

UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

MASTER'S THESIS

**THE AUTOMOTIVE INDUSTRY IN THE REPUBLIC OF SOUTH AFRICA:
FOLLOWER VERSUS PIONEER**

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INTRODUCTION

The last 20 years have presented exciting times for developing countries as they have become more involved in the global economy. The 1990s in particular brought great transformation to the automotive industries of developing countries resulting from trade liberalisation and large investments by global assemblers (Humphrey, 2003).

Despite these positive changes, the integration of local firms into the global economy has its share of obstacles. Developing countries and their firms face major challenges in strengthening their human and institutional capacities in order to take advantage of trade and investment opportunities (OECD, 2004). The inclusion of small and medium-sized enterprises (hereinafter: SMEs) has not been automatic and they are found mostly at the low end of global production chains (Caspari, 2003). In their pursuit of their economic independence, local SMEs find themselves increasingly dependent on their developed partners.

Humphrey and Schmitz (2002) acknowledge that all firms everywhere are under constant pressure to improve their performance and increase their competitiveness. This is even more difficult for firms in developing countries as they are trying to enter and compete in the automotive industry which is an already established, mature, globalised industry.

Developing countries find themselves competing against each other, in particular China & India, the rise of which does have serious consequences for other developing countries. Altenburg, Schmitz and Stamm (2006) highlight that given the sheer size of these two countries and the enormous emerging supply of high-skilled researchers, engineers, technicians and skilled workers, the technological progress of China and India poses a great challenge also for the rest of the world too. So both OECD and developing countries are threatened.

Developing countries are attempting to catch-up and countries like Korea have done so successfully (Lautier, 2001). SMEs from select developing countries have managed to build up competitive advantages, enabling them to compete successfully in global markets. What is needed in order to create competitive capabilities is the capacity to continuously upgrade their skills so as to increase their returns (UNCTAD, 2010).

Upgrading is a means to solidify their place by moving to more advanced positions along the value chain (Giuliani, Pietrobelli, & Rabellotti, 2005) and is an ambitious, necessary target for developing countries because their initial appeal is their cheap labour.

The automotive industry is characterised by an accelerating speed of innovation which commands that firms plan for constantly improving core competences by 'doing new things and doing things better than anyone else' (Altenburg et al., 2006; Kaplinsky, Morris, & Readman, 2002). Participation in global value chains provides a means to accelerate this development as firms can learn from the global leaders of the chains (Giuliani et al., 2005).

Local producers working for global buyers enjoy considerable advantages in some types of upgrading but encounter barriers in other types (Humphrey & Schmitz, 2002). It is now acknowledged that value chain relationships play a decisive role in facilitating upgrading and that competitiveness does not concern only a single firm's performance but the entire chain's (UNCTAD, 2010).

Firms in developing countries initially are in a fragile state as a result of being late entrants, where their progression along the value chain appears to be determined by the buyer. In the buyer-driven chains, like the automotive industry, the buyer has coordinating power and can set the terms under which other firms in the chain operate. The upgrading opportunities of local firms are then often structured by the relationships in global value chains (Altenburg, 2006; Schmitz, 2006). So in this buyer-driven chain, it stands to reason that firms would need support from the buyer to participate in the buyer's chain.

The typical situation in sourcing is that buyers only provide support where they define the product and where they perceive a risk of supplier failure (Schmitz, 2006). It is in the beginning stages of new producers' integration into global value chains that buyers are more likely to assist in improving products and processes (Giuliani et al., 2005).

Attempts to upgrade is not led by or pursued jointly with the buyer, but rather that the buyer merely represents an external stimuli and spectator to the process. It is the desire to be a supplier that induces firms to try to keep up with technological advancements (Giuliani et al., 2005). In Brazil, the predominant upgrading pattern was found to be only product and process upgrading with limited support from the buyer.

Local suppliers in Brazilian automotive improved to meet qualitative standards certification but the support came mainly from consultancies and accredited certification institutions (Quadros, 2002). Both China and India draw Foreign Direct Investment (FDI) that incorporates local scientists and engineers but in particular, China takes advantage as it trades market access for technology which forces the sharing of technology from those wanting to enter the Chinese market (Altenburg, Schmitz, & Stamm, 2007). The ability of any country to increase or maintain their share of global automotive production since the entry of China and India in 1990 – 2005 can be seen as a real success for some countries (Sturgeon, Memedovic, Biesebroeck, & Gereffi, 2009).

South Africa was reintroduced to the global automotive market in the early 90's and finds itself strongly affected by these two countries. In South Africa, there are 120 first tier component manufacturers of which 75% are multinationals and there are more than 200 second and third tier suppliers but these are mostly local (NAACAM, 2012). Despite the large second and third tier numbers, the net value of local components used in locally assembled vehicles is less than 40% of the total component value (NAACAM, 2012).

Naude and Badenhorst-Weiss, (2012) has said that automotive assemblers often import cheaper components from abroad and that local automotive component manufacturers in

South Africa are not as competitive as suppliers from India and China (Naude & Badenhorst-Weiss, 2011a). India and China are advancing rapidly because of large inflows of FDI and looking at their size and that of developing countries in general, it is evident that South Africa is a relatively small competitor in comparison. For this reason it is important to evaluate how South Africa is pursuing continued involvement and how to pursue sustainable growth.

Purpose and objectives - Firms in developing countries, in common with firms everywhere, are under pressure to improve their performance and increase their competitiveness. New, low-cost producers are entering global markets, intensifying competition in markets for labour-intensive manufactures (Humphrey & Schmitz, 2002, p.1). The purpose of this thesis is to investigate the upgrading status of foreign and local component manufacturers within South Africa. Trade liberalisation, globalisation of markets and government support has been significant drivers of the development and performance of the local automotive industry in recent years (Franse, 2006, p. 43). The main goal of this thesis is to examine whether firms are upgrading and if they are receiving support, as this is the situation in other developing countries like China and India. Further, it will show how multinational component suppliers view their subsidiary, whether they are transferring design capabilities or just using it as a production hub. This study is among the first attempts to investigate the upgrading status of local component manufacturers in South Africa based on primary collected data through an online questionnaire and in depth interviews with management representatives of South African local component manufacturers.

The research question of this thesis is twofold. The questions are:

- What type of upgrading is occurring in the components manufacturing industry with multinational subsidiaries and local firms?
- How are upgrading attempts of both the local firms and multinational subsidiaries pursued and supported by buyers?

Content - The research work will be divided into two main parts where the first part will focus on the review of the existing literature, whilst the second part will present the data and findings.

The first chapter will describe general information on the automotive industry to provide a background to the importance of the industry and how developing countries have come to play a role. It will briefly touch on globalization, then relevant terminology such as innovation, upgrading, pioneering and following will be defined and addressed. It will discuss upgrading.

The second chapter will give a detailed overview of South Africa as a country and its automotive industry, depicting the business environment, relevant statistics, strengths,

weaknesses so as to understand the nature of activities within the country and its capabilities.

The research will be presented in chapter three and four, together with methodology and results to determine with regard to South Africa, if upgrading has been or is taking place and how. Based on this, the conclusions will be presented in chapter five.

1 THE AUTOMOTIVE INDUSTRY

“As coal and the steam engine were to the nineteenth century, so the automobile and oil were to the twentieth” (Maxton & Wormald, 2004).

The automotive industry is an important sector globally, impacting global economic activity as a driver of growth, employment and income. According to the Organisation Internationale des Constructeurs d'Automobiles (hereinafter: OICA), were the automotive industry a country, it would be the sixth largest economy in the world. It is one of the largest and most advanced scale industries, in terms of output levels, direct and indirect employment, management practices and manufacturing standards (Barnes & Morris, 2008) with 8.8 million direct employees among automakers and their suppliers (Dannenberg & Kleinhans, 2004).

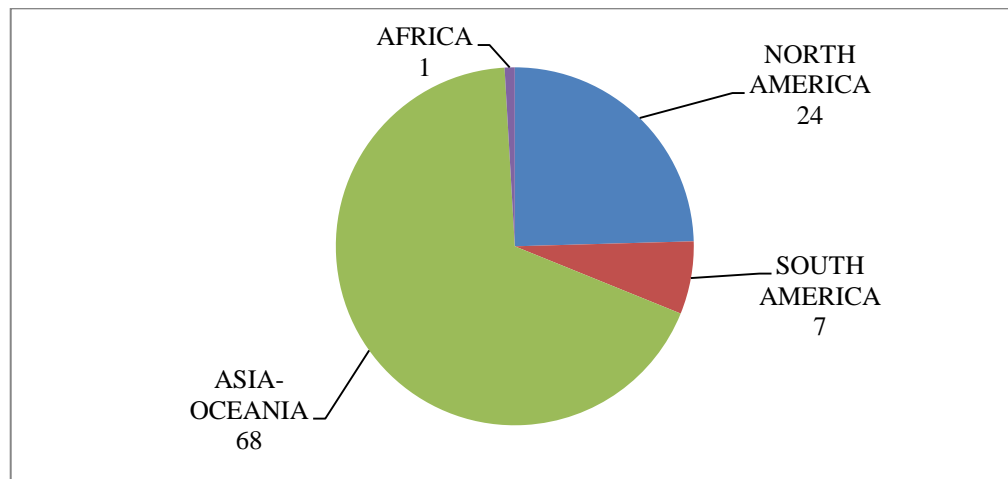
In addition to the direct employees, about five times more are employed indirectly in related manufacturing and service provision, such that an estimated more than 50 million people earn their living from cars, trucks, buses and coaches (OICA, n.d.). Barnes and Morris (2008) have referred to the automotive industry as ‘the industry of industries’. Its production and sales have been and is a major indicator of the state of a country’s economy and every country is vying to be a part of it.

There are eleven lead firms from three countries, Japan, Germany and the USA, that dominate production in the main markets (Sturgeon et al., 2009). The global automotive industry is currently led by the main Original Equipment Manufacturers (hereinafter: OEMs), that is, Toyota, General Motors, Volkswagen, Ford, Honda, PSA, Nissan, BMW and Chrysler, which function in an international competitive market (Naude, 2009, p33). The industry is relatively fixed in its structure, its relationships, its participants and influential players. An industry that, despite having many options developed in terms of production, it is becoming more rigid with regard to who participates and who does not.

Primarily located in developed countries, its importance has surged in developing countries over the years. The industry has grown globally from 65.4 million to 84.1 million total new vehicles sold over the period 2005 to 2012 (OICA, n.d.) and much of the production has shifted to developing countries (Sturgeon & Van Biesebroeck, 2011). Production is now interspersed throughout the globe with facilities on every continent (Figure 1).

The automotive industry past and present is seen as a core industry, a unique economic anomaly that has dominated the twentieth century. It has created changes in the way we live and work that were unimaginable before, and today, its products still continue to transform our society and everyday lives. For much of the developed world, and increasingly for the developing world, it is a pillar industry, a flag of economic progress (Maxton & Wormald, 2004).

Figure 1. Geographical Locations of Producers (%)



Source: *Organisation Internationale des Constructeurs d'Automobiles*, 2013.

1.1 Globalisation and internationalisation

1.1.1 Globalisation

The automotive industry has been strongly affected by globalisation and internationalisation. In recent decades, the term globalisation has become a popular term used by scholars and business people but often with different meanings to each (Gill, 1996, p210). Globalisation is not a single concept that can be defined and encompassed within a set time frame, nor is it a process that can be defined clearly with a beginning and an end. It can be conceptually linked to a variety of social, economic and political changes. Ballard (2001, p5) describes globalisation as a 'process whereby distance is becoming less of a barrier to social, cultural and economic interaction'.

'Globalisation refers to all those processes by which the peoples of the world are incorporated into a single world society' (Albrow, 1990, p. 9), it means the onset of the borderless world (Ohmae, 1992) or as Daly & Farley (2004, p317) have defined it as 'the effective erasure of national boundaries for economic purposes'.

Kogut (1999) wrote about globalisation in the Harvard Business Review, having classified globalisation as the 'convergence among nations and companies toward common ways of doing things'. Never before has there been such an opportunity to sell as many goods to as many people as there is right now.

Morris, Donnelly & Donnelly (2004, p. 129) acknowledge that in the last two decades, the automotive industry has experienced major changes, which have come about through the pressure of globalisation.

Levitt (1983) discusses the effect of globalisation on customers saying that 'it is the purpose of business to get and to keep a customer' where automakers have been lured to 'places where populations are huge and car owners few' (Sturgeon and Florida, 2000). It has helped cultivate a universal need or want for automobiles, thereby creating a customer as it has made 'isolated places and impoverished peoples eager for modernity's allurements' (Levitt, 1983). Needs and desires have been irreversibly homogenised where everyone in the world market wants products and features that everybody else wants and their preferences are constantly shaped and reshaped. The automobile has become one of these products where it is seen as almost a defining gauge of a country's degree of economic development (Chamon, Mauro & Okawa, 2008), where it has been and is becoming an increasingly universal need.

The globalisation of the automotive industry has also gathered momentum since 1995 owing to the erection of facilities in foreign countries and the formation of mergers between multinational automakers (Bera 2004, p. 1, Humphrey and Memedovic, 2003, p. 2). The phenomenon has markets and production in different countries becoming increasingly interdependent due to the dynamics of trade in goods and services and the flows of capital and technology (OECD, 1993). The new growing markets allowed for establishing cheap production sites for the manufacture of vehicles and components and the spreading of vehicle development costs (Humphrey and Memedovic, 2003, p. 2).

Trade barriers around the world have been reduced with the phasing out of import restrictions and import tariffs, thereby encouraging trade with and investment in developing countries (Lorentzen and Barnes, 2004). Ballard (2001) asserts that international trade is rules-based and thus in order for local producers to gain access to international markets, governments have to allow foreign producers access to local markets in exchange. The lowering of trade barriers then exposes local firms to intense competition from foreign firms (Lorentzen and Barnes, 2004).

1.1.2 Internationalisation

Ishaq (2003) acknowledges internationalisation as fundamentally referring to the increasing linkage of national economies by way of international trade. The perspective of Cox (1994) is that a characteristic of the globalisation trend includes the internationalisation of production. Dicken's (1998, p5) view is that globalisation and internationalisation coexist, that they are interrelated terms pertaining to the geographic spread of economic activity. Veloso and Kumar (2002) conclude that globalisation has in fact led to internationalisation. As OEMs have implemented globalisation strategies, internationalisation has occurred in the form of global suppliers.

Globalisation is qualitatively different from internationalisation as it does not merely involve the geographical extension of economic activity across national boundaries but also – and more importantly – the functional integration of internationally dispersed activities (Dicken, 1998).

Gereffi (1999) contends that internationalisation is not new, but it started centuries ago as the search for raw materials as well as for new markets for manufacturing exports was undertaken. The modern day example of internationalisation would be the Multinational enterprise who attempts to sell its products overseas or the aspiring global supplier who has, through trade policies, been obliged to establish production facilities offshore in order to gain access to new markets (Sturgeon & Florida, 2000).

Santucci (1997) rationalises that automakers were the first to globalise and whilst there was a significant difference between vehicle models produced in different countries, there was no reason for suppliers to follow. Once automakers moved to building similar vehicles in a variety of regions, it made economic sense to work with the same supplier for standardised components (Santucci, 1997). So as much as globalisation in the automotive industry may create opportunities for development in developing countries, internationalisation may be limiting it because of the preference to use the global supplier over a local one.

For the SME, network theorists see firm's internationalization as a natural development from network relationships with foreign individuals and firms (Johanson & Mattson, 1988). The emphasis of the network approach is that by establishing close relationships with customers, suppliers, the industry, distributors, regulatory and public agencies as well as other market actors, information is acquired by the firm. It is thus important for firms to establish and maintain global relationships in order to grow their own operations.

1.1.3 Implications for automotive industry

With reference to the global economy, globalisation is the term used to describe the trends in the world economy that are pulling previously distinct national economies closer together. It has enabled the auto industry to change from a regional industry to a more integrated global industry (Sturgeon et al., 2009).

The consequences of globalisation as noted by Lamprecht (2009, p. 159) include the fragmentation of production to lower product units; dissatisfaction with the costly system of building cars for stock, not to order; innovative modular construction in which increasingly parts of a car are assembled by parts suppliers; and a possible switch to alternative-energy powered cars.

It has provided the opportunity for an increasing number of suppliers to participate in the global economy (Kaplinsky et al., 2002). Globalisation has resulted in the surfacing of two

kinds of suppliers in the auto industry, global and local, where competitors are no longer limited to those merely down the street but now span across the globe.

