DEPARTMENT OF TRADE
AND INDUSTRY

DEPARTMENT OF TRADE AND INDUSTRY
POLICY SUPPORT PROGRAMME

International Competitiveness And Value Chains in Selected Manufacturing Sectors Study
Code: A.1.001

Report on international benchmark findings

JUNE 1999

Submitted by

Justin Barnes
University of Natal: Industrial Restructuring Project

AGORA' 2000 S.r.l.
Management Consultants
Via Germanico, 172
I-00192 Rome - ITALY
Tel.: +(39) 063 241 719 - Fax: +(39) 063 216 915
E-mail: agora2000@uni.net

DRA-development cc
Development Researchers & Policy Analysts
59 Rosebank Avenue, Roseglen, Morningside
Durban 4001 - SOUTH AFRICA
Tel.: +(27-31) 208-4112 - Fax: +(27-31) 202-8437
E-mailastavrou@iafrica.com

FOREWORD

The Industrial Restructuring Project (IRP) was initiated at the beginning of 1996 as the KwaZulu-Natal Industrial Restructuring Project (KZN IRP). The project initially focused exclusively on KwaZulu-Natal, but is now aimed at supporting industrial policy in South Africa at the national, provincial and local levels. It is facilitated by international experts and is based at the School of Development Studies, University of Natal Durban. The project has two important features. Firstly, it focuses on critical issues that are impacting on the competitiveness of manufacturing sectors that are under threat from increased international competition and the liberalisation of the South African trade regime. Secondly, it is action-oriented in design. The findings that have been generated have, for example, been presented to numerous industry stakeholders, including government, business associations and trade unions. The project consequently has the support of various regional and national stakeholders.

This particular report/working paper has arisen out of both new research and the cumulative knowledge that has been generated from previous studies. These cover a number of IRP reports, working papers, journal articles and conference papers. Some of the themes covered include South Africa's manufacturing competitiveness, the automotive industry, the clothing and textiles sectors, footwear, middle-management capacity, human resource development, institutional support for industrial restructuring, and business services for manufacturing competitiveness. Enquiries regarding IRP material should be addressed to: The Librarian, Centre for Social and Development Studies, University of Natal, Durban, 4041. Tel: 031 2601031; Fax: 031 2602359; email: smithm@mtb.und.ac.za.

Prof. Mike Morris
Head: IRP

ACKNOWLEDGEMENTS

The **European Union** through its **Department of Trade and Industry Policy Support Programme** provided the principal funding for the writing of this research report. This financial support is sincerely appreciated and hereby acknowledged.

The benchmarking database from which this report draws its information was, however, supplied by the **KwaZulu-Natal Benchmarking Club**. This growing database is openly shared with the **Industrial Restructuring Project** and the support of the Club is therefore also duly acknowledged.

At an academic level a special thank you needs to be directed towards Sean Ellis who helped with data analysis and the generation of the various tables and figures for the report.

The views expressed in this report are, however, solely those of the author. All responsibility for its content therefore lies with the author alone.

TABLE OF CONTENTS

INTRODUCTION

In this report we explore the findings from a series of international benchmarking exercises undertaken as part of the KwaZulu-Natal Benchmarking Club's activities. The KwaZulu-Natal Benchmarking Club was formed by a group of twelve automotive firms in November 1997 and has as its principal objective the continuous improvement of its members via the generation of comparative "like with like" benchmarks with both domestic and international firms[1]. A consultancy company, *KwaZulu-Natal Benchmarking*, is the service provider to the Club, and it co-ordinates the Club's international and domestic benchmarking activities. Eleven of the twelve firms are automotive component manufacturers whilst the major auto assembler in the province completes the Club membership. The member firms of the KwaZulu-Natal Benchmarking Club fund 35% of its budget, with the South African government's Department of Trade and Industry through its Sector Partnership Fund funding the other 65%.

The services offered to KwaZulu-Natal Benchmarking Club members are significant and encompass both firm specific and partnership wide activities. One of the most important activities is the detailed annual "like with like" comparative benchmark with an international firm that competes in the same or a similar market segment, as well as customer benchmarks. The benchmarks are undertaken using the service provider's unique benchmarking tool and take place annually for the purposes of analysing longitudinal trends. The findings are then presented to the member firms in the form of concise written reports, as well as formal presentations. These findings are far more than simple recordings of numerical benchmarks. They take the form of diagnostic reports that analyse the firm's operational competitiveness.

This report draws upon the findings generated from these "like with like" comparative benchmarks. The findings are absolutely critical as they highlight in detail the operational competitiveness of a group of automotive component manufacturers in South Africa relative to a very similar group of international firms. In the report we go beyond only considering the operational competitiveness data, however, and also draw upon the customer benchmarks that were undertaken for all club members. The customer benchmarks verified many of the issues that emerged during the course of the comparative benchmarks and as such constitute an important additional assessment of firm-level performance.

The major substance of this report can be found in Section Three. This is where the comparative operational competitiveness findings are highlighted. The critical dimensions of competitiveness and the manner in which the South African automotive component firms stand up to their international competitors are considered. As is clearly highlighted Club members are, on average, uncompetitive relative to their international counterparts. And yet as is also revealed there are sufficient outliers for every performance measure generated to suggest that the leading club members are internationally competitive in terms of certain of their operational dynamics. The findings are therefore far from negative. They highlight that competitive capabilities do exist in South Africa and that South African automotive component firms have the potential to compete in the global automotive arena.

Before considering these findings, the multi-faceted methodology used for the benchmark undertakings is outlined in some detail (Section One), with brief consideration also being given to the comparative economic performance trajectory of the two groups of firms (Section Two). This is done purely for illustrative purposes and not because there is anything meaningful to be read into economic performance figures as exemplars of operational competitiveness. These figures are indicators of performance after the fact and are symptoms of ailments rather than their root cause. Whilst comparative

[1] The KwaZulu-Natal Benchmarking Club offers firms two forms of membership. Full, which includes the undertaking of an international benchmark on an annualised basis and associate, which entails the undertaking of a benchmark with a similar domestic firm. Of the club's total membership of 12 firms, ten are full members and two associates. All members receive equal access to the club's other activities.

figures are provided they are therefore merely meant to be indictors of economic well being and not of inherent competitiveness capacity. In the last part of Section Two consideration is, however, given to the extent to which the club members are meeting their customers' performance requirements.

The report ends with a brief conclusion that draws together the major findings presented. It also outlines some of the policy and research implications of the firm-level research conducted under the auspices of the KwaZulu-Natal Benchmarking Club.

SECTION ONE: METHODOLOGY

The models of inquiry used for the club's comparative benchmarking activities are both quantitatively and qualitatively based. To simply benchmark firm performance figures on a statistical basis is restrictive as these figures alone say little about the **processes** being utilised in order to drive performance improvements. In order to overcome this limitation the "like with like" benchmarks of the automotive component firms were carried out using an independently developed and multi-faceted benchmarking methodology. For the South African firms this encompassed:

- Personnel of *KwaZulu-Natal Benchmarking* carrying out management and labour interviews at the firms over a two-day period in order to generate an understanding of the processes being utilised at the companies,
- The taking of factory measurements to better understand manufacturing operations, and
- The completion of detailed questionnaires at the companies, with most of the hard performance data generated for the benchmarked firms being taken from the questionnaires.

The methodology used at the international benchmark partner firms was more compressed as most were completed over the course of one day. At the minimum detailed questionnaires were filled in by the international companies. Wherever possible management interviews and factory visits were also, however, undertaken.

The firms benchmarked internationally were usually chosen through the club members. Each club member was requested to indicate five firms that they would like to be benchmarked against. These firms were then approached and promised free comparative benchmarking information from the South African firm for their participation. If none of these five firms were interested in participating our consultants in the United Kingdom and Brazil were then given the mandate to cast the net further and match the South African firm as best they could. The one criteria that was non-negotiable was the "like with like" dimension of the benchmark. If the South African firm manufactured heat transfer products then it had to be benchmarked against another heat transfer product manufacturer. Failing this the benchmark was transferred to an alternative geographical location. This occurred in one instance, with a vehicle electronics benchmark being transferred from Western Europe to Brazil. Whilst there are important differences between the two sets of benchmarked firms, these substantial differences do not therefore lie in the products manufactured by the two groups.

It is critical to note then that given the selection process for the domestic and international benchmarks, both sample sets are unrepresentative of automotive component firms more generally. Firstly, it needs to be borne in mind that the KwaZulu-Natal Benchmarking Club is a continuous improvement network. Firms who belong to it are by definition looking to improve their competitiveness. This separates them from domestic automotive component firms that are not members of the club. Secondly, the international firms were not randomly chosen on a matching-firm basis. Whilst the club members had no idea who they were being benchmarked against they did suggest a group of firms that they would prefer their benchmark firm to be selected from. Invariably, these firms are major players in the markets in which they compete and not small peripheral players that the South African firms would be unaware of. Importantly, there was also a geographical bias in the sampling process. Most club members wished to be benchmarked against Western European companies, as that was the automotive market where they saw export opportunities. As a result, most of the international benchmarks (eight) took place in Western Europe. The three Brazilian benchmarks were undertaken as a result of (a) certain club members wanting to know how they performed against firms they perceived as being more of a competitive threat in the global market place; and (b) as an alternative location for benchmarks that we were unable to undertake in Europe.

As the numbers outlined above would suggest, one additional benchmark was carried out in Europe and another in Brazil, hence the different sample sizes (nine verses 11). In order to bring the two sample sets to parity in terms of firm

numbers the associate member figures are included in the club member statistics. These additional international and associate benchmarks do not skew the overall matching profile of the two sets of firms in any meaningful manner. They do, however, provide important additional qualitative and quantitative information and are thus valuable inclusions.

The methodology used for the comparative benchmarks followed what we call a "market driver" approach. Instead of focusing on financial figures from company balance sheets we developed a set of proxy measures that indicate how effectively firms meet key market requirements (or drivers). These are outlined in Table One, and as illustrated they also suggest the types of organisational practices that firms are following in their endeavours to better meet market requirements. The six key market drivers explored relate to cost control, quality performance, external flexibility, internal flexibility, capacity to change (human resource development) and innovation capacity. This methodology is strongly influenced by the best operating practice and lean production/flexible specialisation literature. (See, for instance, Womack, Jones and Roos 1990, Porter 1990, Bessant 1991, Lamming 1993, Kaplinsky 1994, Womack and Jones 1996, Brown 1996, Kaplinsky and Morris 1998, Humphrey et al 1998, Barnes and Kaplinsky 1999). The market driver approach illustrates quite effectively, we believe, the various operational strengths and weaknesses of the two groups of companies relative to one another, and suggests the types of organisational practices that are being followed at the firms in order to drive their performance improvements. It allows us to step beyond the weaknesses of benchmarking financial performance figures that are an indication of past performance and often external market forces, thus permitting us to assess the relative operational competitiveness of the South African companies against their international counterparts.

Importantly, in addition to carrying out the comparative benchmarks, customer benchmarks, using the same market driver approach, were also conducted for all club members. This entailed sending a perception questionnaire to the benchmarked firms' major customers in order to generate an understanding of the companies' customer demands, as well as customer perceptions regarding their performance relative to these demands. On the basis of the customer benchmarks we were able to identify generic performance strengths and weaknesses amongst the club members. This also enabled us to cross-reference the comparative benchmark findings, thus giving us a more detailed understanding of firm performance.

