

Structural impediments hampering growth in the South African manufacturing sector

**A research report submitted by
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ABSTRACT

South Africa has developed a sizeable manufacturing sector that was developed behind the protective tariff wall and other import barriers. At the end of the 1960s, after half a century of rapid industrialisation, South Africa had a relatively advanced and diversified manufacturing sector. The economy had moved away from primary commodities towards manufacturing. The percentage share of manufacturing to GDP increased from 6.2 percent in 1917 to 22.8 percent in 1970. Manufacturing exports became a large part of South Africa's exports growing to 31.4 percent by 1972.

However, a change to the structure of the economy, including shifting from an import substitution industrialisation to export oriented industrialisation under conditions of economic crisis was one of the reasons for the rapid decline in growth. With the collapse of the commodity price boom in the early 1980s, the export of the main sectors of the economy fell sharply. The investments into the sector declined and the economy stagnated. In the early 1990s a growing trend of scarcity of skills relative to unskilled labour emerged.

South Africa's transition to an export led industrialisation was considerably delayed by nearly thirty years compared to natural resource poor South Korea. It goes without saying that competitive, high-technology industries generate the highest income, while they are a drain on resources if they are not competitive. Other factors such as economies of scale, new technology, better infrastructure and better organisation contributes to productivity growth.

The research was in the form of in-depth interviews and analysed the data to identify the factors hampering growth in the South African manufacturing sectors and targeted senior managers operating in chosen sectors within the manufacturing industry, particularly the metals sector, chemicals sector and pharmaceutical sector, together with senior government officials and trade union officials. The research topic focused on South Africa's industry leaders, large corporates based in the Gauteng region. Results indicate that the country's manufacturing activity is concentrated in Gauteng. On average more

than 40 percent of manufacturing value-added has been generated in Gauteng, followed by the coastal regions (Fedderke and Simbanegavi 2008).

The research found that while great efforts have been made to try to grow the South African manufacturing industry, there are still structural issues that need to be addressed. The South African manufacturing industry has the potential to compete on quality and technology. This can be achieved by improving investment into the industry. The industry needs to use the current strength of the rand to its advantage by investing in technology that can be imported at favourable rates. Skill in the industry remains a challenge and the research suggests that the quality of the skill-set and lack of a strong work ethic is slowing productivity. Companies are opting to replace labour with machinery in order to boost productivity and limit the regulatory burden around hiring and firing. The current SETA programmes can be utilised effectively to boost the skill base and equip the labour force with the appropriate skill set to cope with the diversified product range.

DECLARATION

I, **Bathembukazi Sishuba**, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Signed at

On the day of 2010

DEDICATION

In Loving Memory of my late father

Zondwa Mtirara

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I wish to express my heartfelt gratitude to all those who have added value to my research and have been pillars of strength and encouragement. In particular, I would like to thank my supervisor, Professor John Luiz, for his guidance, patience and motivation throughout this report.

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CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of the study is to investigate the structural impediments hampering growth in the South African manufacturing industry. A change to the structure of the economy, including shifting from an import substitution industrialisation to an export oriented industrialisation in the 1970s under conditions of economic crisis was one of the reasons for the rapid decline in growth. The manufacturing sector provides a locus for stimulating the growth of other activities such as services, and achieving specific outcomes such as employment creation and economic empowerment. Fedderke et al (2007) argue that the prospects for economic growth depend on the competitiveness of the industry. The South African economy is more open to trade than that of most developing countries and the manufacturing industry faces much greater competitive discipline, regardless of whether firms are import-competing or export-orientated. Consequently, the health of the manufacturing industry is vital for both growth and employment creation in South Africa (Rodrik 2006).

Throughout history, countries trying to improve their economic and social standing have sought to move to higher value-added activities, as these require more capital, technology and skills. Manufacturing productivity is measured by the extent of value-add, both by the processes and the workers (Chandra and Shukla 1999). Value-added activities are able to facilitate output growth, productivity growth, employment, imports and export competitiveness. Can the South African manufacturing industry add value and optimise efficiency in order to compete domestically and internationally?

1.2 Context of the study

South Africa has a significantly developed, established and diversified manufacturing industry, but a steadily declining share of the manufacturing industry in South Africa's gross domestic product (GDP) since the early 1990s

resulted in this industry being overtaken by the financial and business services sector as the largest sector in the economy in 2003 (IDC 2009). Bell and Madula (2001) argue that the initial trigger for the decline of the manufacturing sector was a fundamental change in the South African economy in the years between 1965 and 1975, i.e. the commodity price boom and the resulting real appreciation of the rand.

Roberts (2006) argues that post 1994 the South African economy moved from a capital-intensive orientation under apartheid to a more labour-intensive trajectory, with the manufacturing sector particularly focusing on creating employment opportunities. However, capital-intensive heavy industries have continued to perform, while most labour-intensive manufacturing industries have struggled to undertake sustainable restructuring, and as a result, started to shed jobs (Roberts 2006). The government has realised that the domestic market alone cannot be enough to promote growth in the manufacturing industry and that the South African manufacturing industry needs to be competitive both domestically and internationally.

In 2007 cabinet adopted the National Industrial Policy Framework (NIPF) that sets out government's broad approach to industrialisation. In April 2010, the government unveiled a new Industrial Policy Action Plan (IPAP2 2010) which aims to focus on key sectors within the manufacturing industry to boost South Africa's industrial capacity and create more jobs. Roberts (2006) argues that government's industrial policy has focused on international competitiveness, given its avowed intentions to open the South African economy to the pressures and possibilities of globalisation.

According to a study carried out by Statistics South Africa (2009), the relative size of the manufacturing industry in real value-add is 16.5 percent of GDP, and its contribution to the real economic growth rate is 0.5 percent of a total GDP rate of 3.4 percent. There are signs that the manufacturing industry is in decline due to:

- a low labour intensity;
- a decline in the value-add from the sector;

- declining rate of exchange in manufacturing export growth ; and
- a decline in employment across that sector (AMTS 2002).

To enhance economic growth, the benefits depend very much not only on the volume of investment but also on the prevailing market conditions and productive efficiency of both existing and new firms (Bonelli 1998). South Africa's industrialisation process faces a number of constraints that have resulted in low manufacturing profitability. This in turn has lead to low investment, low output, and poor export and employment performance, particularly in low-and-medium skill manufacturing industries (DTI 2007). These constraints include:

- the level and volatility of the exchange rate;
- a relatively small market size coupled with relatively costly and unreliable infrastructure;
- high logistics systems, particularly freight and commuter transport;
- the monopolistic pricing of key intermediate inputs into the manufacturing sector;
- challenges with respect to skills development and training;
- an intensely competitive global environment; and
- inadequate state support for investment, upgrading, innovation and technology.

The context of the study was to analyse the performance of the South African manufacturing industry. The aim was to prove or disprove Bell's theory that since the early 1970s, South Africa's manufacturing growth performance has deteriorated significantly, and to highlight what needs to change in order to promote growth in the manufacturing sector.

1.3 Problem statement

1.3.1 *Main problem*

Identify the structural impediments hampering growth in the manufacturing sector.

1.4 Significance of the study

The South African manufacturing industry remains relatively uncompetitive compared to that of other developing countries such as China, India, Brazil and South Korea (Luiz 2009). Luiz (2009) argues that South Africa is neither leading nor competitive in quality, innovation or cost relative to other developing countries.

The study fills a gap in the literature in that over since the early 1990s the South African economy has experienced a fair amount of structural change and yet not much progress has been seen in the manufacturing industry (Smith 2003). Despite the fact that the end of the political and economic isolation of the country in the early 1990s, together with factors such as continuous technological change, trade liberalisation and globalisation, contributed substantially to the transformation of the South African economy, these factors have not been adequate in putting the South African manufacturing industry on par with that of other developing countries.

The study aims to provide guidance to policy makers and academics who are interested in understanding factors inhibiting growth within the manufacturing industry, and has focused on factors that have a direct impact on the manufacturing industry.

1.5 Delimitations of the study

The research topic focused on South Africa's industry leaders, large corporates based in the Gauteng region. Results indicate that the country's manufacturing activity is concentrated in Gauteng. On average 40+ percent of manufacturing

value-added has been generated in Gauteng, followed by the coastal regions (Fedderke and Simbanegavi 2008).

It should be emphasised that the aim of the study was to provide an overview of the factors impeding growth in the manufacturing industry, focusing on two main sectors namely chemicals and metals and identifying factors that resulted in its downfall. Details of other manufacturing sectors, such as textiles or the automotive industry, were referred to but were not discussed in detail.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This literature review takes stock of the factors that influence growth in the manufacturing sector. The research reveals how several authors suggest that maintaining a relatively large manufacturing sector can be justified by the objective of creating a competitive advantage.

The study is structured in two parts. It starts by reviewing the literature on some emerging markets - namely, South Korea, Brazil, Russia, India and China. It looks at the competitiveness of the manufacturing sectors in these developing economies by analysing them across four dimensions: cost, quality, technology and export and trade policies. The developing countries are chosen on the basis of their representative character in terms of competitive abilities and presence in the world market.

The second part of the study looks at South Africa's manufacturing industry along the same dimensions. The study takes stock of two sub-sectors namely, chemicals and metals and highlights their contribution to the South African manufacturing industry.

2.2. Factors affecting the performance of the manufacturing industry.

2.2.1 Background discussion

Nordas (1995) argues that comparative advantage in a particular industry simply means having a relatively abundant supply of the resource intensively used in that industry. Creating comparative advantage could be achieved by investing heavily in the relevant resource. Ghalayini et al (1997) add that to achieve and maintain a competitive edge in the world marketplace, manufacturing companies

have had to produce high quality products at low costs with increasing variety, over shorter lead times.

- ***Cost competitiveness and labour productivity***

Research shows that increasing the stock of human capital embodied in the labour force improves the productivity of both labour and capital, as workers develop skills to utilise new capital equipment more efficiently and solve problems as they arise on the shop floor (Nordas 1995). Ghalayini et al (1997) argue that the labour cost component of manufacturing companies constitutes an average of 12 percent in all industries, while overheads consist of 50-55 percent of the manufacturing cost, and yet companies focus on controlling and reducing direct labour costs as opposed to controlling and reducing other overhead costs.

High wages do not mean the same thing in high and in low productivity sectors (van Ark et al 2009). The author goes on to say that, in low productivity sectors, high wages mean that production may become too costly and jeopardise the long-term profitability of business. In high productivity sectors, however, high wages are often compensated for by higher output levels per person and can be fully compatible with long-term profitability (van Ark et al 2009). The increased demand for labour caused by the expansion of more productive firms pushes up the real wage, thus forcing their less productive counterparts, who cannot afford higher costs, to exit (Ahrend et al 2007). This exit strategy does not necessarily work for government who see growing the manufacturing industry as the best opportunity to create employment and therefore labour has to yield results both productively and competitively.

- ***Product quality***

The manufacturing process produces goods with varying degrees of quality. Ghalayini et al (1997) argue that, in order to compete, manufacturing companies have to produce high quality goods, and, to achieve these objectives, many companies are adopting the recently developed management, production and quality philosophies such as: total quality management; just-in-time; computer integrated manufacturing; optimised production technology; and rapid product realisation.

Research shows that a top priority for most manufacturing companies is to increase the yield of high quality products. In a survey taken in the 1980s, nearly 80 percent of U.S. managers polled believed that quality would be the fundamental source of competitive advantage in the year 2000, but barely half of the Japanese managers agreed (Hamel and Prahalad 1996). The author adds that the Japanese primary goal was to create new products and new businesses. This does not mean that Japanese will turn their back on quality, it indicates that over the last 30 years, quality has come to be seen by some manufactures as the price of entry, not a comparative differentiator (Hamel and Prahalad 1996).

- ***Technology***

In a dynamic setting, competition from new entrants in the market that experiment with new technologies has become the driving force for innovation, and in turn market incumbents are forced to innovate for their survival (Uchiba and Cook 2005). Nordas (1995) argues that technological progress takes place through two different channels, one being research and development (R&D), where the outcome of R&D is usually new products and processes, or substitutes for them; the other channel being incremental improvements of existing goods and processes that to a large extent take place on the shop floor as a result of learning and doing.

- ***Exports and trade policies***

Manufacturing has become far more export intensive and export has become a permanent feature of manufacturing (Roberts 2006). The author argues that competition from foreign imports or goods produced by firms with foreign investment has a positive impact on the productivity of domestic firms, which tend to restructure faster in response to the competitive threat. Ahrend et al (2007) argue that, the exchange rate appreciation, which may be ignited by reliance on resource exports, will inevitably intensify competitive pressure on both export and domestic markets.

The pursuit of a coherent industrial strategy appears to depend on certain socio-political conditions which have clearly been present in some countries but absent in others (Mckay and Grant 1983). These include:

- a broad acceptance among political elites of the need for government to play an active part in helping industry adapt to change; and
- the existence of good communications between political/bureaucratic and economic actors, including a broad acceptance by private investors of the need for government intervention.