Direct investment across national borders has increased, which means that the economy operates on a global scale and is intensely competitive as countries seek to attract new investment. The increased competition, promotes individualism as firms pursue increased profit and not really development, ultimately making the Multinational Corporation a threat to the local firms.

Globalisation has created opportunities for businesses in all countries. However, it is also said to be widening the gap between developed and developing countries as it traps developing countries into the global economy, making it difficult to be a genuinely independent economy (Ishaq, 2003). In most cases, developing countries serve as host countries to multinational enterprises (Vernon, 1998). As a host country, they can benefit through capital, technology, job creation, workforce improvement and access to foreign markets (Vernon, 1998) but MNCs and governments don't have the same intentions. Governments want the benefits but require ways to minimise the consequences of remaining merely a host with limited development.

OEMs play a key role as they are constantly in search of new markets and places to locate production, especially where costs are the lowest. This has resulted in the global shift in production from the developed to the less developed countries. There is a growing shift in sales where developing countries are seeing marked increases and this shift has warranted moving production to these countries too. The move benefits developing countries by providing working and learning opportunities coupled with economic prosperity and growth. Increasing trade relations between industrialised and developing countries can induce technology transfer. Trade enhances competition which is a driver of technological innovation (Altenburg et al., 2006).

Soubbotina (2004) acknowledges that empirical evidence suggests globalisation has significantly boosted economic growth in select East Asian economies, but not all developing countries are equally involved in globalisation nor in a position to benefit from it. Many developing countries have been rather slow to integrate into the world economy, for example, the share of Sub-Saharan Africa in world trade has declined constantly since the late 1960s (Soubbotina, 2004).

However, it cannot be denied that globalisation has brought about opportunities. The breaking down of geographical, economic and social borders has allowed for the fragmentation of production processes in the world economy and thereby encouraged growth of global production, global markets and global finance.

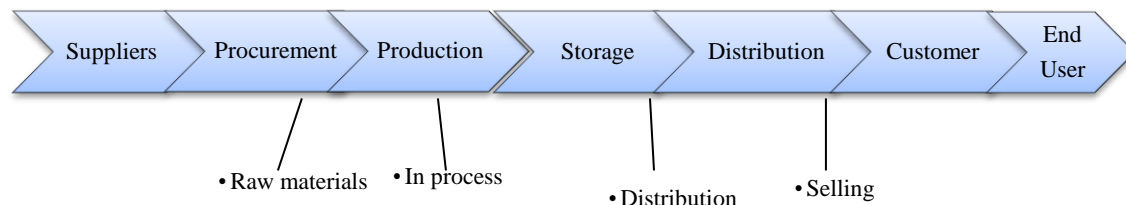
1.2 The Supply Chain & Supply Chain Management

1.2.1 Supply Chain

This fragmentation of production has made things a bit more complicated. Producing and delivering a product requires many different inputs. The linking of these inputs in bringing the product to the customer forms the supply chain. It is the combination of all activities needed in order to produce the final product (Figure 2).

The Supply Chain Council (Hugo, Badenhorst-Weiss & van Biljon, 2004, p. 5) proposes the following definition of a supply chain: ‘The supply chain encompasses every effort involved in producing and delivering a final product from the suppliers’ supplier to the customers’ customer’.

Figure 2. A Supply Chain



Source: K. Lyons & M. Gillingham, *Purchasing and supply chain management*, 2003.

It thus starts from the raw materials to the final end product. A supply chain is comprised of two or more parties linked by a flow of resources – typically material, information and money (Naude & Badenhorst-Weiss, 2011a). As time has gone on, products are no longer produced and assembled by the original company, but are created as a result of collaborations with many supply chain members. This can incorporate many suppliers, distributors and retailers in the process leading to delivery to the final customer.

Naude and Badenhorst-Weiss (2011b) succinctly described the importance of the supply chain by saying that ‘companies no longer compete against companies’ but it is now the era where ‘supply chains compete against other supply chains’.

Efficient supply chains can offer streamlined collaboration and coordination between suppliers, business partners and customers (Khayundi, 2010) and has become one of the core determinants of a company's business model and the foundation for sustained competitiveness.

1.2.2 Supply Chain Management

Fierce competition in today's global markets, the introduction of products with short life cycles and the increased expectations of customers have forced businesses to invest in and focus their attention on their supply chains (Simchi-Levi, Kaminsky & Simchi-Levi, 2003,

p. 1). In order to stay competitive, there's pressure on businesses to decrease costs and enhance customer service levels.

The delivery of the required products at the right time and at the lowest cost (or value) enables a firm to differentiate itself from its competitors in the market and enhances current and future profitability by balancing costs and service levels (Chopra & Meindl 2007, p. 5-6). The cost factor has steered production to lands with cheaper labour and the spread of responsibilities has created a co-dependency between supply chain participants.

Co-ordination is pivotal because one chain member's output is another member's input, so this interdependency commands a fluid, seamless flow. Supply chain co-ordination can contribute significantly to improved product quality, shorter lead times and a more responsive supply chain, at lower cost and with increased customer satisfaction levels (Naude & Badenhorst-Weiss, 2011a).

Logistics operations in the automotive supply chain are complex and account for large expenses and therefore are segments where improvements can be made (Sturgeon et al., 2009). According to Cagliano, Caniato and Spina (2006, p. 282) managing the supply chain has become the central focus for many businesses. Getting the final product to the customer is a process that takes careful consideration and planning. Effective control of the supply chain can enhance customer service thereby providing a competitive advantage through well-organised management of the flow of materials.

Supply chain management is the management of actions involved in purchasing materials, converting them into intermediate goods and end products and distributing a product or service (Swink, Melnyk, Cooper & Hartley, 2011, p. 42-43).

Hugos (2006, p. 4) defines supply chain management as follows: 'Supply chain management is the coordination of production, inventory, location and transportation among the participants in a supply chain to achieve the best mix of responsiveness and efficiency for the market being served.'

Supply chain management as a philosophy and concept has developed as business organisations realised that they need their suppliers to decrease costs and improve efficiency by cooperating and managing it as one process to be more efficient together than separately (Hugo et al., 2004, p. 10). It is a philosophy that evolved in response to the transformation in the business environment and is aimed at integrating all the linkages in the supply chain into a seamless unit.

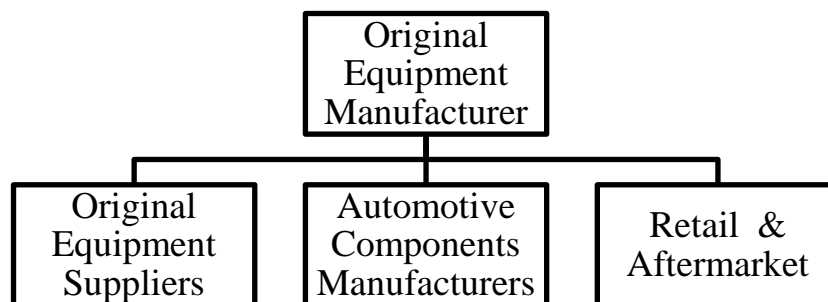
Van Weele (2010, p. 255): 'SCM represents a systems approach to viewing the supply chain as an integrated entity rather than a set of fragmented parts.' In order for a firm to enter the chain, it must do so without a glitch. It cannot halt or slow down the flow of the supply chain and so internal SCM is important. For this reason firms' internal operations

integration is essential in order to integrate externally with other supply chain members (Naude & Badenhorst-Weiss, 2011a).

1.2.3 Developments in the Automotive Industry

The main parties in the automotive industry supply chain are original equipment manufacturers, original equipment suppliers, automotive component manufacturers and the automotive retail and aftermarket. The supply chains evolve around the Original Equipment Manufacturers (OEM) and the relationships can be depicted by the Figure 3 below.

Figure 3. Industry Relationships



There's pressure to find methods to minimise costs, minimise cycle times and improve forecasting techniques coupled with continued emphasis on quality, flexibility, time-based competition and lean production (Naude, 2009). Automotive firms have chosen to be exclusively involved in the assembly and design of the vehicle, whilst outsourcing component production.

In order to better reach local consumers and establish lower costs for the production of vehicles, the majority of OEMs invested a great deal of money in assembly plants outside their home base (Naude, 2009, p. 36).

With time the automotive industry has seen a rise in the trend to outsource manufacturing and even design activities to suppliers. The global auto industry has been characterized by increased outsourcing by assemblers to first-tier suppliers, which have taken responsibility for designing and supplying modules and systems for vehicles (Humphrey and Salerno, 2000). The dependency on suppliers has increased because of outsourcing, so there has been a greater need for responsible, responsive and trustworthy suppliers and partners (Arnold & Chapman, 2004). Liker and Choi (2006, p. 23) acknowledge that businesses are largely relying on their suppliers to reduce costs, enhance quality and develop innovations faster than their competitors' suppliers can. It is therefore important for suppliers to constantly be focussed on developing and improving their competences.

The development and integration of people and technology resources are critical to successful supply chain integration (Institute of Supply Management, 2000). JIT supply

requests have and are forcing business firms to apply new approaches to inter-firm relationships (Arnold & Chapman, 2004).

The success of businesses depends largely on the way it satisfies its customer requirements and on how their own supplier base responds in making this a reality (Leenders, Johnson, Flynn & Fearon, 2002, p. 93). It is evident that the supply chain is a core link to success and requires focussed management of its parts. With the growing trend of outsourcing, the co-ordination of activities takes much planning and consideration to function efficiently.

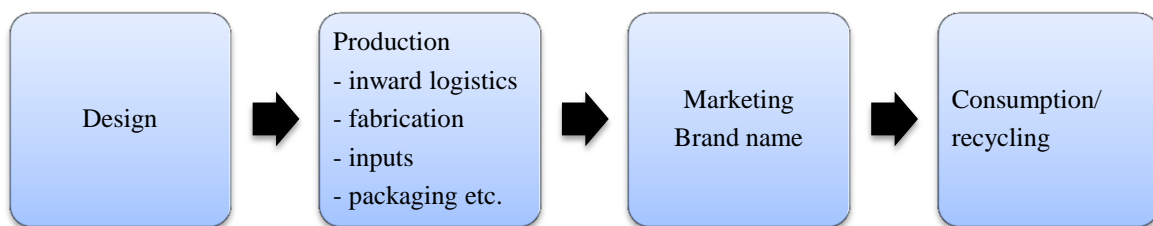
1.3 Global Automotive Value Chain

Supply chain is the co-ordination of activities that produce the product or service but the value chain differs from supply chain, in that it includes the activities that ‘add value’ to the product or service.

The value chain concept was popularised by the works of Michael Porter who described it as the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumers and final disposal after use (Kaplinsky et al., 2002; Pietrobelli, 2008).

Lysons and Gillingham (2003, p. 75) acknowledge that supply chains are linked to value chains. The value chain is the supply chain and also includes all activities that serve to add to the value derived from the supply chain. The value chain is made up of both primary and support activities (Naude, 2009). This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or can be fragmented and divided amongst different firms in varying locations (Figure 4).

Figure 4. A Value Chain



Source: R. Kaplinsky, M. Morris & J. Readman, *Understanding Upgrading Using Value Chain Analysis*, 2002, p. 3.

1.3.1 Global Value Chain

A Global Value Chain is a chain of activities which are divided among multiple firms in different international geographical locations. Global Value Chains cover a full range of interrelated production activities performed by firms in different geographic locations to

bring out a product or a service from conception to complete production and delivery to final consumers (UNCTAD, 2010).

Humphrey & Schmitz (2001) summarised key findings of other studies to say that access to developed country markets has become increasingly dependent on entering into the global production networks of lead firms situated in developed countries. Global Value Chains often represent one of the few options for local firms and suppliers to get access to larger markets and to new technologies (Pietrobelli, 2008).

1.3.2 Global Automotive Value Chain Structure

Humphrey and Memedovic (2003, p. 2) comment that the impact of globalisation on the automotive industry of developing countries not only occurred because of the changes in trade and investment policies and the international strategies of leading businesses, but also as a result of the changes in automotive industry value chains.

The automotive industry is distinctive because of its extremely concentrated firm structure: a small number of giant companies exert an extraordinary amount of power over smaller firms (Sturgeon et al, 2009). Previous research notes that OEMs do not wish to deal with a large number of suppliers because this results in increased expenditure in administration, increased design costs and quality problems (Naude & Badenhorst-Weiss, 2011b). Hence instead of dealing with a large number of suppliers, suppliers are organised into tiers, where first-tier suppliers are left to design many of the assemblies themselves and second-tier suppliers to assist in designing and producing the components. This preference from the OEM has decreased the number of suppliers deemed eligible to participate in the automotive value chain.

Globalisation has further created two classes of suppliers in the automotive industry, global and local. In the past, lead firms either exported parts to offshore assembly plants or relied on local suppliers in each production location (Sturgeon et al., 2009). Today, a new class of supplier has been added, the global supplier (Sturgeon & Lester, 2004).

According to a recent analysis of the global automotive industry, there is a targeted restructuring aimed at a consolidation of critical technology expertise, production capabilities and capital access provided by global suppliers (UNCTAD, 2010). A small number of global suppliers develop local networks of second- and third-tier subcontractors, leading to supply chain improvements and upgrading.

1.3.3 Spread

Production tends to be organised regionally or nationally, with bulky, heavy and model-specific parts-production concentrated close to final assembly plants to assure timely delivery, and lighter, more generic parts produced at a distance to take advantage of scale economies and low labour costs (Sturgeon & Van Biesebroeck, 2011).

Typically, developing countries are utilised by developed countries for their cheap labour and resource abundance. This has linked countries and has accelerated development in poor countries by allowing them entry into existing supply chains (Baldwin, 2011). Developing countries have been awarded an opportunity to participate in the chain because of chain fragmentation. Specifically, a combination of real and potential market growth with a huge surplus of low-cost, adequately skilled labour in the largest countries in the developing world, such as China, India, and Brazil, has attracted waves of investment, both to supply burgeoning local markets and for export back to developed economies (Sturgeon & Van Biesebroeck, 2010).

1.3.4 Role changes

A further trend for OEMs has been to reduce the number of direct suppliers in order to increase effectiveness in coordination thereby creating a monopoly within the supply chain that impacts on the development of local firms (Womack, Jones & Roos, 1990).

Lead firm globalisation has also meant globalisation for suppliers, as demands for local production are now often part of winning contracts (Sturgeon et al, 2009). Increasingly, OEMs demand that their largest suppliers have a global presence as a precondition to be considered for a new part (Sturgeon & Florida, 2004).

Lead firms in the automotive industry are known as automakers or original equipment manufacturers. They carry out most aspects of product design, the production of most engines and transmissions and nearly all vehicle assembly within their own facilities. They have substantial buying power in the chain (Sturgeon et al., 2009).

Since the early 1990s, outsourcing has led to the creation of large global suppliers, which have taken on a more extensive role in the areas of design, production and foreign investment (Sturgeon et al, 2009). There has also been a trend of bundling more value chain activities in supplier firms (Sturgeon et al, 2009). As suppliers have taken on a larger role in design, they have established their own design centres close to those of their major customers to facilitate collaboration (Sturgeon & Van Biesebroeck, 2011).

Specifications are either developed jointly, in a co-design process, or suppliers must be provided with full instructions on what to produce. In the first, more relational approach, design engineers from lead firms and suppliers work closely together to develop parts that will work in the context of the overall vehicle design. In the second instance, lead firm engineers develop all vehicle parts in-house and then put the part out for bids, creating a classic market linkage with suppliers, or, when relationship-specific investments by suppliers are required, which they often are, captive linkages (Sturgeon et al, 2009).

There is a greater co-dependency between OEMs and component manufacturers than ever before (Morris et al., 2004, p. 129; Maxton & Wormald, 2004, p. 257). The absence of open, industry-wide standards undermines value chain modularity and ties suppliers to lead

firms, limiting economies of scale in production and economies of scope in design (Sturgeon et al, 2009).

1.3.5 Future changes

Sturgeon & Van Biesebroeck (2011) posed that there will be an increase in particular long-term trends, namely:

- A shift of automotive production to developing countries, where sales growth is strongest
- Consolidation in the global supply base and in final assembly
- The internationalisation of developing countries' indigenous automakers brands (e.g., the Chinese state-owned automaker Geely's take-over of Ford's Swedish car unit, Volvo).

A critical question is whether the contribution of global production systems leads to sustainable increases in incomes and employment in developing countries (Humphrey, 2004). The consolidation and globalisation of the supply base poses a serious threat to the longevity of smaller, lower-tier, local suppliers (Sturgeon & Van Biesebroeck, 2011). Participating in value chains is a way for them to obtain information on the mode and need to enter global markets (Giuliani et al., 2005). Within the automotive industry, it is not easy for local firms to enter these value chains.