Table One: Key market success factors in the automotive components industry and operational performance and practice measures that highlight firm-level success in terms of meeting such market demands

Key market demands	Operational performance measures	Organisational practice measures
1. Cost control	• Raw material stock holding, • Work in progress levels, • Finished goods stock holding	• Single unit flow lines, • Quality at source, • Cellular production systems, • Production pulling/use of kanbans
2. Quality	• Customer return rates, • Internal quality (rejects, scrap, rework) rates	• Statistical process control, • Quality circles, • Team working
3. Lead times (external flexibility)	• Time from customer order to delivery, • Delivery frequency of suppliers, • Delivery reliability of suppliers	• Process engineering, • Cellular structures in order processing/ dispatch, • Supply chain management
4. Internal flexibility	• Delivery frequency to customers, • Machine changeover times, • Batch and lot sizes, • Throughput time through factory, • Production flow	• Value chain relationships, • JIT manufacturing principles, • Single minute exchange of dies, • Multi tasking and multi skilling of workers, • Cellular production in manufacturing
5. Capacity to change (HRD)	• HRD (numeracy, literacy) • Training and type of expenditure: labour and management, • Suggestion schemes, • Labour and management turnover rates, • Absenteeism rates, • Output per employee levels	• Continuous improvement programmes (kaizen), • Worker development and commitment, • Organisational hierarchies • Communication flows • Team working: multi skilling/tasking
6. Innovation capacity	• R&D expenditure: New product development and product reengineering • Process innovation expenditure	• Concurrent engineering, • R&D structures • Continuous improvement

The reasons underpinning the methodology employed are outlined in the figure below. As highlighted, there are numerous facets to any company's operations, thus necessitating the use of a benchmarking methodology that encompasses as many dimensions of the firm as is possible within a short period of time. In the methodology employed for the comparative benchmarks, we were therefore able to benchmark in detail club member performance in terms of both operational competitiveness and customer satisfaction levels.

Despite the close match between the two sets of firms it is impossible to find two firms that are identical to one another in every respect. The two sets of firms differ in a number of ways and it is important that these be borne in mind when giving consideration to the findings highlighted in Sections Two and Three of this report. This methodology section therefore concludes with a brief profile of the two groups of firms.

1.1 A brief profile of the two groups of firms

The international companies were, on average, larger than their South African counterparts, with their average employment levels for 1997 sitting at 536, in comparison to the South African firms' average of 334 employees. On average then the international companies were 60% larger than their domestic counterparts. Turnover differences were even larger with average 1997 turnover for the international firms sitting at R368.6 million, in comparison to the R69.7 million of the South African firms. The ownership profile of the two groups was also significantly different. Whilst the majority of the international firms were subsidiaries of large multinational corporations that had operations in various parts of the world the South African firms presented a very mixed picture with ownership ranging from international subsidiary status to privately owned companies.

Importantly, though, and as already highlighted, the international firms matched their South African counterparts closely in terms of products manufactured. Whilst certain differences did obviously exist between all of the partnered firms, in every benchmark undertaken the international firms would be considered direct competitors to their South African counterparts in terms of their most important product lines.

Levels of unionisation were quite different for the two groups of firms, with the average level of unionisation at the South African firms sitting at 72% in comparison to the international firms' 58%. Operational dynamics such as number of operating days per annum, and the hours worked per shift were, however, very similar. In general, though, the international firms operated more shifts per day, with all of them operating either two or three shifts. This contrasts favourably with the South African firms, where eight of the eleven firms predominantly operate on a one-shift per day basis.

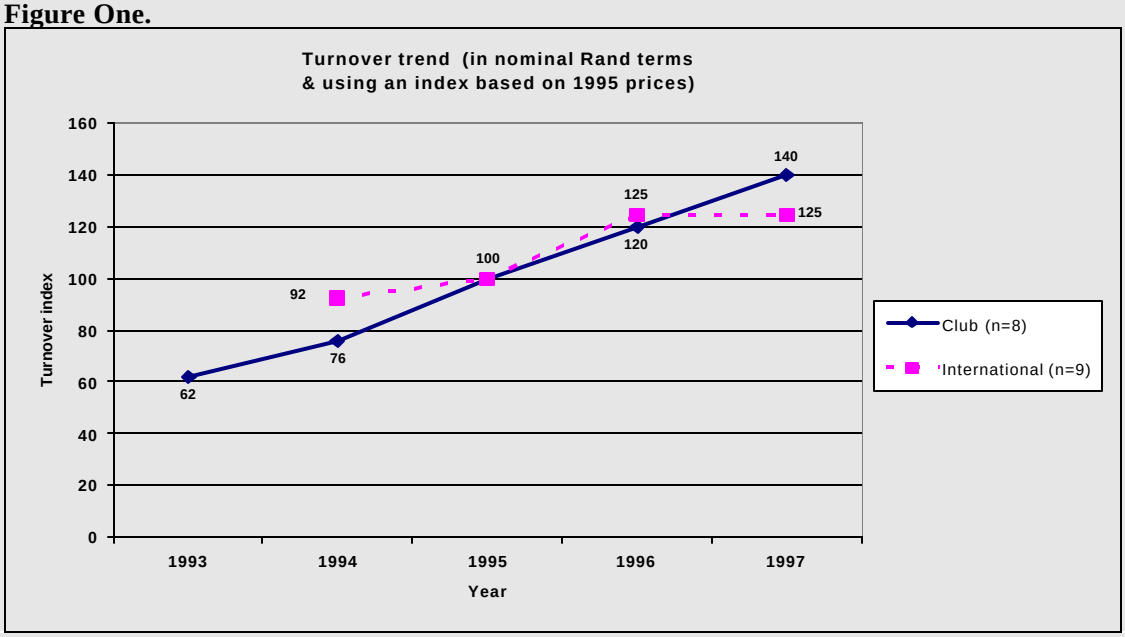
SECTION TWO: THE TALE OF THE ECONOMIC TAPE

As already highlighted, whilst economic performance indicators are a useful indication of the financial health of firms and are therefore worth measuring, they are merely an indication of performance after the fact. The employment, turnover and profit trends of the two groups of firms are consequently a poor indication of their operational competitiveness. In Section Three of this report more detailed consideration is therefore given to the competitiveness performance measures that highlight the extent to which the two groups of benchmarked firms meet what we believe to be key market requirements in the automotive components sector. Somewhat surprisingly, moreover, and whilst outliers do impact quite significantly on the average trajectories of the two groups of firms, it is interesting to note that they have performed similarly over the few years leading up to 1997. This is reflected in the employment, turnover and profitability figures presented below.

2.1. Turnover

As highlighted in Figure One, both groups of firms experienced broadly similar turnover trajectories over the period 1994 to 1997. Both sets of firms grew their nominal turnover levels consistently, although the South African firms' growth rate was more impressive, especially for the period 1996 to 1997, when the international firms actually experienced stagnant growth in nominal terms. Importantly, the differences between the two groups of firms in this regard is exacerbated somewhat by the different inflation rates in the respective regions of operation. Whilst the South African firms appear to have experienced stronger nominal turnover growth over the last few years, real growth rates are likely to be very comparable. Outliers have also impacted quite significantly on the overall trends presented. For example, the best growth rate amongst club members (using the same index) was 34 (1993) to 296 (1997); whilst for the international firms it was 91 (1994) to 241 (1997).

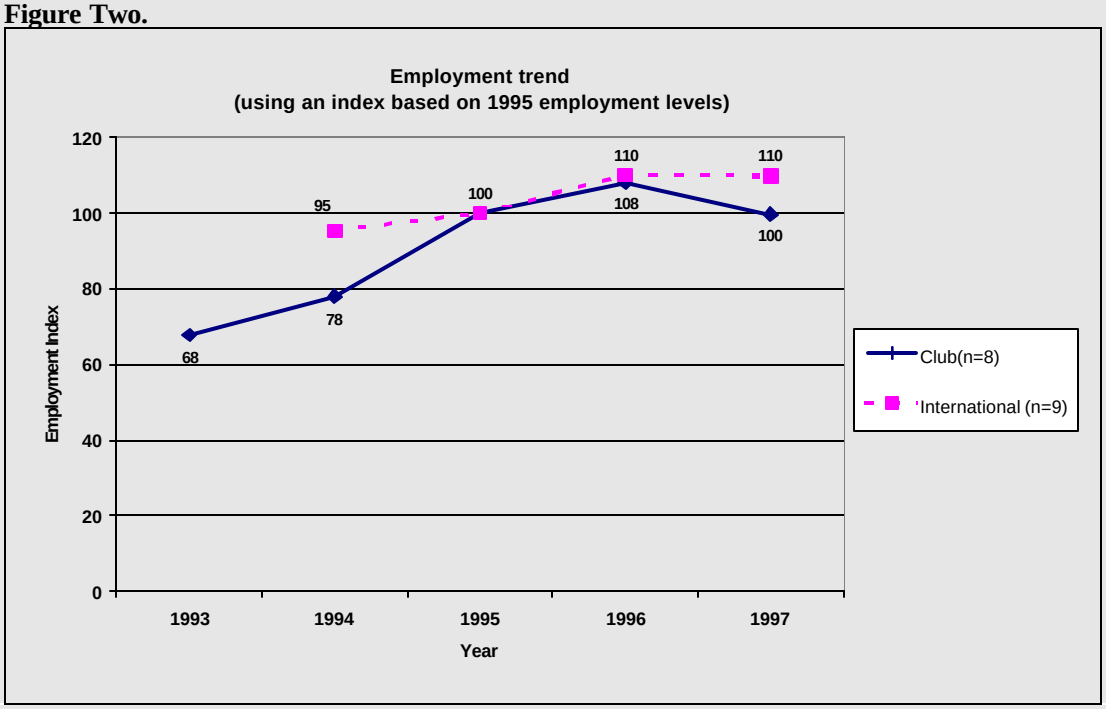
Figure One.



2.2. Employment

As revealed in Figure Two, the two sets of firms' employment trajectories, whilst broadly comparable are not as similar as their respective turnover figures. The South African firms' employment levels, for example, declined in 1997, whereas the international firms' levels remained stable. The South African firms experienced very strong employment growth over the period 1993 to 1996. This contrasts with the international firms, who experienced little growth over the period 1994 to 1996. Once again, however, outliers do impact on the overall trajectories presented. For example, the best performing South African firm increased its employment levels (in indexed form) from 27 (1993) to 112 (1997), whilst the worst decreased from 95 (1993) to 86 (1997). Similarly the best performing international firm increased its employment levels from 95 (1994) to 248 (1997), whilst the worst decreased from 104 (1993) to 82 (1997).

Figure Two.



2.3. Profitability

Both sets of firms claimed that they had generally improved their year on year profitability levels over the period from 1993 through to 1997. Only four international and three domestic firms (out of total samples of 11 each) claimed to experience declining levels of profitability in their last financial year - 1997. As highlighted in Figures Three and Four, not only have the two sets of firms performed consistently well over the short term, their most immediate profit performance has also been rather favourable[2].

[2] It is important to note that Figures Three and Four highlight profit trajectories only and not absolute levels of profitability. The findings presented should not therefore be misconstrued as actual profitability figures.

Figure Three.

