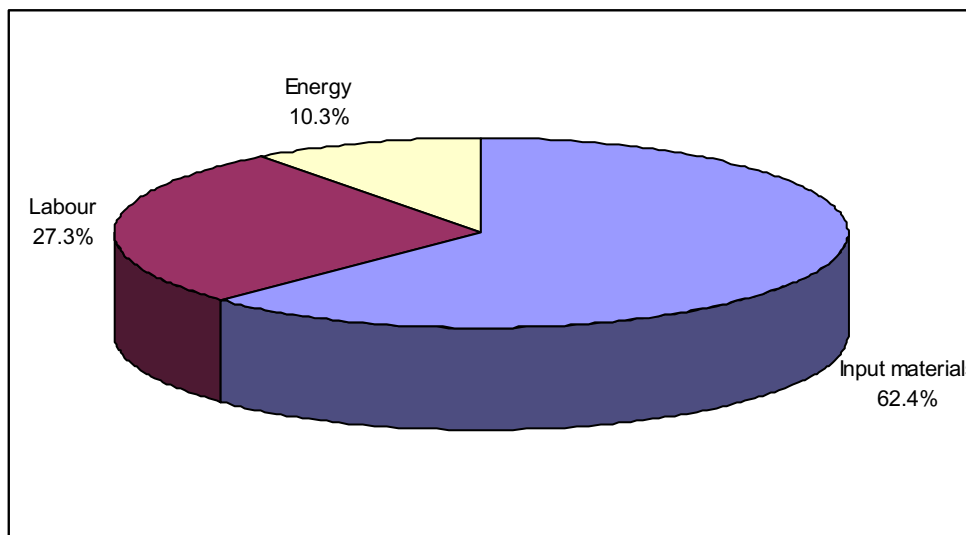
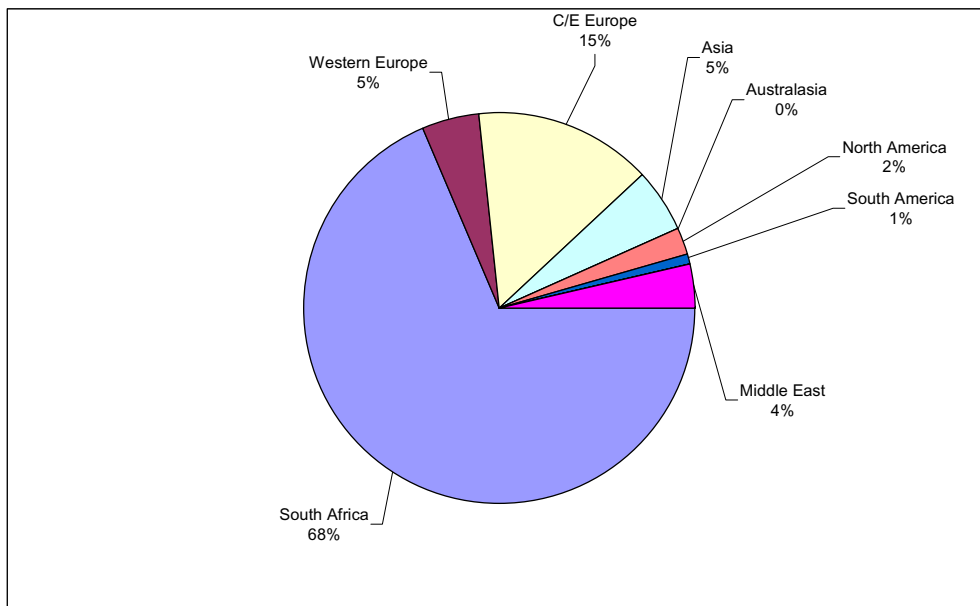


Figure 129 illustrates that 68% of input material was sourced from within South Africa, while 39.4% was imported. Since a large proportion of input materials are metal, the current practice of import parity pricing and the system for scrap metal pricing are partly responsible for the high proportion of input materials to the total cost of production. It is therefore understandable why manufacturers in the sector question the pricing policy of their input suppliers.