2.2.2 South Korea's growth strategy in the manufacturing industry

In 1960, South Korea was poorer than many sub-Saharan African countries (Rodrik 1995). Since then, South Korea has experienced an average increased per-capita income of 6.8 percent per annum, with the result that they have left far behind not only these African countries but also others like Mexico and Argentina, which had been far richer (Rodrik 1995). South Korea's economy is 'stuck in the middle', trapped between an advanced Japan and a rising China. It falls short of Japan on quality and cannot hope to match China on price but the middle ground, it seems does offer advantage (McKinsey 2010).

The reasons for growth must be traced back to reasons why it became profitable to invest (Rodrik 1995). In South Korea, this was for the reasons stated below.

- Savings rose alongside investment, and therefore enabled growth to proceed without hitting balance of payments constraints.
- Government policy was helpful as well, and real interest rates were raised for depositors to levels that were either positive or only mildly negative. The government undertook measures to subsidise private investments by providing credit subsidies, tax incentives, administrative guidance and public investment.
- The labour force was considerably better educated than might have been supposed from their income levels. It had a set of advantageous initial conditions relating to social infrastructure in that it had a skilled labour force, relative to the country's physical capital stock and income levels (Rodrik 1995).
- ***Cost competitiveness and labour productivity***

The outstanding success of Korea from the early 1960s to the mid 1970s was based on the phenomenal growth of labour-intensive manufacturers (Rodrik 1995). The author adds that this high profitability also depended on a relatively well-educated, hard working, docile labour force whose numbers rose, apart from the natural rate of increase, because of a large movement out of people in agriculture.

According to Rodrik (1995), such an economy is ready to take off if there is enough skilled labour and provided a large enough share of the economy's resources were devoted to producing the specialised inputs. The modern sector relies on specialised inputs (e.g. particular labour skills, technologies, intermediate inputs and capital goods) and these inputs require:

- a well educated work-force but at a low cost;
- they exhibit economies of scale; and
- they cannot be perfectly traded in international markets (Rodrik 1995)

Rodrik (1995) emphasises that the inputs indicated above all depend on a sufficiently well-educated workforce.

- ***Product quality***

South Korea's focus is to improve on product design and quality. Korean manufacturers, recognising their inability to compete head-to-head with high quality Japanese, European, and US producers, have targeted new emerging markets such as India, China, and Russia, Latin America, Africa and the Middle East. These markets account for half of Korean exports (Biggart and Guillen 1999).

Although South Korea is strong on assembly, it is weak on components. Three interrelated factors have contributed to a weak auto components industry in South Korea, i.e. counter-productive state policies, dominance by big business, and a failure to improve quality standards. The backwardness of this sector is a consequence of the state policies (Biggart and Guillen 1999).

The state policy supports the development of shipbuilding, steelmaking, and automobile production, industries in which single-minded concern with output is a priority (Biggart and Guillen 1999). It supports a Fordist economic strategy of large-scale, vertically integrated mass production and standardisation. This logic, however, does not promote connections between groups for synergy or innovation. Nor does it promote responsiveness to world markets or quality production. Patrimonialism has favoured the assembly of reasonably priced,

lesser-quality cars but small producers in the auto components industry have been forced to fend for themselves (Biggart and Guillen 1999).

- ***Technology***

South Korea has already shown that it is willing to invest (McKinsey 2010). South Korea spends a bigger percentage of its GDP on research and development than countries like Germany, the United Kingdom, or the United States do. In the 1990s, South Korean manufacturers made a significant shift in production toward high technology industries including information displays and electronics. The contributions of exports to growth came, not from the demand side, but from a widespread of technological spillovers and cumulative productivity benefits deriving from export performance (Rodrik 1995).

- ***Exports and trade policies***

South Korea owes its growth to export-orientated policies and extensive government intervention in markets (Rodrik 1995). According Rodrik (1995), the Korean government had clear industrial priorities and they did not hesitate to intervene (through subsidies, trade, restrictions, administrative guidance, public enterprises or credit allocation) to reshape competitive advantage in the desired direction.

Foreign exchange policies led policy-makers to alter their economic strategy and adopt export-orientated policies (Rodrik 1995). These policies included the unification of exchange rates accompanied by devaluations, various other measures to stimulate exports (including most significantly duty-free access for exporters to imported inputs), higher interest rates, and some liberalisation of the import regime (Rodrik 1995). These policies led South Korea to specialise according to competitive advantage, resulting in rising incomes, investments, savings and productivity. Every major shift in industrial diversification in the 1960s and 1970s was instigated by the state (Rodrik 1995).

2.2.3 Industrial competitiveness in Brazil

Brazil has one of the most advanced industrial sectors in Latin America and accounts for almost one third of the GDP (US DOS 2010). Brazil has a diverse range of products namely, automobiles and part; machinery and equipment; textiles; shoes; cement; computers; aircraft and consumer durables. The government-initiated privatisation after 1996 triggered a lot of investors into the telecom, energy, communications and manufacturing sectors (US DOS 2010). And the author adds that after 1996, the Brazilian railroad industry was privatised through concession contracts ranging from 30 to 60 years and the same goes for the Brazilian port. These factors have had a positive impact on the Brazilian manufacturing industry. The behaviour of Brazilian firms up until the 1990s was characterised by limited efforts to increase efficiency, quality and innovativeness, and even leading firms were far behind international best practice (Meyer-Stamer 1998). In the past, particularly during the 1980s and early 1990s when Brazil's growth and export record were significantly above average, industry in Santa Catarina, Brazil, gave an impressive performance (Meyer-Stamer 1998). This was due to the fact that until 1990, Brazil's market was essentially closed to most products that could be manufactured locally, and competitive pressure on the local market was accordingly low (Meyer-Stamer 1998). The author states that apart from that, chronically high inflation discouraged the formulation of long-term strategies and created an environment that penalised inter-firm transactions.

- ***Cost competitiveness and labour productivity***

Brazil's current standard of living is primarily due to low labour productivity and low capital inputs (Bonelli 1998). Some firms in Brazil have shown that it is perfectly possible to run manufacturing operations with a low level of vertical integration (Meyer-Stamer 1998). Labour productivity in manufacturing industries has increased on an unprecedented scale (Bonelli 1998).

Firms consistently invested in features such as new equipment, the training of their employees, above-average wages and benefits to develop a stable workforce, building up R&D departments, or constantly trying to upgrade their management systems following international trends (Meyer-Stamer 1998).

Rather than using existing institutions, several firms in all branches had their own internal training programmes in basic education and vocational training (Meyer-Stamer 1998).

- ***Product quality***

Within the new Brazilian framework, firms that are not productive are being penalised (Meyer-Stamer 1998). In order to be productive firms, they have to score high on four criteria: productivity, i.e. cost efficiency; quality, i.e. consistently high product quality and low cost of quality control; variety, i.e. the ability to cope with differentiated customer demands; and agility, i.e. the ability to react quickly to specific demands (Meyer-Stamer 1998).

- ***Technology***

Technology, innovative capabilities and skills have long been recognised as fundamental sources of competitive strength (Bonelli 1998). Bonelli (1998) contends that change has often been related to trade liberalisation, stabilisation and the adoption of new technological and managerial techniques associated with the new production paradigm that replaced the 'Fordist-Taylorist model'. If a firm has embarked on a given development path it will most likely remain there in order to be able to run through the cumulative learning process which leads to mastery of a given technology (Meyer-Stamer 1998). Foreign direct investment (FDI) has long helped to shape the output structure and technological base of the Brazilian manufacturing industry, as well as the country's trade structure and performance (Bonelli 1998).

Any change always massively reduces the technological capacity the firm has accumulated so far and necessitates a new learning process in a different direction (Meyer-Stamer 1998). Once a development path has been established, a cumulative process of technological learning starts which brings all sorts of benefits to various actors: industry firms operate under less uncertainty, and consumers benefit from constantly improving price/performance ratios of products (Meyer-Stamer 1998).

- ***Exports and trade policies***

Export promotion is a main component in the Brazilian government plans to generate growth and reduce the risk to financial market fluctuations (US DOS 2010). In the East and South-East Asia, a number of countries experienced rapid export-led growth associated with increased FDI inflows until the 1997 crisis (Bonelli 1998). Following the Asian model, the Brazilian government abandoned the import-substitution strategy in 1990 and gradually opened the market for imports (Bonelli 1998). The most important product and capital market barriers remaining to be addressed are tariffs and government ownership, as well as inconsistent tax enforcements, which stifle productivity growth (Bonelli 1998).

Firms grew rapidly because they had access to (often subsidised) investment funding from the single most important state agency in industrial development, the National Development Bank (Meyer-Stamer 1998).

2.2.4 *Russian manufacturing*

Russia's wealth of resources has forced manufacturing sectors to be more productive in value-creation, while Russian producers have still managed to command higher prices for their production due to imperfect competition (Ahrend et al 2007). Ahrend et al (2007) use the term 'Dutch disease' to describe the decline in the manufacturing sector as originally seen in the Netherlands. It is broadly understood to denote the harmful economic consequences that may arise in certain conditions from a sudden increase in a country's wealth following, for example, a natural resource discovery, a surge in export commodity prices or any other positive exogenous shock generating large foreign exchange inflows (Ahrend et al 2007). The author adds that a shift towards resource-based sectors in Russia – at a time when the Ukraine was shifting more towards manufacturing – could be construed as a sign of Dutch disease.

The privatisation programme in Russia has transferred shares in more than 12,000 companies from state to private hands, resulting in a wide variety of new ownership structures, including the participation of insiders, outsiders, and in many cases still (Earle and Estrin 1996). Policies have been enacted to liberalise prices, foreign trade, and the entry of new businesses yet many highly concentrated sectors remain (Earle and Estrin 1996).

Russia undoubtedly has vastly larger natural resource than other emerging countries such as Ukraine (Ahrend et al 2007). As a result, Russian industry has always been somewhat more focused on natural extraction (Ahrend et al 2007). The authors go on to say that the Russian companies have been rationally investing in sectors where returns have been especially high – i.e. natural resources – and, so far at least, a relatively flexible labour market has permitted a fairly smooth adjustment.

- ***Cost competitiveness and labour productivity***

Russia's output prices have been relatively high, indicating that the quality of Russian output is high (Ahrend et al 2007). Ahrend et al (2007) add that this may also reflect market imperfections. Russian manufacturers do not export much, except to the Commonwealth of Independent States (CIS), so the main issue for them is the price they can command on the domestic market. The authors say that, if incomes are high, domestic competition limited and there are some barriers to imports, then the Russian products are likely to be able to command higher prices. Despite this, the Russian enterprises have profited from cheaper effective energy prices, resulting in lower input prices, particularly in energy (Ahrend et al 2007).

Russian wages are relatively high and twice the level of those in countries like Ukraine (Ahrend et al 2007). In all likelihood, the commodity-export backed strength of the rouble and the relative weakness of the hrynia account for a large part of this wage differential (Ahrend et al 2007). Ahrend et al (2007) contend that a strong export potential alone cannot sustain a higher wage level in foreign currency terms, unless backed by higher labour productivity. Russian wages have been largely driven by exchange rate development in recent years (Ahrend et al 2007). This suggests that economic growth has led to higher wages in the manufacturing sector. Russia's high wage levels have been supported by higher levels of labour productivity (Ahrend et al 2007).

Russia's non-resource industrial sector has been negatively affected by the growth of its resource sector (Ahrend et al 2007). The authors suggest that Russia's resource wealth, and also its market imperfections, have diminished the pressure on some Russian manufacturing sectors to increase productivity via labour shedding, and has thus led to less restructuring on that front.

- ***Product quality***

Early reforms and privatisation in Russia might have increased the relative efficiency of its industry at a very early stage in the transition, giving Russian industry an edge from which it has been able to profit ever since (Ahrend et al 2007). The faster introduction of new production and management techniques

possibly allowed Russian industry to produce goods that could sell for higher prices and had a higher share of value-added.

- ***Technology***

In Russia, the share of industrial labour was not exceptionally high due to the concentration of capital and of labour-saving technology (Easterly and Fischer 1995). Easterly and Fischer (1995) add that the over-industrialisation in Russia, including the creation of non-competitive industries - some of which even created negative value, was recognised in the 1990s as a drag on the ability of former Communist states to adjust to a normal market structure and an open economy during the transition.

The autarkic policy of industrialisation pursued over most of the Soviet period contributed to a technological non-compatibility with the West, which further hurt the competitiveness of Soviet industry (Easterly and Fischer 1995).

- ***Exports and trade policies***

Many segments in the manufacturing sector are characterised by weak competition and local monopolies, sustained by implicit or explicit subsidies and barriers to entry (Ahrend et al 2007). The fact that Russian enterprises can sell their output at higher prices is more likely to reflect the fact that Russian enterprises and sectors that do enjoy a significant degree of (formal or informal) protection are operating in an economy where incomes are higher and demand is greater, owing in no small measure to resource wealth and the real appreciation of the rouble (Ahrend et al 2007).