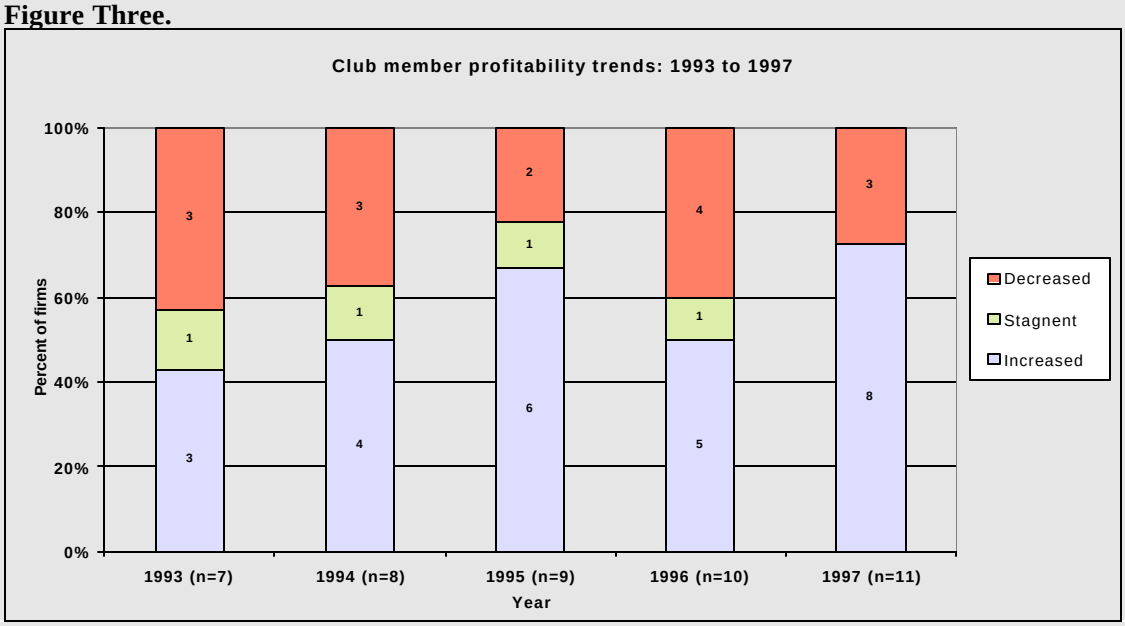
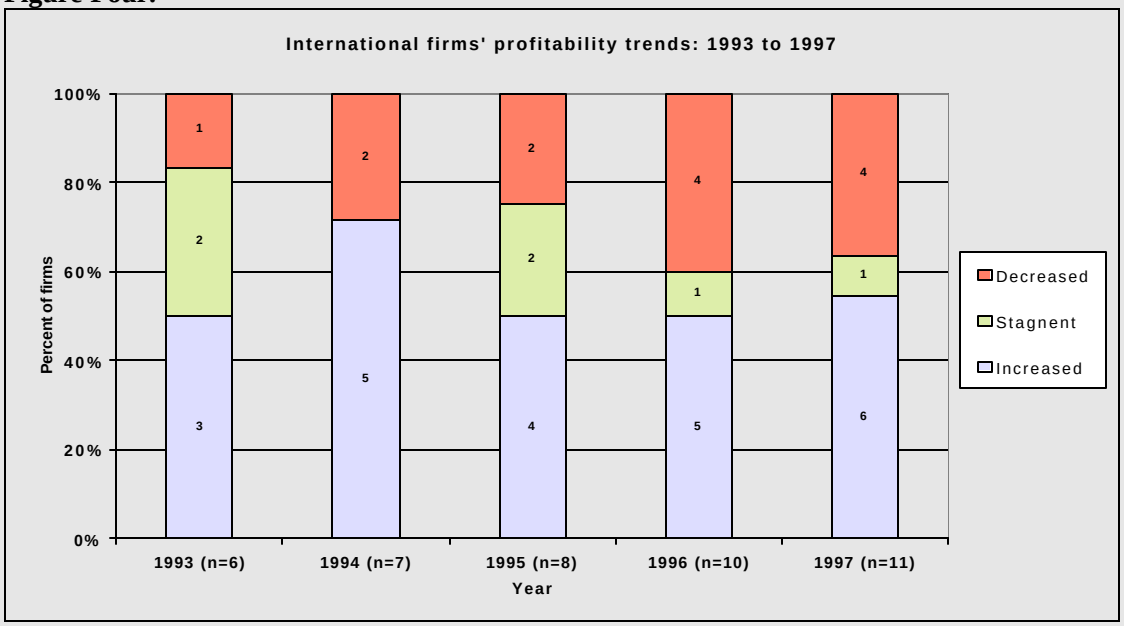


Figure Four.



2.4. General Discussion

The economic performance figures of the benchmarked South African firms are easily comparable to their international counterparts, and appear to be better than the average performance of other South African automotive component firms. (See Barnes 1998 for an outline of average economic performance figures for South African automotive component firms). Importantly, though, nearly all the domestic benchmarked firms indicated that their projections for 1998 were well down on their 1997 figures (in terms of employment, turnover and profitability), whilst the same negative sentiment also prevailed amongst the international firms, with most expecting 1998 figures to be down on 1997 levels. The four follow-up benchmarks that have been completed thus far in 1999 further support these contentions, with none of the four club members having improved their profitability performance in 1998. Two of the four firms actually experienced sizeable losses. Most benchmarked firms appear, then, to have experienced deteriorating economic performance trajectories during the course of 1998.

Apart from stagnant or declining market demand, it was clear from the interviews carried out at both the international and South African firms that fundamental changes are occurring in global automotive markets. Some of the most important international changes as highlighted to us during the course of the international benchmarks are listed below, with these factors being seen as the principal reasons for poorer economic performance in 1998 relative to 1997:

1. *There appears to be over-supply in all of the markets supplied by firms (OEM, OES and independent aftermarket).*
2. *Lifetime costs are having a big impact amongst users with vehicle service intervals extending significantly. This has impacted negatively on firms who are reliant on OES and aftermarket profit margins.*
3. *Environmental considerations are leading to new demands in terms of both company quality accreditation's (e.g. ISO14000) and product specifications.*
4. *Global sourcing and follower supply is becoming critical.*
5. *"Cost-down" is becoming increasingly important, with firms claiming that they are expected to reduce their prices by between 4% and 10% per annum.*
6. *For those firms that are subsidiaries of multinationals, global consolidation of parent company operations is leading to increased pressure from low-wage sister companies, particularly in Eastern Europe.*
7. *Research and development costs are escalating, although some of the firms claimed there would be a long-term payback in terms of royalties generated from global sales of newly designed lead-source products.*
8. *JIT delivery is becoming increasingly prevalent, even for aftermarket supply.*

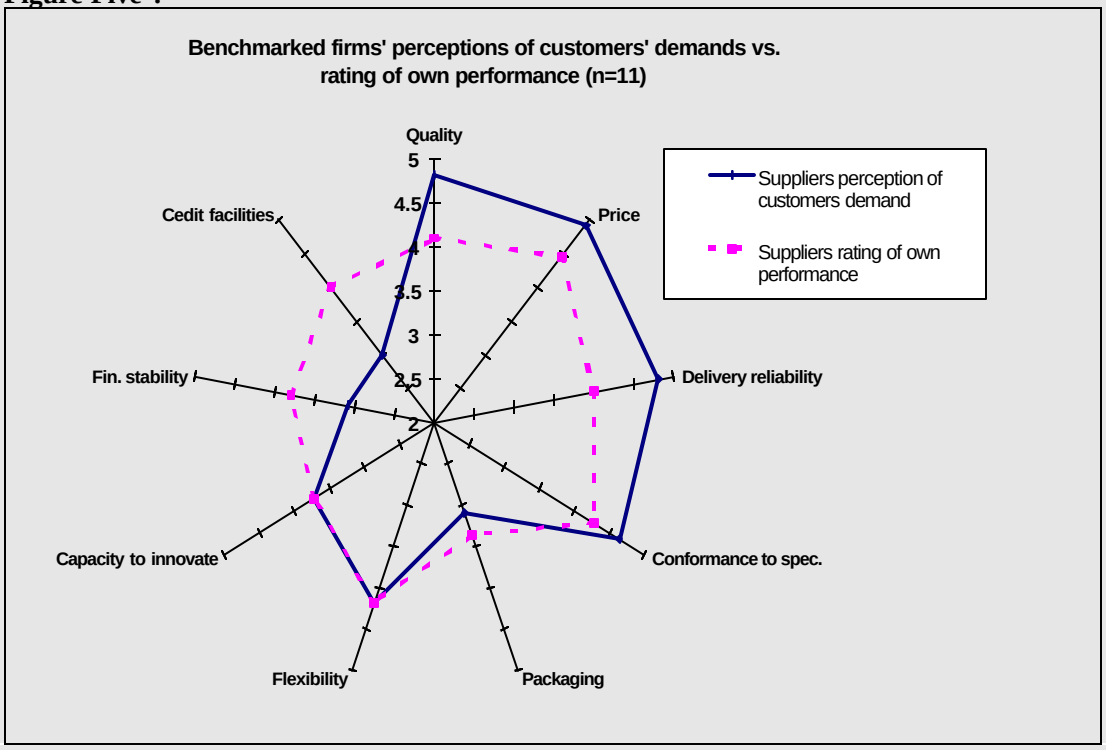
Whilst all of these pressures are also being felt amongst the benchmarked South African firms, it was quite striking to note the levels of pressure being felt amongst the international firms. Future economic success was definitely not being taken for granted, with all of the firms attempting to improve their competitiveness and cut their manufacturing costs. Notwithstanding the importance of factors pertaining to their strategic orientation and "connectedness" into particular global networks, all of the international firms believed that they had to improve their operational competitiveness significantly if they were to prosper. This finding verified the importance of the club's benchmarking and other continuous improvement activities, and further illustrated the significance of using a market driver approach for understanding operational competitiveness issues.

2.5 Satisfying Market Demands?

The importance of understanding club member operational performance is further illustrated by the average customer benchmark findings. We asked the club members to rate their customers' demands on a ranking system of one (not important as a performance criteria) to five (critically important) and then to highlight their performance relative to such demands. The findings are presented in Figure Five and as is clear, on average, club members believe they are meeting

many of their customers' requirements. Importantly, where they do see performance gaps (quality, price, delivery reliability and conformance to specification) the gaps are not seen as particularly large.

Figure Five[3].



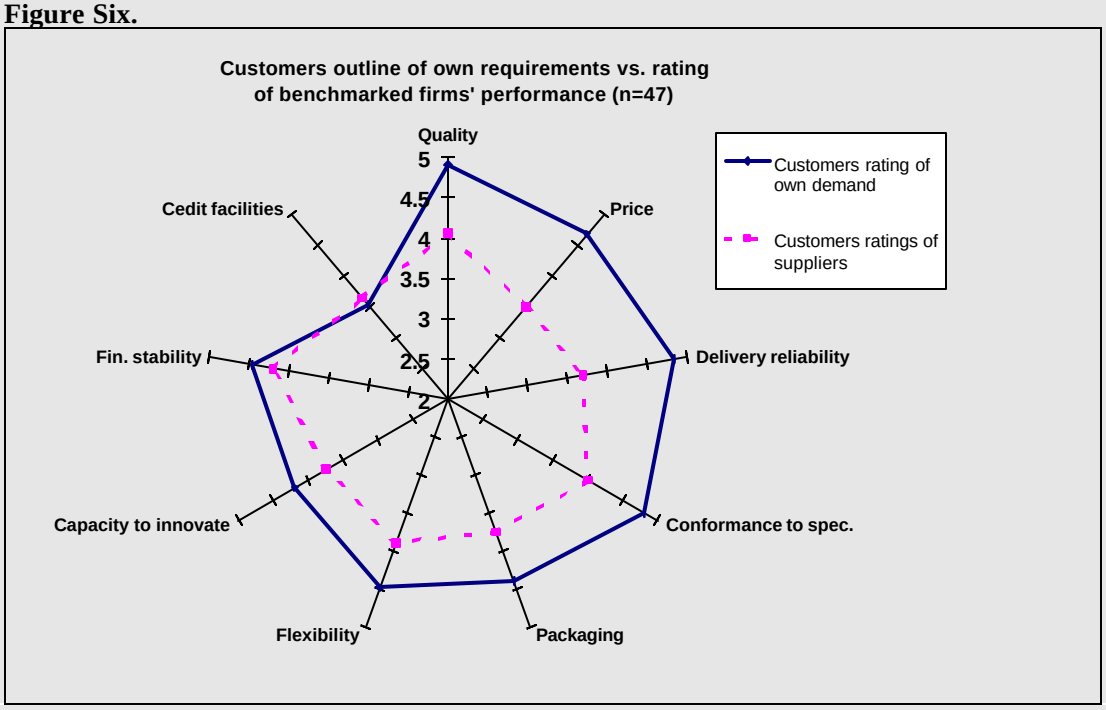
And yet, as highlighted in Figure Six, which reveals major customer perceptions of club member performance, the gaps are far larger in magnitude, especially for the critically important performance areas of quality, price, conformance to specification and delivery reliability. There are even gaps for those performance criteria where club members believed they were meeting (or surpassing) their customers' requirements. The only two criteria, which the club members meet adequately relative to customer demand, are the two least important criteria of financial stability and the offering of credit facilities.