However, the vast majority of respondents imported input materials because the specific material they required was not available locally. Central and Eastern Europe was the largest source of imported input materials, accounting for 15%, while Western Europe and the Middle East each accounted for 5% of input materials. In particular, mention was made of Iscor's continued rationalisation of product lines and its focus on economies of scale make it increasingly difficult for machinery and equipment manufacturers to obtain a dependable supply of low volume products. In addition, the sector experiences difficulties with respect to poor quality and high prices from local foundries, most of whom focus on supplying the automotive industry, leaving machinery and equipment manufacturers with little choice with respect to suppliers. In general, the sector is characterised by weak upstream linkages with little co-operation and planning by companies producing inter-related products.

Figure 129: Source of input materials



### 5.2.2 Wage and salary costs

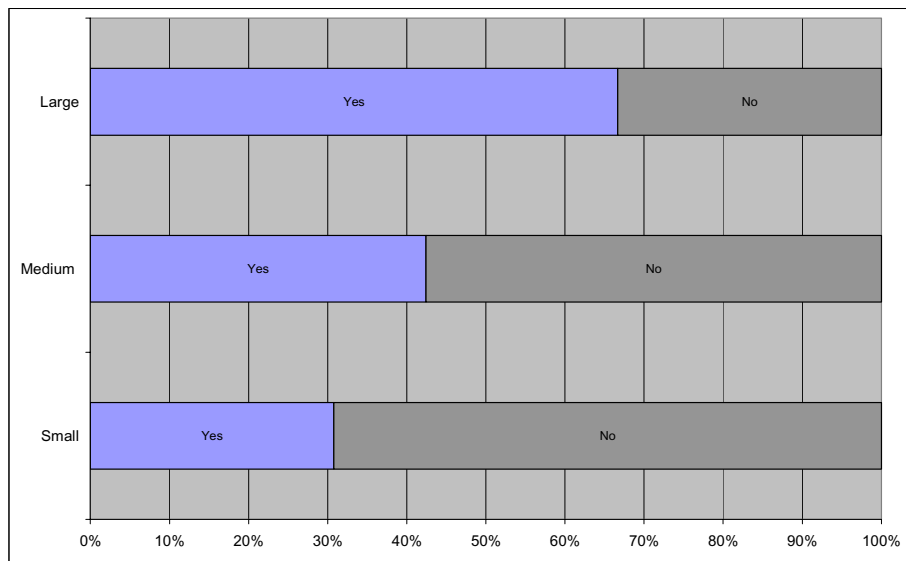
In our survey of employers, they argued that wage and salary costs have a major impact on their decision to hire additional workers, with 98.8% of respondents reporting that this factor influences their hiring decisions. .

### 5.2.3 Skills

Access to a pool of appropriately skilled labour is essential for any industry’s competitiveness and subsequent growth. 70.9% of survey respondents reported difficulty accessing skills, while 95% stated that the availability of skills would influence their decision to hire additional employees, suggesting that a focus on training would be likely to improve employment prospects within the sector.

The sector was generally positive toward the Merseta’s workplace skills plans, with only 6.7% of respondents finding the cost of drawing up workplace skills plans prohibitive. Companies generally felt that the Skills Development Levy was not accessible, although larger companies found accessibility easier. Figure 130 reflects that these same large companies were more likely to rate the Merseta’s efficiency higher than their medium and small counterparts.

Figure 130: Respondent's view on whether the Merseta is effective



Survey findings suggest that medium and small companies in particular, are not fully aware of how to access and benefit from the Merseta.

Key concerns around labour shortages have primarily been regarding engineers and artisans, as production processes are heavily reliant upon artisan and related craft skills. There is also a greater proportion of professional engineering labour employed in the machinery and equipment sector than elsewhere in manufacturing. A number of reasons were put forward in interviews for the inability of the sector to secure sufficient engineering and artisan labour.

The first problem revolves around sourcing engineering and artisan labour with adequate specialised knowledge of companies’ products and markets; interviewees claimed that the education system does not produce engineers with expertise in specialised areas e.g. food milling, which necessitates that engineers entering this field be sent to Europe for further training or to undertake a second tertiary qualification in food technology. This problem is widespread as many machinery and equipment providers are very specialised in their production processes and market solutions.