Russia's comparative advantage in natural resources appears to underlie the competitive advantage of the stronger exchange rate resulting from booming resource exports (Ahrend et al 2007). This represents a significant source of pressure on Russian manufacturing competitiveness, as high wages have been accompanied by higher productivity. In conclusion, Russia is much better off as a result of having a strong resource sector – even if that implies some negative impact on manufacturing.

2.2.5 The Indian Manufacturing Industry

India's manufacturing industry accounts for one third of the GDP (US DOS 2010). The economic growth in India is constrained by the inadequate infrastructure; government bureaucracy; corruption, labour market rigidity; foreign investment controls and the reservation of key products for the small-scale industries (US DOS 2010). India's economic growth over the past two and a half decades has come at a cost. Cuts in expenditure on public services and unsustainable use of natural resources have left the majority of the population poor and surrounded by empowerment degradation (Chandra and Shukla 1999). However, the reduction in effective protection to industries has had a favourable effect on productivity growth in the Indian manufacturing industry (Goldar and Kumari 2002). The authors say that there was a steep change in investment activity in Indian industries and that agricultural growth has also been an important factor in influencing industrial productivity (Goldar and Kumari 2002).

Chandra and Shukla (1999) state that a strategy based merely on exports to combat the might of multinationals can prove to be dangerous, which will cause erosion in the strength of Indian companies in the home market. Under pressure of consumer demand, a major impact of the recent macro-economy policy reforms in India was on the industrial policy of India (Kumar 1995). Kumar (1995) adds that historically, Indian industries developed management practices which suited the restrictive industrial policies, clever accounting policies were seen as the main source of generating profits. Chandra and Shukla (1999) add that the present level of manufacturing competence of Indian firms is the historical product of the past economic policies and is suited to serve only a protected domestic market. These very same companies now face competition from multinationals who have demonstrated far superior performance in world markets.

Kumar (1995) states that in the 1980s savings from the upper middle created favourable conditions for industrial investments on the one hand and consumerist boom in domestic industrial products on the other. The author adds that the restrictive policy regimes suited and reinforced the upper-middle income group's inward orientation. In turn industrial management practices did not emphasise

consumer orientation or the manufacturing excellence needed in a competitive environment.

The opening up of the Indian economy to global competitive forces is posing new challenges and opportunities to Indian manufacturers (Chandra and Shukla 1999). Industries are seeking export markets, which has become attractive following the decline in the value of Indian rupee.

- ***Cost competitiveness and labour productivity***

The comparative performance of Indian firms in respect of manufacturing value-added per worker is the lowest, indicated in Table 1 below. This correlates with the highest level of labour absenteeism and the lowest emphasis on plant and equipment maintenance which contributes to low process utilisation (Chandra and Shukla 1999). It is worth highlighting that it is in regard to products with low value-add where India has a relatively higher market share in the world.

Table 1. Comparison of labour and equipment efficiency				
	Labour productivity (units)	Labour absenteeism (%)	Technology (%)	Plant maintenance (%)
India	6,177	36.76	44.86	44.32
Brazil	7,724	60.29	50.99	51.55
Thailand	9,336	72.00	67.00	60.50
South Korea	9,291	42.14	63.57	58.57
Canada	30,034	49.69	66.25	63.13
USA	44,070	55.00	74.75	56.67
Japan	46,667	81.95	73.13	81.50
Germany	38,207	60.00	68.69	86.94
France	35,287	48.12	77.68	62.32

(World Development Report World Bank 1992)

- ***Product quality***

To successfully compete with world class manufacturing in the domestic as well as the world market, Indian firms will have to begin by offering high quality

product choices to national consumers in order to create a sustainable base for national manufacturing excellence (Chandra and Shukla 1999).

- ***Technology***

India capitalises on a large contingent of well-educated people that are skilled in English (US DOS 2010). According to the author, India is a major exporter of software services and software workers due to a concerted effort from government to build the technological base of the country. This technological advancement is a new phenomenon as according to Kumar (1995) the use of information technology for streamlining product and information flows in manufacturing as well as service sectors, India was comparing poorly with other nations. This is a disadvantage especially for those industries where the role of labour productivity in industrial performance is critical. The excellence of the capital goods industry is crucial for a technological leadership and competitive advantage.

- ***Exports and trade policies***

The export performance of the Indian manufacturing industries reveals weaknesses, but an industry with high export performance is the precious and semi-precious stone industry (Kumar 1995). In 1991-1992, the export of gems and jewellery was nearly a sixth of Indian export and 10 percent of world trade in this sector. Despite these achievements, value-add has remained low.

2.2.6 China's manufacturing cost competitiveness

The convergence of abundant labour, a favourable currency valuation, and an export-oriented growth strategy historically made China a force to be reckoned with in international markets (Tyng et al 2009).

- **Cost competitiveness and labour productivity**

Tyng et al (2009) suggest that input costs, including oil, electricity and coal, influence the cost of production for the manufacturing industry and its transportation costs. Although the price of oil rose from 2002 to mid-2008, the appreciation of the Chinese Yuan helped to ease the pressure on manufacturers in China. In addition, the government's energy subsidy also softened the impact on manufacturing. Although the price of domestic energy is relatively stable, the inadequate supply of energy in China increases the transaction cost of manufacturing industries, as they spend more time and human resources developing *Guanxi (business relationships)* with the local government in order to access adequate energy resources (Tyng et al 2009).

Historically, the 'China price' referred to the ability of both labour-intensive and high-tech Chinese manufacturers to undercut competitors comfortably in production costs with headroom to cut more. A look at China's annual growth in exports from 1995 to 2008 shows the explosion of overall export value (Tyng et al 2009).

Almost 40 percent of China's economy is tied to exports (Tyng et al 2009). The author states that, with the recent volatility in global commodity prices, the steady appreciation of the Chinese Yuan, and the sharp increase in domestic resource and labour costs, it seems that the 'China price' is losing its edge in global markets. Although the average labour cost in the manufacturing industry is still very low, wage increases have affected China's export margins in labour-intensive sectors. Many factories have to raise the salaries in order to attract new labour, so that they can continue growing their business (Tyng et al 2009).

With 1.3 billion people, China possesses huge advantages in labour supply, and hundreds of thousands of people are migrating from less developed areas, ensuring a consistent abundance of labour (Tyng et al 2009).

In recent years China has showed a slightly higher labour productivity level than that of India in the year 2002 but, due to its higher compensation level, China has been somewhat at a disadvantage in terms of unit labour cost relative to India (van Ark et al 2009). This poses important questions about China's competitiveness relative to other emerging economies, and stresses the need for keeping productivity and cost (wages) levels in line (van Ark et al 2009).

- ***Technology***

The Chinese have achieved dynamic improvements in their education system since 1949. After World War II, 80 percent of Chinese citizens were illiterate (Tyng et al 2009). Today, Tyng et al (2009) add that the Chinese literacy rates are above 93 percent, higher than neighbouring countries such as India, Vietnam and Indonesia. In an effort to improve the education system and increase the skilled labour supply, China re-introduced the college entry examination in 1977 (Tyng et al 2009). An increase in enrolment and success rates began in 1999, and the advancement in education has equipped more Chinese with qualified skills and knowledge. This has contributed to China's competitive position among high-tech manufactures among other things (Tyng et al 2009).

- ***Exports and trade policies***

Chinese government policy on export rebates plays an important role in China's manufacturing competitiveness. This is one instance of supply-side incentives that play a prominent role in China's manufacturing advantage (Tyng et al 2009).

Tyng et al (2009) suggest that China's cost competitiveness in capital-intensive manufacturing remains strong. China maintains the largest market presence, not necessarily the best price (Tyng et al 2009). However, based on the observation that relative import market size has declined since 2003, China could face challenges finding buyers as economies across the globe contract. How long can supply exceed demand (Tyng et al 2009)?

The 'China price' still exists for certain commodities in specific international markets, but is under increasing pressure (Tyng et al 2009). As indicated below in Table 2, China remains a formidable competitor in manufacturing cost competitiveness.

Table 2 Change in relative market share		
Country	2003 – 2008	2008 export value
China	1.24%	\$10,406,091,600
Italy	-8.89%	\$292,650,387
Vietnam	6.69%	\$213,079,295
Thailand	-3.54%	\$161,852,331
South Korea	-15.21%	\$153,515,839
Malaysia	-5.48%	\$56,868,509
Indonesia	-6.26%	\$53,080,214

(Source: World Trade Organisation 2008)

2.2.7 The South African Manufacturing Industry

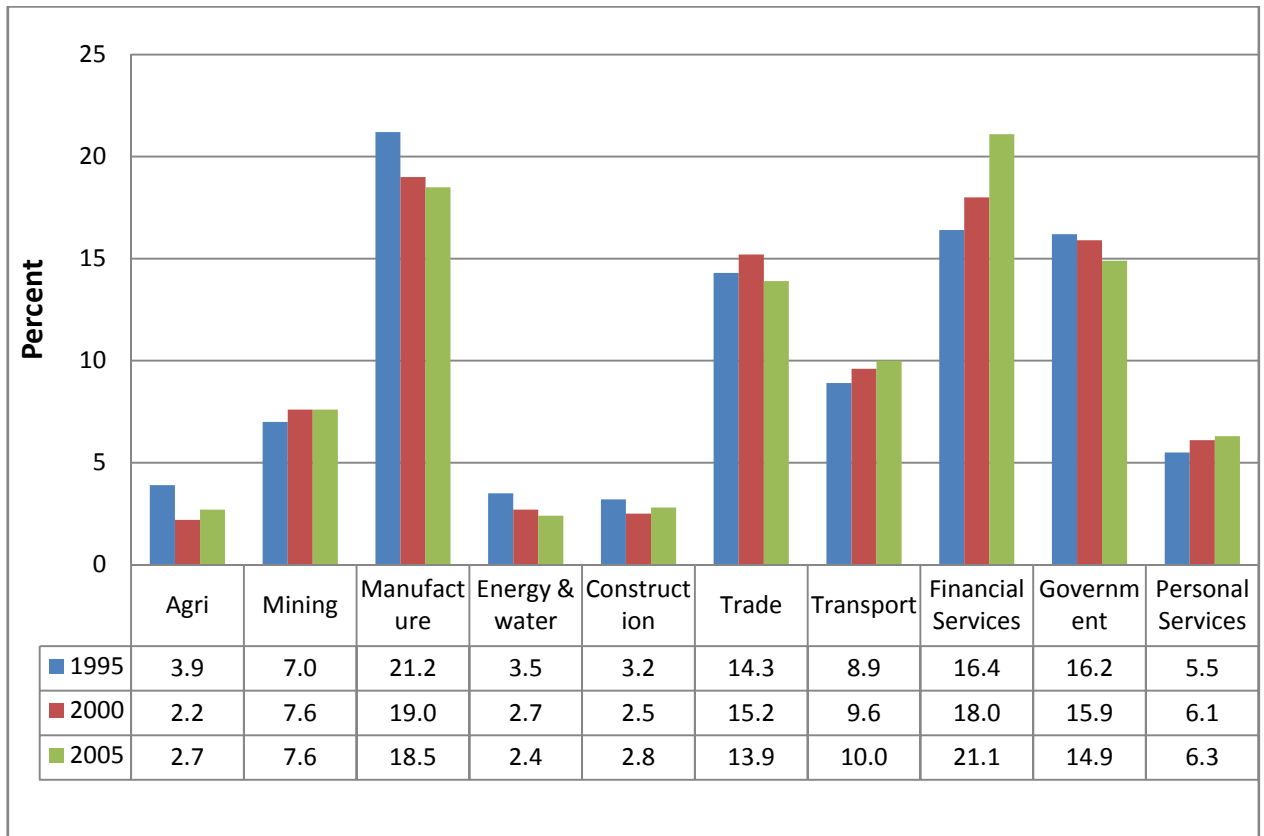
South Africa was a very late industrialiser, but it was a very much earlier industrialiser than those East Asian countries which have been the stars of the manufacturing growth firmament since the 1960s (Bell and Madula 2001). The country has undergone a remarkable transformation since its democratic transition in 1994, but the weakness in export-orientated manufacturing has deprived South Africa of growth opportunities as well as of job creation at the relatively low end of the skills distribution (Rodrik 2006). Hence, generating equitable growth is a priority for the government of South Africa and the country's growth strategy is focused on spurring manufacturing of goods for export (Stone 2006).

The manufacturing industry is a key sector in the South African economy. According to Stats SA (2008) the manufacturing sector contributes R1.2 trillion in revenues, and 50 percent of total South African exports are from this sector which employs a total of 1.3 million people. According to the IMF world economic outlook (2010), China surpassed Germany as South Africa's major export destination, followed by Brazil.

Gibson (2003), concurs that countries specialise according to their comparative advantage. As South Africa is a mineral-rich country, it has inherited a comparative advantage in resource-intensive industries, including the manufacturing sector (Nordas 1995). South Africa's traditional industries have been resource-based, particularly in minerals, and today most minerals are exported (AMTS 2002). The author adds that this prevents South Africa from reaping the full benefit of its rich resource base. Manufacturing can add value to these exports by converting ores to primary metals and primary metals to higher value-added manufacturing products (AMTS 2002).