The harsh reality then is that the firms are on average not meeting their customers' requirements – customer requirements that are becoming far more onerous as the South African automotive assembly and component industries are increasingly incorporated into the extremely demanding and continuously changing global automotive industry[4].

[3] Please note that Figures Five and Six are radar graphs. These graphs present the perception rating system used for the customer benchmark undertaking. A rating of one highlights that the performance criteria is not important and five that it is critically important. The graphs can therefore be read in two ways: Firstly, the gap between demand and performance illustrates the extent to which a firm is or is not meeting its customer demands. Secondly the closeness of the rating to five highlights the importance of each criterion relative to the other performance criteria.

[4] For an outline of these demands and the pressures that are likely to emanate out of them for South African automotive assembly and especially component manufacturers, see Barnes (1999) "Globalisation and change: Major trends in the international automotive industry and their likely impact on South African automotive assembly and component

Figure Six.



The reasons underpinning these, in certain instances, large gaps in performance are of course complex and relate to a number of critical operational issues. These operational issues are explored in the comparative competitiveness benchmark findings, and it is therefore to these critical findings that this report now turns.

SECTION THREE: OPERATIONAL COMPETITIVENESS FINDINGS – BRIDGING THE GREAT DIVIDE?

As repeatedly argued in this report, the fact that an individual firm is performing either well or badly economically provides little conclusive indication of its competitiveness capabilities. Whilst it most definitely does highlight the present financial strengths and weaknesses of the firm, it gives little indication of the firm's capacity to meet its markets' present and future demands. This is particularly true when its markets are being fundamentally altered on an ongoing basis, as would appear to be the case in the global automotive components industry and even amongst the benchmarked firms' customers, who are becoming far more demanding in terms of their quality, price and flexibility requirements. The numerous measurements generated for the comparative benchmark of the South African and international firms' operational performance and that are presented below are drawn from Table One. As already highlighted the market driver approach illustrates quite effectively, we believe, the various operational strengths and weaknesses of the two groups of companies relative to one another, and suggests the types of organisational practices that are being followed at the firms in order to drive their performance improvements. The methodology thus permits us to assess the relative competitive capacity of the South African companies against their international counterparts.

Importantly, whilst average performance figures are highlighted in graphic format in this section for each of the proxy measures that fall under the various market driver headers, summary tables are also included. These summary tables detail the outlying firms in each of the comparative sets and as will become increasingly clear, they also highlight the massive variance in performance amongst the South African firms. For the majority of the proxy measures generated the best South African firms perform almost on parity with the best international firms. The difference lies principally with the weaker firms. Whilst the international firms generally perform consistently and with some level of convergence in terms of most key measures, the South African firms perform inconsistently, with this being evident both between and within firms. The weaker South African firms are especially poor.

3.1 Market Driver 1: Cost control

The measurement of inventory levels provides a good proxy for the measure of cost control at manufacturing firms. Firms with good control over their inventory are usually in control of their manufacturing costs, with raw material, work in progress and finished goods stock all contributing both directly and indirectly to the costs of the products being manufactured. Direct costs include working capital and space utilisation expenses, whilst indirect costs include the hiding of quality problems, the need for increased staffing levels, etc.

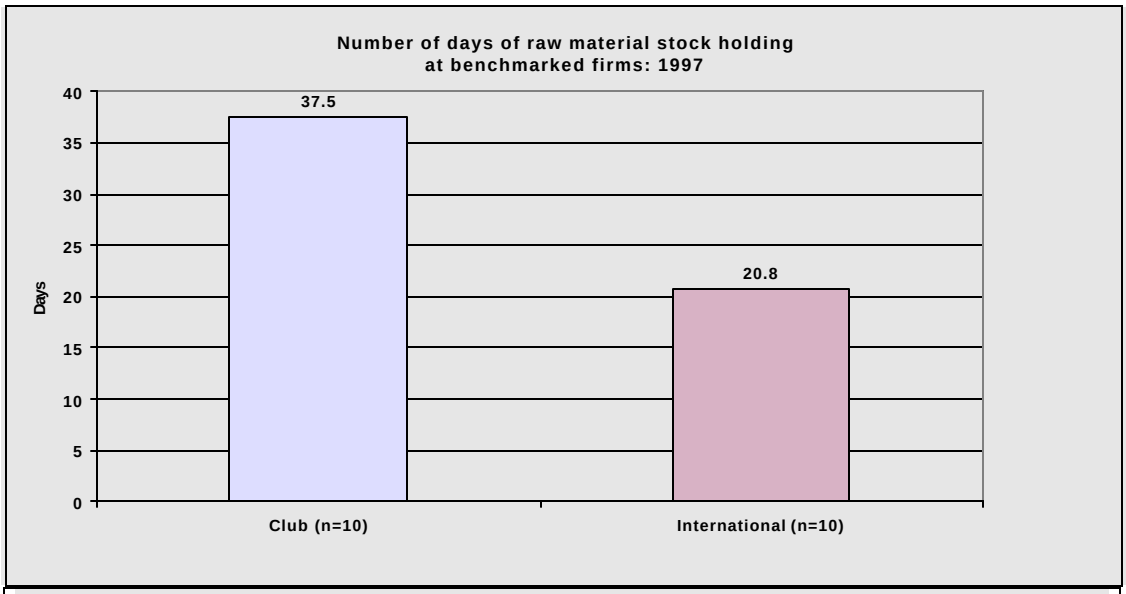
In comparison to the international firms, the South African firms do not meet this market driver particularly well. In terms of **total stock** holding, the South African firms, for example, hold on to 77% more stock than their international counterparts. This is highlighted in Figure Seven. As highlighted in the summary table the best club members, however, perform at world class standards, which we would define as the average figure for the best three international firms in each performance category.

Figure Seven.

Summary table: Total inventory holding		
	Club members	International firms
Best performing	9.0 days	11.5 days
Worst performing	128.1 days	95.0 days
Average top 3	15.2 days	12.1 days
Average bottom 3	110.4 days	64.3 days

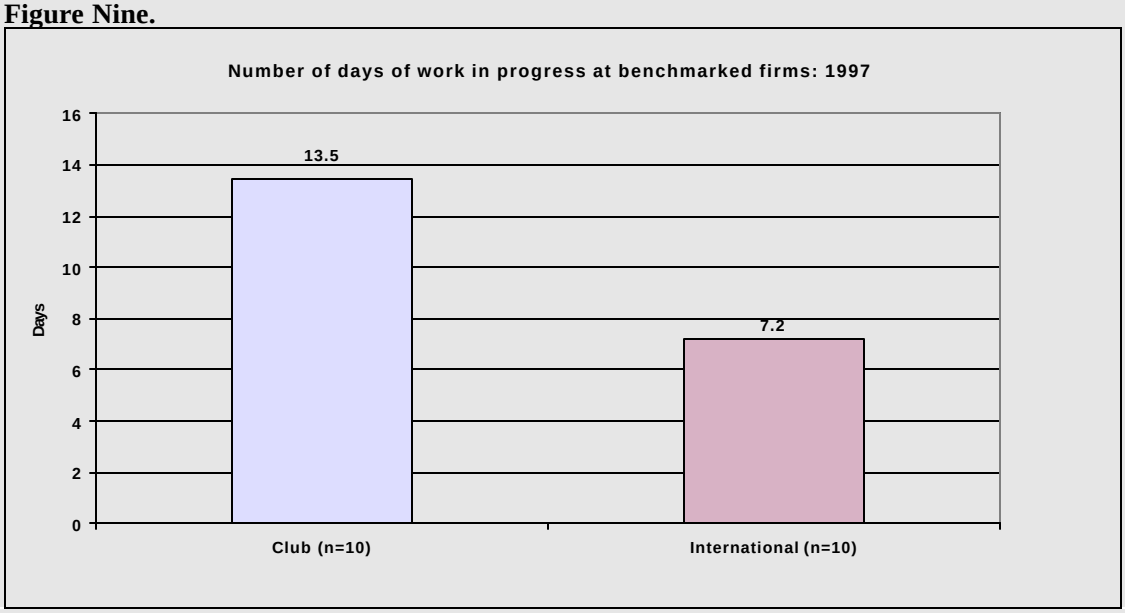
A breakdown of the two sets of firms' inventory performance is highlighted in Figures Eight (raw materials), Nine (Work in Progress - WIP) and Ten (finished goods). As is clear from all three figures, on average club members do not meet the international firms' performance figures for any of the inventory measures. As highlighted in each of the summary tables and in support of the figures presented in the first summary table, the best performing domestic firms do however have very low inventory levels.

Figure Eight.



Summary table: Raw material stock holding		
	Club members	International firms
Best performing	4.0 days	4.0 days
Worst performing	86.0 days	42.0 days
Average top 3	7.4 days	5.3 days
Average bottom 3	66.0 days	39.3 days

Figure Nine.



Summary table: Work in progress levels		
	Club members	International firms
Best performing	0.5 days	1.1 days
Worst performing	54.0 days	25.0 days

Average top 3	2.2 days	1.6 days
Average bottom 3	31.5 days	16.3 days

Figure Ten.

Summary table: Finished goods stock holding		
	Club members	International firms
Best performing	0.2 days	2.0 days
Worst performing	52.4 days	33.0 days
Average top 3	1.4 days	2.7 days
Average bottom 3	23.8 days	20.8 days

Whilst the South African firms perform comparatively poorly in all three of the inventory measures, the performance gaps are far from uniform. This is illustrated in Table Two. The largest difference (measured in percentage terms) is for raw materials and work in progress levels, with a smaller gap evident for finished goods stock holding.

Table Two: An analysis of average inventory differences (1997)			
Inventory measure	Performance of SA firms	Performance of international firms	Percentage difference: SA verses international firms
Raw material	37.5	20.8	**80**
Work In Progress	13.5	7.2	**88**
Finished goods	14.7	9.1	**62**
Total	65.7	37.2	**77**

The most important reasons for the comparatively poor average inventory performance of the South African firms relates to:

1. **Their poor domestic supply base.** Not only are many of the firms being forced to hold on to large amounts of raw material buffer stock because of the unreliability of their suppliers, many are also forced to purchase large

volumes because of supplier inflexibility. This is also a major problem amongst the Brazilian firms in the international sample set.

2. **The long and inflexible lead times associated with the purchasing of foreign raw material inputs.** (Although significantly, certain of the Brazilian firms in the international sample also purchased their raw materials from other continents without this leading to the generation of massive amounts of inventory).

3. **Their poor inventory control and production scheduling systems** (based on forecasts rather than actual sales).

4. **Customer unreliability in terms of frequent order changes.** This did not appear to be a major problem in Europe, although it was highlighted as being a critical problem in Brazil.

5. **Their failure to put in place production pull rather than production push systems,** although very little production pulling was seen amongst the international firms either.

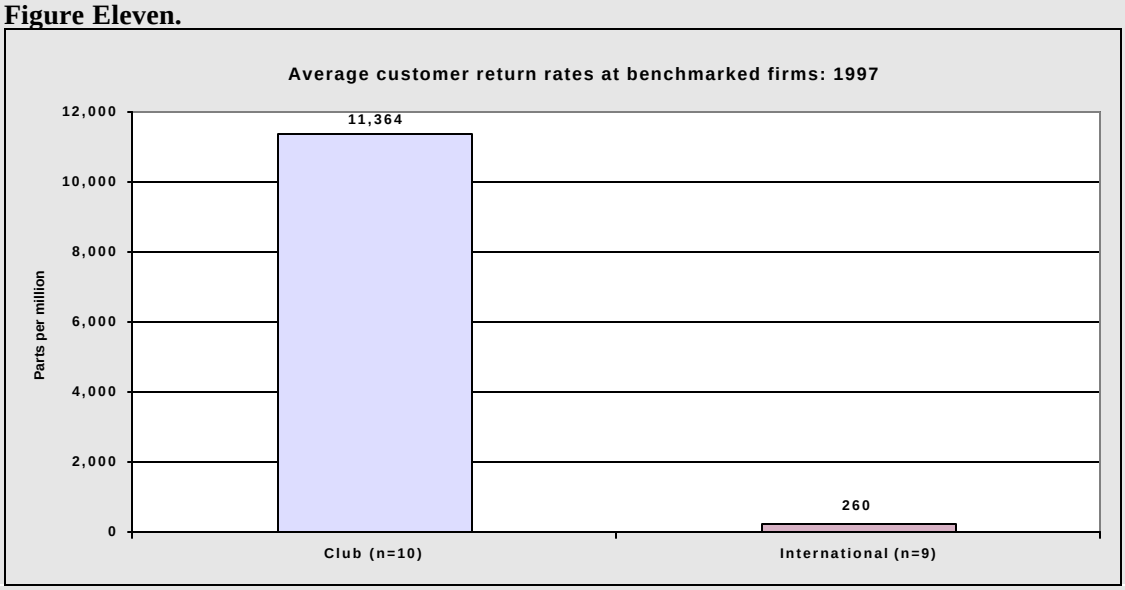
6. **Their failure to put in place more flexible production systems** (such as integrated manufacturing cells), which would allow them to operate JIT systems.