A second major problem is declining interest in engineering as a career choice, due to concerns regarding remuneration and job security. When asked for reasons behind the declining interest in artisan training, one interviewee summed it up by saying that “people don’t want to get their hands dirty”. The result is an ageing engineering and artisan population. The Merseta is aware of this problem and is trying to target learners under the age of 30 and have also started a bursary scheme worth R 10 million to try and encourage school leavers to enter engineering.

Thirdly, companies are struggling to compete with the demand for skills elsewhere in the world. Increasingly globalised labour markets have resulted in an increased labour mobility. This shipbuilding industry has been particularly severely affected by this trend, having lost draughtsmen, coded welders and engineers to overseas companies (particularly in New Zealand). The export of skills is exacerbated by the competitive price of South African engineering and artisan labour and aggressive recruiting on the part of foreign-based companies.

A fourth problem is the concern regarding the general lack of skills in the South African economy. While it is generally agreed that skill levels are poor, there is little agreement as to why artisan training in particular has declined, when the economy so desperately requires these skills. Possible explanations include companies cutting training budgets and deskilling work through greater expenditure on computer numerically controlled (CNC) machinery to lessen dependence upon skilled labour; reduced funding and support for artisan training on the part of the government; the decline during the 1980s and 90s in the mining industry, which had the largest artisan training schools and was an important source of skills for other industries. The industry's decline resulted in reduced training expenditure and the subsequent closure of many training schools. Although the mining industry's profitability has since improved, the sector is focusing on globalisation of production and has not reverted back to its former training levels. Certain large companies historically trained many engineers, for example Denel, which was referred to by one interviewee as the "Denel mindset" – meaning a vibrant engineering culture that led to much innovation, strong capacity development and growth in the number of skilled engineers. Denel was regarded as vital for producing the necessary engineering skills for the broader machinery and equipment sector and overall manufacturing sector. The company's demise has had a huge negative impact on the skills pool in the sector.

The Merseta are very aware of the problem regarding apprenticeships. There are currently 1700 apprentices across all five chambers within the Merseta, only 105 learners in the Metals chamber and 5 learners in the Plastics chamber. This is a huge decline since 1982, when there were 13,000 learners. The Merseta feels that many companies are not entering into apprenticeships because they think the programmes are about to be discontinued, which is not the case. Learnerships have got off to a slower start than the Merseta anticipated and the decline in the number of apprentices is thought to be partly due to the fact that the Merseta advisors are promoting learnerships rather than apprenticeships.

The increasing use of labour brokers in the sector provides a challenge with respect to training of labour broker employees as labour brokers are currently classified under the Services SETA and therefore are not able to access the Merseta's training programmes. Given the skills-intensive nature of the sector and the trend toward sub-contracted labour, it is

essential that labour brokers' employees are given access to training if the sector is to remain competitive in the future.

Interviewees felt that the Merseta has not picked up on the dearth of skills. However, the Merseta was only formed in 1998 and have had the challenge of simultaneously combining a number of departments and delivering to the sector. They are generally felt to have outperformed the other Setas and have instituted a number of innovative, holistic approaches to improve skills within the sector, for example the SMME project. The Merseta's levy: grant ratio<sup>42</sup> has increased from 50.9% in 1999 to 69% in 2002, indicating that training is slowly increasing. The Merseta seem to have overcome their initial problems and are focusing on delivery while continuously driving improvement within the organisation. There is a high morale among staff which can only bode well for future delivery of services to the sector.

#### **5.2.4 Finance and profitability**

72.6% of respondents experienced some difficulty with respect to accessing finance while 70.8% of respondents experienced some difficulty with respect to the cost of finance, suggesting that finance is an issue which currently has a negative impact on the competitiveness of the sector. Industry experts confirmed that the cost of finance is indeed a problem within the sector.

There were no clear differences in the profitability of job champions and job losers, both groups tended to have profit margins of between 0-10% indicating the intense rivalry and resultant pressures throughout the sector.

