

SECTORAL STUDY – ELECTRONICS AND ELECTRICAL ENGINEERING

1 INTRODUCTION

The electronics and electrical engineering sector¹⁶ notwithstanding its relatively small size within South African manufacturing is a source of much innovation and competitiveness. A review of the nominees and winners of various export and innovation awards over the last 5 years shows that companies from these sectors are consistently represented amongst the ranks of South Africa's leading exporters and innovators¹⁷. However the sector is far from homogenous and spans a range of products from relatively 'old' technologies, such as circuit breakers that have their roots in South Africa's mines, to the very cutting edge of journalistic fantasies of the digital age in the form of set-top boxes for digital television. In the course of this section we review what the major trends are, which define, drive and threaten the viability of these sub sectors and in particular, their ability to create jobs.

In the overarching section, we saw that the electronics and electrical engineering sector occupied very much a 'middle-of-the road' position. On the basis of the sector-level trends that were reviewed, the sector is neither as likely to create employment as the metal products and fabrication sector nor is it as likely to destroy employment as the machinery and equipment sector. As will be seen below, the sector is positioned to go either way. With appropriate strategic interventions, the sector may well start to grow employment over the medium term, without which the small employment losses and marginal increases in the negative balance of trade over the past 3 years may well accelerate, leaving the sector in much the same position as that currently occupied by the machinery and equipment sector. Inaction is not an appropriate option for stakeholders in this sector as it is likely to result in considerable employment losses over the medium term – a situation that should ideally be avoided.

While, many of the strategies discussed in the overarching chapter are directly applicable to this sector, there are nuances that require elaboration and this chapter will, in its closing sections, clarify what those are.

¹⁶ Note that in this report electronics and electrical engineering sectors will be taken to mean the sub-sector electrical machinery, components and parts thereof; radio, television and communication; and professional equipment. The household appliances sector although forming part of the focus of this sector report will be referred to separately.

¹⁷ For example, Altech was awarded the President's Award for Export Achievement and won South Africa's Technology Top 100 Award in 2001; Tellumat was awarded the dti's Overall Enterprise of the Year Award in 2002; UEC has been a winner of the Technology Top 100 prize every year between 1996 and 2000.

1.1 Profile of the sector

1.1.1 Industry Classification

There are four groups of products that for the purposes of this report were defined as constituting the electronics and electrical sub sector. The details of each SIC classification are listed in Table 12 below.

Table 12: SIC codes constituting the sector definition

SIC Code	Description
SIC 3710	Manufacture of electronic valves and tubes such as television picture tubes, television camera tubes, image converters and intensifiers, microwave tubes, receiver or amplifier valves or tubes. This group also includes the manufacture of other electronic components, such as diodes, transistors and similar semi-conductor devices; photosensitive semi-conductor devices, integrated circuits and micro-assemblies, printed circuits, electrical capacitors and resistors.
SIC 3720	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy. Included is the manufacture of relay transmitters and television transmitters, transmission apparatus, fixed transmitters, transmitter-receivers, radiotelephony apparatus for transport equipment, radio-telephones, television cameras, telephone sets and switchboards.
SIC 3730	Manufacture of television and radio receivers, tape recorders and other sound recording equipment, telephone answering machines, video recording apparatus, hi-fi equipment, microphones, loudspeakers, headphones, earphones, amplifiers and the equipment used to test all the products in this group.
SIC 358	Manufacture of household appliances

1.1.2 Products

Although located within the electronics and electrical engineering sector for purposes of this study, the household appliances sub-sector is more typically located in the carbon steel value chain. As will be seen in the course of this paper, while the industry shares some of the generic trends of the overall sector, it is also significantly different from the electronics and electrical machinery industries. Accordingly, the analysis will group electrical machinery and components; professional equipment and radio, television and communications together while treating household appliances separately. It is further important to note that other products such as radio and television receivers, which might be thought of as household appliances, are in fact classified under the radio, television and communications sub-sector.

Table 13. Products of the electrical and electronic engineering sector

Sub-sector	Product examples
<i>Electrical machinery, components and parts thereof</i>	Electrical motors and generators
	Electrical transformers
	Electrical signalling equipment
<i>Professional equipment</i>	Optical fibres
	Direction finding compasses
	Oscilloscopes
<i>Radio, television and communication</i>	Television receivers
	Reception apparatus for radio telephony
	Transmission apparatus for radio telephony
Household appliances	Refrigerators
	Washing machines
	Other white goods

1.1.3 Major companies

The sector's major private sector players are the Altron Group; Reunert and Grintek while the unlisted Denel constitutes a major presence in the defence industry (Phillip and Xaba, 2002). While each of the private sector players is relatively large at the consolidated level, their holdings are diversified across a whole spectrum of electronics manufacturing and increasingly, related services. Reunert has assets ranging from the defence electronics sector through to circuitry, electronic valves and other components sector. The Grintek group:

- Owns interests in Telecommunications; Electronics; and Defence; and
- Manufactures products ranging from self protection systems under their defence umbrella to antennas manufactured by the electronics division

Similarly the Altron group owns companies that manufacture electrical machinery, consumer electronics, electrical cabling and telecoms service solutions.

All three groups, Altron, Grintek and Reunert¹⁸ have undergone a broad strategic repositioning in the past few years that has seen an emerging emphasis on services within the overall mix of the companies that they control and choose to invest in. Much of the

¹⁸ In Reunert's case the restructuring has seen a decline from having approximately 15000 people in manufacturing to approximately 4000 (Source: Interview G. Oosthuizen).

service-oriented acquisitions have been driven by trends in the mobile telephony markets and information technology, where the companies have sought to benefit from opportunities created by these new technologies.

The household appliances sub-sector operates somewhat out of the strict electrical engineering and electronics sector and this is reflected in the major players in the sector who are not associated with any of the big electronics companies discussed above. The major, indeed only players, are Defy, which manufactures refrigerators, freezers, stoves, washing machines and tumble dryers locally and Whirlpool which manufactures refrigerators and freezers locally (Bezuidenhout, 2002).