Figure 1 reveals the trend of the South African manufacturing industry's contribution to GDP. This emphasises that the industry has been on a gradual decline over the past two decades, contrary to the trend patterns of other developing countries, namely South Korea, Brazil and China (as indicated in the literature).

Figure 1. Percentage contribution to GDP by industry



(Source: Statistics South Africa 2006)

- ***Cost competitiveness and labour productivity***

South Africa has a cost level that is not justified by productivity performance stemming from technological development (Nordas 1995). A major factor contributing to South Africa's poor manufacturing performance is that the country has not made good use of the manufacturing plants, equipment and labour employed in production (Joffe et al 1995). The authors suggest that South Africa's manufacturing industry has had a very low rate of productivity growth for a sustained period of time and that the industry currently utilises its employed resources very inefficiently. The authors add that this rate of poor productivity increase has come about when investment, employment and output have all been declining.

To be able to compete domestically and internationally the input costs have to be favourable, as this drives the total cost of production. A study carried out by the

Department of Trade and Industry (2009) shows that the high demand in China is driving up input costs worldwide, thus increasing input costs in the South African manufacturing industry as well. In terms of input costs, a majority of South Africa's manufacturing firms have experienced high rates of increase in raw material costs, salaries and wages (Roberts 2006). Furthermore, a study carried out by Roberts (2006) highlights that firms with high increases in salaries and wages are 26 percent more likely to achieve high turnover growth.

The relative shrinkage of manufacturing (along with economy-wide skill upgrading) has entailed a collapse in the demand for relatively unskilled workers (Rodrik 2006). Rodrik (2006) shows evidence indicating that less than 60 percent of workers employed in manufacturing in 2004 were classified as low and unskilled. Seventy percent of manufacturing output is either resource-based or scale-intensive and therefore labour costs are not the decisive factor in determining competitiveness for the majority of South African manufacturing industries (Nordas 1995). In their investigation into labour market flexibility in South African manufacturing, Fedderke and Hill (2006) find that about two thirds of labour employed in South African manufacturing is devoted to fixed costs while only one third is devoted to variable costs. They also find evidence of the increased use of capital in place of labour during increased labour market inflexibility. Fedderke and Simbanegavi (2008) conclude that capital and labour in most cases are substitutable and that this has important implications for employment – especially in a developing country where there is an abundance of unskilled and semi-skilled labour.

The presence of so many unionised workers in the manufacturing industry can drive up wages faster than productivity growth, thereby exacerbating unemployment (Banerjee et al 2006). The authors add that unionised rates in the South African economy are highest in the mining, manufacturing and electricity sectors and these unionised rates are higher for African workers than for white workers. Rising wage costs were the original source of the decline in manufacturing employment (Rodrik 2006).

- ***Product quality***

As incomes grow, there is an increase in the willingness of consumers to pay for quality (Verhoogen 2004). The author contends that if richer consumers have identical utility functions to those of poorer consumers but the marginal utility of income is declining, they will be willing to pay more for a given level of quality. Price is no longer the major determinant of market share (Joffe et al 1995). Joffe et al (1995) add that new standards of quality, reliability and innovation are required to ensure survival. Higher incomes and advances in technology have led to increased growth in demand for more sophisticated, higher quality and more differentiated products and services (Roberts 2006). An ISP study showed that in most manufacturing sectors firms performed particularly poorly in these non-price-competitive factors (Joffe et al 1995). This can be interpreted as a function of income (Verhoogen 2004).

There is very little literature available on the quality of goods produced in the South African manufacturing industry. A survey conducted by the Harvard Business Review in 1994 suggests that quality is the price of entry, not a competitive differentiator, and perhaps in the South African context, not a competitive advantage.

- ***Technology***

The South African innovation system has been, and still is, generally characterised by fragmentation, silo mode approaches and a lack of resources (AMTS 2002). Evidence found by AMTS (2002) suggests that within the manufacturing sector there are interesting trends that distinguish manufacturing goods of different technology intensities. The high technology industries offer the greatest advantage for growth, which poses the question of what South Africa needs to do to be competitive in the technology and innovation field (Roberts 2006).

Nordas (1995) argues that intra-industry trade with developed countries is an important source of technological transfer, and creates incentives to climb up the learning curve. South Africa has an industrial structure that could be suited to such trade, but high costs and weak social capacity to assimilate technology are

an impediment to productivity growth (Nordas 1995). Uchida and Cook (2005) add that as inefficient enterprises fail to survive, leaving the field to more successful innovators, a more concentrated market structure may be associated with a higher degree of competition.

Table 3, as indicated below, depicts the trends in growth rate and technology intensity.

Table 3. Growth rate versus technology intensity				
	1994-1996	1996-1998	1998-2000	2000-2001
Low technology	1.59%	-0.98%	-3.45%	1.30%
Medium technology	8.85%	-0.84%	0.20%	-3.20%
High technology	14.25%	3.08%	11.84%	8.30%

(Source: TIPS-South African Standardised Industry Database 2001)

- ***Exports and trade policies***

It has been argued that the underlying cause of the lack of manufacturing exports from African economies is the relative scarcity of skilled labour in Africa that ensures that Africa has a comparative advantage in natural resource exports (Collier and Zeufack 2000). South African trade policy has exerted a major influence on the composition and aggregate growth of manufacturing exports (Edwards and Lawrence 2008). By contrast, trade liberalisation in the 1990s not only increased imports but, by reducing both input costs and the relative profitability of domestic sales, also boosted exports and stimulated productivity (Edwards and Lawrence 2008). They find evidence pointing to the importance of trade policies that afford South African manufacturing firms access to inputs at world prices as well as a competitive real exchange rate. On the other hand, imports of the manufactured goods are likely to be affected by the new policies and the rising imports of manufactured goods in South Africa has had an adverse effect on employment (Golub and Ceglowski 2002)

Edwards and Golub (2004) find evidence that suggests that South African exports respond to relative unit labour costs and that export growth is, in part, influenced by some combination of moderate wage growth and improved productivity. Exports of manufacturing have increased but not by enough to generate an export-led growth boom similar to those of East Asia and a few other dynamic emerging economies (Edwards and Golub 2004).

Table 4, as indicated below, shows South Africa's major export destinations and highlights the growth in exports to developing countries over the past two years relative to the developed countries.

Table 4. Real Economic Outlook of Major South African Exports Destinations								
Year	2009	2010	2011		Year	2009	2010	2011
Industrialised Countries					Developing Countries			
USA	-2.5	2.7	2.4		China	8.7	10.0	9.7
Japan	-5.3	1.7	2.2		India	5.6	7.7	7.8
Euroland	-3.9	1.0	1.6		Latin America	-3.2	4.2	3.4
Germany	-4.8	1.5	1.9		Sub-Saharan Africa	1.6	4.3	5.5
United Kingdom	-4.8	1.5	2.7		Emerging Asia	-0.2	5.4	4.8

(Source: IMF World Economic Outlook Update 2010)

The major feature of the 1970s was the great, gold-led commodity price boom which prospered from 1972 (Bell and Madula 2001). Bell and Madula (2001), for instance, find that the effect of the commodity price boom on real exchange rates probably contributed to the inter-sectoral differences in export growth rates. They argue that this resulted in a substantial deterioration in the international competitiveness of the more downstream manufacturing sectors.

The rand's strengthening since the start of 2009 has hampered the competitiveness of South Africa's manufacturing export products (IDC 2009). Exchange rate volatility and excessive rand strength in recent months is posing a serious threat to the sustainability of export-orientated enterprises, indicating that

the demand for manufacturing exports may remain under considerable pressure in the short to medium term (IDC 2009). A more depreciated exchange rate would be better for the health of the manufacturing industry (Rodrik 2006).

The persistence of substantial excess capacity in the manufacturing industry is symptomatic of a foreign exchange constraint on the growth of the economy as a whole, and especially on the most import-intensive part of it – the manufacturing industry itself (Bell and Madula 2001). Edwards and Lawrence (2008) suggest that South African manufacturers are not inherently uncompetitive, and that the exchange rate and its interactions with the commodity prices have been an important factor in the growth of South Africa's exports. Manufacturing exports are more responsive to real exchange rate shocks (Edwards and Lawrence 2008). The econometrics confirm that the level (and also presumably the volatility) of the real exchange rate are a significant determinant of the health of manufacturing (Rodrik 2006).

Although significant liberalisation has taken place, it appears to be the case that South Africa's trade policy hinders its export performance overall and that the impact on non-commodity manufacturing is relatively higher than on commodity manufacturing (Edwards and Lawrence 2008). Edwards and Lawrence (2008) firmly believe and supports the proposition that trade policies are partly responsible for South Africa's weak manufacturing export performance. Rodrik (2006) suggests that it is possible to reverse a deteriorating trend in manufacturing performance, provided the policy framework is adequate. Frankel et al (2007) suggest that the policy conclusion is that liberalisation would help raise openness to the market, which in turn would eventually promote growth.

2.2.8 Key Sectors

- **Iron and steel (metals)**

The South African basic and iron steel industry accounts for 8.3 percent of South Africa's entire exports and the majority of its output exported (Jooste et.al 2009). South Africa has a large, well-developed metals industry, with vast natural resources represents roughly a third of all South Africa's manufacturing (DTI 2007).

The international and local steel industry has changed dramatically over the past two decades as several steel companies have fallen away and protectionism abroad has increased instead of decreasing. According to a study conducted by Lundall et.al (2008) the upstream basic metals industries (basic iron and steel non-ferrous metals) are highly capital intensive and have registered very high rates of growth, while reducing their labour at the same time. The basic iron and steel metals sector is an essential component in industries such as mining, construction, and motor vehicle and appliance manufacturing. This sector accounts for 19 percent of the total manufacturing sectors revenue (Statistics South Africa 2008). South Africa is a net exporter of steel and is the largest steel producer in Africa (almost 60 percent of Africa's total production). The primary steel industry is a significant contributor to the economy and earns considerable amounts of valuable foreign exchange (South African Iron and Steel Institute 2010). The Institute adds that South Africa ranks about 20th among the crude-steel producing countries in the world. According to a study conducted by the DTI (2005) the South African primary steel producers manufacture in excess of eleven million tons of finished steel products per annum, of which about five million tons are consumed domestically. Imports account for about nine percent of locally consumed primary steel.

South Africa's largest steel producing companies include, ArcelorMittal South Africa, formerly known as Iscor and now part of global steel company ArcelorMittal. This is South Africa's largest steel producer. Other industry players are Scaw Metals, Cape Gate, Columbus Stainless Steel, Highveld Steel and Vanadium and Cisco.

According to Lundall, Maree and Godfrey (2008) the extensive investments in basic and steel and non-ferrous metals resulted in high rates of growth and large trade surpluses. In 2004, 45 percent of basic iron and steel and 26 percent of non-ferrous metals were exported. The high levels of exports of basic metals were partly a result of poor growth of the downstream beneficiating industries brought about to some extent by the pricing policy of the upstream producers.

According to a study by Statistics South Africa (2008) China is South Africa's largest steel market, while China on the other hand is not only a major consumer of steel but a great producer. China currently accounts for almost 37 percent of the global stainless steel production, with its share having risen from 26 percent in 2009. This makes China the largest producer of steel and could pose competitive pressures or opportunities for South African steel producing companies.

The basic metals industries involve the manufacture of primary iron and steel products from smelting to semi-finished stages (upstream industries) and, South Africa principally produces in the upstream industry where industrial firms process the basic or raw material into an intermediary product. The conversion of semi-finished products to finished goods takes place in the downstream industries. Below is the value chain analysis of the steel and metals industry of South Africa:

- **Chemicals and Pharmaceuticals**

Chemicals and Pharmaceuticals represents one of the major manufacturing sectors and accounts for 10 percent of South Africa's total exports, although the share has dropped from approximately 13 percent in 2001 (Wilkinson and Rocha 2008). There is low competition in the chemicals sector, with larger players controlling over 67 percent of the market (Sasol, AECI, Afrox, Omnia and Dow). According to Statistics South Africa (2009) the chemicals and pharmaceuticals sector contributes 23 percent of total sector revenues.

Similar to the metals industry, the basic chemicals are capital and raw material intensive with large economies of scale. According to the IDC (2009), this sector remains small in global terms. South Africa is responsible for only 600 of the 80 000 pure and basic chemical products produced across the globe. South Africa produces mainly commodity, low-value and high-volume products, principally fuel and plastics fabrication as well as pharmaceuticals.

The chemicals industry has been shaped by the political and regulatory environment that created a philosophy of isolationism and protectionism during the apartheid years. This tended to foster an inward-looking approach and a focus on import replacement in the local market. It also encouraged the building of small-scale plants with capacities geared to local demand, which tended to be uneconomic.