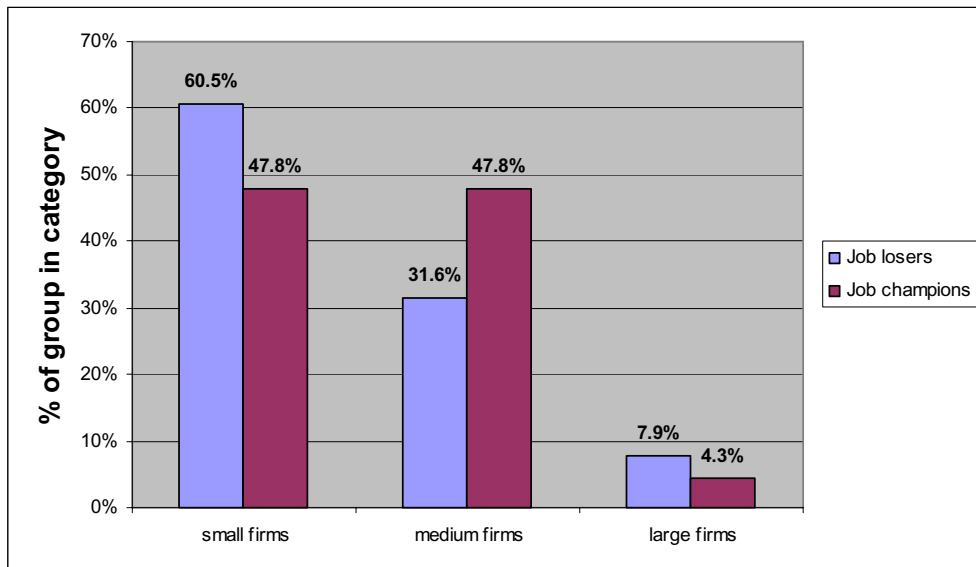
#### **5.2.5 Company size and supply side factors**

The survey analysed job champions and job losers with respect to company size, the results of which are illustrated in Figure 131. The figure highlights that medium sized companies appear to be the most attractive with respect to creating employment.

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<sup>42</sup> The amount of money paid into the Merseta in levies: the amount of money claimed back by companies in the form of grants