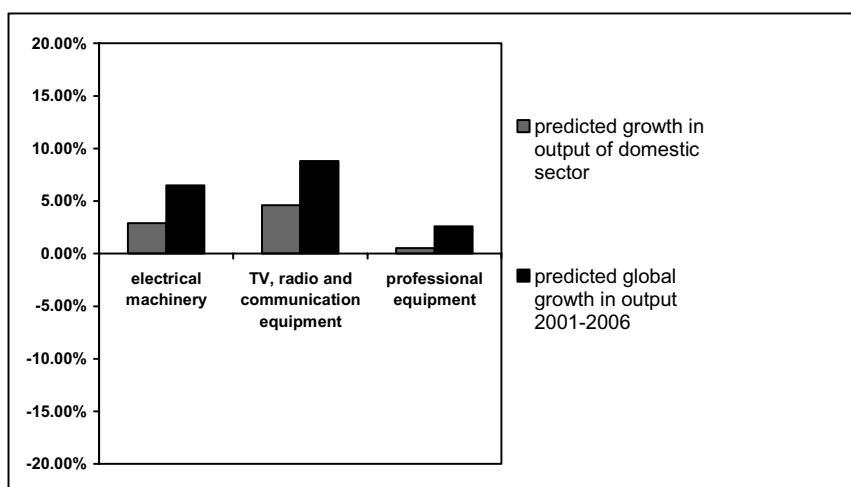
2 PERFORMANCE OVERVIEW

2.1 Performance in a global context

Globally, as in South Africa, the electronics and electrical engineering sector is a driver of innovation and growth within the Metal and engineering industries. Although the sector - particularly the radio, television and communication sub-sector - has suffered from the evaporation of enthusiasm for convergence technologies and the decline in the telecom market since early 2000, the outlook for sector remains largely positive with growth continuing to come from strong investments across the three core sub-sectors.

Figure 40 locates the performance of South Africa's sectors in a global context. It is striking to note that each sub-sector is well-positioned for global growth, but notwithstanding South Africa's small global share it is predicted to grow at a slower rate than the world average. While, for reasons elaborated on below, this is unsurprising for the components of the electronic engineering sub-sector (namely the TV, radio and communication and the professional equipment sub-sectors), it is worrying for the electrical machinery and components sub-sector given both its dominance within the electrical and electronic engineering sub-sector and because it had over the course of the 1990s performed relatively well against international competition, maintaining market share. Although, as is elaborated in section 2.2.5.; this trend started to reverse over the period 1999-2002 with potentially negative consequences for employment. As we noted in the introduction, although not currently a priority, the existing trends unless addressed may result in this sector becoming a priority.

Figure 40: Predicted growth in domestic and global output, 2001-2006



Source: ABSA, 2002

Some softening in demand is expected from both the telecoms and television broadcast sectors as they adapt to the 'post-tech-bubble' world. Nevertheless the roll out in infrastructure services as well as set-top boxes and associated receivers for interactive services is expected to bolster global growth (Altech, 2002).

In broad terms two differing manufacturing forces dominate the sector:

- East Asian producers dominate the mass production of standardised consumer items and derive their global price competitiveness from the enormous economies of scale that they are able to generate; and
- USA and EU manufacturers who compete on the basis of high technology products.

While this is a crude over-simplification, Section 2 below shows that this typology holds considerable explanatory power, as domestic mass producers have lost out to large East Asian multinationals, while US and European manufacturers have been the primary source of imports in custom, lower volume products.

2.2 Domestic performance

In reviewing the status of this sector, it is critical to understand that within the ambit of electronics and electrical engineering; sub-sectors and companies supply a diverse array of end-users, under different conditions with different products requiring differing skill sets and production processes. These diverse conditions across multiple variables have had a significant impact on the restructuring of the electrical and electronics sector over the course of the last 5 years. Overall, the sector has experienced significant downsizing as manufacture has been displaced by imports; a view which was reflected in the interviews conducted. However a manufacturing base continues to exist, driven by what was referred to as the "family silver" and "pockets of excellence", namely companies that are operating in niche, lower volume market segments and are able to successfully compete on the basis of focus and differentiation.

The current electronics and electrical engineering sector was shaped by a government policy of import substitution that had two components:

- High tariff protection for domestic manufacturers; and
- Long-term preferential contracts for domestic manufacturers issued by parastatals

Much of the sector emerged in this context as suppliers to Eskom, Telkom, the defence force and local government. Demand from this sector accounted for as much as 80% of the total output of the sector. In addition, supplier contracts were often guaranteed for considerable

lengths of time (up to 15 years in some instances) allowing for a great degree of certainty for domestic manufacturers.

Outside of the manufacture oriented to meeting parastatal and government demand, the electrical engineering sub-sector developed in response to the requirements of the mining industry; developing particular competencies in the manufacture of products such as electrical machines, often based on domestic research and development or the adaptation of international designs for local conditions.

Since 1994, a number of key domestic and global processes have served to shift the structure of the sector.

- The lowering of tariff barriers
- The reduction of local manufacturer preferences received from parastatals
- Reduction in parastatal and defence spending
- Introduction of competition in the telecommunications market

The net result of these shifts has been declining employment in parts of the telecommunications manufacture sub-sector as multinationals have chosen to import most telecoms technologies instead of manufacturing domestically. This shift has seen the demise of significant local employment, with some interviewees estimating that as many as 15 000 jobs had been lost in the parts of the sector supplying Telkom. Two key players that were compelled to shed jobs in ultimately failed efforts to adjust to the new competitive conditions were Telephone Manufacturers of South Africa (TEMSA) and the Alcatel manufacturing facility, which between them represented approximately 2500 jobs.