1.4 Developing Countries' Importance

1.4.1 What is a developing country?

In order to establish what a developing country is, perhaps it's best to start with an insight of what a developed country is. The United Nations Statistics Division has stated that there is no established convention for the designation of "developed" and "developing" countries or areas in the United Nations system. It is easier to define developed countries and to class the remainder as developing countries.

Isaacs (1997, p. 36) alludes to the following key aspects as to why developed countries are regarded as the developed countries of the world:

- They have a more educated and skilled working population with higher levels of technology being utilised. Industrial products form a larger part of their economies than other sectors of the economy do.
- They have a history of organised political and economic control compared to other countries in the rest of the world.
- The majority of these countries have more commanding military forces than other countries do.
- Ninety percent of the world's top companies dominating the economy have their head office in these industrialised countries.

According to the World Bank (1996), the main criterion for classifying countries and distinguishing different stages of economic development is Gross National Product (GNP) per capita. In this respect, countries are classified into three categories, namely, low-, middle- and upper-middle income groups. It is the low-income and middle-income countries that are generally referred to as developing countries (Kamel, 2006).

The World Bank (2013) records 145 countries to be classed as developing countries. The fact that there are so many developing countries means that cheap labour is freely available, and so if that's the business advantage, it could also easily be replaced by another developing country with cheap labour and making strides with development.

1.4.2 Why are they important?

The automotive industry in itself is a mature one. In the developed world, it has been plagued by overcapacity, cost pressures and low profitability within the Triad economies (Humphrey & Memedovic, 2003). The global automotive sector manufactured about 80 million cars, vans, trucks and buses in 2011. The growth can be largely attributed to countries in which demand is developing and still showing an upward trend (The Department of Trade & Industry, 2013).

Major automotive manufacturers have expanded the foreign share of production in recent years especially to developing countries (Sturgeon et al., 2009, p9). The appeal of developing countries relates to the opportunities it presents. Its under-development provides cheap labour and the increasing industrial development means there's a potential need for vehicles. Developing countries are important to the business world because of their potential, the opportunities available for businesses because of the under-development.

Real and potential market growth and a huge surplus of low-cost but skilled labour in countries like Brazil, China and India have attracted large FDI flows to supply local markets and to export back to developed countries (Sturgeon et al., 2009).

Political pressure to build vehicles where they are sold has promoted investment in the industry in developing countries (Sturgeon & Van Biesebroek, 2011). The movement in production to developing countries is the reason for the notable macroeconomic growth achieved by a few high-performing Asian economies and is mainly due to the development strategy of export-oriented industrialisation (Gereffi, 1999). United Nations Industrial Development Organisation (2002) reveals that those countries integrated into global value chains have been the fastest ascenders up the Competitive Industrial Performance ranking.

In contrast to many other industries, developing countries do not establish a presence in the global automotive industry by making low-level components first and working their way up from there. Instead, final assembly is often the first step and the development of a parts sector come later (Sturgeon & Van Biesebroeck, 2011). The only entry strategy latecomer

firms typically have to enter global markets, is to focus on performing the most labour-intensive value-adding activity in the chain, enabling them to avoid the high costs of R&D and marketing (Miotti & Sachwald, 2001).

Developing country lead firms' total share of world production increased from 1.9% to 7.5% from 1999 to 2007, but this was almost solely due to increased production by Chinese firms (Sturgeon & Van Biesebroeck, 2011). If trade liberalisation is to bring benefits to developing countries, then these countries must continue to be able to export products for which they have a comparative advantage to developed country markets (Humphrey & Schmitz, 2001).

1.4.3 What are the concerns for developing countries?

The United Nations Conference on Trade and Development (2002) and Giuliani et al. (2005) provide a contrasting viewpoint that warns of the possible dangers for developing countries from increasing global integration:

1. Since firms in developed countries govern global value chains, their successes and decisions determine the future involvement and upgrading prospects of firms from developing countries participating in these chains;
2. If developing country firms participating in these global value chains don't upgrade to more value-added activities and instead solely perform labour-intensive, low value-adding activities, the benefits related with technological spillovers won't appear; and
3. In order to enter these global value chains, firms need only to be competitive in a narrow range of operations, such as low-technology assembly. As a result, there are many capable firms and buyers in these chains can easily encourage competition, which may end up with firms racing to the bottom.

They have been included in the chain, as said earlier for their cheaper labour and market potential, and with sales increasing, the market is growing, but the advancement of local producers within the developing country is of concern. The number of developing countries competing in the automotive industry has increased over the years. Whether these countries are in fact moving towards being a developed country, or rather just furthering the advance of the existing developed countries is not known. Sustainable growth is a concern for developing countries because of how they are generally utilised within the supply chain. Those with a more educated population are better equipped to advance along the chain.

1.4.4 How can firms from developing countries progress?

Sturgeon and Van Biesebroeck (2010), from the experience of successful suppliers in developing countries recommends achieving three objectives:

- Achieve **worldwide quality standards**. This is an essential condition to start supplying internationally competitive supply chains.
- **Improve productivity**. Achieving quality standards will already require a great deal of automation. Productivity levels have to be suitably high and also improve at the same speed as the average technological progress in the sector so as to match constant price declines that are the norm.
- Acquire **design capabilities**. This is a compulsory step to greater independence and also a precondition to becoming a lead supplier on a part when new vehicle programs are started.

To achieve the first two goals, working in the value chains of foreign-owned firms accelerates the process. Also, the largest developing countries, namely China and India, are gradually gaining more independence as their industries and markets gain in size and importance, and the local design content of vehicles increases to meet the needs of local consumers (Sturgeon & Van Biesebroeck, 2011). They are developing their design capabilities.

The process of progression is slow but is even more so when innovation capabilities are not being harnessed or transferred to these countries. So despite the urban transformation, without innovation capabilities, they are mere stewards of their industrialised partners' interests. These firms are starting from the bottom, in industries that are new to them which are dominated by established firms that have set the curve, so in order to progress; they are in need of guidance/nurturing from those in the know. This does not mean that they have to be babied, but they are not being entrusted with more nor being up skilled, only acting as agents for the developed country.

Considering how many developing countries exist in total, and the number who are playing a role in the industry, innovation and upgrading is key in solidifying their positions within the chain. Sustainable growth should be pursued by upgrading to improve productivity, wages and profits (Giuliani et al., 2005).

1.5 Pioneer and Follow

1.5.1 Pioneer and Follower defined

Pioneer and follower refer to the order-of-entry and leadership of the market thereafter. Being a pioneer is about being the first. Golder and Tellis (1993) suggest three types of pioneer: an inventor, a product pioneer and a market pioneer:

- An inventor is the first to develop patents or important technologies,
- A product pioneer is the first to develop a working model or sample of a product and
- A market pioneer is the first to launch and sell a product.

A firm can achieve this by being the first to produce a new product, use a new process or enter a new market (Kerin, Kalyanaram & Howard, 1996, p. 22) and then continuing to do this. A pioneer is therefore the firm who dominates in a product category.

Followers are competitors who enter after the pioneer and develop slower than the pioneer. They are late entrants that come into the market by imitating as a 'me-too' competitor and some enter by modifying existing products (Karakaya & Stahl, 1989, p. 82). Late entrants also usually utilise their low-cost labour advantage to enter value chains (Miotti & Sachwald, 2001). It is not necessarily seen as a bad position because of the decreased risk involved. Typically, followers have good prospects for catching up with the leaders because copying is cheaper than innovation (Barro & Sala-i-Martin, 1997).

1.5.2 Status in Automotive Industry

Considering that developing countries have entered an established market with an already established limited number of OEMs, their firms are not really able to compete on that level, but their main window of opportunity lies in the components production. Globalisation's process in the automotive industry has led to global overcapacity (Blum, 2009) where the automotive sector is now plagued by excess capacity and fierce price competition (Altenburg et al., 2006).

Developing countries are followers not by choice but rather circumstances and the quality of relationships with global lead firms is particularly important for latecomer development (Altenburg et al., 2006). However, they can improve these circumstances. Initially, entering as a follower and continuing with a follower strategy may have been acceptable before, but with the tendencies of OEMs to use fewer suppliers, firms are subject to an increasing threat of exclusion. So in an industry that appears to be saturated with regard to available suppliers, the only way to remain active in a technology driven market, is to continuously upgrade.

1.5.3 How do followers fare against pioneers?

Over the last two decades, with the rise of the global supplier, these pioneers have made it more difficult for the followers but many Asian firms have gone beyond production and have upgraded (Sturgeon & Lester, 2004). The South Korean automotive industry was not on the world manufacturing map in the 1970s but during the next two decades it grew extraordinarily rapidly and no country other than South Korea has followed the Japanese path and introduced its own indigenous automobile manufacturers (Lautier, 2001). Korea is a country who has managed to do so in the automotive industry and China is now moving in that direction too. Follower is therefore not a fixed status.

Countries like China and India are not faring badly against the pioneer. China in particular has made strides in catching up with lead firms. Its market size coupled with long-term growth prospects makes it very attractive for FDI. Its strong bargaining power has obliged

foreign car makers to invest in R&D and to share technologies thereby inducing technology transfer (Altenburg et al., 2006). Chinese firms pick up and master technology much faster, resulting in foreign competitors being kicked out of the market (Tang, 2009).

1.5.4 What are the consequences of remaining a follower?

A pioneer strategy implies greater R&D and financial resources. A follower strategy implies strength in marketing and production (Kaličanin, 2008). As a follower, firms would need to improve production to compete on price, quality and the ability to meet demands promptly. But these factors alone cannot make them indispensable. Followers will then be continuously plagued with the need to maintain low costs, even more so than the pioneer.

As a pioneer, the expectation is that you will produce new products or technology, ultimately providing answers to unanswered questions or to provide new answers to already answered questions. In an industry when ‘technology leads and the market follow’, the market evolves gradually but the technology evolves rapidly, and then a follower is further disadvantaged by the resources accumulated by earlier entrants (Kaličanin, 2008).

Both require improvements with regard to product, process and function. There is evidence that China and India are advancing their own innovation capabilities so for all others, there is a need to advance along the chain too (Altenberg et al. 2007). Upgrading requires active effort and investment by firms coupled with support from public agencies (Humphrey, 2004).

1.6 Upgrading

As much as the industry is important for the economy, the development of the local firms’ is equally as important. Global competitive pressures require firms to plan for change continuously where they must not only do things better than before but must do new things and better than anyone else (Kaplinsky et. al, 2002). There is no doubt that upgrading is essential in order to compete in a technology intensive industry, yet the successful pursuit of it is elusive to many.

1.6.1 Upgrading defined

For producers to preserve or increase incomes in an increasingly competitive environment, they must intensify the skill content of their activities and/or move into market niches which have entry barriers and are therefore shielded to some extent from these pressures. This is upgrading (Humphrey & Schmitz, 2002). Upgrading is the increase of value added and the progression along the upgrading trajectory.

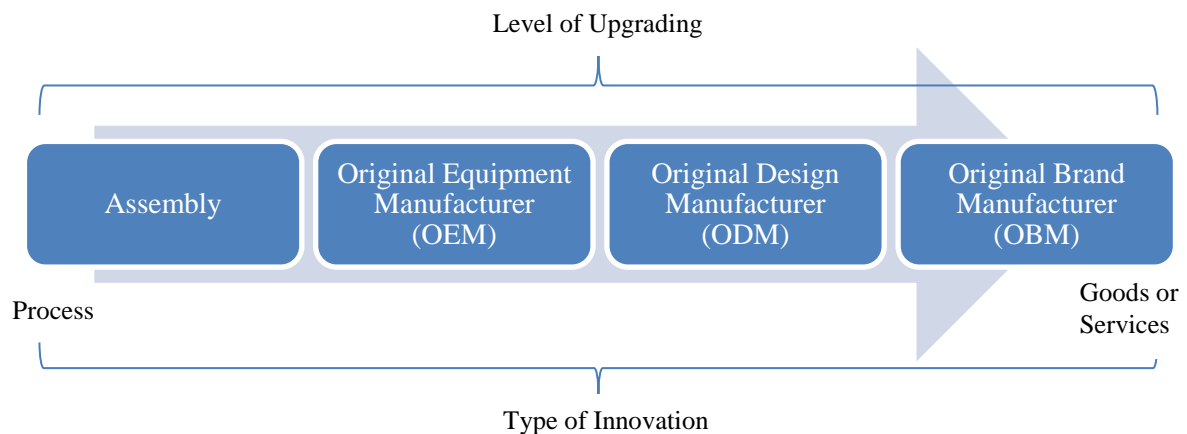
1.6.2 The Upgrading Trajectory

Upgrading within a value chain suggests going up on the value ladder, moving away from activities in which competition is of the “low road” type (i.e. based on lower wages and generally production costs) and where entry barriers are low because with low entry barriers, competition is rife (Giuliani et al., 2005).

Humphrey (2004, p. 6-8) has defined a trajectory by identifying 4 stages of upgrading (Figure 5). These stages of the upgrading trajectory being:

1. **Assembly**: following buyer’s specifications by using inputs supplied by the buyer and focussing on production alone.
2. **Original Equipment Manufacturer (OEM)**: in addition to production, supplier expands in manufacturing functions by including sourcing its inputs and logistics functions. Buyer is responsible for marketing.

Figure 5. Upgrading Trajectory



3. **Original Design Manufacturer (ODM)**: in addition to production and manufacturing functions, the supplier is also partly or fully responsible for design based on criteria specified by the buyer. Buyer then adds its own brand and marketing.
4. **Original Brand Manufacturer (OBM)**: the supplier is not reliant on the buyer as it performs design, production and marketing functions of its own products under its own brand name.

Typically, succession from one stage to the other occurs when upgrading.

1.6.3 Types of Upgrading

The performance improvement of all the firms participating in a Global Value Chain is a concern and progression along the trajectory can be achieved with different types of upgrading (UNCTAD, 2010). The increase of value added can occur in the form of 4 types (Humphrey and Schmitz, 2002):

- **Process upgrading** refers to an increase in efficiency of the production process, such as through reorganization or investing in more advanced technology.
- **Product upgrading** involves shifting to more sophisticated product lines with increased unit value.
- **Functional upgrading** is the process by which firms acquire new functions and new, more strategic functions in the chain such as design or marketing. Functional upgrading seeks to increase the value added by changing the mix of activities conducted within the firm.
- **Inter-chain upgrading** is the use of skills and experience developed in one value chain to productively engage with another – usually more profitable – value chain.

Later, Morrison, Pietrobelli & Rabellotti (2008) has said that upgrading at the firm level does not need to refer to going up the value chain but also refers to ‘deepening capabilities within the same function or additional functions along the chain’ such as the ones listed above.

1.6.4 Relationships

Interaction is central to upgrading as the relationships with buyers in the chain can hinder, limit or encourage upgrading. There have been 4 such types of relationships identified in value chains (Humphrey & Schmitz, 2002):

- **Arm’s length market relations.** Buyer and supplier do not develop close relationships. This implies that the supplier has the capacity to produce the product the buyer wants, and also that the buyer's requirements (including quality, reliability, etc.) could be met by a range of firms.
- **Networks.** Firms co-operate in a more information-intensive relationship, frequently dividing essential value chain competences between them. In this case, the buyer may specify certain product performance standards or process standards to be attained, but should be confident that supplier can meet them.
- **Quasi hierarchy.** One firm exercises a high degree of control over other firms in the chain, frequently specifying the characteristics of the product to be produced, and sometimes specifying the processes to be followed and the control mechanisms to be enforced. This level of control can arise not only from the lead firm's role in defining the product, but also from the buyer's perceived risk of losses from the suppliers’ performance failures. In other words, there are some doubts about the competence of the supply chain.
- **Hierarchy.** The lead firm takes direct ownership of some operations in the chain.

Where there is an imbalance of power between buyers and sellers, the buyer decides how far upgrading goes (Caspari, 2003). Most developing country firms are based in quasi-hierarchical relationships. It was found generally that ‘Quasi-hierarchical relationships

promote fast upgrading for local producers in the sphere of production, but these firms find it difficult to move into higher value activities' (Humphrey & Schmitz, 2002). It facilitates inclusion and rapid enhancement of product and process capabilities. They become tied into relationships that prevent functional upgrading and leave them dependent on a small number of customers (Humphrey & Schmitz, 2002).

1.6.5 Is it possible for developing countries' firms to upgrade in a mature industry?

Upgrading is important to both developed and developing countries, but in different ways and in their own individual interests, not in relation to each other. The upgrading of developing countries is not necessarily important for developed countries. Process upgrading yes, but not necessarily product and functional upgrading because they are then more concerned that it would create a competitor rather than a partner.