Figure 131. Job champions and job losers by company size, 2002

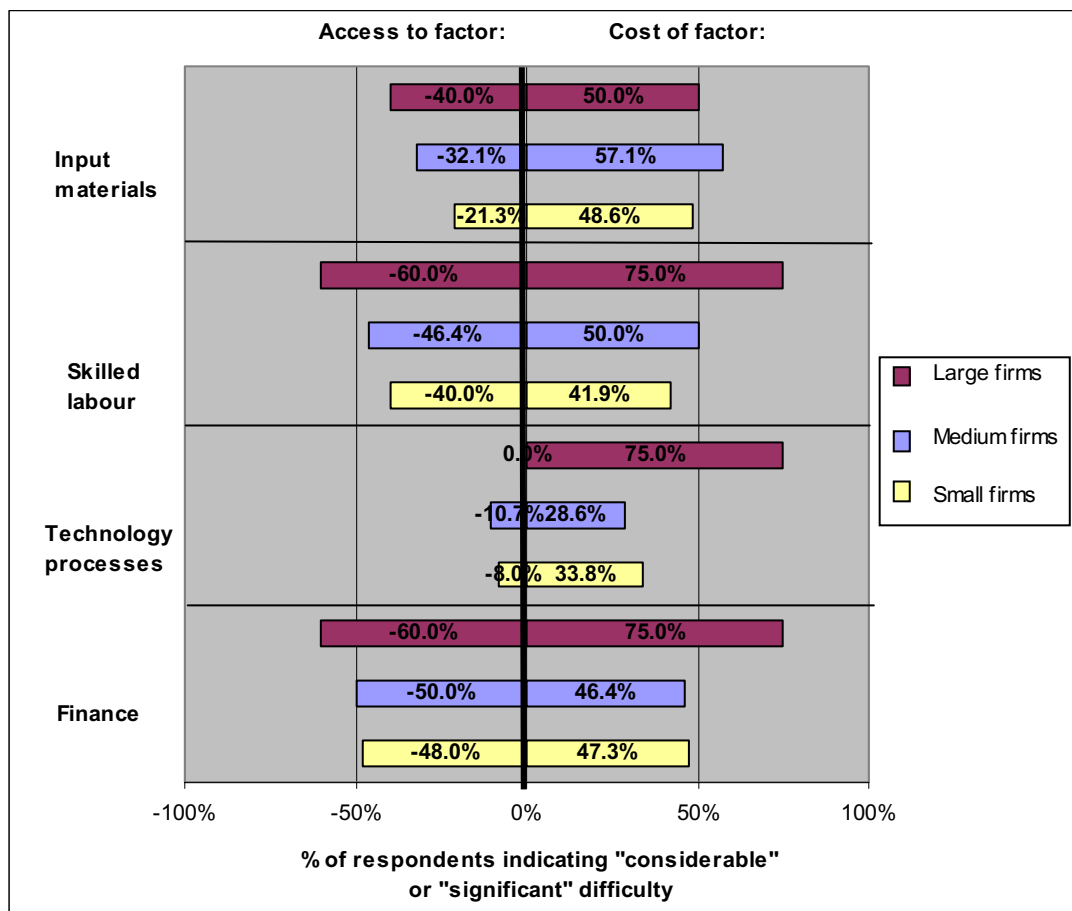


The survey also analysed whether company size influences the ease of accessibility and ability to finance various input materials, the results of which are illustrated in Figure 132. Accessibility and cost of skilled labour was rated as the most obstructive factor for competitiveness.

Companies of all sizes rated the cost of input materials as being a more prohibitive factor than accessibility, but large companies experienced relatively more difficulty with respect to cost than small and medium companies.

Accessibility of input materials was also highlighted as problematic with companies of increasing size experiencing relatively more difficulty accessing input materials

Figure 132. Supply-side factors inhibiting the competitiveness of small, medium and large companies



### 5.3 Companies’ strategies with respect to manufacturing processes

#### 5.3.1 Capital equipment and use of technology

As noted earlier, the sector is characterised by relatively low levels of investment in capital equipment.

As described previously, the sector was divided into various groups of differing employment intensities. Their employment trends over the period 1999 to 2002 were analysed and are summarised in Table 32. Interestingly, both the labour intensive and non-labour intensive groups shed jobs, while the capital/ knowledge intensive group gained employment. This approach utilises either skilled engineering skills to provide value-added services or capital intensive approaches in manufacturing and suggest that using technology and specialised skills is a successful way of competing in this sector.

Table 32. Employment intensity and employment trends in the machinery and equipment sector from 1999-2002

	CAGR 1999-2002	Absolute change in sample employment 1999-2002	No. of companies in sample 2002	% share of employment in 2002
Labour Intensive	-6.3%	-1877	95	68.2%
Non labour intensive	-6.9%	-536	20	17.7%
Capital /knowledge Intensive	4.5%	221	21	14.1%

The sample was then divided into small, medium and large companies to examine employment intensity and resultant employment trends, the results of which are summarised in Table 33. All small companies shed jobs, while medium companies tended to create jobs.

Capital/knowledge intensive medium and large companies exhibited a positive employment CAGR, reinforcing showing labour absorption can take place within more capital-intensive segments of the sector.

Table 33. Employment intensity and employment trends among small, medium and large companies from 1999-2002

	small companies				medium companies				large companies			
	CAGR 1999- 2002	Absolute change in employ- ment	No of co.	% share of emplo yment in 2002	CAGR 1999- 2002	Absolute change in employ- ment	No of co.	% share of emplo yment in 2002	CAGR 1999- 2002	Absolute change in employ- ment	No of co.	% share of emplo yment in 2002
Labour Intensive	-12.3%	-653	73	10.7%	18.0%	732	17	14.8%	-9.8%	-1956	5	42.7%
Non-labour intensive	-30.2%	-355	11	1.4%	0.8%	732	6	4.9%	-4.1%	-195	3	11.4%
Capital/ knowledge intensive	-1.4%	-13	11	2.4%	7.3%	179	9	7.4%	3.6%	55	1	4.4%

Note: data in table is sample data and is not extrapolated to sector level

A comparison of exporters and non-exporters' use of technology was done to establish the resultant employment trends, the results are summarised in Table 34. Both groups making use of labour intensive and non-labour intensive methods of operation shed jobs, as opposed

to the capital/ knowledge intensive groups which gained employment. This suggests that domestic versus export orientation is not a determinant of growth, rather utilising either a knowledge-intensive approach when providing a more services oriented offering or a capital intensive approach when undertaking manufacturing (which would be appropriate for less specialised products that can be feasibly produced in a batch process).