Similarly the long-term decline in defence spending resulted in declining fortunes for the sector and was accompanied by job loss. For example, Armscor's market declined by an average of 15% between 1990 and 1998 which had knock-on effects in the defence electronics sector (Phillips and Xaba, 2002). The pressure of this decline is reflected by:

- The change in composition of Reunert's revenue. During the 1980's the defence industry contributed approximately 55% to Reunert's revenue, a figure which currently stands at 5%.
- The substantial retrenchments at Denel over the last 5 years.

The consumer electronics and white goods sub-sectors have been subject to similar pressures. In particular the sub-sector has suffered under increasing import penetration by multinational companies that has seen domestic manufacturers lose market share and employment.

However, despite these shifts, the sector as a whole is projected to grow slightly over the next five years. A number of trends underpin this forecast growth:

- Increased access to export markets, especially African and SADC markets, after the lifting of sanctions and the ability of South Africa to compete in certain niche markets. Indeed many companies emphasise that their futures lie in increasing exports. This is accompanied by steadily rising export volumes over the last 10 year period as well as the increasing share of revenue from export operations.
- Large capital expenditure in telecommunications as a result of the growth in cellular telephony in South Africa
- Increased capital expenditure in the mining sector
- Telkom's roll-out of its fixed line network in line with public service obligations
- Increased capital investment by Transtel and Easitel in preparation for their participation in a second fixed line operator
- Eskom's electrification drive
- The roll-out of pre-paid metering systems associated with the delivery of electrical and telephony services
- The defence procurement package
- Export opportunities into Africa associated with the roll-out of mobile telephone networks as well as the expansion of mining operations into the continent.

All of these areas of demand have served to offset the decline in parastatal and government purchasing. However, as will be seen below, the failure to develop and implement a preferential procurement system bolstering local manufacture has meant that the employment effects of this expenditure have not fully exploited by domestic companies. A strong service sector has emerged alongside the manufacturing base in the sector. Part of this sector has always existed such as the refurbishment of electrical engines and motors, servicing of the telecoms network and electricity grid. However, the cellular and information technology industries are new sources of value creation and employment. For example, Rivonia is emerging as a hub for cell-phone repairs and software development companies are being recognised by TISA as a potential source of employment creation. However we will not focus on the emerging service sector but will be concentrating primarily on the trends within the manufacturing sector.

The various strategies being pursued by the companies interviewed for this paper are reflective of the above trends in demand. A list of the various strategies pursued by companies in the sector is provided in Table 14.

Table 14. Strategies being pursued by South African companies

Company	Type	Sector	Strategy	Export
A	Part of listed group	Telecoms	Import of components coupled to some domestic modification and local assembly.	Growing
B	Part of MNC	Electrical equipment and machinery	Services particular markets within MNC strategy using a combination of licensed technology and local R&D. Unique or highly customised products.	Growing.
C	Part of listed group	Electrical circuitry	Domestic R&D capabilities. Focuses on ability to customise designs for client specification and assembles domestically.	Growing
D	Listed Group	Diversified	Decreasing exposure to manufacture with focus on few key areas.	Growing
E	Listed Group	Diversified	Increasing services assets, manufacturing in niche areas and undertaking international acquisitions to reinforce focus.	Growing
F	Listed Group	Diversified	Focus on solutions allied to products sold to customer.	Growing
G	Part of listed group	Electrical cables	Manufacture, competitive advantage in domestic market	Growing
H	Private	Electrical circuitry		Growing
I	Private	Telecoms	Owns own technology, acts as contract assembler for international design houses while developing domestic R&D.	Domestic focus.
J	Private	Professional Electronics	Own R&D capability led by innovation. Moving into service offerings, turnkey projects and support for installed products.	Growing.
K	Private	Electrical components	Labour intensive assembly servicing domestic market. Maintains competitive edge through flexible production.	Domestic focus.

As can be seen from Table 14, most companies rely on high levels of engineering and artisan skills that allow for the production of custom products or products serving smaller volume markets. While all have some form of assembly operation, they emphasised that their competitive advantage derives from the considerably cheaper engineering and design rates – estimated at 40% below that of comparable rates in the EU and US.

2.2.1 Employment¹⁹

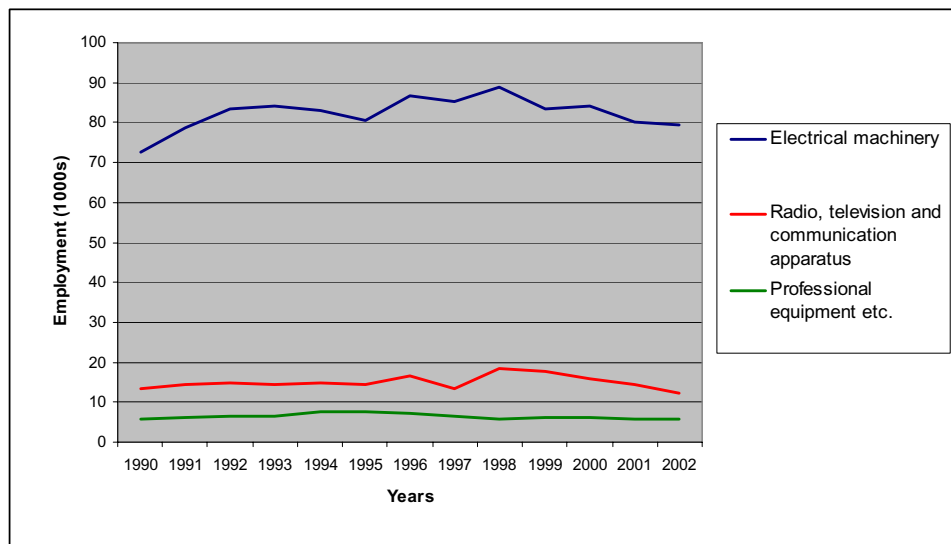
This section will make use of the survey undertaken as part of this study to quantify the current size of the sector. Since it was not feasible to go back further than 1999 in the survey, official data sources are used to track changes occurring in the sector from 1990 up to 1999.