An extremely concentrated firm structure in the industry creates high barriers to entry and restricts the upgrading possibilities for smaller firms but it is not impossible (Sturgeon et al, 2009). There have been cases where it has happened or is happening, but this is not the norm. In these instances it has occurred as a result of initially playing a minor role, perfecting the role and then being trusted with more responsibility along the chain.

Through technology transfers, imports of manufacturing equipment and repeated learning-by-doing processes, Korean assemblers have gradually caught up with OECD firms as regards production technology in the automotive industry (Lautier, 2001).

Without intangible investment, namely where there's no intra-firm investment in equipment, organisational arrangements and people, considerable upgrading of any kind is not likely. This was emphasised by Bell (1984). One of the main lessons from the recent East Asian experience is that a substantial number of firms, including small and medium-sized enterprises, made these investments and displayed strategic intent from which they have seen great success (Hobday, 1995; Kishimoto, 2002).

Brazil, Russia, India and China (BRIC countries) have their own car brands, which are an indication of their investment and existing intellectual capital whereby they are in a better position to move along the upgrading trajectory. It is a realistic goal that can be achieved easier compared to other developing countries.

1.6.6 What is needed to upgrade?

The pursuit of upgrading requires:

- Learning and innovation as vital components of competitiveness and growth for firms and countries (Morrison, Pietrobelli & Rabellotti, 2008) and this means obtaining the technological, institutional and market competences that enable resource-deprived rural communities to advance their competitiveness and move into higher-value activities.

- An ever increasing skilled workforce that is constantly seeking to improve. Both China and India place high emphasis on skills development (Altenburg et al., 2006). China and India have nearly endless reserve armies of labour and also strongly invest in skills. Weighty labour shortages are not likely in the foreseeable future (Altenburg et al., 2006).
- Upgrading depends on the degree of collective efficiency between firms, research centres and technology and quality diffusion centres as examples (Giuliani et al., 2005). External relationships are important as firms can also acquire and assimilate knowledge through local institutions, such as technology institutes (Humphrey & Schmitz, 2002). Within Latin American Clusters, Giuliani et al. (2005) found that clusters in complex products industries like automobiles and auto-components industries, recorded lower levels of collective efficiency.
- Upgrading requires an effective innovation system that includes collective private initiatives and supportive public organisations (Humphrey & Schmitz, 2002).
- Upgrading also needs support from buyers but it seems that support needs to be induced. There have been policies implemented in various countries in order to facilitate upgrading.

Without the policies, buyers' decisions to support firms are based around buyers becoming extremely demanding and their concern to maintain their reputation. They invest in supporting suppliers because of 2 reasons referred to by Schmitz (2004) as Product definition and Risk of supplier failure.

- Product definition being that buyers provide precise specifications for their product differentiation and Risk of supplier failure is when standards of quality, response time and reliability of delivery are not met.
- Buyers provide assistance with detailed monitoring to identify failures but also assist in guiding how to solve problems.

Giuliani et al. (2005) concludes that most upgrading is not a joint, collective effort but that the buyer 'merely represents an external stimuli and spectator to the process'.

2 SOUTH AFRICA AUTOMOTIVE INDUSTRY

2.1 Country Profile

The Republic of South Africa occupies the southernmost part of the African continent and is the most advanced country with the biggest economy in Africa. South Africa officially became a member nation of BRICS on December 24, 2010, after being formally invited by the BRIC (Brazil Russia India China) countries to join the group. Its importance within the automotive industry stems from the country's abundance of raw material and it is home to more than 70% of the world's chromium, which is an essential ingredient in the stainless steel used to house the catalyst and produce modern auto exhausts (The Department of

Trade & Industry, 2013). In manufacturing, the automotive cluster is the most important and successful for the country. However, since opening the economy and entering global trade, South Africa is facing an extremely competitive environment both in attempting to enter external markets and trying to keep up with those present in the local market (Barnes and Kaplinsky, 2000, p 797).

2.2 South Africa Business Environment

The country has attracted large FDI since its reintroduction to the global market and faces intense competition from a global industry whose centre of gravity is increasingly shifting to developing countries. Other developing country auto clusters like those of Mexico and Thailand enjoy advantages of lower costs and greater proximity to major export markets. In order to compete, South Africa must address its competitive weaknesses and evaluate its environment. The external environment that could impact on the automotive industry is listed below:

Political – South Africa is governed as a constitutional parliamentary republic, led by President Jacob Zuma from the ANC. The country is politically stable for its region as it is one of six sub-Saharan African countries never having experienced a coup d'état or similar attempt (Lindemann, 2010).

Economic – South Africa has a mixed market economy with a resource-rich, middle-income emerging market. Trade and industry is undertaken within the framework of a free enterprise economy. There was robust growth from 2004 to 2007, then GDP fell nearly 2% in 2009 but recovered in 2010 – 2011 (Central Intelligence Agency, n.d.). The unemployment rate in 2012 was 24.9%, an increase from 2011's 23.9% (Statistics South Africa, 2013).

Social – South Africa has an over supplied but under skilled workforce. The government in its objectives to redistribute wealth more fairly in South Africa has pushed for an increase in skilled labour. In 2012 unskilled labour accounted for a still high 28.9% of all labour (Saunders, 2013).

There is a total of 1 274 doctoral graduates or 26 doctorates per million of South Africa's population. This is a low performance compared to other countries and one of the major challenges for the country and business (SAccess, 2011). UNESCO has cited that South Africa has 194 technicians and 821 researchers per million inhabitants whilst Brazil has 976 and 1100 (Alfaro, Bizuneh, Moore, Ueno & Wang, 2012). The country has a weakness in attracting highly skilled labour from outside the country too.

Technological – There is limited power supply capacity available which has resulted in the introduction of rolling blackouts to conserve electricity usage. South Africa is hindered by a weak technological infrastructure, which continues to inhibit the countries' progression in this area. Higher production costs from electricity and steel price increase could also

hamper the pace of growth recorded in recent years and the sector's competitiveness (The Department of Trade & Industry, 2013).

South Africa falls short in terms of transforming research into commercially viable products and services (Kgobe, Chidi & Bwagwan, 2012). In 2011, the country was granted only 123 patents, which is much lower than the number granted to other developing nations such as Brazil, Russia, and India.

Environmental – Anderson, Wentzel, Romani and Phillips (2010) findings suggests that environmental matters are not a high priority for the South African public. In this respect, South Africans appear to have views that environmental concerns are generally not seen as among the most important issues facing society.

Legal – South African law originated from Roman-Dutch law and English law. General commercial legal practices relating to transactions and the drafting of commercial agreements are generally globally applicable and in line with international norms and conventions (SouthAfrica.info, 2013). The courts are open to foreigners on exactly the same terms and conditions as South African citizens, although many commercial disputes are resolved through arbitration by agreement between the parties. Sanctity of contract is protected under common law, and independent courts ensure respect for commercial rights and obligations (SouthAfrica.info, n.d).

2.3 South Africa's Automotive Industry

The automotive industry is one of South Africa's most important industries, with many of the major multinationals sourcing components and assembling vehicles from South Africa for both the local and international markets. The South African automotive industry hosts a number of multinational OEM and components manufacturers that are situated in three provinces, namely Gauteng, the Eastern Cape and KwaZulu-Natal (The Department of Trade & Industry, 2013). Despite its distance from some of the major markets, Africa and particularly South Africa, does produce high quality products at prices competitive with other automotive manufacturing and assembly centres (SouthAfrica.info, n.d).

2.3.1 History of the motor industry in South Africa

The South African automotive industry developed under high levels of protection (Black, 2001) which encouraged the establishing of plants by Ford and General Motors in the 1920's (Barnes & Kaplinsky, 2000).

The government supported this industry as it tried to change the dependence on imports by developing the local industry. There was an implementation of high tariffs to discourage imported vehicles and thus create a need for locally produced vehicles. Consequentially, many OEM's set up assembly plants, helping fuel rapid growth in the manufacturing industry (Black, 2001; Barnes & Kaplinsky, 2000).

This changed in the 1970's as leaders like Ford and General Motors withdrew their investment because of sanctions imposed against the country because of the world's intolerance of the apartheid regime. This was not the case for all OEMs though, as BMW and Volkswagen maintained their operations (Barnes & Kaplinsky, 2000). Nonetheless, development did stagnate in the industry through this time leaving South Africa's economy uncompetitive.

Sanctions were lifted as the country went through transformation in the 1990s and there was a wish to participate in the global economy. Since then the country has been attempting to catch up to the global market.

2.3.2 The size and role of the South African automotive industry

In 2011, the sector contributed 6,8% of the country's gross domestic product (GDP) and of the 0,6 million vehicles produced in Africa, South Africa contributed almost 80% (The Department of Trade & Industry, 2013). South Africa was ranked 24th in respect of global vehicle production, with a market share of 0,61% (The Department of Trade & Industry, 2013, NAACAM, 2011). This is incredibly small in relation to global production but markedly significant to the country (Table 1).

Table 1. SA Vehicle Production vs. Global Production

	2000 (million)	2006 (million)	2009 (million)	2010 (million)	2011 (million)	Change 2011/10
Global Production	58,40	69,33	61,70	77,61	80,10	+3,2%
South Africa Production	0,357	0,588	0,374	0,472	0,538	+14,0%
SA Share of Global Production	0,61%	0,85%	0,61%	0,61%	0,66%	

Source: *National Association of Automobile Manufacturers of South Africa*, 2013.

The industry has recorded positive gains with an estimated 540 000 vehicles produced locally in 2012 from 373 923 in 2009 (The Department of Trade & Industry, 2013). Further, both left and right hand drive vehicles are produced in the country and exported to 77 destinations. A sizeable portion of the vehicle models produced by major international OEMs in South Africa are also produced in India, China and Brazil. These countries are exceptionally strong competitors and so South Africa also finds itself diversifying into new trade areas and business links in Africa, Asia, the Middle East, South America and, importantly, with the new emerging automotive giants, China and India (The Department of Trade & Industry, 2013).

The main destinations for South African automotive products remain first-world markets as many European OEMs and Suppliers already buy components from South Africa amounting to more than 2 billion rand annually (NAACAM). Germany comprised of

29,3% of South Africa's total automotive trade in 2010, followed by Japan with 12,6% and the US with 12,4% of total automotive trade (The Department of Trade & Industry, 2013).

The most recent recorded numbers to be found say that in 2011, total automotive component exports amounted to R38.8 billion, from R30.8 billion the previous year. The export basket was dominated by the catalytic convertors to the US and Europe which can be attributed to the implementation of stringent emission legislation in those regions. In the top 10 exported components, catalytic convertors make up 50% of the total export basket (NAACAM, 2013).

There are 16 of the 20 major global first tier suppliers present in South Africa (NAACAM, 2013). The top 10 exported automotive components are reflected in Table 2. South Africa is seen as the gateway to Africa as almost 20% of vehicles locally produced are destined for the African market and have been growing.

In 2012, Algeria, Nigeria, Zambia, Zimbabwe, Mozambique and Angola were South Africa's leading export destinations for vehicles, both light vehicles as well as medium and heavy commercial vehicles.

Table 2. Top 10 Component Exports

Component	1995 (R million)	2000 (R million)	2010 (R million)	2011 (est.) (R million)
Catalytic Converters	389	4 683	14 761	19 600
Seats, Stitched Leather	1 019	1 915	2 898	2 100
Engines and Parts	111	485	2 470	2 800
Tyres	213	682	1 133	1 700
Silencers/Exhausts	76	377	1 696	2 100
Radiators	55	127	782	1 000
Automotive tooling	153	362	518	500
Wheels	157	551	383	500
Total Components	3 318	12 640	31 467	37 500

Source: National Association of Automobile Manufacturers of South Africa, 2013.

2.3.3 Employment levels

South Africa's automotive industry is a significant employer. There has been relative employment stability where current employment levels are 29 000 at OEMs, 68 000 at component manufacturers and where approximately 67% of the cluster's total employment is concentrated in the area of motor trade, distribution and servicing, amounting to approximately 200 000 jobs (Naamsa, 2012).

South Africa currently houses manufacturing plants for major industry players, namely, Volkswagen, Toyota, Mercedes, Ford, BMW, General Motors and Nissan Fiat. In 2010, investment ventures collectively valued at more than R11 billion were announced by global automotive manufacturers with operations in South Africa, and further R4-billion

worth of investment in the components sector. Together, both the vehicle and component manufacturing investments could generate more than 20 000 jobs (The Department of Trade & Industry, 2013).

2.3.4 Broad-based black economic empowerment

The Broad-Based Black Economic Empowerment (hereinafter: BBBEE) Act 53 of 2003 is aimed at promoting economic transformation by enabling meaningful participation of black people in the economy. Government has required business sectors to collaborate in developing their own sector-specific charters that depict the sector's plans for transformation and the implementation of the BBBEE Act (Pillay & Phillips, 2009, p. 30).

Progress by businesses and business sectors in achieving Black Economic Empowerment (hereinafter: BEE) compliance is measured with the use of a balanced scorecard. The scorecard measures three fundamental elements of BEE (Hugo, Badenhorst-Weiss & Van Biljon, 2006):

1. Direct empowerment through ownership and control of enterprises and assets
2. Human resource development and employment equity
3. Indirect empowerment through preferential procurement and enterprise development.

This BBBEE compliance is only acceptable if the scorecard has been verified by a rating agency. The Government Gazette (2008) set out this requirement where companies must verify their scorecard measurement via a rating agency who will merely audit the scorecard and supporting documentation.

Organisations in a certain industry must, according to charter targets, purchase their supplies from previously disadvantaged organisations so that active inclusion of black individuals at all levels. Organisations' power and influence is therefore used to compel transformation through the whole supply chain.

2.4 South Africa Automotive Industry Supply Chain

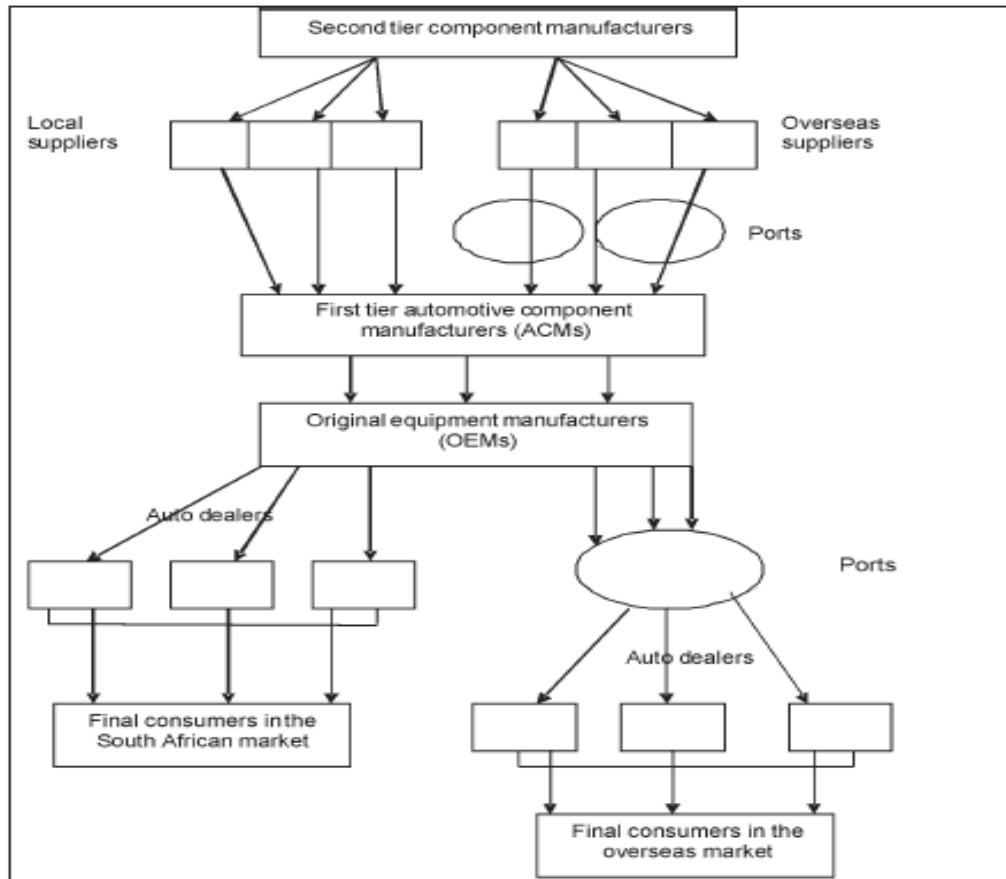
A number of studies have drawn attention to gaps in the manufacturing competitiveness levels of South African automotive component suppliers.