3.2. Market Driver 2: Quality

There are two broad dimensions of quality that are important to a firm: customer return rates and internal defect rates (measured by reworks, rejects and/or scrap). Customer returns are an important measure of quality as they highlight customer satisfaction levels regarding the quality performance of a particular firm (i.e. external quality performance). Importantly, though, customer return rates offer little indication of the internal quality performance at the firm. A firm may have a poor internal production system and yet provide good quality products to its customers by following stringent quality checks at the end of its production process. The problem with this, however, is that the quality is generated at an exorbitant cost, in terms of both the price of the product being produced and other performance variables such as flexibility and delivery reliability. Customers may therefore be satisfied with the supplier's quality but they are likely to be dissatisfied with the firm's overall operational performance. Measuring the extent to which quality is built in at source, i.e. built into the production system itself, is therefore critical, as the ideal quality situation is one where low customer return rates are complemented by low internal defect rates. Only then is it possible to provide high quality products at low prices – one of the key determinants of market success.

Unfortunately this is an area where the South African firms generally perform well below the standards of their international counterparts. Domestic firm customer return rates are on average significantly worse than the international firms, as clearly highlighted in Figure Eleven. Interestingly, the two best performing firms in terms of external quality control are Brazilian (25 parts per million) and South African (38 parts per million) and not European, as might be expected.

Figure Eleven.



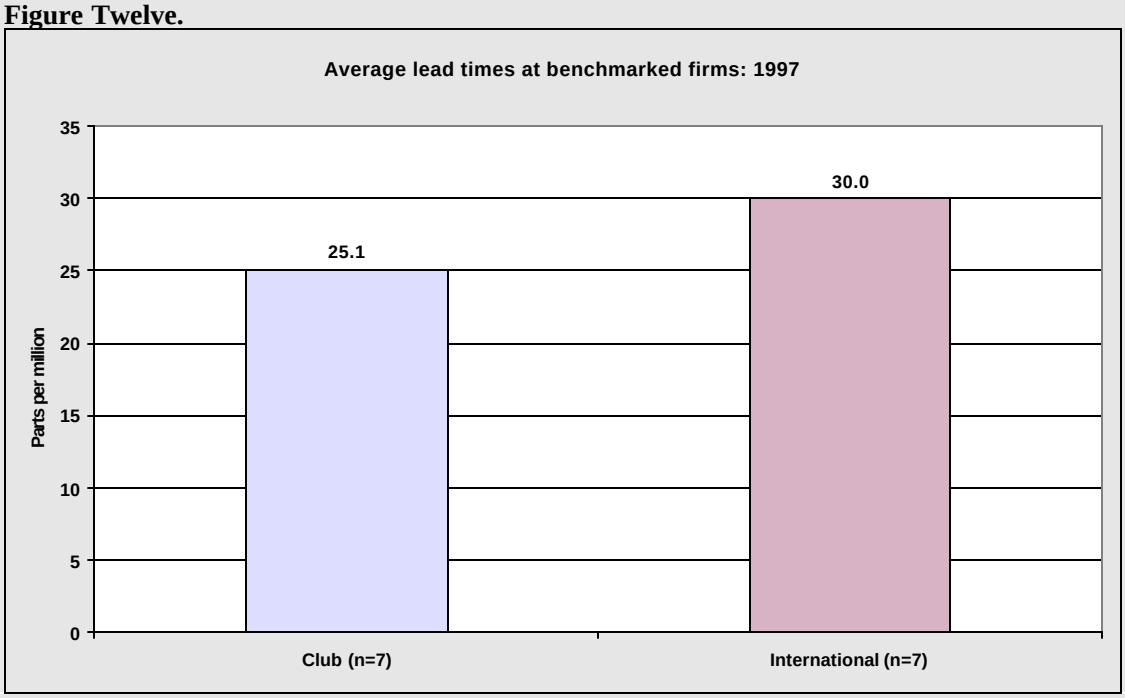
Summary table: Customer return rates		
	Club members	International firms
Best performing	38 ppm	25 ppm
Worst performing	80,000 ppm	700 ppm
Average top 3	133 ppm	67 ppm
Average bottom 3	35,667 ppm	514 ppm

Importantly, the respective average internal quality performance figures of the two groups of firms could not be calculated. Measurements taken on the factory floors of the South African firms suggested that many were not calculating their internal quality performance with the same level of accuracy as the international firms, thus negating the findings and bringing into dispute the accuracy of the figures generated. One South African firm, for example, had an internal rework rate of 0.4% in comparison to its international partner firm's 2.5%. And yet closer analysis highlighted that the international firm was measuring reworks on a right first time (RFT) basis at each workstation, whereas the South African firm was simply calculating it at the end of the production line (i.e. during the course of final inspection). All of the reworks that took place between workstations were not included in its internal quality figures, thus skewing the comparison enormously. In addition to this, many South African firms were simply unable to provide their internal quality performance indicators. These two observations - lack of and/or poor measurement systems - suggest that the South African firms are performing well below the standards of the international firms in terms of their internal quality performance.

3.3 Market Driver 3: Lead Time (external flexibility)

A lead time (or customer response time) refers to the time taken from a firm's taking of a customer order to the delivery of the product ordered. It is impacted on by three key variables: The logistics and administration system of the firm, the efficiency of its suppliers and the flexibility of the production systems in place at its own factory. Given the complexity of the issues relating to internal firm flexibility this is dealt with as *Market Driver No. 4.* Here we are solely interested in the manner in which the logistics and administration systems at the firms and the frequency of supply from suppliers (a proxy for measuring Just-In-Time supply) impacts on the speed at which they are capable of delivering products to their customers.

Figure Twelve.



Summary table: Lead times		
	Club members	International firms
Best performing	7.0 days	1.0 day
Worst performing	56.0 days	100.0 days
Average top 3	12.2 days	4.0 days
Average bottom 3	37.3 days	63.3 days

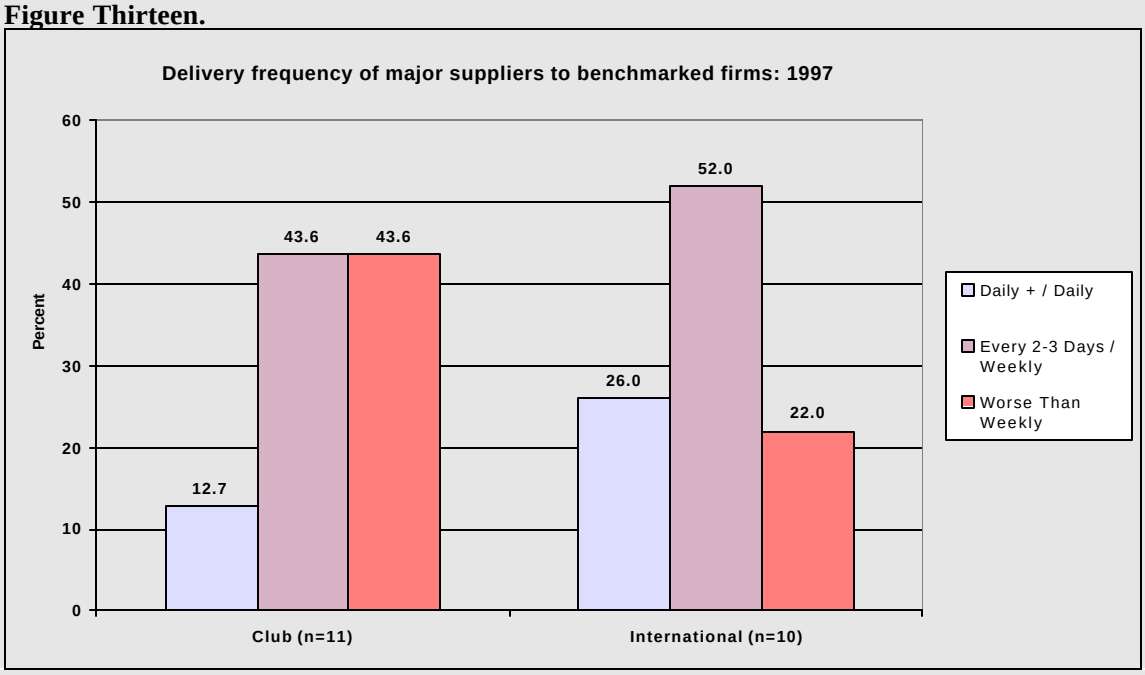
In comparison to their international counterparts, the lead time performance of the South African firms is exceptionally good. This is clearly highlighted in Figure Twelve. However, this is a performance measure that many of the international firms did not see as being particularly important. Only seven international firms consequently gave us their average lead times, with the other four maintaining that delivery reliability was all that counted – and here they all maintained performance levels of between 96% and 100%. Despite this, as well as the fact that the international firms have lower inventory holding levels and frequently claim that their customers do not change their orders frequently, it does nevertheless seem as if club members do, on average, have a lead time advantage over their international counterparts.

This supports the findings from a study conducted by Black (1994: 82). Black found that due to the plethora of vehicle models made in South Africa, and by implication the small volume production runs at South African OEMs, domestic

component manufacturers have developed an ability to respond quickly to (changing) customer orders. The problem, however, is that the advantage that the domestic firms have in this regard is being generated at an exorbitant cost (i.e. through the holding of excessive inventory and the production of relatively poor quality products). It is not a result of true internal (see 2.4) or external firm flexibility.

The fact that the South African firms do not operate in truly flexible value chains is verified by the delivery frequency figures of each of their five major suppliers. As highlighted in Figure Thirteen, whereas only 13% of the South African firms' most important suppliers deliver to them on a JIT basis (i.e. daily or more frequently), well over a quarter (26%) of the international firms are having supplies delivered to them at this level. In addition, whilst 44% of major suppliers deliver to the South African firms on a weekly or less frequently basis, this is the case for only 22% of the international firms. Weekly or worse supplier delivery schedules will almost certainly prevent value chain flexibility, thus suggesting that supply chain coordination could be significantly improved at the South African firms, particularly given the widely held view that their suppliers are weak and that supplier relations are generally arms length in nature[5].

Figure Thirteen.