According to the survey figures, the electronics and electrical engineering sector accounted for 15.3% of employment in the overall metals and engineering industries. In addition to this, the sector's capacity for innovation and design give it a competitive advantage, rendering it an important driver of sustainable employment creation in the broader metals and engineering industry.

2.2.2 Structure of employment

According to the IDC, the electrical and electronics sector has grown from just over 91 000 employees in 1990 to slightly over 97 000 employees by 2002. This slight upward trend is in contrast to the rest of the metals and engineering industry that has experienced a steady decline from 1990 to 2002. Figure 41 shows that electrical machinery accounts for the vast majority of employment in the electronics and electrical engineering sector.

Figure 41: Total employment trends by industry from 1990 to 2002



Source: IDC, 2003

¹⁹ Note that there are differences between the absolute employment numbers kept by Statistics South Africa and those that resulted in the survey. These differences are the results of a variety of methodological differences in approach. Please refer to the methodology section for a fuller explanation of these issues.

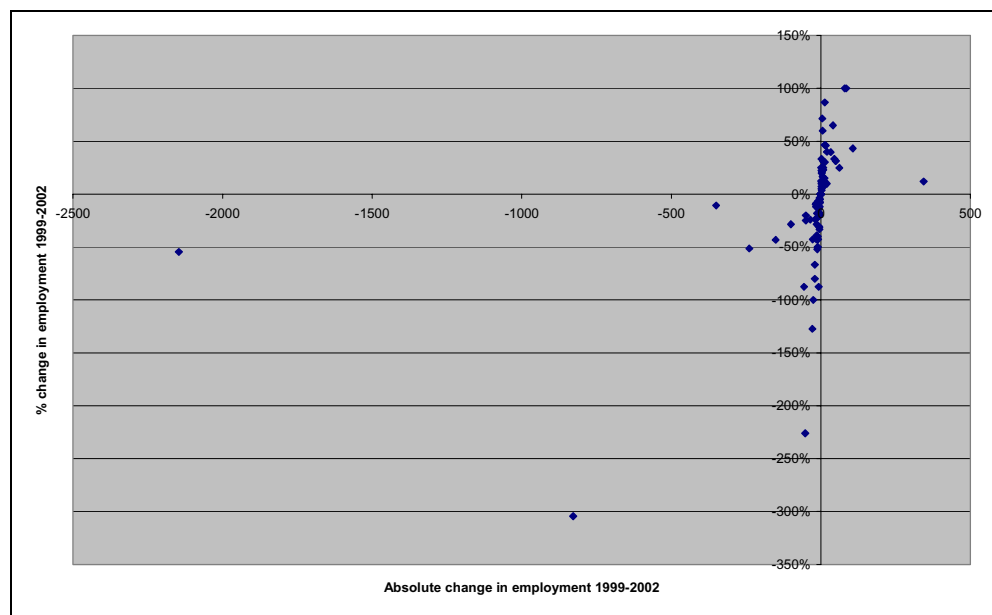
Bezuidenhout's (2002) work shows that employment within the household appliances sub-sector has remained largely stable in the period 1993-2000 at approximately 9 500 employees.

Within the electrical and electronics sector, it has been the electrical machinery industry that has experienced the most employment growth, creating approximately 6 700 jobs, which is equivalent to a compound annual growth rate of 0.7%. However, as demonstrated in Figure 41, employment has declined over the last 3 years in the sector – a trend that is reflected in the survey data presented in

Table 16 below. Employment declined over the same period within the radio, television and communications sub-sector by 0.6% annually, but given the relatively small size of the sub-sector, this only amounted to a loss of approximately 900 jobs. The professional equipment sub-sector has remained small but relatively stable with respect to employment, accounting for a mere 5 800 employees in 2002.

Figure 42 enables a more detailed understanding of employment trends within the sector. The majority of companies have grown between 5 and 60 jobs between 1999 and 2002, with only a few creating more than 100 jobs. Companies that have lost jobs are equally distributed, although there are more 'big' job losers than there are 'big' job champions. Thus, at an aggregate level, employment within the electronics and electrical engineering sector is relatively stable, with medium-sized job champion firms accounting for 80% of all the jobs created by job champions.

Figure 42. Employment trends from 1999 to 2002 within the electronics and electrical engineering sector



Notwithstanding the employment loss shown above, the sector has created employment as reflected in Table 15 and

Table 16. Much of the employment created has been atypical in nature and has offset considerable declines in the levels of permanent employment in the sector. Increases in atypical employment may be associated with declining conditions of employment (salaries, medical aid, access to training and development) for employees as well as constraints for employers including the inability to access appropriate levels of skill; increased scrap rates; and increased health and safety risks.

Thus the fact that atypical employment constitutes an increasing component of employment in the sector requires active strategies to manage this trend, or over the medium-term it may become a constraint both to employment creation and the general increase in employment conditions.

Table 15: Employment trends at a sector level by work category in the electronics industry from 1999 to 2002

	Sector employment 1999	Sector employment 2002	Compound Annual growth rate
Permanent employees (FT and PT)	23 850	16 660	-11.3%
Casual employees	2	4	26.0%
Temporary employees	48	102	28.3%
Sub contracted labour	789	1 578	26.0%
Total employment	23 898	18 343	-8.4%

Table 16: Employment trends at a sector level by work category in the electrical engineering industry from 1999 to 2002

	Sector employment 1999	Sector employment 2002	Compound Annual growth rate
Permanent employees (FT and PT)	42 130	41 187	-0.8%
Casual employees	187	374	26.0%
Temporary employees	1 347	937	0.0%
Sub contracted labour	1 004	637	-14.1%
Total employment	44 787	43 134	-1.2%

Outsourcing

Table 17 demonstrates that the use of atypical forms of employment within the electronics sub-sector has increased since 1999, with the number of sub-contracted employees having increased dramatically for both electrical and electronic engineering over the period 1999 to 2002. However, although the numbers of permanent employees have declined, they continue to constitute the majority within the sector. However, it is the decline in permanent employees which underpins the employment decline in the overall sector.