Table 34. Employment intensity and employment trends among exporters and non-exporters 1999-2002

	Non-exporters				Exporters			
	CAGR 2002	Absolute change in employment	% share of employment in 2002	No. of companies in sample 2002	CAGR 2002	Absolute change in employment	% share of employment in 2002	No. of companies in sample 2002
Labour intensive	-9.9%	-2374	51.2%	58	9.2%	497	16.9%	37
Non labour intensive	-3.1%	-47	3.8%	11	-7.8%	-489	13.9%	9
Capital/ knowledge intensive	1.7%	61	9.9%	11	12.6%	160	4.2%	10

Note: Percentages and trends are applicable to the overall sector but actual numbers are reflective of the sample

### 5.3.2 Product and service quality

The qualitative investigation revealed that many industry experts viewed quality as being an order-qualifier for any company wishing to export. Since larger companies tend to export more, they are likely to view a change in product quality as relatively more important in facilitating growth, than smaller companies who compete largely with domestic producers and tend to focus more on product price.

### 5.3.3 Customer service

64.8% of respondents perceived a need for some degree of change with respect to customer service, with larger companies tending to see a relatively greater need for change. This is again likely to be in part due to larger companies exporting more and therefore competing in developed countries where product price becomes an order-qualifying factor and customer service is likely to be the order-winner that generates repeat business and gives companies a competitive edge over rivals.

### 5.3.4 Product innovation

Surprisingly, 41.8% of companies saw no need to increase levels of innovation in order to grow, with larger companies tending to view a change in innovation as relatively less

important. This finding is supported by the interviews which revealed that many companies are relying on global brands and are importing whole products or components, rather than manufacturing themselves; resulting in the sector becoming dependent on overseas multinational companies' innovation. This is likely to result in a degree of "technological slavery" within the domestic sector which will become progressively more difficult to break out of in the future.

There are however some notable exceptions in the field of specialised machinery for example ultra deep level mining equipment, where domestic capacity exists to design and produce such equipment which is then sold both locally and exported.

**5.3.5 Work methods**

Work organisation with respect to leaner organisations, multi-skilled workforces and just-in-time principles has had a considerable effect on the size of the workforce and the quality of work within the metals and engineering industry globally (International Metalworkers Association, 2001). Work methods are increasingly focused on, with a view to improving productivity.

61% of companies surveyed perceived that some degree of change with respect to work methods would result in growth, with larger companies being more likely to recognise the need for change in this factor. This is unsurprising, since larger companies are generally in closer contact with overseas competitors.

Table 35 shows the capacity utilisation levels among companies in the sector and highlights the direct relationship between capacity and company size.

*Table 35. Average shift number, length and capacity utilisation by company size*

	<b>Number of shifts in 24 hrs</b>	<b>Length of each shift (hrs)</b>	<b>Capacity of each shift (%)</b>
Small	1.0	8.3	57.4
Medium	1.1	8.0	67.0
Large	1.0	8.0	80.0
Overall average	1.1	8.2	60.5

**5.3.6 Inventory management**

A change in this factor was not seen as important in facilitating growth by the majority of companies in the sector as 58.2% saw no need to change their inventory management. This is again due to the nature of the sector in that much of the output is customised and the focus