3.4 Market driver 4: Internal Flexibility

Notwithstanding the importance of value chain issues, many firms are struggling with their own internal efficiency levels. This is critical as efficiency, which we will measure by way of various flexibility measures here, determines not only the market responsiveness of firms, but also to a large extent firm-level performance in terms of price, quality and delivery

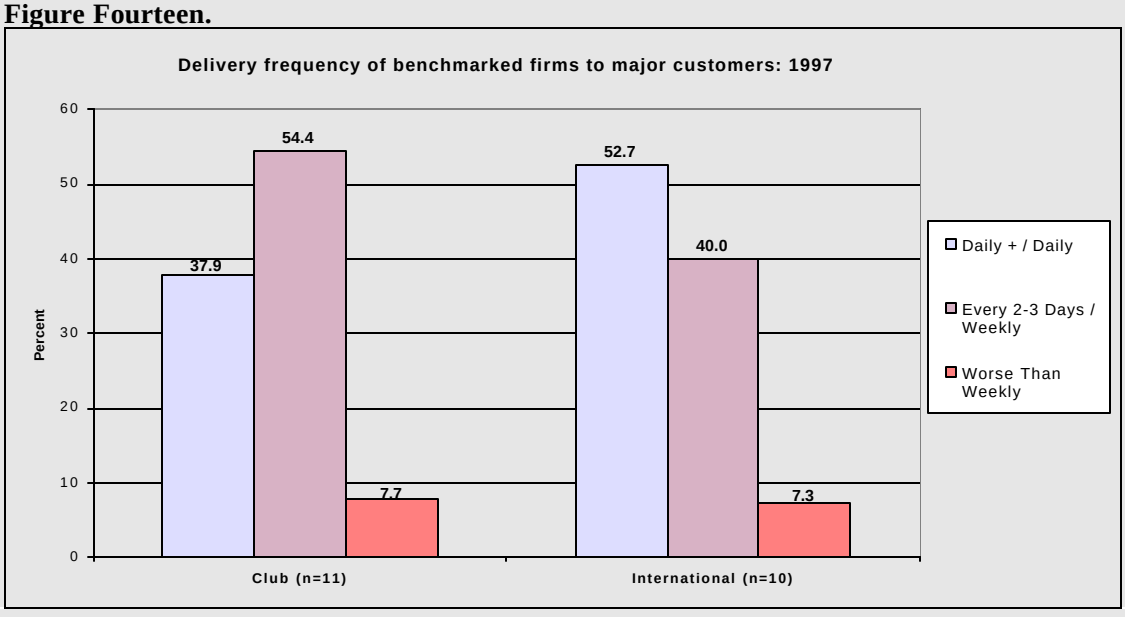
[5] This critical issue of value chain efficiency forms the focus of two completed **Department of Trade and Industry Policy Support Programme** papers on the automotive components industry – the plastics pipeline and auto-textile studies. As argued in these papers the importance of supply chains cannot be overemphasised when considering competitiveness issues.

reliability criteria. These are all key success variables in the automotive components industry, particularly for those firms supplying OEMs[6]. Some of the important issues pertaining to firm-level flexibility have been discussed under different market drivers, but other important measures also highlight the extent of their internal flexibility and these are discussed below.

Delivery flexibility: It is often argued that the more frequently a firm delivers to its customers the more flexible its production system. For example, firms operating according to old Fordist methods of production with massive amounts of inventory, large batch and lot sizes, slow throughput and long machine changeover times, are highly unlikely to cope with customer demands that designate the frequent delivery of products on a JIT basis.

Measuring delivery frequency to customers is therefore a widely used measure for assessing firm-level flexibility. This is moreover an area where the South African firms perform in a similar fashion to their international counterparts, as highlighted in Figure Fourteen. For example, 38% of deliveries to major customers are taking place on a JIT basis from the South African firms, with 53% of deliveries occurring at the same level from the international firms. Very similarly only 8% of deliveries take place weekly or less frequently, which is almost identical to the international firms' 7%.

Figure Fourteen.



However, if deliveries to customers are taking place from overflowing finished goods warehouses or through constantly "breaking in" to the production system then operational system inflexibility is simply being masked – at an exorbitant cost. This is unfortunately the case at many South African firms. Given high levels of finished goods stock holding many

[6] This is clearly illustrated in Figures Five and Six. The club members' customers are extremely demanding in terms of their flexibility and delivery reliability requirements.

of the club members could, in fact, deliver to all of their major customers on a daily basis. This would not, however, equate to true flexibility, highlighting as it would the existence of "apparent JIT" systems at the firms. Such flexibility incurs enormous costs, although admittedly it does help the firms' customers in terms of their own flexibility requirements. Other measures are therefore critical for ascertaining real levels of internal flexibility at firms, with these measures including work in progress levels, average batch and lot sizes, production flow distances and machine changeover times.

Work in Progress: As was highlighted in the cost control discussion, this is an area where the South African firms generally perform below the standards of their international counterparts. Average WIP levels were nearly double the international firms' levels. Importantly, though, and as highlighted in Figure Nine's summary table, this was not true for every benchmark. For example, the firm with the best WIP levels for both groups of firms was South African, with its WIP levels sitting at only half a day.

Batch and lot sizes: A batch size indicates the quantity of manufacture of one particular product in a factory before machines are re-set to produce another product, whilst a lot size represents the actual quantity of product passed from one work station to the next. Both are important internal manufacturing performance variables as increasing flexibility entails the manufacture of small batches, with these small batches then being broken up and transferred from one work station to the next in small lots (perhaps even one at a time, i.e. single unit flow). In South Africa, however, batch sizes in manufacture are often the same size as the customer's order plus a certain percent extra in order to take into account possible internal rejects. Lot sizes are likewise kept as large as is possible in order to maximise machine utilisation levels. By lowering both batch and lot sizes firms effectively cut their inventory levels and increase their velocity of throughput. There is usually also an improvement in quality as smaller quantities of product are easier to control and inspect for defects at the various stages of production. Lowering batch quantities can potentially however be risky particularly if machines are old and the labour force (including management) poorly trained. In order to lower batch quantities effectively it is necessary to reconfigure the production systems at firms. Small batch production will not work in a manufacturing layout designed according to Fordist principles. It requires a movement towards cellular production systems, single unit flow lines, team-working arrangements, etc. Whilst detailed statistics on both batch production and lot sizes were impossible to obtain given their massive variance within both the South African and international firms, this does appear to be an area where the South African firms perform very similarly to their international counterparts. Batch production runs were broadly comparable at the two firms for which accurate information was generated. Given the larger average size of the international firms and by implication their greater volume of output, the differences between the two sets of firms was underplayed somewhat, however.

Production flow: Poor production flow was evident at the majority of South African firms, with Fordist-style factory layouts and machine configurations on factory floors severely restricting smoother material and production flow and therefore better work in progress control and improved firm-level flexibility. This is clearly evident in Table Three, which presents respective flow measures from sampled products followed at the eleven South African firms. On average production distances accounted for only just over one-third of the total distance travelled by the sampled components during the course of their movement through the South African manufacturing plants. Importantly, production flow was itself rather poor at many of the firms.

Table Three: Product flow through South African firm operations: From raw material receiving through to dispatch

	Part	Raw material receiving to production begin	Production begin to end	Production end to dispatch	Total distance	Production as % of total distance

Firm A	Part 1	172m	8m	56m	236m	**3**
	Part 2	101m	15m	80m	196m	**8**
Firm B	Part 1	15m	443m	143m	601m	**74**
	Part 2	28m	109m	143m	280m	**39**
Firm C	Part 1	140m	62m	74m	276m	**22**
	Part 2	178m	58m	65m	301m	**19**
Firm D	Part 1	295m	65m	480m	840m	**8**
	Part 2	694m	785m	480m	1,959m	**40**
Firm E	Part 1	193m	99m	52m	344m	**29**
	Part 2	182m	27m	52m	261m	**10**
Firm F	Part 1	173m	46m	38m	257m	**18**
Table Three: Product flow through South African firm operations: From raw material receiving through to dispatch						
	Part 2	176m	121m	84m	381m	**32**
Firm G	Part 1	191m	49m	65m	305m	**16**
	Part 2	107m	1m	53m	161m	**1**
Firm H	Part 1	88m	1m	84m	173m	**1**
	Part 2	69m	1m	146m	216m	**0**
Firm I	Part 1	122m	191m	71m	384m	**50**
	Part 2	47m	189m	71m	307m	**62**
Firm J	Part 1	47m	181m	49m	277m	**65**
	Part 2	38m	187m	58m	283m	**66**
Firm K	Part 1	77m	186m	26m	289m	**64**
	Part 2	77m	343m	26m	446m	**77**
Total		**3,210m**	**3,167m**	**2,396m**	**8,773m**	**36**

Machine changeover times: Improving throughput times at factories, as well as decreasing batch and lot sizes is contingent upon significantly shortening machine changeover times. It would prove impossible to improve production flexibility if, for example, it took four hours to change a machine over. The costs of continuously changing it would prove exorbitant given the amount of downtime that would develop. Firms consequently need to focus on ways to decrease their machine changeover times, a difficult endeavour given the age of many of the machines in use in factories, and the fact that they were designed for the mass production of undifferentiated products.

Notwithstanding this fact firms could reduce their machine changeover times by practicing single minute exchange of die (SMED) principles; although it was found that the majority of South African firms (bar three important exceptions) did not practice them. Significantly, however, neither did the international firms; with only a minority of firms claiming to practice rapid changeovers. Whilst it was highlighted to us that machine changeover times were a key concern at the majority of the benchmarked companies, most were attempting to deal with the issue by increasing their production runs. This unfortunately has a negative impact on their flexibility performance.

3.5 Capacity to change (Human Resource Development)

The most important determinant of future success for firms is their capacity to change in line with ever increasing market demands. The only certainty about the international automotive industry is that there is no certainty in terms of performance requirements. The goal posts are continuously being shifted with the demands becoming increasingly onerous, especially in terms of OEM supply. Whether automotive firms fail or grasp the opportunities afforded by these new demands will depend largely on their ability to use their resources effectively, with the most important of these being their human resources.

Brown (1996) argues that unless firms continuously innovate in terms of their production and organisational systems, as well as their products, they will fall behind their competitors. He notes that there are four key dimensions to this: Manpower, machines, materials and methods (the four m's). Whilst these four dimensions are all inextricably related it is the first that determines firm-level capability to deal with the others. Numerous international case studies have shown that human resource capability is the most important weapon that firms have when confronting the demands of international competition. It is their human resource capacity that gives them the ability to innovate and continuously improve operations.

A number of proxy measures can be used to gauge a firm's human resource development and hence its capacity to change. These relate to:

- the skills development of the labour force and management,
- the company's implementation of processes of continuous improvement, and
- labour and management commitment to the company.

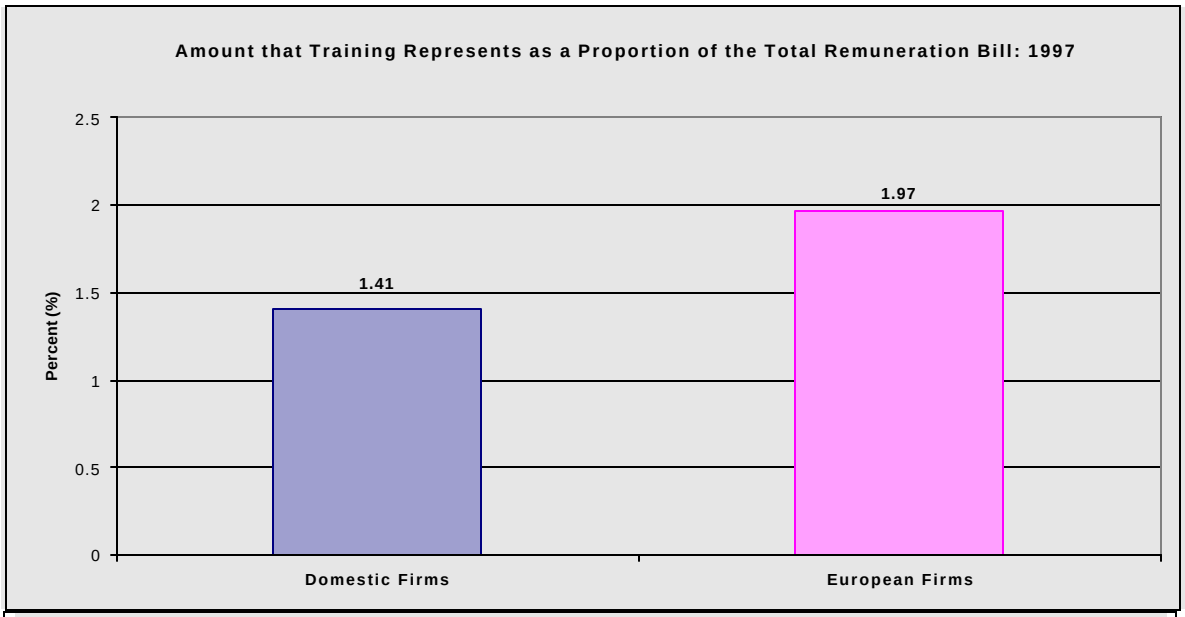
As highlighted below, these are unfortunately areas where the South African firms generally perform below the standards of the international firms.