Because of isolation of the industry from international competition and high raw material prices as a result of import tariffs, locally processed goods have generally been less than competitive in export markets. Now that South Africa is once more fully part of the global community, South African chemical companies are focusing on the need to be internationally competitive, and the industry is reshaping itself accordingly (www.mbendi.com 2010).

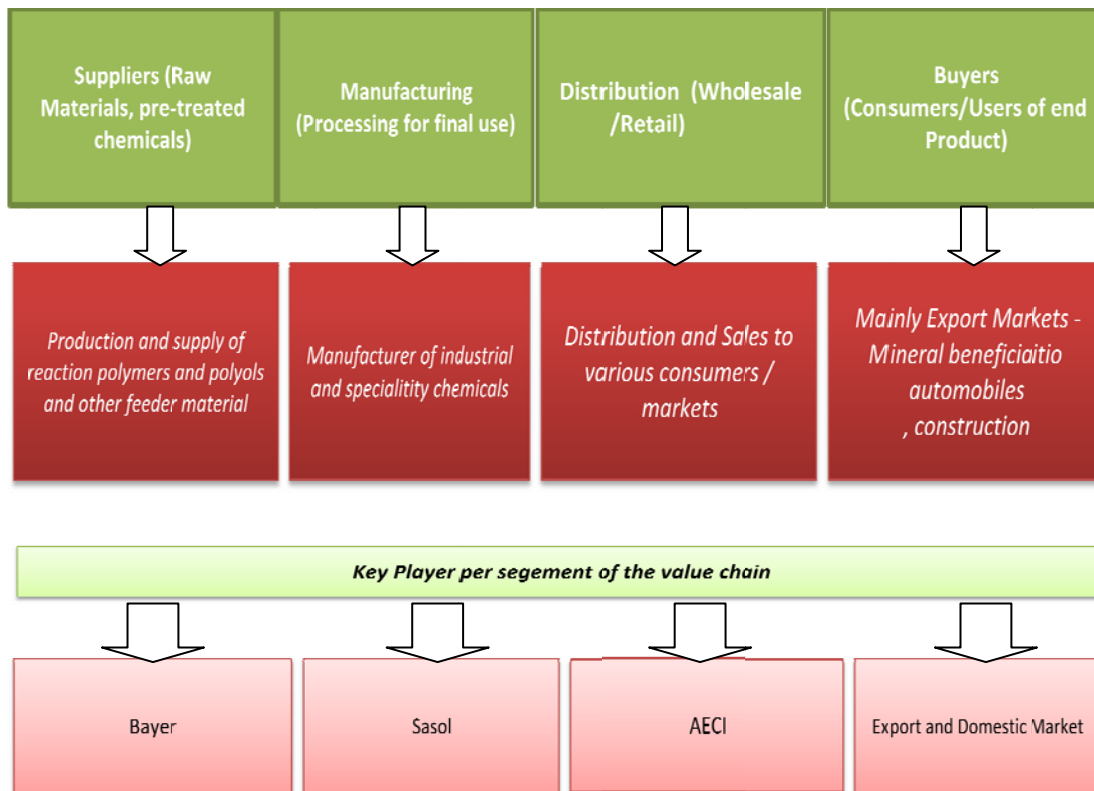
The South African chemicals sector has two noticeable characteristics. Firstly, while its upstream sector is concentrated and well developed, the downstream sector - although diverse - remains underdeveloped in the form of industrial firms that process the output of other firms (which are at the previous level of material processing) into a finished or different product. Examples are plastic

manufacturers whose inputs come from petroleum processors, and agro-processors whose inputs come from farmers or growers. Downstream industries are, in general, more stable and have higher profit margins than those of the upstream (raw material producing) industries. The conversion of raw materials to finished goods takes place in the downstream industries, for example, petroleum processors who refine crude oil into intermediary chemicals which are converted into plastics by other industries, and farmers or growers whose produce is used by agro-processors.

Secondly, the synthetic-coal and natural gas-based liquid fuels and petrochemicals industry is prominent, with South Africa being the world leader in coal-based synthesis and gas-to-liquids technologies.

The industry is the largest of its kind in Africa. It is extremely complex and widely diversified, with end products often being composed of a number of chemicals that have been combined in some way. The primary and secondary sectors are dominated by Sasol (through Sasol Chemical Industries and Sasol Polymers), AECI and Dow Sentrachem. These companies have recently diversified and expanded their interests into tertiary products, especially those with export potential. Below is the value chain analysis of the chemicals industry of South Africa:

Value Chain of Chemicals



(Source: Nedbank Strategy Report 2010)

2.3. Identifying the structural impediments hampering growth in the manufacturing industry

A synopsis of the literature revealed that the debate on the structure of the manufacturing sector and the impact it has on the growth and competitiveness of the industry has raged for many years. The structural impediments, including input costs, technology quality and trade policies were a recurring theme throughout the literature and represented an important aspect of the manufacturing industry. The quality of the business climate has a direct impact on production costs and profits, aggregate export volumes and productivity (Balchin and Edwards 2008). This proved that factors such as the exchange rate and trade policies cannot be ignored while looking at the industry's competitiveness.

2.3.1 Identifying the factors influencing the performance of the manufacturing industry

The South African manufacturing industry is capital-intensive and therefore changes in the production capacity are an important factor affecting employment, innovation and cost. In certain industries, it may be easy to expand or reduce production capacity in line with final demand but this is not likely to be the case in the manufacturing industry as a capital intensive sector (IDC 2009). In addition to this, results have indicated that success in international markets, measured by the share in world-wide manufacturing exports, higher domestic competition amongst domestic firms and research and development efforts, has had positive effects on innovative activities (Uchida and Cook 2005).

The research questions are presented below.

2.3.2 Research Question 1

How can the South African manufacturing industry gain competitive advantage and become an industry leader in one of the three dimensions namely, cost quality and technology?

2.4.3 Research Question 2

Given its current skill set, how can the South African manufacturing industry utilise labour efficiently?

2.4. Conclusion of the Literature Review

The literature review revealed a number of factors that inhibit growth in the South African manufacturing industry. The disappointing growth trajectory of the South African economy since 1994 is best understood as a consequence of the under-performance of the manufacturing industry. Had the manufacturing industry expanded rapidly, economic growth would have been higher (Rodrik 2006).

Trade and investment liberalisation have increased international competition, particularly in labour-intensive industries. The entry of China and India into global manufacturing exports on a large scale has heightened this competition and resulted in the commoditisation of less sophisticated exports, and a purely wage-based strategy is no longer viable for South Africa (Roberts 2006). The literature review revealed evident structural features that still prevail, the most notable being the skills gap (both in terms of numbers of people educated and trained and the quality of education and training provided) and the innovation gap that South Africa is facing. These factors need to be further understood in order to ascertain South Africa's standing in the value chain. Unless the quality and quantity of education are improved, the prospects for rebuilding the country's technological capacity and catching up with the OECD countries are bleak (Nordas 1995).

The manufacturing sector remains the engine for growth in the South African economy and the application of advanced manufacturing technologies is seen as a critical requirement for gaining competitive advantage in global markets (AMTS 2002). The other alternative is to actively promote processes of specialisation in order to encourage South African firms to move up the value chain (Joffe et al 1995). This strategy necessitates a focus on continuously enhancing productivity as well as product quality and variety (Joffe et al 1995)

CHAPTER 3: RESEARCH METHODOLOGY

The research methodology section addressed the methods used to conduct the research, it discussed at the literature on qualitative research approaches and reviewed the research design and research instrument used. In conclusion, the section addressed the issues of data collection and analysis, followed by a discussion on the validity and reliability of the study.

The research made use of a qualitative approach consisting of one-on-one in-depth interviews that incorporated both structured and open-ended questions. In-depth interviews were seen as the most effective means of collecting data on the perspectives and opinions, of organisations especially when sensitive information was being explored (Mack et al 2005). The reason for selecting a qualitative methodology approach was that Mack et al (2005) argue that this approach sought to understand the research problem from the perspectives of the organisations it chose, and a qualitative research is an investigation that:

- seeks answers to questions;
- systematically uses a predefined set of procedures to answer questions;
- collects evidence;
- produces findings that were not determined in advance; and
- produces findings that are applicable beyond the immediate boundaries of the study.

This was particularly pertinent to the study owing to the fact that there is a widely-shared set of perceptions among senior decision-makers in the manufacturing industry and senior government officials about why the South African manufacturing industry is not growing. The process of investigating the topic revealed new structural factors affecting the manufacturing industry while at the same time discarding irrelevant factors.

By extrapolation, the qualitative methodology was suitable owing to the subjective nature of the responses from the participants. The respondents were encouraged to discuss their perspectives freely. Qualitative methods are more flexible and allow for the greatest spontaneity between the researcher and the

study participants, as participants have the opportunity to respond more elaborately and in greater detail (Mack et al 2005).

3.1 Research Design

The research was in the form of one-on-one in-depth interviews. This format yielded the best results owing to the breath of the subject.

The benefit of this type of design was that respondents were allowed more freedom to discuss their thoughts and opinions on the topic at hand. This elicited honest discussions, as the respondents did not feel compelled to respond in a particular way. The qualitative method used open-ended questions and probing gave participants the opportunity to respond in their own words, rather than forcing them to choose from fixed responses.

The disadvantage that was experienced in this format was the influence the interviewer had on the respondents' responses, the subjectivity that influenced the interpretation of the responses, and the lack of availability of time experienced. In order for the study to yield the relevant information, the sample group needed to comprise senior decision-makers in the manufacturing industry, and senior government officials and senior trade unions officials formed part of the sample group. This entailed booking time in their schedules, which took a long time and was not always possible.

3.2 Population and sample

3.2.1 Population

The population group targeted by the research was senior managers operating in chosen sectors within the manufacturing industry, particularly the metals sector, chemicals sector and pharmaceutical sector, together with senior government officials and trade union officials. The research focused on the large corporates in the South African manufacturing industry. These included the various roles within

the industry (senior operations managers, senior production managers, managing directors, chief executive officers and financial managers).

3.2.2 Sample and sampling method

A sample was selected from senior managers in large manufacturing companies that are situated in the Gauteng region, owing to their involvement in the operational activities that take place in their firms and the industry as a whole. The Gauteng region has the largest concentration manufacturing companies in South Africa (Roberts 2006). The sample also included senior government officials who are involved in strategic decision-making and policy-making. The large manufacturing companies such as Sasol, AECL, Afrox, Omnia, and Arcelor Mittal control over 67 percent of the market.

After the research had identified the relevant respondents for the sample, the candidates were contacted telephonically and via email correspondence and the reasons for the study and the relevance of the respondents' participation were fully explained. The correspondence was also motivated by the argument that the intended purpose of the research was to add value to the manufacturing industry for both business and government. When the identified individuals were unable to make themselves available for the interview period, a suitable replacement was found.

Table 5, below shows a list of organisations that formed part of the sample in the research.

Table 5: List of organisations that participated in the research

Organisation	Sector	No. of Respondents
AECI	Chemicals	1
Omnia Group (Protea Chemicals)	Chemicals	1
Sasol Chemicals	Chemicals	1
Arcelor Mittal SA	Metals	3
Aveng Group (Trident Steel)	Metals	1
Columbus Stainless Steel	Metals	1
Copalcor	Metals	2
Highveld Steel and Vanadium Corporation	Metals	1
Reclamation Group	Metals	1
Adcock Ingram	Pharmaceutical	1
Aspen Pharmacare Holding	Pharmaceutical	1
Cipla Medpro	Pharmaceutical	1
First National Bank	Financial Services	1
Nedbank Economic Unit	Financial Services	1
Nedbank Capital	Financial Services	1
Industrial Development Corporation (IDC)	Government	1
The Department of Trade and Industry (DTI)	Government	1
Gauteng Economic Development Agency (GEDA)	Government	3
Cosatu (Naledi)	Labour	1

3.4 The research instrument

The research instrument was a semi-structured interview schedule with open-ended questions. These questions were posed in a face-to-face setting as opposed to telephone interviews, although one respondent opted to have a telephonic interview due to distance. Fourteen questions were developed for business, and the same questions were posed to all the business respondents and economists. Government and trade union members had a separate questionnaire with seven and eight questions respectively and there was also a common set of questions for all the respondents.

These questions were designed to gain an in-depth insight into the manufacturing industry. They were also designed to be as unequivocal as possible in order to ensure the clearest responses.

3.5 Procedure for data collection

The questionnaire was not hand delivered in advance but instead, the questions were posed to the respondents by the interviewer at the respondent's venue of choice. The respondents were requested to answer the questions as objectively as possible. The duration of the interview process varied from between 45mins to two and a half hours.

3.6 Data analysis and interpretation

The content analysis method was used to analyse the data collected as the data was in the form of an in-depth qualitative approach, with open-ended questions. Content analysis is a technique that enables the analysis of open-ended data to be structured for purposes of diagnosis (Harwood and Garry 2003). Open-ended questions have the ability to evoke responses that are rich and explanatory in nature, anticipated by the researcher and culturally salient to the respondent (Mack et al 2005).