Table 17. Employment trends in the electronics sub-sector by work category from 1999 to 2002

	1999	2002	CAGR
Permanent full-time and part-time	13 304	9 343	-11.1%
Casual employees	0	2	Not possible to calculate
Temporary employees	27	57	28.3%
Subcontracted labour	0	880	Not possible to calculate
Total employment	13 331	10 282	-8.3%

Note: Figures are reflective of the sample, not the sector level. However, CAGR values apply to both the sample and the population

Table 18 shows the employment trends for the electrical engineering sub-sector, which like the electronics sub-sector, shows a decline in employment both overall and in the category of permanent employment. Interestingly, although casual employment increased, the use of temporary and sub-contracted labour was seen to decline in the sample. The decline in temporary employees was mainly driven by the reduction in one large company, whereas the other companies in the sample tended to increase their numbers of temporary workers slightly. This is because the company used to use temporary workers extensively to cope with seasonal fluctuations in production, but are in the process of evening-out production fluctuations, which has decreased the number of temporary workers required. These workers are employed on a fixed-contract basis and are given training by the company for the assembly work they undertake.

Likewise, the decline in the number of sub-contracted workers in the sample was again driven by drastic reductions within one large company, while the remainder of the sample tended to increase their numbers of sub-contracted workers slightly.

Table 18. Employment trends in the electrical engineering sub-sector by work category from 1999 to 2002

	1999	2002	CAGR
Permanent full time and part time	6 880	6 726	-0.8%
Casual employees	50	61	6.9%
Temporary employees	220	153	-11.4%
Subcontracted labour	164	104	-14.1%
Total employment	7 314	7 044	-1.2%

Note: Figures are reflective of the sample, not the sector level. However, CAGR values apply to both the sample and the population

Thus, although the sample shows a decline in the number of temporary and sub-contracted workers, this is skewed by two large players and the numbers have increased slightly among the medium and smaller companies. However, total employment in the electrical engineering sub-sector has declined by 0.8% annually from 1999 to 2002.

Notwithstanding the relatively low number of employees in outsourced relations, a large percentage of companies now use some form of outsourcing. The prevalence of outsourcing was found to be 34.7% in the electronics and electrical sector as a whole, which is average compared to the other sectors in the metals and engineering industry. When the sample was segmented by company size, it was found that 24.7% of small companies outsourced services, while 58.1% of medium companies and 50% of large companies made use of outsourcing.

Table 19. Frequency of outsourcing among companies within the electrical and electronic engineering sub sector

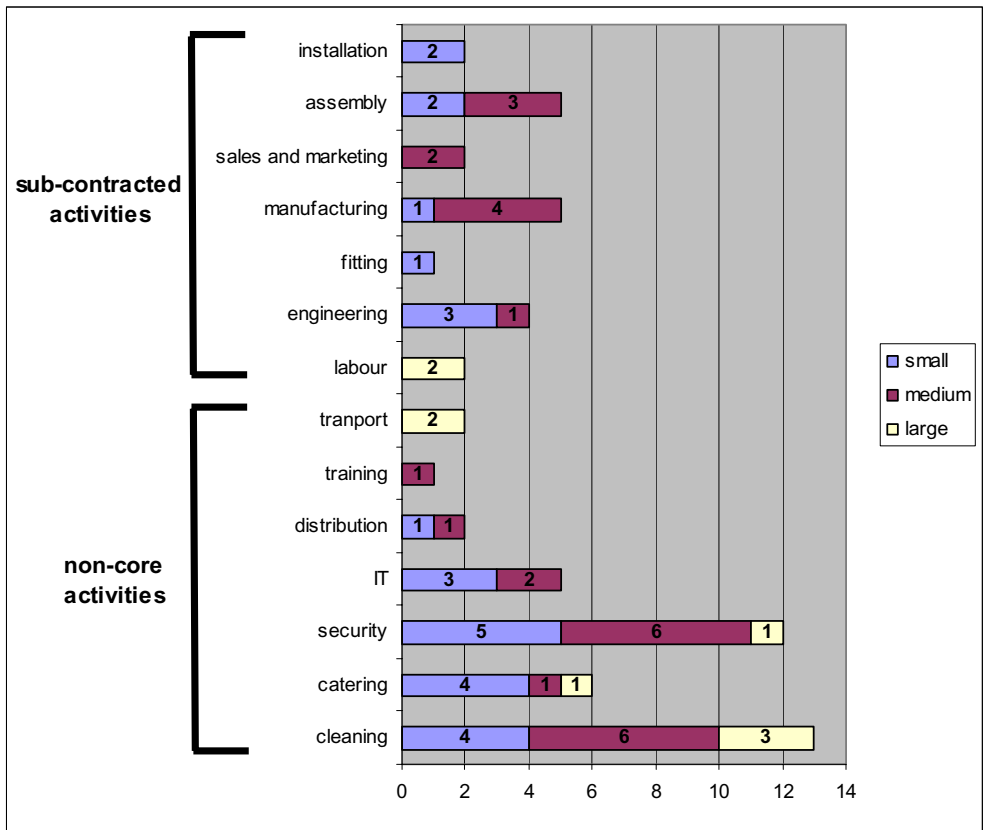
Company size	Total number of companies	Frequency of outsourcing	Response in %
Small	85	21	24.7%
Medium	31	18	58.1%
Large	8	4	50.0%
Overall sub sector	124	43	34.7%

In general, the services outsourced tended to be non-core in nature rather than technical, specialised functions. Figure 43 summarises the more commonly outsourced services. The most commonly outsourced activities in small companies were cleaning, catering and security. Within medium-sized companies, cleaning and security were the most commonly outsourced functions, while manufacturing and assembly were the second most commonly outsourced functions. Large companies tended to outsource cleaning and labour.