Naude & Badenhorst-Weiss (2011a) managed to depict the automotive industry supply chain (Figure 6). It was shown that South Africa's automotive industry participants are limited to production of components and assembling of cars, and retail in the form of:

- **Automotive component manufacturers:** 1st tier suppliers supply components to OEMs, OESs and the aftermarket.
- **Original equipment manufacturers:** Passenger and commercial vehicle assemblers
- **Original equipment suppliers:** Automotive parts and accessory sales through OEMs

- **Automotive retail and aftermarket:** Automotive parts and accessory sales through independent retailers and repair shops.

Figure 6. Role Players in a Typical Supply Chain in the South African Motor Industry



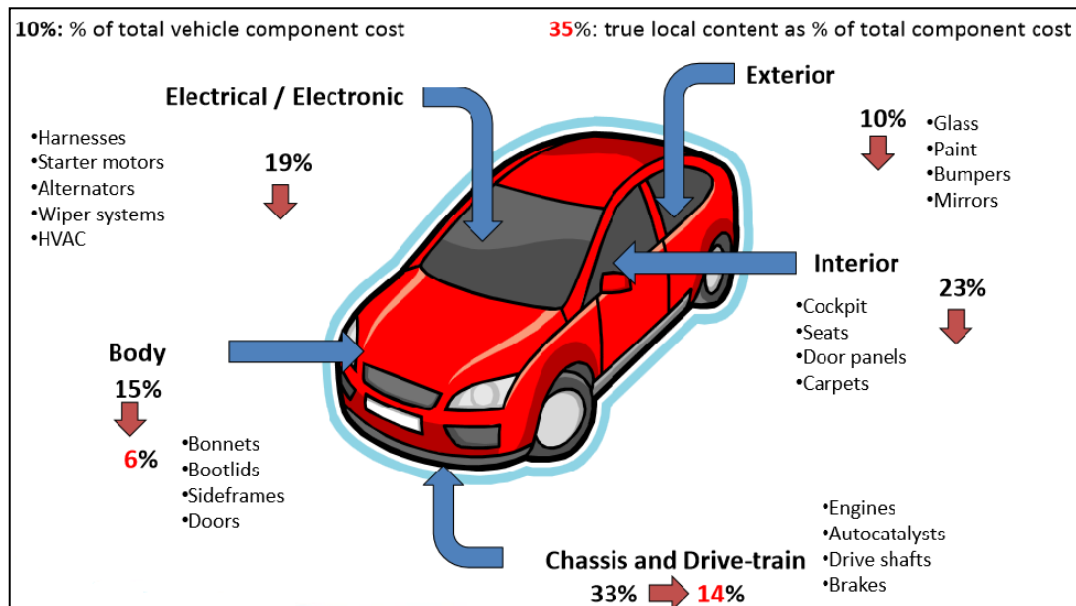
Source: M. Naude & J. Badenhorst-Weiss, *Supply chain management problems at South African automotive component manufacturers*, *Southern African Business Review*, Volume 15 Number 1, 2011a, p. 70-99.

2.5 Industry Policies

The Motor Industry Development Plan (MIDP) was introduced by the South African government as a means to make the automotive industry a competitive industry. In the country's attempt at attracting foreign investment, the policies implemented have managed to do just that, but at the expense of local content. Local content is very low and this has been as a result of the scrapping of mandatory local content requirements that existed pre-MIDP.

Figure 7 shows the local content proportions of a locally produced vehicle whilst still under the MIDP. The MIDP allowed OEMs to offset duties through exports and thereby eliminated component protection and in turn, lowered local content. In addition, much of the manufacturing supply chain is not yet globally cost competitive.

Figure 7. Indications of Decreases in Local Content



Source: *National Association of Automotive Component and Allied Manufacturers website, Newsletter no.28, November 2012.*

Governments around the world provide both financial and non-financial support to develop their domestic industries. South Africa is no different. In 1995, the government introduced the MIDP and in early 2013 replaced this with the Automotive Production and Development Programme (APDP), which will run until 2020 (The Department of Trade & Industry, 2013).

Similar to the MIDP, the APDP has four key components:

Table 3. MIDP & APDP Comparison

MIDP	APDP
Productive asset allowance	Automotive Investment Scheme (AIS)
Duty-Free Allowance	Duty-Free Allowance
Import rebates	Import Rebates
Tariffs	Tariffs

The main objectives of the Automotive Production Development Programme (APDP) is to raise production volume to 1.2 million vehicles per annum by 2020 and considerably expand and deepen the components supply chain (The Department of Trade & Industry, 2013).

Apart from the successes achieved since 1995, the industry faces a number of challenges as it enters into the APDP model. 'Economies of scale in assembly and the depth of domestic component manufacturing are not yet internationally optimal. A relatively small number of automotive components dominate the export basket and local content has tended to stagnate' (The Department of Trade & Industry, 2013).

The difference lies in the following key elements:

1. The investment allowance under the APDP is in the form of a cash grant (20 – 30%), while support under the MIDP's productive asset allowance was duty rebate-based.
2. The duty-free allowance under the APDP is lower than that under the MIDP, but is earned on all vehicles assembled in South Africa, while under the MIDP only those vehicles assembled and sold in the local market qualified.
3. The import rebates earned under the APDP are based on local value added and not on exported local content as was the case under the MIDP.
4. Tariffs under the APDP are kept constant, whereas they gradually reduced under the MIDP.

While the MIDP aimed to re-integrate the local automotive industry into global supply chains, the APDP seeks to build thereon and drive the achievement of improved economies of scale, hence the introduction of a minimum plant volume of 50 000 units per annum for light motor manufacturers to participate in the programme.

When the MIDP was introduced in 1995, imports comprised of only 25 339 vehicles. By 2011, imports had increased to 362 390, representing approximately 66% of total car sales domestically (NAAMSA, n.d.). Germany, Japan and South Korea remained the top three countries of origin for passenger car imports during 2011 (dti, n.d.). The industry has experienced an increasing trend in the import of aftermarket parts to complement the products not manufactured in the domestic market (The Department of Trade & Industry, 2013).

Table 4. Imports as a Percentage of South Africa's Total Sales

	2005	2006	2007	2008	2009	2010	2011
Total domestic car sales	419 868	481 558	434 653	329 262	258 129	337 130	440 002
Imported car sales	208 892	266 247	265 095	203 808	163 750	223 390	318 325
Imports as a percentage of total car sales	50%	55%	61%	62%	63%	66%	n/a
Import as a percentage of South Africa's total LCV sales							
Total domestic LCV sales	170 132	199 677	204 386	169 466	118 159	133 756	149 301
Imported LCV sales	23 199	40 208	47 760	50 825	32 496	36 911	40 597
Import as a percentage of total LCV sales	14%	20%	23%	30%	28%	20%	n/a

Source: The Department of Trade & Industry (Creamer Media, 2011 and NAAMSA, 2012).

The percentage increase of imports of total car sales has been on the rise since almost 2 decades ago, with imports of the Light Commercial vehicles (LCV) contributing almost half of total vehicle imports (Table 4).

The introduction of the MIDP resulted in a noticeable increase in exports from South Africa, predominantly in the passenger car segment. In 1995, approximately 15 764 vehicles were exported and in 2011 that figure surged to 272 457 (The Department of Trade & Industry, 2013). South Africa itself uses right-hand drive vehicles but in 2011 the industry exported both left- and right-hand drives to more than 80 countries.

2.6 South Africa Automotive Industry SWOT

Table 5. SWOT Analysis

<p>Strengths:</p> <ul style="list-style-type: none"> • Supportive public sector (MIDP and APDP) • Industry is part of global sourcing networks, particularly at OEM and Tier one component level • Continuing market growth • Production facilities cater for right-hand-drive vehicles, enabling manufacturers to export to other RHD countries • Effective export market, bolstered by strong and reliable transportation facilities • Economy is generally stable compared with other African markets and • The country's economy dominates Sub-Saharan Africa 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Dislocation from major export markets, and the concomitant increased logistics costs associated with getting the product to major export markets; South Africa is far removed from the large markets of Europe and North America. • Low volumes by global standards create higher production costs; • Limited investment by lower tier component manufacturers; • Inadequate leverage of high-quality automotive research facilities in local universities; • Shortage of high-level management and engineering skills, particularly within the supply base; • Automotive sector is highly exposed to global markets and trends as most production is for international markets
<p>Opportunities</p> <ul style="list-style-type: none"> • Market access via international trade arrangements (e.g.EU and BRIC); • Domestic production expansion through improved competitiveness, economic growth and exports; • Better utilisation of the local value chain capabilities; • APDP, which replaces the existing MIDP in 2013, offers incentives to manufacturers investing in local production and could boost output; and • Potential for export of vehicles and components to the region. 	<p>Threats</p> <ul style="list-style-type: none"> • Strong Rand and associated volatility discourages export performance and planning; • Increasing sectoral trade deficit; • Relatively high administered price levels and uncompetitive behaviour; • Relatively high cost of capital raises the internal rate of return hurdle for new investments; and • Labour tension is a continuing and growing possibility, slashing gains made across production, sales and exports.

Source: Adapted from dti & Business Monitor International, 2013.

The situation with regard to opportunities and challenges in the automotive industry can be depicted with a SWOT analysis (Table 5).The implications of its strengths are that the country provides access to the African continent based on its geographic position and interactions with surrounding countries in particular. This creates an opportunity with ease of access to sub-Saharan Africa and also the country has free trade agreements with major export markets too (eg. EU and BRIC). Exporters benefit from the protection afforded them in previously the MIDP and now the APDP. The new policy presents opportunities to increase economies of scale and aims to strengthen the local supply chain. South Africa also is the most developed country in Africa, so when compared to other African countries, it offers benefits in that its transportation facilities are strong and can easily facilitate exports. Further, despite the country using left-hand-drive vehicles, it is equipped to and is

also producing right-hand-drive vehicles for exporting indicating its versatility in production.

The situation is not all positive as there are challenges for the country to overcome. The geographical position also counts against the country as the distance isolates it from major markets and thus needs strong logistics and infrastructure as time is then an additional concern to factor in. The production volumes are low in relation to global numbers and this creates higher production costs. The domestic market is small too and so most production is for export making the demand dependent on exports. Another concern is currency volatility negatively influences profitability of the local industry and there is an ever present labour tension that threatens the stability of the industry.

3 RESEARCH METHODOLOGY

The research aim was to investigate whether automotive component manufacturers within South Africa were upgrading and whether they receive support from buyers. The research process began with the exploration and consolidation of available secondary data such as literature on the automotive industry, its structure, trends, developing countries and studies on upgrading in particular. The main findings of this study are based on primary data collated from questionnaires completed by and further interviews conducted with representatives of component manufacturers.

3.1 Research Design

Qualitative and quantitative approaches were conducted in this Master's thesis in order to attempt to answer the research questions. Two separate methods were decided on in order to collect both quantitative and qualitative data. The primary data required to conduct this study was collected initially with the use of a questionnaire. The questionnaire would identify who upgraded and the interview was expected to give details about the exact type of upgrading that occurred and support received. The nature of the study was more detail oriented in order to answer the research questions.

Questionnaires are used in quantitative research methods and in order to target large numbers of respondents, as questionnaires are useful to gather large quantities of the same information (Wisker, 2008). From literature and previous studies we've seen that in order to answer both research questions, the use of only a questionnaire would not suffice. A mixed method data collection approach was used as it is encouraged for business and management research (Cameron & Molina-Azorin, 2011). For this reason, an explanatory research construct is also required and is done in the form of individual interviews. Interviews are useful when needing to get respondents to expand on their own perspective and so can be used to follow up a questionnaire and to supplement information provided in a questionnaire (Wisker, 2008). It was important to adhere to a sequence by performing the

interviews after questionnaire completion because the interviews would expound on questionnaire data collected.

The use of more than one method or source of data in the study of the same phenomenon is known as Triangulation (Bryman & Bell, 2011). Methodological triangulation is where both quantitative and qualitative methods of data collection are used. This type of triangulation was used for the research work.

Jack & Raturi (2006) cite three rationales frequently given for using methodological triangulation:

1. The first is completeness, in that quantitative and qualitative methods complement each other, providing richness or detail that would be unavailable from one method alone.
2. The second rationale is contingency, which is driven by the need for insights into how and why a particular strategy is chosen.
3. The third rationale for triangulation is confirmation because it should improve the ability of researchers to draw conclusions from their studies and might result in a more robust and generalisable set of findings.

Its use thus increases study credibility by combining theoretical views, methodological approaches, data sources, and analysis methods.

3.2 Sampling Method and Size

The proposed unit of analysis is the firm i.e. a component manufacturer in South Africa. The identification of the sample was done by a non-probability sampling technique where all members of the National Association of Automotive Component and Allied Manufacturers (NAACAM) that manufacture, supply or assemble components for the automotive industry were chosen as the population.

The members list is not a comprehensive list of all manufacturers but provides a sample of the component industry. NAACAM's database contained 200 firms but the total population estimate was more than 400 at the time the study was performed. After sorting and eliminating non-manufacturers, a total of 110 firms were identified.

It is a purposive homogeneous sample as it is derived from an organisation within the South African automotive components supplier industry. The target audience was Chief Executive Officers (CEOs), Managing Directors (MDs) and senior managers from automotive components manufacturers as indicated on the NAACAM website.

3.3 Data Collection Tool and Process

It was an online questionnaire and the link to the questionnaire was sent by individual email to senior managers, CEOs or MDs as listed on the NAACAM database. This was

done in a series of 4 emails over the period July 2013 to October 2013. The final email was sent by the NAACAM Executive Director directly to members resulting in a significantly increased number of completed questionnaires.

The web-based questionnaire was constructed on the website www.1ka.si. It was modeled off of a questionnaire used by Grota (2010) in an analysis of innovation of the South African automotive industry. The questionnaire was adapted to gather information about upgrading in the South African automotive industry.

A copy of the online questionnaire is attached in Appendix A. The questionnaire makes use of structured questions which makes it easier to code questions and answers (Wisker, 2008). An attempt was made to simplify questions and answers in order to evade ambiguity or too much detail. Closed-ended questions are quick for respondents to complete and when distributed to a large sample, are easier to code and analyse. Questionnaires are also employed as devices to gather information about people's opinions, by asking respondents to indicate how strongly they agree or disagree with a given statement using likert-scale questions (Wisker, 2008). Likert-scale questions were added to determine supplier perceptions. This data will give insights about the upgrading support status of South African automotive component manufacturers and reveal what sources they are using to purposefully pursue upgrading.

Further, those firms that participated by completing the questionnaire were then contacted by telephone and asked if they would answer a few more in-depth questions. The appointment was made for the telephone interview to be held the next day. Most firms refused while only 5 consented and their further findings are described below.

The semi-structured telephone interviews were 20 minutes in duration. The interviews were moderated by the author of the research report. Anonymity was agreed beforehand, so no names of individuals or firms have been used. The interviews were conducted over the period September 2013 to December 2013 with 2 MDs, 1 CEO and 2 Senior Managers whose roles pertained to strategy. The in-depth interview process included writing an in-depth interview guide, conducting the interview and analysing the data.

3.4 Data Analysis Approach

The questionnaire results are divided by group (MNC and local), then analysed by theme, in which the answers of both groups are compared. Further, the Mann-Whitney test was utilised to analyse MNC and local firms' group results. The Mann-Whitney test is a non-parametric statistical test that is used when the data is ordinal and allows for testing differences between groups when the populations are small and not normally distributed (Mann & Whitney, 1947).

The notes of the interviews were used to analyse the data collected by questionnaire. Both questionnaire and interview data was summarised, interpreted and analysed before drawing

conclusions. Summarising helps to compare information in a standardised format. The analysis was aimed at the identification of patterns of upgrading amongst South African automotive components manufacturers. The aim of the study is not to identify causal relationships but rather to explore the hypotheses with newly gathered data. Simple analysis of the ordered data provided many useful insights from which deductions were drawn.

3.5 Limitations

The scope of the research is limited to the South African automotive industry and cannot be used to make inferences about other industries or developing countries. The data collected for each element in the sample represents the view and knowledge of a single individual within the firm. The research method included interviews and thus generalisations cannot be made to other firms and industries as the findings are only applicable to the interviewed firms.

The author faced a problem with conducting interviews because of logistical reasons in that the research was conducted outside of South Africa. Firms in South Africa are reluctant to participate in studies in general and when attempting to collect data it would have been better to do so in person instead of email and telephone.