After the researcher received the questions, the responses to the open-ended questions were content analysed. Responses were classified into categories consistent with the research questions and were matched against the structure and theme derived from the literature review. Once the responses had been categorised according to the structure, qualitative measures were used to interpret the results.

3.7 Limitations of the study

Due to the difficulty that was experienced in finding respondents in a random manner and the fact that participants were selected based on their willingness to participate, the study could be viewed as being biased with regard to the calibre of participants and their willingness to participate freely.

3.8 Validity and reliability

Golafshani (2003) asserts that reliability is a concept used for testing or evaluating quantitative research. The author goes on to say that if one sees the idea of testing as a way of information elicitation, then the most important test in qualitative research is the quality (Golafshani 2003). Reliability involves the “accuracy and precision of a measurement procedure” (Cooper and Schindler 2008).

Golafshani (2003) states that the term validity a wide range of terms in qualitative research. He adds that the concept is not single, fixed or universal, but rather a contingent construct, inescapably grounded in the processes and intentions of particular research methodologies (Golafshani 2003). Validity can be described as the “extent to which the test measures what we actually wish to measure” (Cooper and Schindler 1998).

3.8.1 External validity

Cooper and Schindler (1998) describe external validity as the ability of the research to be generalised across persons, settings and times. External validity was achieved by directing the interview questions to participants who are actively and directly involved in the decision-making processes of business, government and trade unions. Fortunately, such individuals were found in senior management and executive positions.

3.8.2 Internal validity

Cooper and Schindler (1998) describe internal validity as the ability of the research instrument to measure what it purports to measure. Internal validity aims to ensure that the data collection process is uniform throughout the research. The uniformity was achieved by asking the participants the same questions and ensuring that the questions were asked in the same sequence.

3.8.3 Reliability

Golafshani (2003) defines reliability as the extent to which results are consistent over time and an accurate representation of the total population under study. If the results of the study can be reproduced by employing a similar methodology, then the research instrument is considered to be reliable. This resulted in the data collection process yielding the same results from various respondents in the research process. This methodology was guaranteed by using the same questions for all respondents and addressing them in a similar sequence.

Reliability was guaranteed through the use of accurate and standardised research instruments.

CHAPTER 4: PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter is a presentation and an analysis of the data collected from the face-to-face and telephonic interviews that were undertaken with twenty four respondents. The respondents hold a strategic or decision making positions in business (fifteen), government (five), labour (one) and to gain further insight three economists formed part of the sample. The findings reported are in response to the thirty questions set out and summarised in Section 4.3, Section 4.4 and Section 4.5. The research findings are qualitative in nature and therefore no actual values can be deduced from them. There are however, likely trends that can be inferred or observed from the data.

4.2 Profile of respondents

Respondents were selected from the two main sectors of the South African manufacturing industry, namely the chemicals sector, including the pharmaceutical sector, and the basic metals sector (iron and steel) due to its size and contribution to the South African manufacturing industry. The report of Statistics South Africa's (2008) on the manufacturing industry has calculated that the chemical products, followed by the basic metals and metals products, represents the largest contribution to total revenue in the manufacturing industry, contributing 50 percent (R735 238 million) of total income and employing 36 percent (480 000 people) of the total industry's labour force, and these sectors also export 52 percent of their total production.

The research has established that the South African manufacturing sector is concentrated in the upstream industries. Given the high concentration levels in the industry, the major players are large corporates who have some sort of market dominance and control over 67 percent of the chemical sector. The same applies in the metals sector, with five main players who dominate the industry. It

was therefore useful to interview respondents from organisations that have a sizeable share in the chemicals and metals sector to make a meaningful and valuable contribution to the research.

The demographic characteristics of respondents included a range from CEOs and Board Representatives of listed companies to Business Development Managers and well known Business Economists, together with senior government officials and a senior trade union representative.

4.3 The Business Sector and Economists

4.3.1 Competitiveness of the manufacturing sector

Sixty-seven percent of the respondents specific to the pharmaceutical sector claimed that they compete on skills, for an example, one participant stated that “We pride ourselves in a skilled labour force and we are able to ensure that output and productivity are kept at optimal levels.” The skilled labour force ensures that the quality of goods produced and service remains at optimal levels. It is Interesting to note that pharmaceutical companies view their skilled labour force as a competitive advantage. According to a report by van Zyl (2008), the South African pharmaceutical industry is struggling to get sufficiently well qualified pharmacists with a strong background in chemistry, and because of the shortage in skills, all the work is currently being concentrated on the manufacturing of ARV's. The report adds that there is no investment in R&D in the pharmaceutical industry, and there are plenty of new ideas for development and no staff to spare. This could be attributed to the focus on the production of ARV's as opposed to new medicines.

Eight companies agreed that quality is their competitive advantage. To prove this statement one company stated that “Our goods are regulated by institutions such as the FCC (fine chemicals corporation) and GMP (good manufacturing practice). We have to be compliant with the regulatory bodies that enforce certain quality standards and should we not comply, we run the risk of being closed down.” They went on to say that quality in South African products is not inferior, but it is not regarded as being the best in the world mainly because of the lack of investment in technology.

Contrary to the evidence given by van Zyl (2008), the participants felt that South Africa has through the years showed itself to the world to be an innovative country, with South Africa being regarded as one of the global leaders in certain industries such as the pharmaceutical and chemicals. One participant stated that “South Africa is traditionally strong on innovation, and quality is not an issue for the South African manufacturing industry as it complies with international standards. Proof of this is the number of internationally recognised companies

and the growing export business across sectors.” Interestingly, respondents saw quality as a function of technology and one company added that “quality would improve if the technology improved”, and yet the research shows that 73 percent of respondents have not upgraded their technology and currently utilise old machinery.

Six companies acknowledged that they dominate their particular industry’s, there are no more than 10 large metals and chemicals manufacturing companies in South Africa that control and dominate the industry. This market dominance does not deter them from ensuring competitive pricing of their products. It is interesting to note that, according to Lundall et al (2008), the high levels of exports of basic metals was partly as a result of poor growth in the downstream beneficiation industries that was brought about by the pricing policies of the upstream producers. The respondents went on to say that customers would be importing on a far larger scale if the pricing was viewed as being uncompetitive, but according to Lundall et al, the pricing is uncompetitive and has had a negative impact on the downstream industry.

Only two companies listed technology as their competitive advantage. The one company mentioned that “We create value for our customers’ by responding innovatively to the customers evolving needs with differentiated products and services.”

4.3.2 The growth barriers in manufacturing

From the responses it appears that the majority of companies view the unavailability of resources as a growth barrier. Sixty seven percent of respondents viewed the cost of capital as a major concern. One respondent stated that “The cost of borrowing in South Africa remains very expensive even when organisations approach institutions such as the DBSA and IDC, and in some cases, the development banks are less favourable than the commercial banks. Many of our competitors have shut down because of the lack of CAPEX investments.” Investment in CAPEX is required to improve the competitiveness of the industry.

All the participants commented on the unproductive labour force (relative to output), union dominance and lack of a strong work ethic in the industry, and viewed these as a major growth barrier. Respondents were in agreement that the labour costs in their respective companies and in the industry as a whole were too high and did not match productivity levels. They went on to say that the only way to counter high input costs (labour costs) would be to increase productivity but the productivity levels remained low because of the stringent labour laws. One company stated that “South Africa is operating at the bottom half of the world’s cost curve, and the country is not price competitive.” One participant gave an example of a survey that was conducted and compared the relative cost of producing a car in South Africa, Brazil, India, and the EU. South Africa **would** have been the cheapest had it not been for the labour cost. The participant went on to say that “The volumes and economies of scale are able to see other developing economies producing at a lower unit cost per product than in South Africa.” The industry needs to curb labour costs by increasing productivity.

The inefficient supply chain was seen as a growth barrier. Sixty percent of respondents commented on the infrastructure. They viewed ease of access for both imports and exports and the “production infrastructure” (electricity supply) as key components to producing and delivering a “quality product pipeline”. Investment in the rail network is essential as the road infrastructure cannot

sustain the increasing demand for both imports and exports. An efficient supply chain is required to become more cost competitive.

Nine out of the twelve companies interviewed agreed that technology in the South African manufacturing industry has not evolved and this has compounded on South Africa's competitiveness. These organisations have not achieved any technological improvements over the past few years. The respondents added that technology is very important as it influences the cost structure and South Africa has outdated technology that makes it less efficient. One respondent went on to give an example of the textile industry and stated that "The textile industry uses outdated technology and that is why it is practically non-existent." Respondents felt that technology will continue being a key ingredient for growth in the industry. One company added that "The South African manufacturing industry operates at the bottom of the value chain. The country produces basic goods and semi-finished goods (upstream industry) for the export market and these goods are beneficiated abroad. The beneficiation is achieved abroad instead of in South Africa and imported back to the country as value-added activities. This is a consequence of no real technological improvements and a lack of skill." To be able to be more competitive, respondents felt that the industry needed to invest in technology.

One respondent added that the currency strength is impacting on export manufacturing and stated that "Even though the rand depreciated during the recession it did not go to the desirable levels of R8.50/USD." The industry is looking at exports for growth and the strong currency is resulting in an uncompetitive export market.

4.3.3 The current skill set and contribution of labour in the industry

Sixty percent of respondents felt that South Africa cannot compete with its current skill set. The main reason given for this was the lack of quality education, the lack of a strong work ethic, stringent labour laws and the lack of investment in technology. The lack of quality education remains a major challenge not only in the manufacturing industry but across also sectors of the economy. Respondents said that the economy has a large contingent of “unemployable” individuals due to the lack of basic skills such as reading and writing. Strike actions and the union dominance were also noted as a concern, as these put more pressure on productivity and made it less favourable to invest in labour. One respondent stated that “Machines can do more work for less.”

One company emphasised: “The skills shortage in South Africa is one of the most glaring weaknesses of in the manufacturing sector. The labour force does not have the right skill set to adapt to technology changes”. Seventy-three percent of respondents agreed to the fact that labour needed to be replaced by technology. Lundall et. al (2008) find evidence that suggests that employment in the basic iron, steel and non-ferrous metals sector has declined and 25 749 jobs have been lost between the period 1996 and 2005. This constitutes a 33 percent decline. The respondents conceded that the use of automation creates a more cost effective product, which can lead to greater market share, and therefore greater returns.

Only three companies felt that South Africa could compete with its current skill set. A respondent stated that “It is misleading to say that the country does not have sufficient skills. Sectors such as the textile industry do not require years of training and perhaps the country should be looking at rebuilding such sectors.”

In summary, the majority of the companies interviewed do not see opportunities or even encourage labour intensive growth; there is a mismatch between the skills South Africa has and what the industry needs. The country needs engineers who are able to build the components sector as opposed to having the components imported. The country also needs technology and investments. It

became very clear that companies do not want labour intensive growth but they do want technology-driven growth.

4.3.4 Actions required for future growth

What was evident from the research was that all the companies interviewed were optimistic about the future of manufacturing in South Africa. The respondents felt that the government had developed good industrial policies but that implementation remained a challenge. One respondent stated that “The new IPAP2 has strict deadlines in place and if they are implemented, the industry will be moving in the right direction.” Respondents agreed that government should start by providing cheap credit through institutions such as the IDC and DBSA and by using taxation strategies to protect local manufacturers against unfair competition from abroad. One company gave an example by saying that “On the export side, other countries get government subsidies and neighbouring countries like Mozambique have duties on imports of up to 65 percent to protect their local manufacturing industry.” Government needs to even out the playing fields and find ways to offer local manufacturers some sort of assistance.

The participants added that the domestic market is not sufficiently large to find any real growth and that companies see opportunities in the export market. Companies are looking at opportunities within Africa because the East is still dominating in terms of imports across the continent. A greater commitment to exporting is important if the manufacturing sector is to become a more significant contributor to GDP. One respondent noted the structure of Malaysia as a practical example by saying that “Malaysia has a very small population but they are able to produce in large quantities for the export market. South Africa needs to ease up its labour laws but this could be difficult considering the strong union influence.” Government must make the environment in which business operates conducive to doing so and achieve a higher economic and political integration of SADC and their trade in a mini EU/AU. The participants added that more friendly trade regimes with AU and SADC are required, and the local manufacturers should be supplying to those countries with ease, and government should be trying to encourage that.

Respondents felt that moving up the value chain to produce value-added products would improve growth. The upstream industry, where the South African manufacturing industry dominates does not offer any labour intensive growth. They viewed the downstream industries as the future of manufacturing in South Africa. More jobs could come out of the downstream industries and not so much in the current structure. One respondent added that “The industry needs to invest in world-class technology, and guarantee the supply of critical raw materials to downstream industries and other industries such as mining and agriculture. Talk of nationalisation would have a detrimental effect on mining and agriculture and the raw materials required by the manufacturing industry.”