Skill levels of labour and management: In order to ensure the on-going upgrading of skills within any firm it is necessary to invest resources in training programmes, and yet this is an area where many South African firms appear to fall short of their international counterparts. For example, whilst the international firms, on average, spent the equivalent of 2% of their remuneration bills on training, the South African firms spent only 1.4% (see Figure Fifteen).

The number of training courses offered at certain of the international firms was staggering, with most also closely monitoring the impact of training on their labour force, thereby setting new targets for individuals on an on-going basis. This was not the case amongst many of the South African firms. As highlighted in the summary table the worst performing benchmarked firms provided almost no training for their workers. The great irony here is that the quality of the labour pool from which domestic firms draw their employees is generally weak, thus necessitating extensive training expenditure. South African firms, for example, estimated that the average numeracy level of their respective workforces was only 69%[7] - well below the international firms' estimates of between 98% and 100%.

Figure Fifteen.

[7] There was significant variance in the estimates, however, with the highest figure being 99% (which was comparable to the firm's European benchmark partner firm) and the lowest 10%.



Summary table: Training expenditure as a percentage of remuneration bills		
	Club members	International firms
Best performing	3.3 %	3.4 %
Worst performing	0.002 %	1.0 %
Average top 3	2.8 %	2.8 %
Average bottom 3	0.5 %	1.1 %

Implementation of processes of continuous improvement: The "best operating practices" evident amongst the world's leading automotive component firms relate to a move towards the initiation of flatter organisational structures, team-working, self managed work teams, cellular production systems, employee involvement through suggestion schemes, etc. All of these initiatives are, however, premised on the existence of high levels of HRD at both the worker and management levels. And yet as highlighted above there were only limited indications of these necessary levels of HRD at many of the South African firms. The visual inspection of continuous improvement programmes on factory floors (i.e. the notice boards and the various manufacturing performance measures used) further revealed a general lack of worker ownership of the manufacturing environment. For example, notice boards frequently contained out of date information that was generated by management and not the labour force. Labour interviews that were carried out at each of the domestic firms suggested, moreover, that many workers did not understand the information that was being provided.

The inability of firms to build a continuous improvement culture at the plant level was further illustrated by their failure to successfully institutionalise suggestion scheme programmes. Whilst a few of the domestic firms did have suggestion schemes in place most were poorly supported by both management and labour.

Labour and management commitment: There is significant scope for industrial relations improvements at the domestic firms, particularly as this pertains to the more open dissemination and sharing of information between company stakeholders. Two measurements that are useful proxies for highlighting levels of worker and management commitment to their firms and hence to change are management/labour turnover and absenteeism rates.

Management and labour turnover rates are important to measure as it is argued in the international literature that firms struggle to adopt new organisation and production practices unless they have stable labour and management teams.

Stability can be an important enabler in terms of the development of trust relations. Measuring absenteeism rates is also critical as this suggests levels of day-to-day commitment workforces have to companies. Globally competitive companies tend to have significantly lower absenteeism rates than their competitors, with absenteeism being highlighted in the international literature as more an issue of commitment to work than sickness.

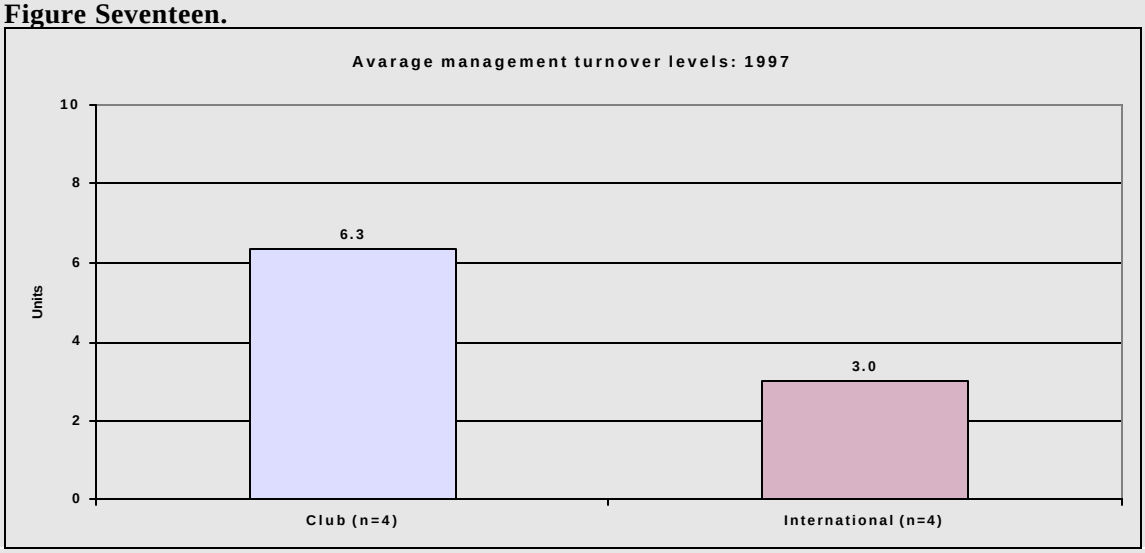
The poor economic environment in South Africa potentially skews labour turnover measures, however, with many firms having low levels of labour turnover despite also having low levels of worker commitment. The poor alternative work opportunities available to workers tends to limit their mobility, as does the fact that wage rates in the automotive components sector, though lower than at automotive assemblers, are considerably higher than in other manufacturing sectors such as the clothing, textile and furniture industries. In South Africa, then, labour turnover measures generally offer a poor indication of worker commitment levels. This is illustrated in Figure Sixteen: Average labour turnover levels at the South African firms are half the international firm levels.

Figure Sixteen.

Summary table: Labour turnover rates		
	Club members	International firms
Best performing	0.5 %	0.6 %
Worst performing	8.0 %	24.9 %
Average top 3	1.0 %	2.2 %
Average bottom 3	6.5 %	14.4 %

Interestingly, as highlighted in Figure Seventeen, management turnover rates at the South African firms are significantly higher than at the international firms[8]. Once again this may be an indication of the impact of broader economic forces rather than a lack of management commitment to companies. Certain of the benchmarked firms claimed, for example, that they had lost their qualified personnel to emigration rather than to other South African companies; although this was also mentioned as a factor, especially for affirmative action appointments into management positions.

Figure Seventeen.



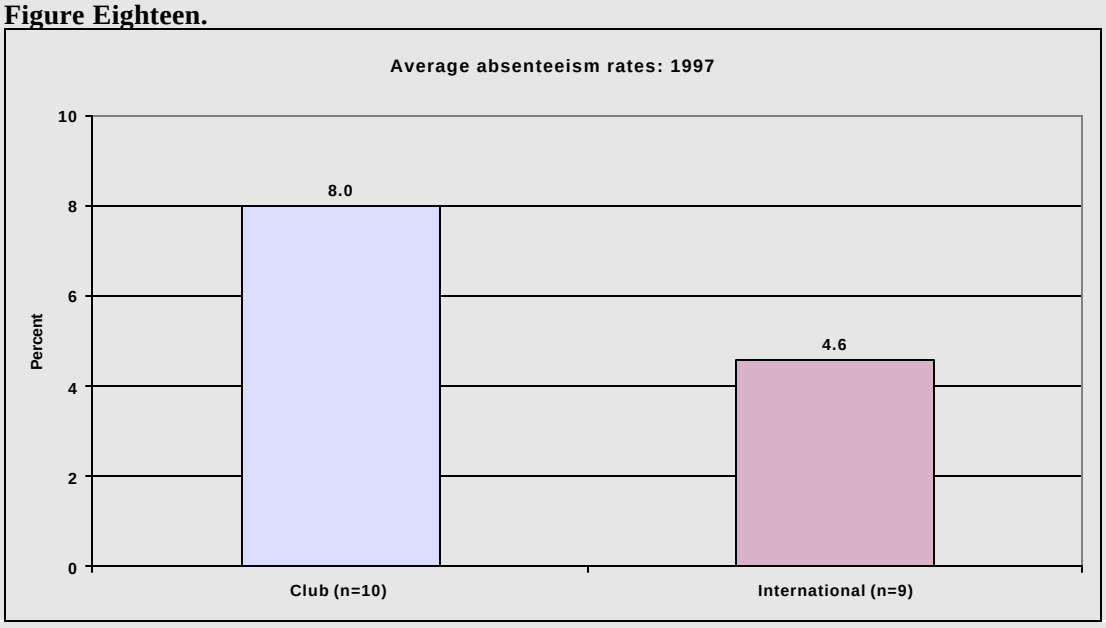
Summary table: Management turnover rates		
	Club members	International firms
Best performing	0.0 %	0.0 %
Worst performing	15.3 %	10 %

[8] Management turnover was not disaggregated from labour turnover rates for the first benchmarks. It was only after presenting turnover data to club members at the club's quarterly workshops that we were informed that management turnover rates were an issue and that we should separate them from the labour figures. The data set is therefore rather limited (n=4).

Given the conspicuous biases built into the labour and management turnover measures, absenteeism rates would appear to be a better proxy measure for indicating commitment levels within companies. Even here, however, there are broader external factors that need to be considered – KwaZulu-Natal, for example, has an HIV-prevalency level amongst its economically active population of well over 20%. Given the extended morbidity period associated with HIV infection it is highly probable that absenteeism rates at firms will be negatively impacted on. Despite this increasingly important factor, it is highly unlikely that HIV-prevalency accounts for the totality of the significant gap between absenteeism levels at the South African firms relative to their international counterparts, as highlighted in Figure Eighteen.

In addition, the massive variance in performance between the South African firms themselves is striking. The best performing South African firm had an average absenteeism rate of only 2.5% in 1997, which is on parity with the best of the international firms, whilst the worst firms all averaged around 15%. In comparison the worst performing international firm had an absenteeism rate of only 6.2%.

Figure Eighteen.