This is consistent with the trends in the other sectors within the metals and engineering industries and may point to the need for a particular solution for employees in these sorts of companies. However the rise of atypical employment is a challenge for stakeholders. While on the hand it reflects potentially increasing insecurity of employment for current permanent employees, if it is stabilised and appropriately managed it may constitute an entry point for people into the sector. Many of the employers interviewed reported that they did not use atypical labour in the production process because of the potential problems discussed above. However, it seems that if these problems were addressed, there may be the potential for increasing the level of atypical employment in the sector not through the degrading of the conditions of work of existing employees but through creating the capacity to pursue opportunities that companies may currently be ignoring.

While outsourcing of non-core activities is consistent with strategies adopted by companies globally, the increase in sub-contracting of manufacturing and assembly amongst small and medium-sized companies is indicative of an increasing focus on innovation as well as avoidance of permanently employing labour, which was perceived by the interviewees to be high-risk because of the associated retrenchment costs, along with direct and indirect costs both prior to and as a result of potential CCMA penalties, should they have to retrench as a result of fluctuations in demand.

Figure 43. Type of services outsourced among small, medium and large companies



Race Profile

Although the survey presents a snapshot of the sector in 2002 and is not able to capture the amount of change that has taken place in the race and gender profile of the workforce, the figures below indicated that the sector continues to experience the effects of apartheid and remains substantially untransformed. Figure 44 and Figure 45 shows that the majority of unskilled and semi-skilled positions are filled by black workers, while managerial and skilled positions are dominated by whites.

Figure 44. Breakdown of workforce profiles by race within the electronic engineering sub-sector

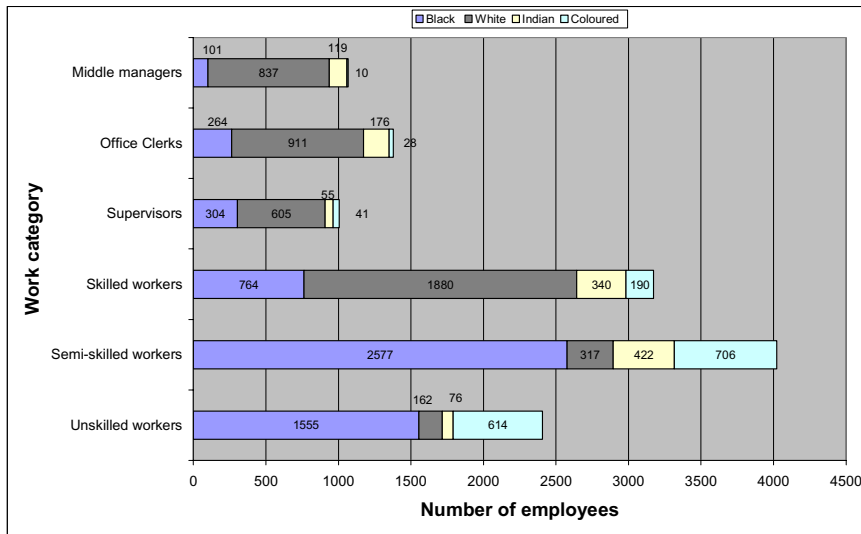
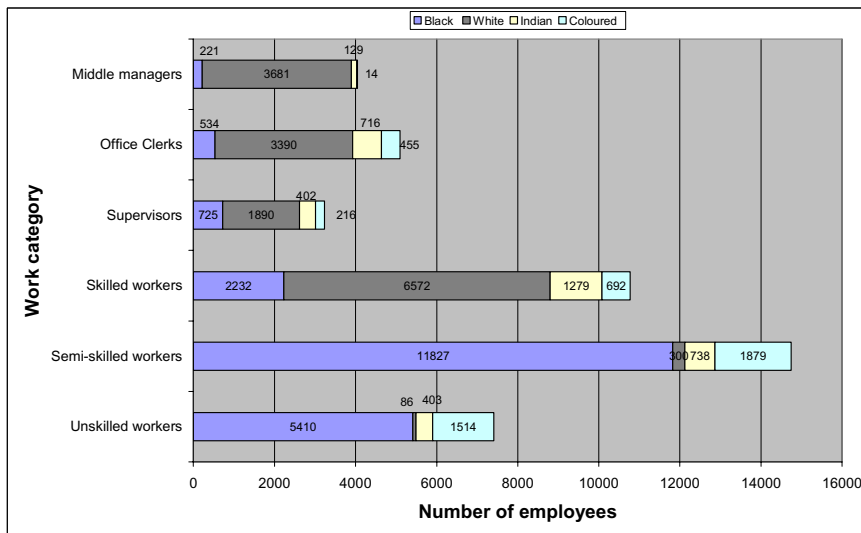


Figure 45. Breakdown of workforce profiles by race within the electrical engineering sub sector



Gender profile

Similarly, the survey shows that both in the electronics and electrical engineering sub-sectors, men overwhelmingly dominate employment in the sector, while women are only significantly represented in the traditional domains of office work. Middle management in particular is heavily dominated by males. These findings suggest that the sector still has much to do to bring about gender equality in the workforce.

Figure 46. Breakdown of the workforce profiles by gender within the electronic engineering sub sector