The companies interviewed also felt that creating a niche market for their product line driven by the customer’s specific requirements would give the country a competitive advantage as opposed to trying to catch up to the well established countries such as Brazil and China. Joffe et al (2005) states that actively promoting processes of specialisation in order to encourage South African firms to move up the value chain can build the industry and improve productivity as well as product quality.

Relaxing the stringent labour laws would go a long way towards creating employment. The current legislation dealing with labour is not helping the industry. Respondents viewed these laws as rigid and to add to this, the unit cost of production per employee in South Africa was very high. Respondents felt that unit cost per employee was higher in South Africa than in countries like Germany due to lower productivity levels. Some respondents felt that raising productivity would require a social contract between labour, government and business.

All 12 companies felt that CAPEX, supported by a skilled labour force is required for growing the industry. The regulatory environment of doing business also needs to be flexible. According to Rodrik (1995) the modern sector relies on specialised inputs such as labour skills, technology, capital goods and intermediate inputs.

The research confirms that multinationals operating in South Africa operate in the upstream industries and at the bottom of the value chain. Technology will

improve the positioning along the value chain and will increase employment in the downstream industries, as production will increase and hence more people will be required to fabricate the goods. All the respondents agree that technology is a key component for growth and that high technology goods are very good for profit margins. An example given for what technology can do for growth was the comparison of South Korea and Ghana in 1960. The GDP of Ghana was higher than that of South Korea, and yet today South Korea is far more productive due to technological improvements and a skilled labour force. Technology-driven growth will indirectly increase labour because the more a company produces, the more it requires labour and a sales force to go out and sell the products.

4.3.5 The product mix and value chain analysis

Eight companies felt that they had a diverse product mix and were conscious of the right product mix, due to the highly prevalent and every changing global society. These respondents maximise utilisation, one respondent stated that “We sweat our assets.” Some of these respondents follow the Brazilian model which promotes an end-to-end manufacturing and value chain presence.

Four companies viewed their product mix as being inappropriate. They do not have the financial means to expand to other product lines. They see the IDC playing an important role in getting them to diversify into niche markets that have higher returns.

Eighty percent of the respondents acknowledged that they were currently operating at the bottom of the value chain, with plans to move up the value chain. One respondent added that the industry is currently operating in the low margin sectors and there are not many advantages there, the only advantages would be to increase productivity and improve economies of scale. According to a study by Aghion et al (2008), profit margin in the South African industries remains significantly higher than in corresponding industries worldwide. It is interesting to note that respondents felt that they are priced competitively. The authors added that a reduction in mark-ups should have a large positive effect on productivity growth (Aghion et al 2008)

Only two companies are well positioned and control the entire value chain system. The structure of these companies is perfectly balanced with the end to end process.

4.4 Government Sector

4.4.1 The main objective for the manufacturing industry

The IDC would like to see the promotion of Greenfield investments. This must happen by encouraging the construction and development of new manufacturing companies in the SMEs sector that will help create jobs and grow the manufacturing industry. They felt that government could no longer rely on the existing organisations alone. New players need to come into the market. The manufacturing industry remains one of governments “growth path” strategies.

GEDA wants to attract investment into the manufacturing industry and not only encourage FDI's but most importantly, encourage investors to come into the province and set up factories and produce value-added goods with long term objectives. The GEDA participant stated that “Manufacturing in South Africa is concentrated in the Gauteng region and therefore GEDA's objective is to attract investment into Gauteng.”

The DTI sees the IDC playing a crucial role in the development of the South African manufacturing industry. The DTI's view is that institutions such as the IDC should have structures in place to fund the SME sector but currently this is not happening. The DTI claimed that the IDC should play a catalytic role by financing companies that cannot obtain funding through the commercial banks at preferential interest rates. However, respondents from the IDC were quick to point out that what is currently inhibiting smooth access to finance is that the IDC is under-resourced. The IDC's balance sheet is not funded by the government (National Treasury or the DTI). They are self funded and as such, have to compete with commercial banks for clients. The IDC respondent gave an example by stating that “In countries such as Brazil, the government is injecting large sums of money into equivalent institutions and therefore their manufacturing companies can expand and innovate as access to finance is readily available. This is not the case in South Africa. We as the IDC do not get cash injections from the government.”

4.4.2 The industry's growth barriers relative to other economies

The IDC was indifferent about whether the South African manufacturing industry is catching up or falling behind other developing economies. They felt that economies go through stages and that China is at an advanced stage in their cycle, and cultural aspects and other forms of assistance have resulted in their current successes. The respondent gave an example by stating that “The manufacturing giants in the Asia are where they are because of some sort of government intervention, whether it be through protectionism or funding”. The IDC felt that South Africa was unique, and could not follow the same model as it is a democratic state operating under the auspices of a free market.

GEDA is of the opinion that the South African manufacturing industry is falling behind other developing countries due to the low productivity rate per employee. The low productivity levels have been caused by the skills deficiency in the country exacerbated by the continuous labour unrests (strike actions). The respondents stated that having an unskilled labour force has made it difficult to compete in terms of technology, as other developing economies such as China and South Korea are able to compete because of technological advancements, and technology requires a skilled labour force.

The DTI, IDC and GEDA all agreed and raised the issue of skills as the greatest impediment to growth in the South African manufacturing industry. According to the DTI (2005), only 36 percent of the labour force in the secondary economy is skilled labour; the remainder, namely 64 percent is semi and unskilled labour. Respondents from the DTI added that the current skill-set is not transferable and the skills cannot be diversified into other sectors of the economy.

GEDA identified the lack of an efficient infrastructure (rail network system) as a real impediment, reducing the possibility of the manufacturing industry having a cost advantage. The logistical delays and bottlenecks on the roads affect the entire supply chain of the industry from distribution of raw material to finished goods shipment. In addition, the South African ports have their own challenges, the transportation of goods abroad comes with many inefficiencies as goods are not exported directly to the respective destination. Goods destined for Brazil as

an example are shipped via Europe. Geographically, the country is not well positioned, South Africa is situated at the bottom of the African continent, yet its major trading partners, namely, Asia, Europe and the United States are situated thousands of kilometres away; the time delay runs right through the supply chain from raw material to the final destination.

All the respondents felt that the lack of technological improvements and scarcity of a skilled labour force had dampened the industry. Skilled labour was a major concern amongst respondents. Respondents once again concurred that China is competitive because of an advanced technology base and a skilled labour force. It is interesting to note that, capital financed by the public sector such as public investment in R&D has a positive impact on the cost and productivity of industries (Nadiri and Mamuneas 1994).

Access to cheap finance was viewed by all respondents as another factor that impeded growth. What was of interest was that a IDC respondent involved in financing business, viewed access to finance and energy shortages as being the two major impediments.

The regulatory environment and the bureaucracy within government and slow decision-making were seen by all respondents as another major impediment. A respondent from GEDA made a comparison with Ireland, where it takes two days for government to decide whether or not an investor can come in (set up a factory), whereas in South Africa, the process could go on for up to five years.

4.4.3 Actions required for future growth

The IDC is of the opinion that the tertiary sector (financial services industry) will continue to drive the South African economy. The respondents added that the manufacturing industry has potential to grow if one looks at the development that is needed in the continent alone. The respondent stated that “The manufacturing industry can improve but that is not to say it will surpass the tertiary sector.”

The success of Motor Industry Production Plan (MIPD) needs to be transferred to other sectors of the manufacturing industry. Respondents from GEDA felt that South Africa is a reactive country, especially when analysing the manufacturing

industry: there is no skills transfer or technical training to equip workers with the technological changes. The textiles sector is dead only because the technological changes that were supposed to take place and never did. South Africa needs to invest in skills and technology.

GEDA believes that the future looks good, “South Africa is regarded as the gateway to the rest of Africa. There are many international companies that invest in South Africa with the hope of penetrating to the rest of Africa. The location though is a challenge as South Africa is further away from its trading partners. The respondents gave the example of the EU: neighbouring countries such as Italy and France, can trade easily and also, the EU and China are relatively closer. The distance of South Africa from its trading partners adds to the uncompetitive input costs of the produced goods.

The DTI and IDC felt that the country was geared to compete in the technology space. The industry is currently utilising old technology that is heavy on energy and not so efficient. The respondents mentioned that countries like China and South Korea invested in technology when they could afford it and this was a long-term strategy that would support growth in the long run. Respondents felt that South Africa needs to invest in the right technology to become more productive. The DTI stated that the industry should look at advantages in Green Technology (energy efficient technology promoted by the Department of Science and Technology).

The DTI felt that quality was a function of technology and was a space where the manufacturing industry could gain competitive advantage. The respondent gave the example of the Mercedes C-Class that is assembled in East London “The Mercedes C-Class has won various quality awards and currently holds the US Platinum Award, for the best quality car in the world.” Again, South African goods are very competitive when it comes to quality.

GEDA sees intra-Africa trade as creating many opportunities, and South Africa has a competitive advantage in terms of distance and proximity. Currently a great number of manufactured goods are imported to Africa from Asia, preferential trade agreements could assist in boosting the manufacturing

industry. One respondent from GEDA stated that “SADC and the AU have a huge role to play in terms of promoting trade agreements between African countries, and as it stands, South African labour is better skilled than its African counterparts.”

4.4 Labour

4.5.1 The current structure

The respondents view the manufacturing industry as being highly concentrated. Fewer workers are required by the market due to technological improvements. The respondents added that this was evident in the automotive sector that had reduced its staff complement by over 20 percent (no supportive evidence found) in the ten years. This goes against the MIPD that government has set out to create more jobs. Furthermore, as stated by van Ark et al (2009) in 2.2.1 above, in low productivity sectors, high wages mean that production may become too costly and jeopardise the long-term profitability of business. In high productivity sectors, however, high wages are often compensated for by higher output levels per person and can be fully compatible with long-term profitability (van Ark et al 2009).

The respondents added that the critical aspects of a motor vehicle such as the computer box were not being manufactured in South Africa. The manufactured components are imported from countries such as Germany, China and Japan. The downstream industry has many employment opportunities. The respondent added that “The components industry is one area where SMEs could be created and it does not require much capital to set up a company that manufactures lights or seat belts for an automobile.”

Labour felt that there are many monopolistic tendencies in the industry, and they went on to give the examples of Nissan South Africa and Bosch South Africa where “One still finds that manufacturing companies like Bosch have links with Nissan to manufacture certain components and it is clear that Bosch will import half of those components anyway.” The respondents viewed this phenomenon as not supportive of SMEs and that it does not empower the workers.

The respondents felt that the current skill set is not satisfactory. Although the automotive sector has one of the highest supplies of skills and one of the better resourced sectors in terms of skills, there is not enough investment in skills in the manufacturing industry, and there is general skills deficiency in all the sectors.

There is no coherent strategy, and labour felt that it is the responsibility of government, business and labour to find a coherent skills strategy.

Respondents felt that in the late 1990s there were many job losses in the manufacturing sector and now with the global financial crisis the trend has continued. The respondents cited the example of the BMW plant. This plant utilises sophisticated machinery which results in employees not necessarily losing their jobs but working for fewer hours; therefore technological advancement in the current sectors is bad for labour.

The participants viewed South Africa as a capitalist economy. The nature of capital markets is that, above all else, the company has to make as much profit as possible with no social consideration to improve the skills of the labour force adequately. The participant stated that “South Africa needs diversified and transferable skills between sectors and industries”.

4.5.2 Actions required for future growth

The labour felt that there should be a focus on the downstream industry. They added that a downstream diversification will create ownership for SMEs and help the industry by producing more value-adding products priced at a better value for the economy. The respondents went on to say that Toyota controls the entire value chain of the automobiles sector in South Africa and gave an example by stating that “Toyota sells its fleet to Imperial Holdings who then distributes to dealerships who sell the cars at a set retail price (predetermined price). The market dominance and control needs to be broken by allowing other players to enter the market.”

The participants reiterated that the country had not moved in terms of creating skills at the lower level sectors, and respondents felt that this needed to change. The skills gap remains the biggest obstacle to growth and the future would look promising if the skills that came with it were adequate.

4.6 Summary of the results

The research suggests that the South African manufacturing industry can compete on quality and technology. This can be achieved by improving investment into the industry. The industry needs to use the current strength of the rand to its advantage by investing in technology that can be imported at favourable rates. The research suggests that quality is a function of technology, and respondents agree that the quality standards in the industry are not necessarily inferior, to ensure further improvements in quality, artisan skills and new technology is required by the industry.

Skill in the industry remains a challenge and the research clearly suggests that the quality of the skill-set and lack of a strong work ethic is slowing productivity. Companies are opting to replace labour with machinery in order to boost productivity and limit the regulatory burden around hiring and firing. What 'globalisation' and the increase in exports have highlighted is the relatively low levels of productivity and lack of a strong work ethic. However, the industry can focus on certain segments of the industry that require a moderate skill base in the downstream sector. The research suggests that there is value in creating a niche market of products that is driven by the customer's specific requirements and to diversifying into niche markets that have higher returns. The current SETA programmes can be utilised effectively to boost the skill base and equip the labour force with the appropriate skill set to cope with the diversified product range.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

The purpose of this chapter is to highlight the main findings of the research and to draw the final conclusions. The main findings will include data gathered from all the respondents that included respondents from government, labour, economists and business.