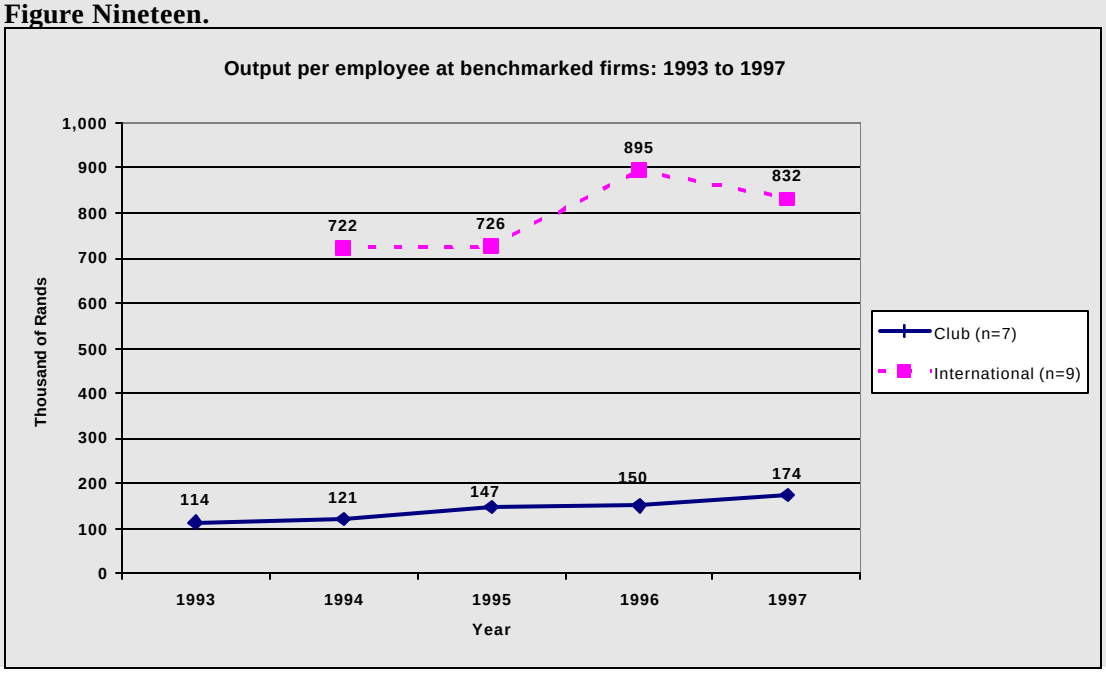


Summary table: Average absenteeism rates		
	Club members	International firms

Best performing	2.5 %	1.9 %
Worst performing	18.0 %	6.3 %
Average top 3	3.4 %	2.9 %
Average bottom 3	15.2 %	6.2 %

Another critical proxy for measuring the productive utilisation of human resources at firms is average output per employee levels. This is a loose proxy as there a numerous factors influencing labour productivity, including automation levels, capital utilisation and market demand (which is especially important in the presently subdued South African operating environment). It does nevertheless highlight the output value of employees at benchmarked firms and it does consequently offer a general indication of their productive use of human resources. As highlighted in Figure Nineteen, there is a massive difference between the South African firms and their international counterparts in terms of this particular measure.

Figure Nineteen.



Summary table: Output per employee levels		
	Club members	International firms
Best performing	R 297,983	R 1,531,915
Worst performing	R 76,169	R 393,613
Average top 3	R 257,496	R 1,175,139
Average bottom 3	R 95,822	R 511,324

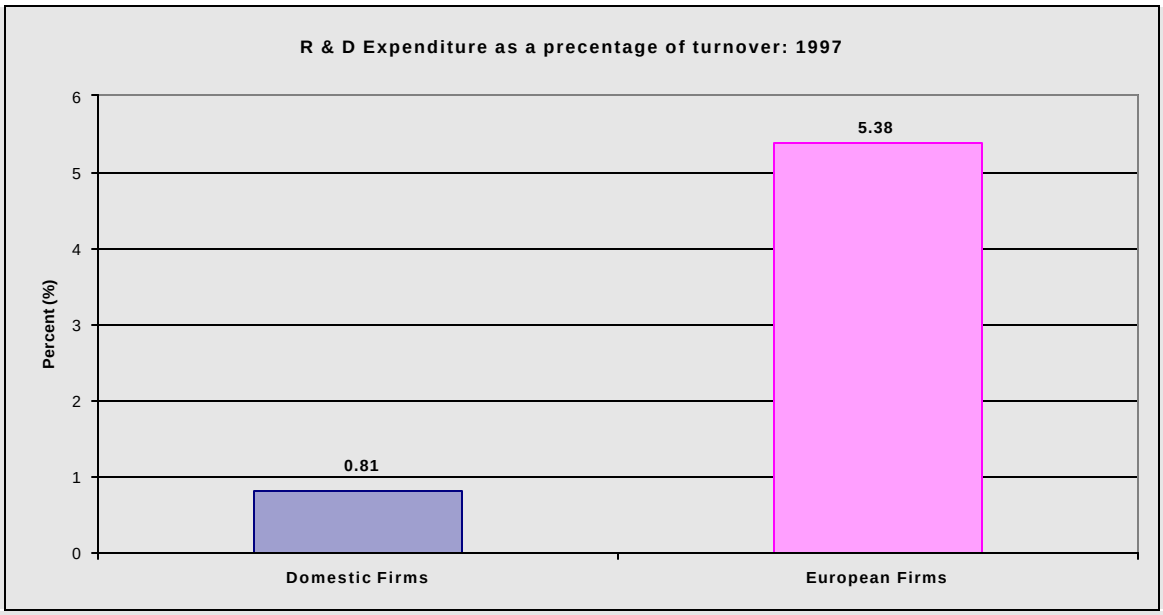
In summary then the firms benchmarked in South Africa utilise their human resources far less effectively than their international counterparts. The South African firms generally perform weakly in terms of all the human resource scores generated. The only exception in this regard is their labour turnover figure and external economic factors appear to be the reason for this sound performance measure.

3.6 Market driver 6: New product development

As highlighted in Figure Twenty, the South African firms spend considerably less on R&D activities than their international counterparts. None of the South African firms are leaders in new product development, although interestingly neither are many of the international firms, with most also being borrowers of technology. The significant difference, however, is that the international firms are generally owned by their sources of technology. They do not merely have licensing agreements with them, as is the case with the majority of the South African firms, who are either independent or subsidiaries of South African holding companies, as outlined in Table Four.

Table Four: Ownership profile of the two groups of firms		
	South African firms	International firms
Private company	3	2
Subsidiary of locally owned company	7	2
Subsidiary of multinational	1	7

Figure Twenty.



Summary table: R&D expenditure as a percentage of turnover		
	Club members	International firms
Best performing	8.0 %	12.5 %
Worst performing	0.0 %	0.0 %
Average top 3	5.8 %	9.5 %
Average bottom 3	0.01 %	0.7 %

Given global lead sourcing tendencies and the fact that the automotive components industry is rapidly consolidating at the first tier level, there is very little chance that any of the South African firms will ever become major independent players in the design of new products for the global market. It is therefore critically important that they at the very least maintain their relationships with their licensors, with this acting as a mechanism for them to stay abreast of the industry's latest technology trends. Significantly, moreover, the inability of the South African firms to undertake pure R&D activities, underlines the importance of them having to improve their manufacturing competence in order to remain competitive[9].

[9] See Barnes and Kaplinsky (1999a and 1999b) for detailed explanations as to why South African firms need to focus on their operational competitiveness.

CONCLUSION

As outlined throughout this report, the South African automotive component firms that were benchmarked generally perform poorly in comparison to their international counerparts. That much is obvious - as highlighted in all of the market driver analyses there are significant performance gaps between the two sets of benchmarked firms. However, and very significantly, as was also revealed in the analyses, these are average performance figures. As outlined in the summary tables there were, in fact, numerous performance differences between individual firms, with some of the South African firms somewhat surprisingly outperforming their international counterparts in terms of important performance measurements.

Significantly, in no individual benchmark did an international firm perform better than its South African counterpart in every performance measure. The variances in performance in terms of all of the major findings presented in this report are highlighted in Table Five, below.

Table Five: Summary of important findings, including an outline of the best and worst performing firms (1997)

Market driver	Measure	SA average	SA best	SA worst	International average	International best	International worst
Cost control	Total stock: days	65.7	9.0	128.1	37.2	11.5	95
	RM stock: days	37.5	4.0	86	20.8	4	42
	WIP: days	13.5	0.5	54	7.2	1.1	25
	FG stock: days	14.7	0.2	54.4	9.2	2	33
Quality	Customer returns: ppm	11,364	38	80,000	260	25	700
Flexibility	Lead times: days	25.1	7	56	30	1	100
Capacity to change	Output per employee: Rands	174k	298k	76k	832k	1,532k	394k
	Absenteeism: %	8	2.5	18	4.6	1.9	6.3
	Labour turnover: %	3.7	0.5	8	7.7	0.6	24.9
	Management turnover: %	6.3	0	15.3	3	0	10
	Training expense as % of remuneration	1.6	3.3	0.002	1.9	3.4	1
Innovation capacity	R&D expense as % of turnover	2.5	8	0	4.5	12.5	0

The policy and research implications of the above findings are enormous. Firstly, at the policy level, they highlight that despite poorer average performance, South African automotive component firms that are committed to change (as their membership to the KwaZulu-Natal Benchmarking Club would suggest) do have the propensity to be internationally competitive. If no South African outliers had been found during the course of the benchmarks deep concerns regarding the potential for competitiveness within the South African operating environment would have been raised; and yet the

exact opposite has been found. There are pockets of operational excellence within the club members – to the extent that some of the firms performed better overall than their international counterparts.
The performance figures from the international firms do, however, provide South African automotive component firms specifically and other manufacturing firms more generally with an unequivocal warning: Ignore operational competitiveness at your own peril! The tight concentration of performance amongst the international firms suggests that weak performance in terms of any of the market driver issues will not be tolerated in the international automotive marketplace. None of the international firms (with the exception of one Brazilian firm that struggled with inventory control) performed particularly poorly in terms of any of the performance measures generated. This is clear from the summary of findings presented in Table Five.

If one accepts that this is the challenge facing South African automotive component firm then this suggests two possible outcomes for weaker domestic automotive component firms, with the one outcome being promising and the other potentially disastrous. The first possible outcome is that the weak firms internationally rapidly caught up to the performance levels of the best performing firms as they were squeezed by international competition (hence the concentrated performance). The second is that these weak firms are no longer operative and as such not captured through benchmarking activities.

The critical question that emerges from this for South African automotive component firms is where do they want to be? Importantly, this is not a question that can be avoided for an extended time period. Economic performance levels will continue to be eroded if the operational competitiveness challenge is not confronted.

From a government policy perspective, two similar questions also need to be asked. How can the preferred outcome be facilitated and how do the various institutional support measures for industry help ensure a rapid improvement in operational competitiveness? From a policy research perspective the findings are equally empowering. If, as the findings suggest, South African automotive component firms can be internationally competitive, what then are the key differentiating features of successful and unsuccessful firms? As the KwaZulu-Natal Benchmarking Club develops over time and as more detailed time-series data is compiled, this question will hopefully receive more critical reflection.

The findings presented in this report are therefore extremely encouraging from an operational competitiveness perspective. The very fact that certain South African firms appear to be on the correct path towards international competitiveness highlights the possibilities for others. Through the activities of structures such as the KwaZulu-Natal Benchmarking Club, as well as through appropriate government policy formulation, this process will hopefully be reinforced.

REFERENCES

Barnes, J. R. (1998), "Competing in the global economy: The competitiveness of the South African automotive components industry", CSDS Research Report No. 13, Durban: Centre for Social and Development Studies, University of Natal.

Barnes, J.R and Kaplinsky, R. (1999a) "Globalisation and trade policy reform: Whither the automobile components sector in South Africa?" Competition and Change (forthcoming).

Barnes, J.R and Kaplinsky, R. (1999b) "Globalisation and the death of the local firm? The automobile components sector in South Africa", Regional Studies (forthcoming).

Bessant, J. (1991) Managing Advanced Manufacturing Technology: The Challenge of the Fifth Wave, Manchester, Blackwell.

Black, A. (1995), An industrial Strategy for the Motor Vehicle Assembly and Component Sector, Cape Town: University of Cape Town Press.

Brown, S. (1996), Strategic Manufacturing For Competitive Advantage, London, Prentice Hall.

Humphrey, J. et al. (1998), Globalisation, Foreign Direct Investment and the Restructuring of Supplier Networks: The Motor Industry in Brazil and India, in Kagami, M, Humphrey, J and Piore, M (eds) Learning, Liberalisation and Economic Adjustment. IDE, Japan.

Kaplinsky, R. (1994), Easternisation: The Spread of Japanese Management Techniques to Developing Countries, London: Frank Cass.

Kaplinsky, R and Morris, M. (1999) "Trade Policy Reform and the Competitive Response in KwaZulu-Natal Province, South Africa", World Development. Vol. 27, No. 4.

Lamming, Richard (1993), Beyond Partnership: Strategies for Innovation and Lean Supply, London: Prentice Hall.

Porter, M. (1990) The Competitive Advantage Of Nations, MacMillan Press, London.

Womack, J., D. Jones and D. Roos (1990), The Machine That Changed the World, New York: Rawson Associates.

Womack, J. and Jones, D. (1996) Lean Thinking - Banish Waste and Create Wealth in your Corporation. New York: Simon & Schuster.