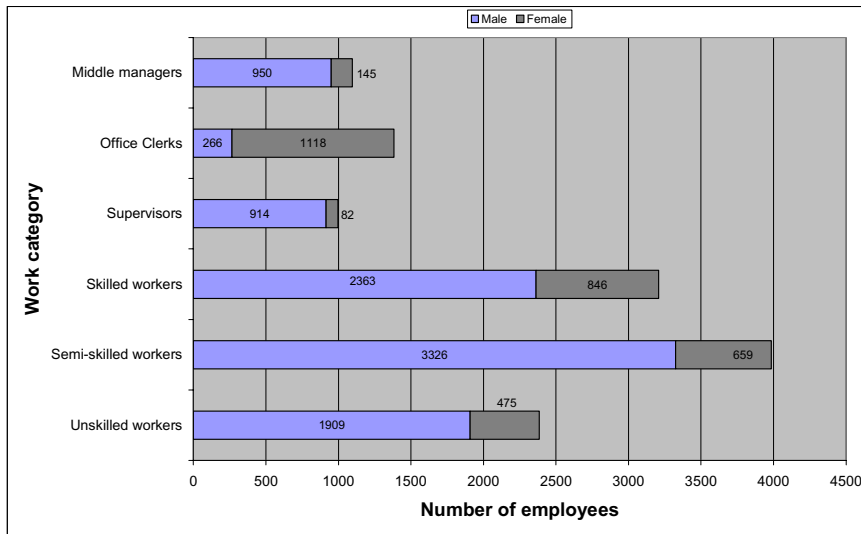
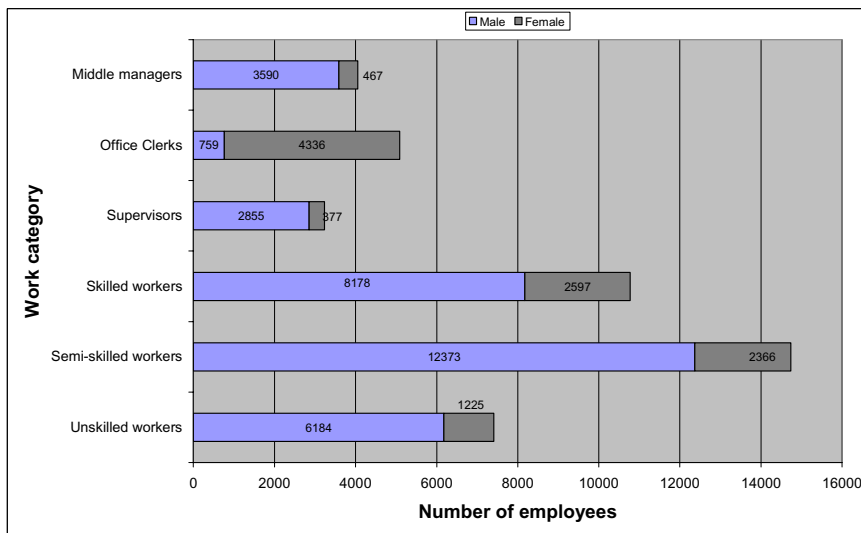


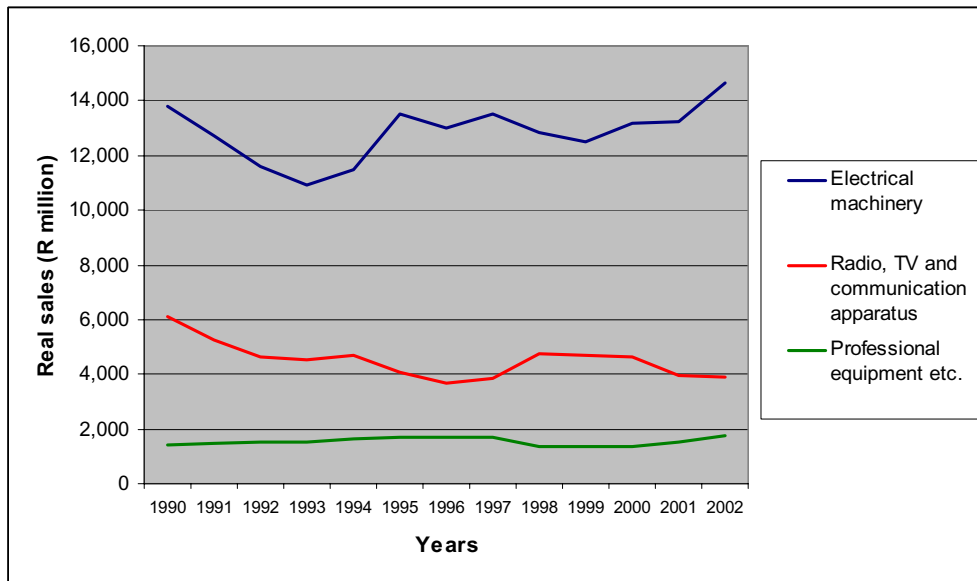
Figure 47. Breakdown of the workforce profiles by gender within the electrical engineering sub sector



2.2.3 Turnover

The employment stability of the sector is mirrored by fairly consistent real sales, as illustrated by Figure: 48. However the radio, communications and television sub-sector has experienced a considerable decline in real sales over the last decade, due to an increase in East Asian imports which are mass-produced on a vast scale, enabling them to undercut domestic producers' production costs.

Figure: 48 Trends in real sales from 1990 to 2002



Source: IDC, 2003

The survey reveals the contribution of various categories of companies to these overall sales levels. Figure 49 and Figure 50 illustrate that companies' turnover is a function of size, with most small companies being situated in the lower turnover ranges and larger companies situated in higher turnover ranges. The exceptions to this are:

- One large electronic engineering company that has relatively low turnover, reflecting labour-intensive productions methods
- Between 5% and 10% of small companies having mid-level turnovers, reflecting their positioning within high value-added products

This picture is consistent with the image of the sector that emerged during the qualitative phase of the research namely, a sector that is both characterised by labour-intensive assembly methods and by high levels of innovation in high value-added products.