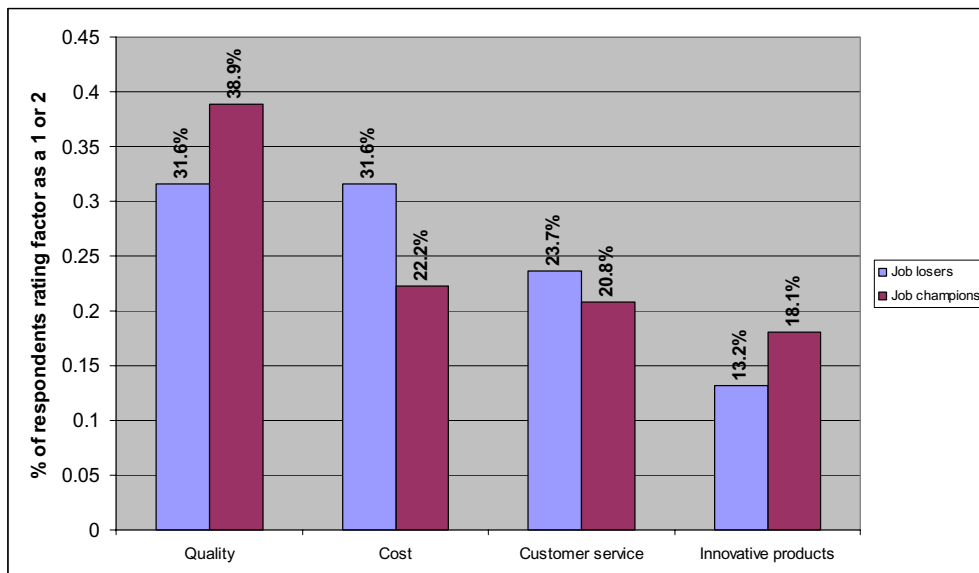
on mass produced items has decreased in favour of associated services. Thus, knowledge regarding the domestic market is regarded as more important, which is understandable in the light of the fact although 41% of the companies in the sector export, they generally derive a relatively small proportion of their revenue from these exports and thus still rely heavily on the domestic market.

### 5.3.7 Company strategies

Job champions emphasised quality and innovation as their primary criteria for competition, while job losers tended to focus on price and customer service. By focusing on quality and innovation, champions are able to target niche markets with specialised offerings for which they are able to charge a premium price and thereby earn more attractive margins than job losers who are offering a less differentiated product and are competing directly on price. Innovation is assisted by international alliances, the majority of which are formed following the “sale” of domestic capacity, as this is an easier route via which to access international markets than selling a South African brand.

The future challenge for the sector lies in exploiting their knowledge within their specialised areas such as mining, agriculture and forestry to offer differentiated, innovative products which will enable them to target niche markets and earn more attractive margins. Innovation involves continuous improvement which in turn requires long-term relationships with both suppliers and customers.

Figure 133: Perceived importance of various drivers of growth among job champions and losers<sup>43</sup>



<sup>43</sup> Respondents were asked to rank the four factors in order of importance with 1 being the most important factor and 4, the least

The relatively small size of the South African market implies that companies should focus on flexibility and responsiveness, doing short production runs and customising products.

## **5.4 Demand side factors**

Increasingly, machinery and equipment is being procured on a total project basis. This has led to a tiering of equipment supply as larger companies have shifted to offering turnkey solutions, while sub-contracting various aspects such as components, aspects of installation or fabrication works to second tier contractors. This trend is supported by the job champion and job loser analysis outlined above that showed that the majority of technical outsourcing that was being conducted in the sector was in fact driven by the job champions. This is consistent with the findings in the electronics and electrical engineering sector, where competitive companies are focusing on integrating a variety of product and service offerings, while outsourcing components of the actual manufacture and assembly processes.

This has led to a growth in the importance of consulting engineers, project houses or other engineering intermediaries in determining which machinery and equipment is bought. Manufacturers of equipment are increasingly also marketing their products to these intermediaries as they assemble project or turnkey solutions to the buyers of equipment. It has also necessitated an improvement in co-operation between suppliers of similar or relating equipment.

There are a number of factors which drive the demand for machinery and equipment, which will now be discussed.

### **5.4.1 The mining and quarrying industry**

A major driver of growth in the sector is the mining industry. The largest concentration of intermediate demand is from the primary sector (mainly mining) which accounted for 28.8% of total intermediate demand for machinery and equipment, while resource-intensive manufacturers producing primary beneficiated products accounted for a further 12.5% of intermediate demand. The decline within the mining and quarrying sectors during the 1990s had a major impact on the sector, as much of the machinery and equipment sector's output is mining related. The collapse of the gold price during the 1980s resulted in a decline in the output of that sector. Real capital stock in the mining and quarrying sectors declined by 52% between 1980 and 1998. This had a direct negative impact upon demand for machinery and equipment.

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