All companies that completed the online questionnaire were approached; however, only five companies consented to be interviewed. If all firms had agreed to the interview, the findings would have more merit and as said, with the actual gathered data, generalisations cannot be made to other firms, industries and countries.

4. RESULTS

4.1 Participant Responses

To identify target companies for this research work, the NAACAM's database was used. From this, 110 companies were selected and 74 attempted the questionnaire but only 45 completed the online questionnaire thus yielding a response rate of 41%.

This work, in its investigation, focuses on 2 possible influencers of upgrading, namely 'Ownership' and 'Global Sales Linkages'. The respondents were therefore categorised according to these factors.

4.1.1 Local Firm or Subsidiary of an MNC

Whether respondents are subsidiaries of MNC's or if they are local only:

- 23 Respondents are subsidiaries of firms with a foreign head office;
- 9 Respondents are single plant firms with a local head office;
- 8 Respondents are subsidiaries of local firms

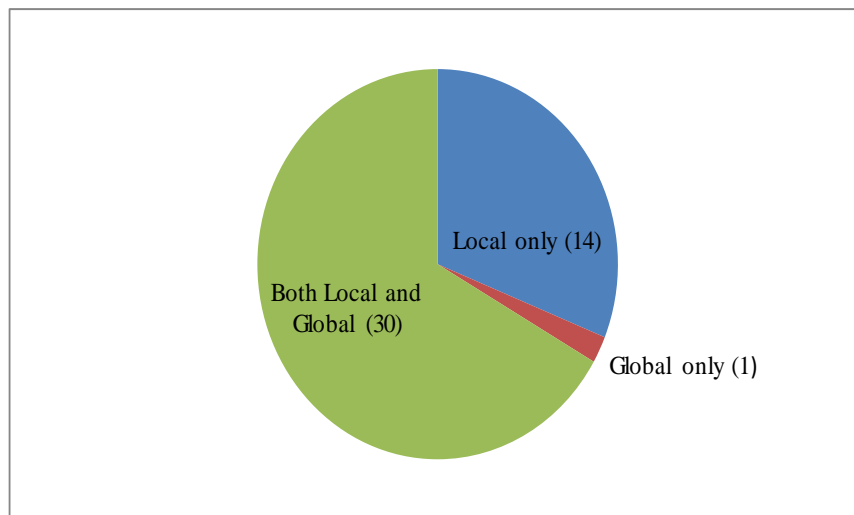
- 5 Respondents are the head offices of local firms.

Therefore, 23 respondents are classed as MNCs owing to the structure of the enterprise group they belong and 22 respondents are local firms.

4.1.2 Destination of Sales

Using a firm's destination of sales as an indicator of whether it has local or global linkages, the respondents can be categorised as having 14 firms with local sales linkages only, 1 having only global buyers and 30 having both local and international buyers (Figure 8). This classifies 14 firms with local sales linkages and 31 with global sales linkages and whether these have an impact on upgrading.

Figure 8. Destination of Sales is: (n = 45)



4.2 Discussion of results

4.2.1 Upgrading findings

The likes of India and China have seen investment in their operations and firms are upgrading. This has been the case in Korea too but Brazil has not been as fortunate with upgrading pursuits and investments. This study evaluates the situation of South Africa.

In total, of the 45 that completed the questionnaire, 31 firms reported to have not added any new activities over the last 5 years but 29 firms acknowledged having added new activities to their competences since inception. This reflects that functional development was occurring from the beginning, but from these numbers it also appears to have petered out of late.

The most common new competence added was that of component manufacturer, followed by module assembly. The component manufacturing activity was added by 4 local firms and 3 foreign firms. Module assembly was also added by both 2 foreign and 3 local.

Table 6. Upgrading Levels and Sales Linkages of Sample

	Category	MNC Subsidiary	Local Firm
	Count of firms	23	22
Upgraded over last 5 years	Total	6	8
Not upgraded over last 5 years	Total	17	14
Upgraded since inception	Total	15	14
Global sales linkages	Total	17	14
Local only sales linkages	Total	6	8
R&D department	Total	8	9

4.2.1.1 MNC Subsidiaries

Of the 23 foreign subsidiaries (MNCs) that completed the questionnaire, 6 had upgraded functionally over the last 5 years but a striking 17 of whom had not added any new activities over the last 5 years. Module assembly and component manufacturing were the most common new competence added.

This could indicate that the subsidiary is merely involved in low value functions and there's no strategy from the head office to increase or develop the subsidiary by expanding its role within the chain with the addition of new functions. However, 15 of those MNCs have changed core competences and activities since first establishing operations in South Africa and so indicating that this development occurred earlier but stopped later on.

The majority of firms (21) have direct contact with OEMs and are therefore 1st tier component manufacturers. The remaining firms supply components to 1st tier manufacturers and the aftermarket. The fact that there are so many 1st tier manufacturers and that all firms supply components primarily to the local market indicates that the follow source method is definitely occurring in South Africa.

There were 6 firms supplying products solely to the local market and the remaining 17 supply both the local and international market indicating that South Africa does have some form of comparative advantage because of the exporting to other markets. But upon closer inspection, despite exporting, it was found that sales were primarily local and only 3 acknowledged that their global sales were the more dominant source of income.

There are 8 firms with R&D departments and their innovation focus is depicted in Table 7 below. Of these 8 firms, only 3 firms upgraded over the last 5 years. These firms upgraded by adding component manufacturing (2 firms) and marketing with distribution of own product (2 firms).

Table 7. Innovation focus of MNC firms with R&D departments

Do you have an R&D department?	Processes	Product	Materials
Yes		x	x
Yes	x	x	x
Yes		x	
Yes	x	x	
Yes	x	x	x
Yes	x	x	x
Yes	x	x	
Yes		x	x

For all firms, the focus is primarily on product innovation more than processes. Firms are therefore implementing and adhering to processes determined by the group and then making modifications to existing products or developing new products. There has been an innovation focus on products and materials by all 3 upgrading firms, with manufacturing and logistics processes being a priority for 2 firms. The remaining firms in the sample have an innovation focus, but do not have designated departments for it.

Of the 15 firms that do not have R&D departments, there were 3 firms that upgraded over the last 5 years. These firms upgraded by adding module assembly (2 firms) and component manufacturing (1 firm) to their operations. Their innovation focus was marked as being on manufacturing and logistics processes only, so it could be said that the addition of module assembly would not have been as a result of their own gradual development. It was rather a function determined and developed by the parent and then the local operations were modified accordingly.

4.2.1.2 Local Firms

There were 22 local firms that completed the questionnaire and of these firms, 8 firms upgraded over the last 5 years. The most common were 4 firms adding component manufacturing and 3 adding module assembly. There were 14 who had not added any new activities over the last 5 years. Alarming, 6 of the 14 local firms had not even changed core competences and activities since inception.

The roles of local firms were shown to be that the majority were 2nd tier manufacturers (17), then 1st tier supplying direct to OEMs and also to the aftermarket.

There were 8 firms having sales that could only be attributed to the local market, a further 1 firm had only global sales and 13 local firms have sales both locally and internationally. Similarly as with MNCs, despite firms supplying to both local and international, the local sales portion was still found to be the more dominant source of income with only 2 firms marking global sales as the larger component of their revenue.

Table 8. Innovation focus of Local firms with R&D departments

Do you have an R&D department?	Processes	Product
Yes	x	
Yes	x	
Yes		x
Yes		x
Yes	x	x
Yes		x
Yes	x	x
Yes	x	x
Yes		x

Of all the local firms, 9 firms have an R&D department and the main focus appears to be product innovation as can be seen in Table 8 above. 4 firms with R&D departments upgraded over the last 5 years. Their upgrades came in the form of module assembly (3) and component manufacturing (1). The remaining firms have innovation focus despite not having R&D departments where 4 firms without R&D departments upgraded as component manufacturers over the last 5 years. However, there are 3 exceptions that are not engaging in any innovation whatsoever which partially explains why they have not changed competence since inception.

4.2.1.4 In-Depth Interviews on Upgrading

Table 9. Upgrading Status of Interviewed Firms

	Upgrade	Method of Upgrading	Ownership	Global Linkage
Firm A	Functional	Acquisition	Local enterprise	Exporter
Firm B	Functional	Acquisition and development	Local enterprise	Exporter
Firm C	Process	'Doing the same things, but better'	Local	Exporter
Firm D	Inter-chain	Development	Local	Exporter
Firm E	Functional	Acquisition	Local enterprise	Not Exporter

FIRM A - Firm A upgraded to module assembly over the last 5 years. This was done by inheriting processes and products as a result of their acquisition of an established company. There was therefore no actual development but rather that there was an immediate expansion of its competence.

It is a 100% South African company with two international offices. Firm A has local and global reach where they serve 1st tier manufacturers, assemblers and the aftermarket.

Locally it's the aftermarket, Volkswagen and General Motors. Globally their components are sold through distributors in the United States, Canada and Russia.

Firm A does have a department designated for R&D and established it because of buyer expectations. There weren't overseas competitors within the country and so the firm felt it was essential in order to be a leader and capture most of the market. It has proved fruitful in that they have managed to build up financial resources to buy their upgrade.

Firm A attributes its revenues to 60% local and 40% exports but before the acquisition, it was the other way around. Its global linkages have provided a platform to learn and the firm has become more attentive to improving operations.

FIRM B - Their customer is the aftermarket but they do have contact with OEMs who provide the drawings for the vehicle from which Firm B develops parts and accessories.

The firm has had design capabilities from the beginning and have made products to their own design. Firm B's view is that they have been upgrading in that, they are constantly striving and becoming better at designing. Also, that their products are unique and their competitive advantage is that they make a range of products and also have a good distribution setup. Firm B has design capabilities and has continuously invested in developing these capabilities. The firm is not developing anything but is rather replicating what is done elsewhere and trying to improve on it.

Firm B stated that there had been acquisitions and definite development in the beginning stages; however, this was not the case over the last five years. There had been an increase in competence based on approximately 50% acquisition and 50% development over the years.

The firm does export but sales are predominantly local. Firm B mainly supplies into Africa, countries like Zimbabwe, Zambia, and other Southern African states and does so by their own efforts into Africa. Firm B believes they have an advantage with distance and knowing the market well. The prospect to export does motivate the firm to stay up to date with market developments and motivated to innovate.

FIRM C - Firm C is a 2nd tier supplier and stated that the product offering had not increased and rather that the firm was producing the same things but continuously striving to do better with new methods, processes and technology.

The firm has been replicating what is done elsewhere but does believe that many aspects of its operations are original innovations. Firm C has had technology upgrades to improve efficiency and quality. Firm C's view is that their product quality isn't really questionable because they have received the necessary certifications that just need to be maintained. Firm focus is on price and delivery mainly. Here there is no designated department for R&D.

Firm C too notes having 60% local sales and 40% direct exports. The bulk of Firm C's components go into South Africa but it is then indirectly exported. These global linkages have not really aided in development because of the lack of direct communication with buyers.

FIRM D - Firm D has upgraded by moving into new spheres within mechanical and electronic engineering even outside of the automotive industry. The Firm has developed 4 divisions in the areas of CNC machinery (for drill tables), automotive, engineering development and skills development by providing access to machinery and training to universities, colleges and technical schools.

Firm D stated that the inter-chain upgrading happened as a result of decreases in volumes demanded. This decrease occurred despite a good reputation for the company but rather because of poor productivity within South Africa as a whole. Firm D thus looked to other areas within mechanical and electronic engineering, then producing products for other sectors in addition to automotive. Firm D supplies to OEMs and has some distributors but the volumes have dropped as the economy worsened.

Sales are generally local but the firm has ambitions to export more. This is pursued ad hoc but if receiving no response, then reverts to focusing solely on local. This is why there was more focus to branch into other spheres of engineering. Firm D claims that it should have closed down five times already but each time 'we keep re-inventing ourselves... if we don't, we die'.

FIRM E - Firm E is a tier 1 and tier 2 component manufacturer. Firm E feels that the reason for being considered as a supplier initially, at the beginning, is because of the reluctance of buyers to import products like batteries. Buyers were reluctant because the transport of large amounts of it can be dangerous and so the preference was to localise production. This contributes to why Firm E is still up and running. The firm has further upgraded functionally but did so by means of an acquisition.

The goal is to export, to increase exports and has cited the reason as being that based on the rebates, with exports, the rebate certificate is attributed directly to the firm. As opposed to when selling directly to the OEM within South Africa, then the rebate certificate is automatically ceded to the OEM. So the firm does not benefit directly and therefore prefers to have more exports than local sales. Firm E is attempting to be strategically minded in its pursuit of longevity but does not engage in R&D really and rather operates using licence agreements and feels the global sales will secure this longevity.

4.2.1.4 Comparison of Upgrading Findings

The primary concern for a country like South Africa is functional upgrading. This work, in its investigation, focuses on 2 possible influencers of upgrading, namely 'Ownership' and 'Global Sales Linkages'. The research question to be answered was:

- What type of upgrading is occurring in the components manufacturing industry with multinational subsidiaries and local firms?

In total, 45 firms completed the questionnaire where 23 were MNCs and 22 Local firms. The majority of MNCs that completed the questionnaire were 1st tier and the majority of local firms were 2nd tier component manufacturers. This was consistent with the theoretical views on developing countries where the 2nd tier is comprised of mainly local firms (Wad, 2010).

Hypothesis 1: MNCs will be more prone to functionally upgrade than local firms.

UNIDO asserted that for upgrading to occur, the acquisition of capabilities and access are interlinked (UNIDO, 2002, p. 105). Access to a global value chain facilitates and accelerates the acquisition of capabilities. Similarly, the acquisition of capabilities empowers the firm to pursue and expand its market access. MNC subsidiaries in developing countries find themselves in a position where they can learn from the parent and where access to tools to upgrade is more readily available. Thus, Hypothesis 1 asserts that MNCs will be more prone to functionally upgrade than local firms.

Table 10. Test Results for Hypothesis 1

Results	MNC	Local Firm
Sample Size	23	22
Mann-Whitney U	227	
Wilcoxon W	503	
Z	-0.736	
Asymp. Sig. (2-tailed)	0.462	

A Mann-Whitney U test was run to determine if there were differences in MNC and Local Firms' upgrading status. Distributions of the upgrading scores for MNC and Local Firms were similar, as assessed by visual inspection (Table 10). Mean ranks and median upgrading score was not statistically significantly different between MNC and Local Firms, $U = 227$, $z = -0.736$, $p = .462$.

Overall, the situation with the two groups' upgrading status was much the same. The majority of MNC subsidiaries and local firms within the country were not upgrading functionally. Of those who were, it was found that module assembly and component manufacturing were the most common new competence added. The MNC subsidiaries are able to survive without local innovation pursuits because it can always rely on the parent for new technology and enhancing their operations.

The local firm is not this fortunate and considering that they are predominantly 2nd tier component manufacturers, they are not in a very commanding position in the chain, they are faced with many competitors and so they do need to be constantly striving to improve. A concerning finding was that 6 local firms had not added any new activities since

inception and in a technology intensive industry; this is unacceptable in order to continue to be a part of it. Also, the lack of R&D designated facilities and staff for both MNC and local firms infers that upgrading is not being actively pursued by all. By not having R&D facilities, firms are not equipped to keep up with international advancements. Firm C stressed just being focussed on maintaining their position and so not partaking in R&D and Firm E too said to be striving just to replicate what's done elsewhere. Upgrading requires a foundation of technological capability but is built through purposive innovation and learning (UNIDO, 2002, p. 105). For this reason, we would expect that R&D would be more prevalent.

All MNCs predominantly supply the local market whereas many local firms supply both the international and local markets (Table 11). However, supply internationally was of a smaller total proportion of sales.

Table 11. Firms Categorised By Ownership Structure and Destination of Sales

Global Sales	17	14
Local Only Sales	6	8
	MNC Subsidiary	Local Firm

Hypothesis 2: Firms with global sales will be more prone to functionally upgrade than firms with local-only sales.

Integration into a global value chain allows for rapid growth and upgrading opportunities. Gereffi, Humphrey, Kaplinsky & Sturgeon (2001) has said that linking into global chains encourages upgrading. Global value chains provide a means for accelerating the development of firms, providing openings that developing country firms can exploit to upgrade their capabilities (Humphrey, 2004; UNIDO, 2002). Hypothesis 2 surmises that firms with global sales will be more prone to functionally upgrade than firms with local-only sales.