The study suggests that the South African manufacturing industry is declining relative to its contributions to GDP, and falling behind other emerging economies. The reasons why the South African manufacturing industry has not been growing are manifold, and range from the cost structure, lack of investment, the skills gap, and the regulatory burden.

The research also highlights the need for a coherent strategy that involves business, government and labour in helping to rebuild the local manufacturing industry.

5.2 Conclusions of the study

In the late 1960s, after half a century of rapid industrialisation South Africa had a relatively advanced and diversified manufacturing sector. According to Bell and Madula (2001) the reason for the growth in manufacturing was the abrupt collapse of the investment in gold in the early 1900s, the gold until then had absorbed all the technical expertise available in South Africa. After World War I South Africa industrialised largely through a process of import substitution. Given the relatively large internal market created by gold, the local manufacturers took advantage of the opportunities for profitable import substitution, and manufacturing exports became an increasingly large proportion of South Africa's total exports, rising from 8.2 percent in 1917 to 31.4 percent in 1972 (Bell and Madula 2001). The composition of the manufacturing goods was natural resource-based products such as chemicals, iron, metals, pulp and paper.

The success of the manufacturing industry was short-lived, and in the mid 1970s the commodity price boom resulted in the appreciation of the rand. According to Bell and Madula (2001), the rand's strength had a negative impact on the local manufacturing industry. There were huge changes in the relative prices which affected the competitiveness of manufacturing exports and the competitiveness of the downstream manufacturing sectors. And as a result, there was a change in the allocation of investments from manufacturing to the primary sectors of the economy. Since 1994, the South African manufacturing industry has undergone a dramatic restructuring by relaxing trade policies and certain macro-economic policies to try to improve its economic and social standing.

According to Porter (1998), there is no such a thing as a competitive nation and there are only nations that are competitive at certain industries. This implies that time and effort should be spent only on the competitive segments of the economy. The study suggests that quality can be the industry's competitive differentiator. South Africa complies with certain quality standards for most of its manufactured goods, especially in the chemical and pharmaceutical products. The quality standards set by the regulatory bodies are enforced to meet the minimum customer and international requirements. The research shows that the pharmaceutical products have to be compliant with the 'good manufacturing practice (GMP)' amongst other regulatory bodies. The GMP standards imply that quality cannot be tested after a product has been manufactured but must be built into the processing stages of that product. The quality standards and customisation has helped the local manufacturing industry in its competitive positioning. The research suggests that the quality standards from the manufacturing industry are improving and the local companies are developing a culture of quality.

Technology can be another competitive differentiator. In an increasingly globalising and knowledge-based economy, technological capacity is seen as an important influence on a country's international competitiveness (Kumar and Aggarwal 2005). The challenge facing South Africa is that of climbing the international ladder to more high tech, skills-intensive and value-added manufacturing activities. Technological advances are critical in achieving the

greater product variety that the South African manufacturing industry needs. The study shows that companies are not motivated to enhance their own capacities for technological innovation due to factors such as the skills shortage and cost of capital. Technology can be improved by improving investments into the industry. The South African government, like that of South Korea, should offer incentives to organisations that wish to build technological capacity and improve investments in research and development.

Local manufacturing companies in the upstream industry are becoming more automated to counter the impact of the rising labour costs. Companies are opting to replace labour with machinery in order to boost productivity and limit the regulatory burden around hiring and firing. The study has revealed that the industry can focus on certain segments of the industry that require a moderate skill base. Labour can be utilised efficiently by improving investments into the downstream labour-intensive industry. The lack of linkages between the capital-intensive upstream sectors and the more labour-intensive downstream processing sectors has hampered the competitiveness of the industry. This is highlighted by the fact that a very small proportion of chemicals and metals are beneficiated in the local downstream industries. According to a study conducted by the DTI (2005), the downstream industries involve the most employment creation opportunities and value-added activities (higher profit margins). The industry is far from reaching maturity as there is still room for growth and new entrants. Research shows that there are 80 000 types of basic or pure chemical products currently manufactured worldwide on a commercial basis. South Africa manufactures approximately 600 chemical products. South Africa is a net importer of manufacturing goods (downstream products) and this will not change if the current structure does not change.

Skill in the industry remains a challenge and the research suggests that the quality of the skill-set and lack of a strong work ethic is slowing productivity. The South African labour force is nowhere near as committed as their Chinese and other Asian counterparts, and a skilled and dedicated workforce can play an important role in making the country more competitive in the global economy. What 'globalisation' and the increase in exports have highlighted is the relatively

low levels of productivity and lack of a strong work ethic. Investing in human resources has short-term costs such as training and development but, in the long-term, investment in labour and technology is important in achieving the productivity enhancement that the manufacturing industry needs.

The current SETA programmes can be utilised effectively to boost the skill base and equip the labour force with the appropriate skill set to cope with the diversified product range. The Manufacturing, Engineering and Related Service Education and Training Authority (merSETA) is one of 23 SETAs established in 1998. It facilitates skills development for the manufacturing and engineering industry and has been able to give 151 bursaries to students and since 1998, 3825 students have graduated from the merSETA programme (www.merseta.org.za). There are projects underway to fill the skills gap such as the Shutdown Network Forum (SNF) as well as Sasol's Project Talent Grow. The South African manufacturing industry needs to put further investments into the industry and increase the levels of artisan skills. Education is required to improve the skill-set and make the industry efficient and competitive. A commitment from government and business is necessary. According to a report by van Zyl (2008), JIPSA has set a target to train 50 000 artisans for the chemical sector alone. The pursuit of a coherent industrial strategy depends on socio-political conditions and governments need to play an active part in helping the industry to adapt to changes (McKay and Grant 1983).

5.2.1 Recommendations

The research and literature have revealed that an attempt by South Africa to compete with China on cost or scale is bound to fail and its best hope is to move higher up the value chain by promoting the downstream industries that have the opportunity to employ more people and create higher margins. Capital investment will play a crucial role in that ascent. The South African manufacturing companies need to invest in productive capacity and capital investment, while further investments in research and development need to be improved.

In 2004, unskilled and semi-skilled labour accounted for 63 percent of total employment in metals products (Lundall et al 2008). There is a considerable job creation potential which is important, given South Africa's large reserve of unskilled labour. According to Lundall et. al. (2008) the downstream metals industries employ a large proportion of unskilled and semi-skilled labour.

South Africa is currently operating in heavy–manufacturing upstream industries and the industry should rely on manufacturing that is not technology-intensive to the point where it is inherently labour-saving. In a developing country such as South Africa, the recommendation would be for business not to replace labour with technology, but to equip the labour force with the technological skill-set because in the long run, a wide unemployment in society hampers the entire economy as fewer people are contributing to the taxes of that that country. Business has a social responsibility to look beyond the short-term profit gains and assist the economy by finding innovative ways of utilising labour and technology simultaneously.

Government has an important role to play by investing in the education system and in promoting research and development. According to a study by McKinsey (2010), the South Korean government has announced decisions to expand tax deductions for companies which invest in research and development. Kumar and Aggarwal (2005) concede that technology has received important attention in economic policy making in most industrialised and newly industrialising economies such as India. The South African government should implement a similar strategy for the local manufacturing industry. Chandra and Shukla (1999) argue that operations of the world-class manufactures such as Japan are driven by innovation. In trying to compete against these firms factors such as cost are rarely important. Since their competitive strategy emphasises product differentiation, their cost advantage is obtained not from cheap factor costs but high productivity and innovation.

There was no strong evidence suggesting that the South African manufacturing industry would surpass the financial services sector and become the largest contributor to GDP, nor did it foresee the industry contributing between 40 and 50 percent of GDP as in the case of China and Brazil. South Africa has a great deal

of potential to grow its local manufacturing industry, but has been lagging behind for far too long to catch up to other success stories such as South Korea, China, Brazil, India and Malaysia. The answer is not to catch up but to utilise the current capacity to optimal levels and to move into spheres of the industry that have been neglected (downstream industries). The country's growth strategy should be directed at expanding into Africa and dominating the African continent, but in relative terms, the country cannot compete with BRIC or South Korea.

Just to add to this, Kumar (1995) has suggested that the success of the Indian manufacturing industry came from savings of the upper middle class in the 1980s. These savings created favourable conditions for industrial investments on the one hand and a consumerist boom in domestic industrial products on the other. To grow an economy needs savings to fund the balance sheet. Boosting savings in the South African household will assist in starting up small businesses and create an industry that is supportive of small business and not just big business.

5.3 Suggestions for further research

Important issues worthy of research were revealed during the present study.

- 1 During the interviews and in the literature review, it became clear that there were concerns regarding the inefficient process of transporting goods from the factory to the harbour.
- 2 The South African manufacturing industry exports a large percentage of its manufactured goods. Firms that export have a higher average wage cost and produce more output per worker (Rankin 2001). It would probably be of value to analyse the exchange rate and the impact it has on the manufacturing industry.

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APPENDIX A

Appendix 1

Pinky Sishuba

WITS BUSINESS SCHOOL

CELL: +27 (0) 82 462 5163

EMAIL: pinkys@nedbank.co.za

Dear Sir/Madam,

SURVEY STRUCTURAL IMPEDIMENTS HAMPERING GROWTH IN THE SOUTH AFRICAN MANUFACTURING INDUSTRY

I am completing my MBA at the University of the Witwatersrand, Johannesburg (Wits Business School). As part of my degree I am writing a research report on the structural impediments hampering growth in the manufacturing sector. To help me to gather data on this subject, I would be grateful if I could arrange an hour interview with you to understand your organisations views on the main factors impeding growth in the manufacturing industry and your views on whether the South African manufacturing industry is growing.

I understand that you are extremely busy but your assistance and contribution to my research would be greatly appreciated. The interview will primarily focus on your experience and understanding of the industry and sectors you are involved with and understanding your views on the primary factors required for growth. Confidentiality will be observed throughout the research process, and the final report will be for academic purposes only.

I am available to meet you at a location and time of your convenience.

Yours Sincerely

Pinky Sishuba

Appendix 2

STRUCTURED INTERVIEW QUESTIONS

STRUCTURAL IMPEDIMENTS HAMPERING GROWTH IN THE SOUTH AFRICAN MANUFACTURING SECTOR

BUSINESS:

1	How does your business compete?
2	What do you feel are the most important factors promoting growth within the manufacturing industry?
3	What is the relative importance of cost, quality and technology in the industry?
4	What do you view as the growth barriers in your organisation and perhaps the industry as a whole?
5	Is your organisation catching up with or falling behind other developing economies and why do you believe this?
6	Do technological improvements in your organisation raise or lower, 1. Employment, and how? 2. Growth, and how?
7	Manufacturing across the globe remains relatively labour intensive. How can the South African manufacturing industry compete with its current skill set?
8	Over the past two decades, which factors have lead to the decline in the manufacturing sector's contribution to GDP?
9	What opportunities are available in your organisation that encourage value-add and labour intensive growth?

10	What does the future hold for the manufacturing industry in South Africa?
11	What role do you see government playing in this industry to facilitate and promote growth?
12	Has BEE played a meaningful role in facilitating growth in the manufacturing industry? Why do you believe this?
13	How can the South African manufacturing industry gain comparative advantage and become an industry leader in one of three dimensions, namely, quality, innovation and cost?
14	Is the current product mix within the manufacturing sector appropriate and is your organisation positioned correctly within the value chain?

GOVERNMENT:

1	Who are the key stakeholders involved in setting out government policies relating to the manufacturing industry?
2	What is the government's objective for the South African manufacturing industry and does government have business buy-in?
3	Has the National Industrialisation Policy Framework been successful in its mandate to boost industrial capacity and create more jobs?
4	Is the South African manufacturing industry catching up with or falling behind other developing economies? Why do you believe this?
5	Do you see any structural impediments hampering growth in the manufacturing industry and if so, what do you view them to be?

6	Do you see BEE playing a meaningful role in facilitating growth in the manufacturing industry? Why do you believe this?
7	Is government satisfied with the manufacturing industry's current contribution to GDP and if not, what can government do to try to improve it?
8	What does the future hold for the manufacturing industry in South Africa?
9	How can the South African manufacturing industry gain comparative advantage and become an industry leader in one of three dimensions, namely, quality, innovation and cost?

TRADE UNIONS:

1	What is your biggest concern with the current structure of the manufacturing industry?
2	What do you view as the value proposition for both business and labour that would effectively promote continued and sustainable growth?
3	Are you comfortable with the current skill set available in the manufacturing industry, if not what can be done to improve it?
4	Do you see BEE playing a meaningful role in facilitating growth in the manufacturing industry? Why do you believe this?
5	What is your view on technological improvements in the manufacturing industry when it comes to employment?
6	In your view, what does the future hold for the manufacturing industry in South Africa?