Figure 49. Turnover during 2002 by company size – electronic engineering

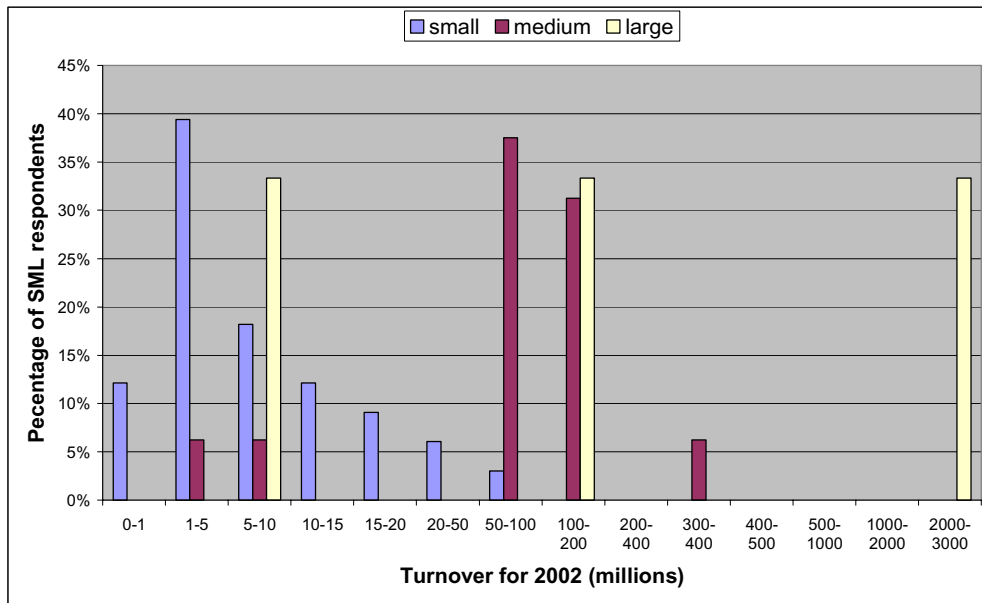
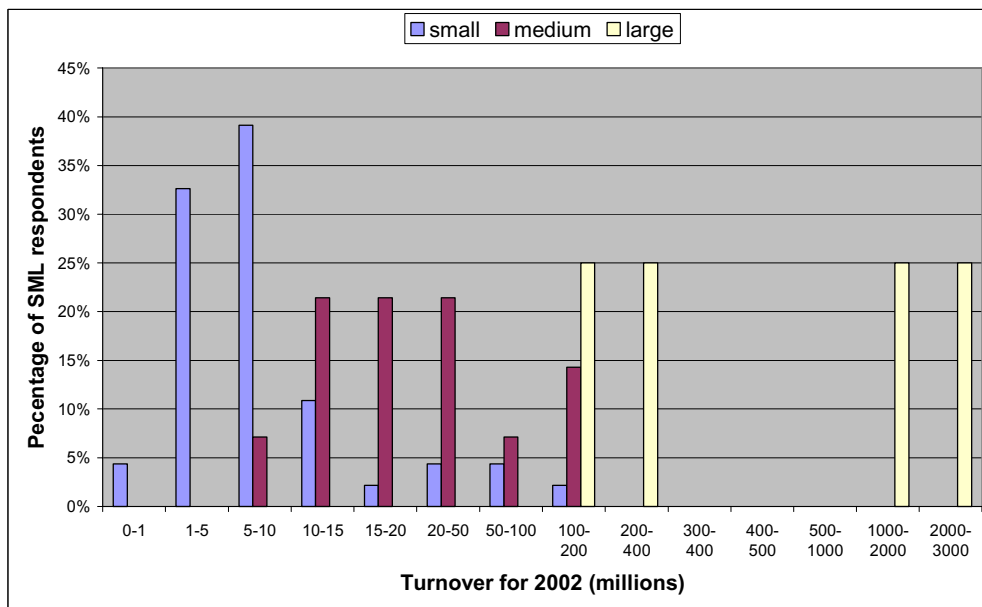


Figure 50. Turnover during 2002 by company size – electrical engineering

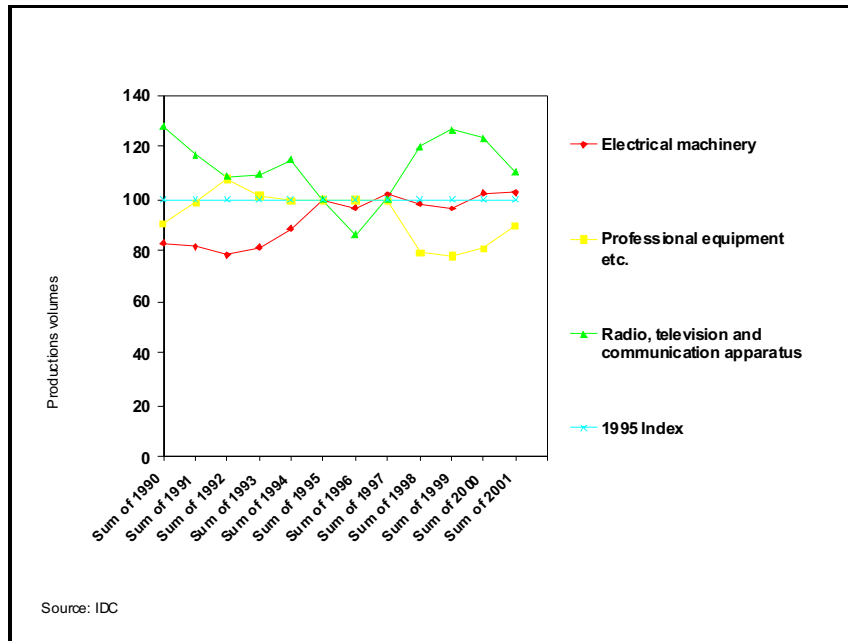


2.2.4 Production volumes

Production volumes for the sector have remained fairly constant over the last 10 years. The radio, television and communications sub-sector enjoyed some revival on the back of telecoms infrastructure roll-out however it would appear that the sub-sector is in a state of longer-term decline and volumes are starting to decline once more. Conversely, the electrical machinery sub-sector has enjoyed slow but consistent growth in output over the decade. When this is viewed in the context of sales that have grown at a slightly lower rate, it would

seem that increased competition and the battle to retain and win market share has, in part, resulted in a declining output: sales ratio. Nevertheless, the consistent growth in production volumes is indicative of the continued existence of a functional manufacturing base. The professional equipment industry experienced a decline in production volumes, but started to increase consistently from the late 1990s onwards.

Figure 51. Index of production volumes (in constant 1995 units)



2.2.5 Exports and imports

Strong real export growth has been an important contributor to the overall performance of industries within the sector, as reflected in Figure 23.