Table 12. Test Results for Hypothesis 2

Results	Local Only Sales	Global Sales
Sample Size	14	31
Mann-Whitney U	209	
Wilcoxon W	314	
Z	-0.245	
Asymp. Sig. (2-tailed)	0.807	

A Mann-Whitney U test was run to determine if there were differences in upgrading status of firms with Global Sales and Local only sales. Distributions of the upgrading scores for firms with Global Sales and Local only sales were similar, as assessed by visual inspection (Table 12). Mean ranks and median upgrading score was not statistically significantly

different between firms with Global Sales and Local only sales, $U = 209$, $z = -0.245$, $p = .807$.

The interviews also revealed that upgrading was occurring as a result of acquisitions so firms were not necessarily developing but rather buying their upgrade. Of the five firms interviewed, Firm A, Firm D and Firm E had upgraded over the last five years, another, Firm B, said upgrading happened more than five years ago and the remaining Firm C, had not upgraded functionally. The firms believe that global linkages aid with upgrading and business longevity but Firm C feels that having global linkages do not really aid in development because of a lack of direct communication with buyers.

These group findings reflect that there is an element of complacency present and it is further confirmed by the interview findings where firms admitted not lobbying for new customers, even with one going so far as to say that it's easier to only maintain existing relationships.

4.2.2 Buyer support findings

4.2.2.1 MNC Subsidiaries

The internal governance of the value chain has an important impact on the scope of local firms' upgrading (Humphrey & Schmitz, 2000). The governance of the automotive chain is characterised as being quasi-hierarchical in developing countries in general (Humphrey & Schmitz, 2001) and this was confirmed within the results. MNC subsidiaries did not have much design capacity and primarily produced products to buyer design specifications or as designed in other parts of the group. Only 26% of respondents attributed all products to being developed by their unit. There is therefore much reliance on the buyer which emphasises that a good relationship is needed for the longevity of the firm.

Table 13. MNCs Communication & Assistance Relationship with Buyer (n = 23)

		MNC Subsidiary	Upgraded functionally over last 5 years
	Count of firms	23	23
Receive no feedback	Total	4	0
Receive feedback, no assistance	Total	18	6
Receive feedback and assistance	Total	1	1

Table 13 depicts the state of MNCs relationships with buyers. With regard to relationships with buyers, it appears that the bulk of MNCs have a very communicative relationship in that 18 acknowledged receiving performance feedback. Of those firms, 6 managed to upgrade despite no assistance. There was 1 firm that highlighted both feedback and assistance was received. Only 4 firms expressed not having any performance feedback from their buyers and subsequently all had not upgraded. The 1 firm receiving assistance

was aided in the areas of achieving quality, punctual delivery and speeding up response. For those without R&D facilities, all listed having collaborations with the parent firm. This affirms the role of the parent in providing guidance as emphasised in theory.

In order to gain skills and keep up with technological advancement, firms need to innovate and learn. This can be done independently but it is better to learn from or with others (Humphrey, 2004).

Figure 9 shows the type of collaborative relationships and the number of firms having those relationships. Collaborative relationships with others are not a standard occurrence for all based on the data collected. There are no common patterns for relationships. Within the sample, 4 firms stated that no collaborations existed for them at all. If not having collaborations, this could mean that the subsidiary is just an assembly or production hub.

The figure lists the partners and how many firms are engaging with them. Those who marked other then all elaborated that it was the relationship with the parent company that they were referring to. Besides the parent company and associations, some MNCs are utilising consultants, research centre, universities and even other component manufacturers.

Figure 9. MNCs Collaborative Relationship Partners (n = 23)

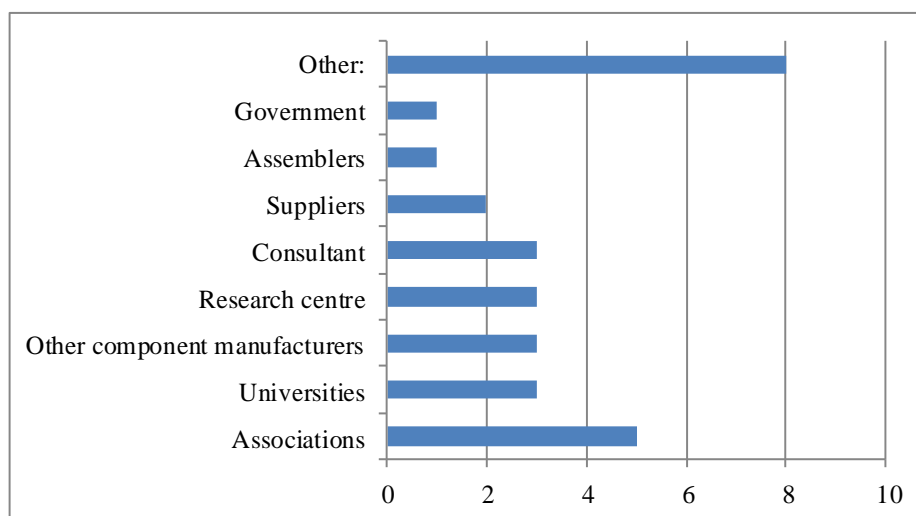
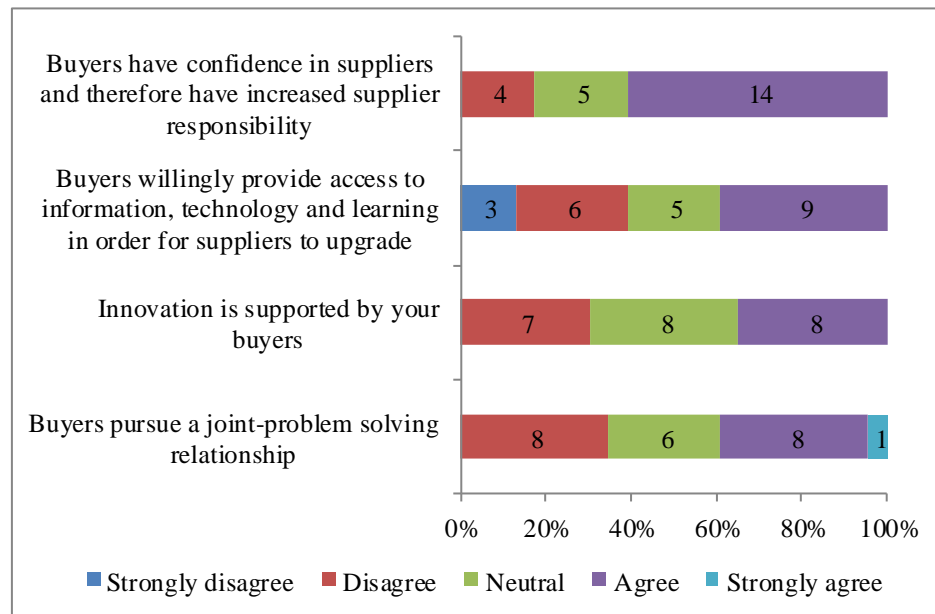


Figure 10 shows that the majority of firms believe that their buyers have confidence in them and have increased supplier responsibility (14 agree) and yet relatively large numbers had differing views regarding buyers' willingness to engage with them. Equal proportions of MNCs had opposing views where some said that buyers willingly provide access to information, technology and learning in order for suppliers to upgrade (9 agree) but an equal number disagreed with this (3 strongly disagree, 6 disagree). This suggests that MNC subsidiaries are viewed as reputable independents that are trusted to meet expectations and are believed to not require assistance in doing so. This is consistent with views that

assemblers source from global suppliers to provide components or systems in various locations and so trust is inferred (Humphrey, 2003).

Regarding the relationship these MNCs have with buyers, there does not appear to be a general consensus but a large part believes that buyers do pursue a joint-problem solving relationship (1 strongly agree, 8 agree). This echoes the idea that buyers believe in their suppliers' competence levels as they are entrusting them with joint responsibility.

Figure 10. MNC Views Of Buyer Support (n = 23)



4.2.2.2 Local Firms

The automotive industry is characterised by a buyer driven chain and it's one where local firms struggle to break into. China finds itself in a position whereby not only are MNCs investing in operations and transferring design capacity to their subsidiaries; but also, buyers are investing in firms and joint ventures are being forged with local firms (Altenburg et al., 2006). Collaborative relationships are ever-present for local firms.

Within this study, relationships with buyers are not consistent for all local firms (Table 14). It was found that 9 firms stated receiving no performance feedback from buyers and with a further 9 firms indicating receiving performance feedback without assistance. In spite of this, the number of firms that upgraded was 2 and 4 firms respectively.

A further 4 firms received both feedback and assistance from their buyers but even though that looks promising, only 2 of those 4 firms upgraded over the last 5 years. The other 2 did not upgrade over the last 5 years, of which only 1 had changed core competences and activities since inception. This indicates that change was occurring but then stagnated, and at a time when global technology is advancing even more rapidly, these local firms are falling further behind.

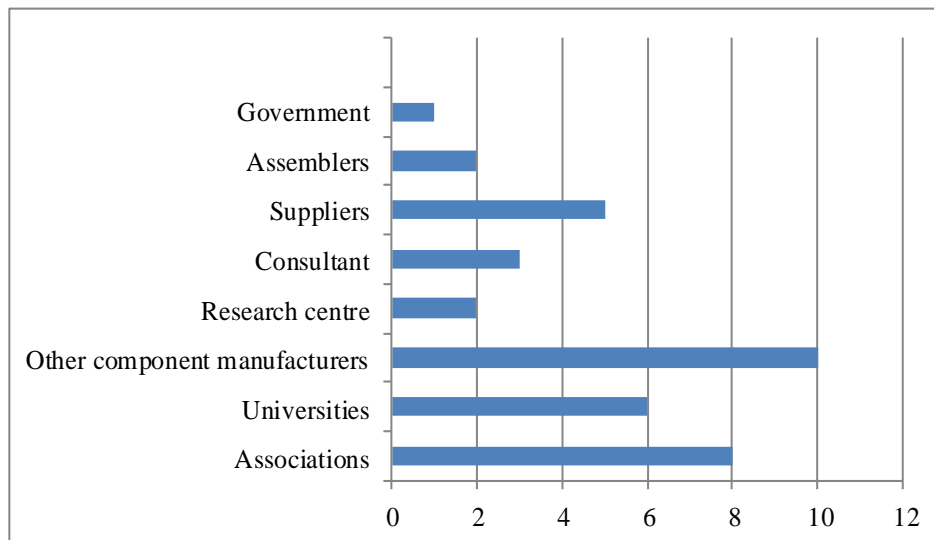
Table 14. Local Firms' Communication & Assistance Relationship With Buyer (n = 22)

		Local Firms	Upgraded over last 5 years
	Count of firms	22	22
Receive no feedback	Total	9	2
Receive feedback, no assistance	Total	9	4
Receive feedback and assistance	Total	4	2

All 4 firms that received assistance received it with regard to achieving quality and the provision of testing facilities. There were also 3 that received assistance with punctual delivery and 2 firms were helped with the upgrading of their technology.

Figure 11 shows that with regard to innovation and research, collaborative relationships amongst component manufacturers are common amongst 46% of respondents. There is an unexpected inter-dependency amongst local firms despite potentially being competitors. It is surprising considering that the market is dominated by MNCs and so local manufacturers would be expected to be more closed, guarded as they are vying against each other for business.

Figure 11. Local Firms' Collaborative Relationship Partners (n = 22)



The associations are next with regard to relationships followed by local firms' collaborations with universities. Co-operations with assemblers, consultants and government are marginal in comparison to the other collaborations listed earlier. This is unlike local component manufacturers in Brazil (Quadros, 2002) and in other Latin American countries (Giuliani et al., 2005) that made use of consultants in their pursuit of upgrading and attaining certifications.

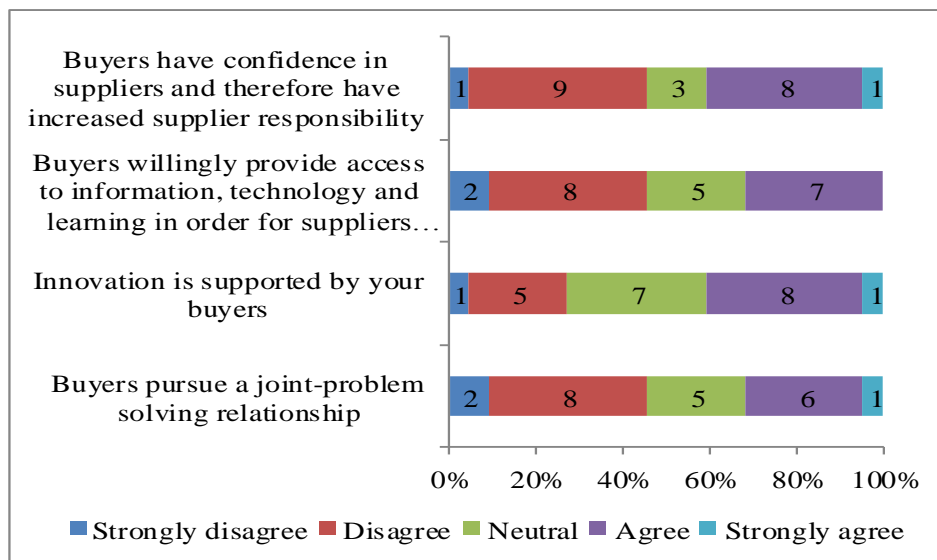
Figure 12 shows that local firms have contrasting views on how buyers view them. A large proportion believe that buyers have confidence in suppliers and therefore have increased

supplier responsibility (1 strongly agree, 8 agree) but yet a slightly larger proportion do not believe this to be the case (1 strongly disagree, 9 disagree).

Local firms know that buyers want them to innovate (1 strongly agree, 8 agree) but the relationship does not support this. Buyers are only pursuing a joint-problem solving relationship with less than half of the sample (1 strongly agree, 6 agree) and buyers' willingness to provide access to information, technology and learning was only for some too (7 agree).

Often buyers only engage with and assist local firms if they are induced to do so as is the case in China where access to the market has been used to encourage assemblers and global suppliers to assist local firms (Altenburg et al., 2007). South Africa's population and market size cannot compare to China and so the government does not have much leverage in comparison.

Figure 12. Local Firms Views Of Buyer Support (n = 22)



4.2.2.3 In-Depth Interviews on Buyer Support

FIRM A - Firm A has said that there's no assistance from buyers. Firm A says it is a prerequisite in the OEM space to have a specified certification needed to be a supplier but firms must do so on their own if they wish to be considered. An agency was consulted to facilitate the process of getting certified and it was acquired over time but has been maintained for 18 years now. Firm A ranks the product certification to be the most costly but it must be done in order to access the markets in the US and Europe. The relationships with Ford or BMW, has the OEMs coming to audit the operations to make sure that products and processes comply with OEM requirements. To quote Firms A's representative, 'They will assist you by telling you what they require but you must get your own house in order'.

Firm A states that the OEM market is dictated by the designer of the vehicle, they normally need a module and will set the specifications. 'It's a very close relationship, but more with their engineers and our product engineers. They will get together to define the product and specifications etcetera. There is very much a development relationship.' The buyer is very clear about what they want and so it has provided Firm A with information that has empowered Firm A to pursue upgrading.

Firm A believes that they are not necessarily chosen over MNCs but rather that there 'aren't overseas competitors setting up shop in South Africa' and so it's easy to source from Firm A. Firm A believes that the South African volumes are too low for overseas firms to justify a plant and so 'they normally have a joint venture to manufacture'. Even Firm A has technical agreements with Continental, a 1st tier supplier, and they manufacture their instrument cluster under licence. Firm A was not that confident before, but is confident now about its abilities as it has developed over time.

Firm A has long standing relationships with buyers. It is viewed as 'we basically have a joint venture because if they successful in selling our products into international markets, we're successful'. All global distribution has been as a result of own efforts where at trade fairs or exhibitions, Firm A has made contacts. Also saying that it is an expensive expedition and lengthy process to find distributors in overseas markets and to appoint and train them or educate them on the product.

FIRM B - Firm B states that other than receiving the drawings for the vehicle so that they can develop accessories, they receive no assistance with development or certifications. However, the interviewee affirms that because Firm B is not a tier one supplier, certifications are not that expensive. They have long standing relationships with buyers and no service is exclusively for one buyer so it is said that perhaps this is the reason for the lack of visible support.

Feedback is not common but with relation to OEMs providing drawings, Firm B would welcome better communication regarding the timeline of new models being introduced and details about the car. At present, this is provided at such a late stage that the firm is scrambling to produce something that can compete with the global suppliers that are present in South Africa. It is then done in a very short space of time.

Firm B believes that buyers have put pressure on their global suppliers to be present in South Africa and so MNCs have the better relationship which results in receiving the information or drawings sooner.

FIRM C - There is no buyer support but the firm does not expect there to be. Firm C has no foreign partnerships with regard to transfer of knowledge and has achieved as well as financed quality certifications independently. This is because Firm C echoes what Firm B said about quality certifications not being that expensive but the reason is because they are not tier 1 suppliers. A loan was not needed for that.

Firm C does not believe that the feedback it does receive allows for upgrading but rather helps just to maintain a relationship with the existing buyer. Firm C has global contracts and believes this has arisen because the firm is 'consistently supplying the best product at the best price.' The firm does not seek out buyers but rather maintains the existing long standing relationships. This is a bit worrisome as Firm C also says that they do not have many customers but have been supplying them for many years, and so new customers will find them. 'I'd rather go with a particular customer than to try and find a new customer, it's just easier'. Despite having few customers, Firm C does not have any functions exclusively for one customer.

Perhaps these comfortable relationships are a reason for the lack of support from buyers as they have not helped Firm C develop in any way. The firm tries to grow the 'lifetime value of the customers' and says the objective is to build a stronger relationship resulting in a loyal buyer. This they are pursuing despite not much communication with buyer.

Firm C further believes that buyers are often in it for the short term trying to get the lowest price and not wanting to build long term relationships. So it's not necessarily that they don't have confidence to increase supplier responsibility but they have many options.

Firm C does feel that more support is needed but does not expect it to come from buyer but rather thinks it should come from the association and government in presenting further incentives that would protect the components manufacturers too.

FIRM D - Firm D believes that MNCs access to buyer information is better. The belief is that buyers don't have confidence in local competencies, and this creates difficulties for local firms because 'buyers are not going to come with the new guy and have potentially inferior stuff in the cars when there's an established supplier'.

Firm D further says that drawings were requested from an OEM but there were all sorts of confidentiality clauses and so it never happened. Daimler fleet management in South Africa approached the firm, having heard about their design capacity and asked about making modifications to existing products. All of this was done without actual support from Daimler but the result has been successful developing a wanted product and having it certified. The buyer helped in testing the product in terms of suitability as to whether it fits their need. Firm D says 'we've done it with very little support from anybody'. Firm D has not received assistance from its buyers with regard to their own operations. But buyers help in testing whether what has been developed fits in with their need.

Firm D does not think the buyer feedback has resulted in upgrading but rather that desperate circumstances served as motivation for the firm to branch out into other spheres. If the feedback was more descriptive and more focussed around working together towards a solution, then Firm D believes it would result in upgrading. For now, the level of contact is just the buyer expressing their want and the firm interpreting and attempting to satisfy the buyer.

Also, like Firm C, has said that normally global contracts come to them. Firm D is found by buyers through word of mouth or via their website. Firm D has long standing relationships with buyers like Ford and Hyundai and some distributors. This past year has been different to the norm, because there has been a concerted effort to go out and the firm ‘hunted for more distributors... we want support to get into the rest of Africa’. Firm C is thus targeting the rest of Africa as future export destinations.

FIRM E - Firm E has found the certifications are quite easy to get, it’s not a problem but it is essential in order to be considered. Firm E would want buyers to be more communicative. Where producers sell to powerful customers, they cannot compete directly with them and must find other markets when diversifying and upgrading.

Firm E’s concern was more around government policy and that buyers will only provide support if induced to do so. Firm E feels that automotive assemblers are more supported by policies than component manufacturers and so they are not really motivated to assist the lower tier. The APDP is more for the benefit of the assemblers and to encourage an increase in the production of vehicles. The policy does not create a real need to assist the component manufacturer. Instead OEMs encourage the firms to get the certifications but not actually aiding them in the process. With regard to testing, OEMs do all testing overseas so they have no need to upgrade testing facilities in South Africa. Firm E feels local component manufacturers are on their own and their growth is limited.

4.2.2.4 Comparison of Buyer Support Findings

The value chain literature focuses on the role of global buyers and chain governance in defining upgrading opportunities and so highlights the importance of buyers’ support. Often firms become tied into relationships that leave them dependent on a small number of powerful customers and prevent functional upgrading. The research question to be answered was:

- How are upgrading attempts of both the local firms and multinational subsidiaries pursued and supported by buyers?

Table 15 below provides the descriptive statistics for the 2 firm types.

Table 15. Descriptive Statistics Of Buyer Support Views

	Category	Type		
		LOCAL FIRM	MNC	Total
	N	22	23	45
Buyers pursue a joint-problem solving relationship	Mean	3.18	2.91	3.04
	Std. Deviation	1.097	.949	1.021

	Median	3	3	3
	Std. Error	.234	.198	.152
Innovation is supported by your buyers.	Mean	2.86	2.96	2.91
	Std. Deviation	.990	.825	.900
	Median	3	3	3
	Std. Error	.211	.172	.134
Buyers willingly provide access to information, technology and learning in order for suppliers to upgrade	Mean	3.23	3.13	3.18
	Std. Deviation	1.020	1.100	1.051
	Median	3	3	3
	Std. Error	.218	.229	.157
Buyers have confidence in suppliers and therefore have increased supplier responsibility	Mean	3.05	2.57	2.80
	Std. Deviation	1.090	.788	.968
	Median	3	2	2
	Std. Error	.232	.164	.144

Again, the findings in general appear to be relatively similar but the relationship MNCs have with their buyers seems to be dramatically better than local firms have with theirs. The relationship seems more communicative unlike those of the local firm where a larger number of firms do not receive any performance feedback from their buyers. For MNCs, 6 of the firms receiving feedback had upgraded functionally and so the feedback does appear to have had a positive impact. Of the local firms, this appears to be somewhat the case too but also. From the interviews, Firms B, C and D who received feedback did not view it as being constructive enough to assist with upgrading but rather that it is just an expression of want from the buyer.

There were 2 local firms that received no feedback but yet still upgraded. There thus seems to still be firms motivated to pursue upgrading. From the interviews, it seems that firms are not actively pursuing buyers to increase their number of buyers and so perhaps these firms are not motivated to pursue upgrading either.

The levels of assistance from buyers for local firms despite being much needed, is not readily available or given to them. For those who do receive assistance, they are not all capitalising on it as only half of them upgraded over the last 5 years. The fact that local firms are not really upgrading shows that their collaboration attempts are not proving to be fruitful. The local firms seem to be compounding their problem by relying on each other but yet they are not engaging in in-house R&D.

Further, for local firms to compensate for what they lack with their buyers, firms are forging collaborations with each other. The exact details were not ascertained because of refusals from firms to be interviewed. Collaborations with other industry players are a means to gain and share knowledge as was discovered in Brazil where firms jointly utilised consultancies (Giuliani et al., 2005).

For MNCs, in addition to the good communicative relationship, MNC subsidiaries rely a lot on their parent company. Their interactions seem to be predominantly with buyer,

parent company and the associations but for those without R&D facilities, the support from the parent company is the most important.

From the interviews with local firms, it is confirmed that buyers relationships are generally one sided and so local firms are at a disadvantage compared to foreign firms. These firms did not receive assistance from buyers.

In general, both MNC and local firms' views appear similar but the most marked difference appears with buyers' confidence in suppliers and increasing supplier responsibility. There were 14 MNCs who agreed, in comparison to 9 local firms and for this reason it was tested for significance of the averages.

Hypothesis 3: The distribution of scores for the two groups' perception of buyers' confidence in suppliers are equal.

Relationships with buyers are such a pivotal part of ensuring long-term inclusion in the value chain. Both MNCs and local firms in China have similar relationships with buyers in that buyers are transferring more responsibility to them (Altenburg et al., 2007). For this reason we investigate the relationship of MNCs and local firms in South Africa.

Table 16. Test for Hypothesis 3

Results	Local Firm	MNC
Sample Size	22	23
Mann-Whitney U	188.5	
Wilcoxon W	464.5	
Z	-1.585	
Asymp. Sig. (2-tailed)	0.113	

A Mann-Whitney U test was run to determine if there were differences in perceptions between firm types (MNCs and local firms) regarding buyers' confidence in suppliers (Table 16). This is because buyers' perception of suppliers will determine the amount of work assigned to suppliers and thus would influence the longevity of the suppliers' business. Distributions of the upgrading scores for MNCs and local firms were similar, as assessed by visual inspection. Mean ranks and median upgrading score was not statistically significantly different between MNCs and local firms, $U = 188.5$, $z = -1.585$, $p = .113$.

MNCs are quite confident that they meet their buyers' expectations and the levels of engagement is slightly better between them compared to local firms' views. MNCs have a more communicative, collaborative relationship with their suppliers.

4.2.3 Sources of information findings

4.2.3.1 MNC Subsidiaries

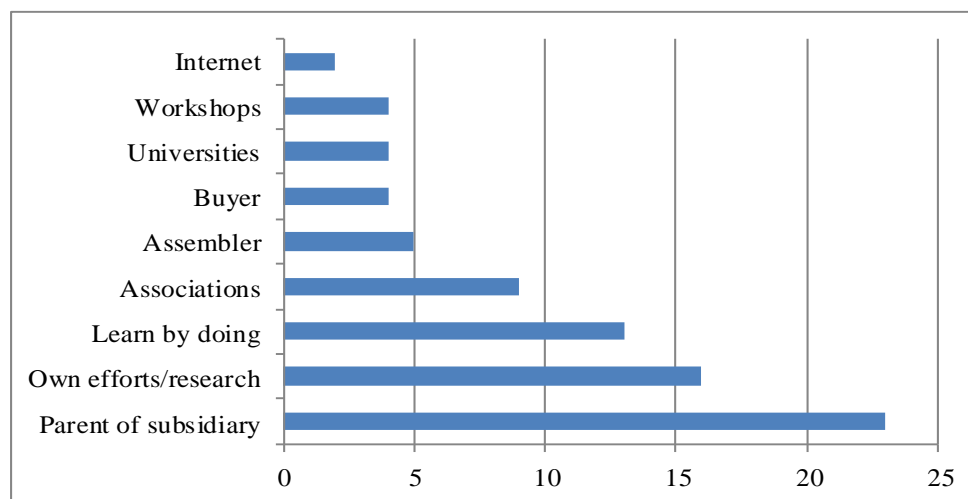
The bulk of firms do not have an R&D department, as 60% of subsidiaries of foreign firms did not have an R&D department. The source most commonly used to enhance product offering and services for subsidiaries of MNCs is the parent company and theoretically, this was expected. Consistently, all firms listed the parent company as a source, followed by their own efforts and learning on the job. The other sources are listed below in Figure 13 but it seems to be mainly an internal activity within the subsidiary and with the parent company.

Those 16 who listed own efforts as a source stated that the finance to facilitate this was self-funded or as a result of a loan. Only 5 firms said to have received foreign direct investment that has aided them in accessing information.

There were 74% of firms utilising only local engineers in their operations whilst 22% employed a combination of local and foreign engineers. Surprisingly, 4% of MNC respondents employed no engineers at all.

Training frequency was most commonly chosen as monthly and half-yearly where all firms said this takes place locally, but 7 firms did list international training as an occurrence too. There are therefore some attempts at acquiring knowledge from the firms situated in more advanced economies. All firms listed that training was funded internally but it does seem that not all firms appear to be pursuing upgrading.

Figure 13. MNC Subsidiaries' Sources of Information



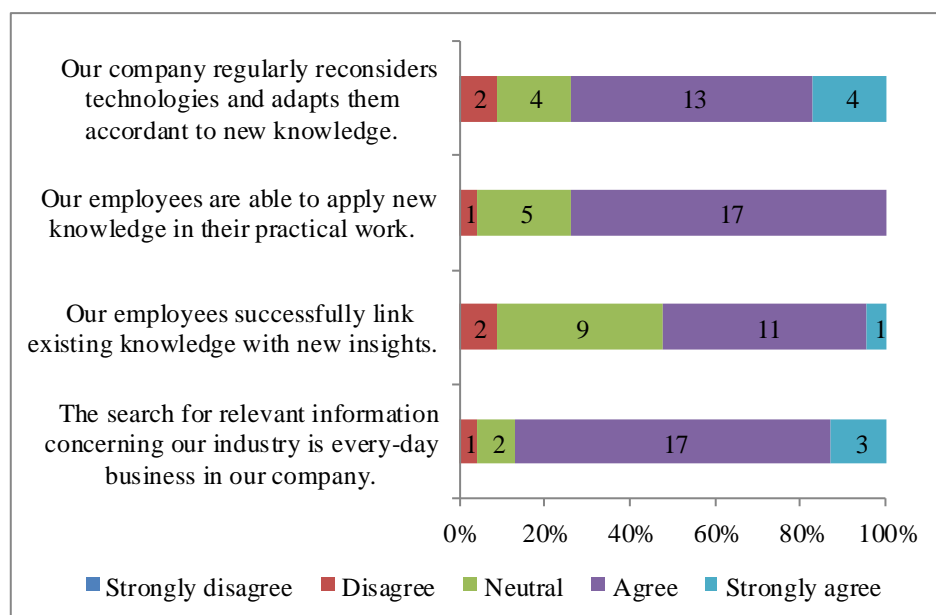
Additionally, subsidiaries do have some confident views of their own abilities (Figure 14). A majority of firms believe their employees are able to apply new knowledge in their practical work (17 agree) and that the search for relevant information concerning the industry is an every-day occurrence (3 strongly agree, 17 agree). They therefore believe that if the search for new information proves fruitful, their employees are competent to apply it to their functions.

Consistently, the majority of firms are attempting to apply their knowledge by regularly evaluating technologies and adapting them accordingly (4 strongly agree, 13 agree). This is consistent with the findings stating that the innovation focus for these firms is primarily on processes (19 firms). Once again, this echoes the theoretical view that design capacity is typically retained by the parent company and subsidiaries attempt to improve on processes as they are solely production oriented.

Further, half of firms find that their employees successfully link existing knowledge with new insights (1 strongly agree, 11 agree) although a large proportion were neutral (Figure 15). Employees are thus able to interpret new information and connect it to their existing knowledge thereby enhancing their understanding.

MNCs thus have confidence in the abilities of their employees.

Figure 14. MNC Views of Company Sourcing Activities and Abilities (n = 23)



4.2.3.2 Local firms

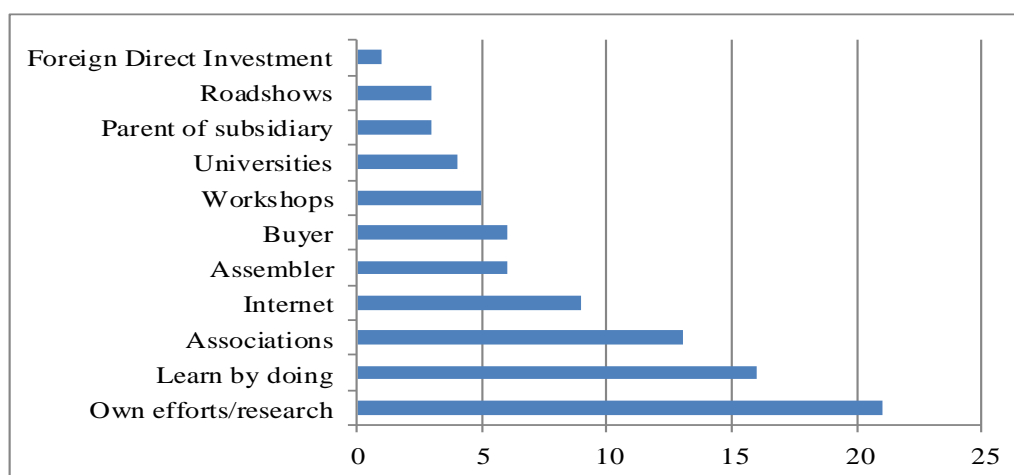
The prevalence of R&D was only found with 41% of local firms who had designated departments for R&D whereas the majority of the sample did not. The source for information, technology and learning most commonly used by local firms is not external but rather that they rely on themselves. Their own attempts of acquiring, assimilating and interpreting new information and technology are how they attempt to keep up to date with developments in the industry. Much of their learning is on the job and they do rely quite heavily on associations too. Of the 8 firms that formed part of a local enterprise, there were only 3 firms who collaborated with their parent firm so the remaining 5 are merely fulfilling a function of production. The other sources are listed below in Figure 15.

These firms have then listed that the finance which aids them to do this is either in the form of loans or profits. A portion of firms, namely 5, did list government as a source of finance but the author was unable to acquire further information because of the reluctance of firms to be interviewed which ultimately led to refusals.

It was found that 9% of all local firms listed not having any engineers employed at their operations whereas 77% of all local firms said their engineers are South African and with only 14% of all local firms saying that they have predominantly South African with some foreign engineers.

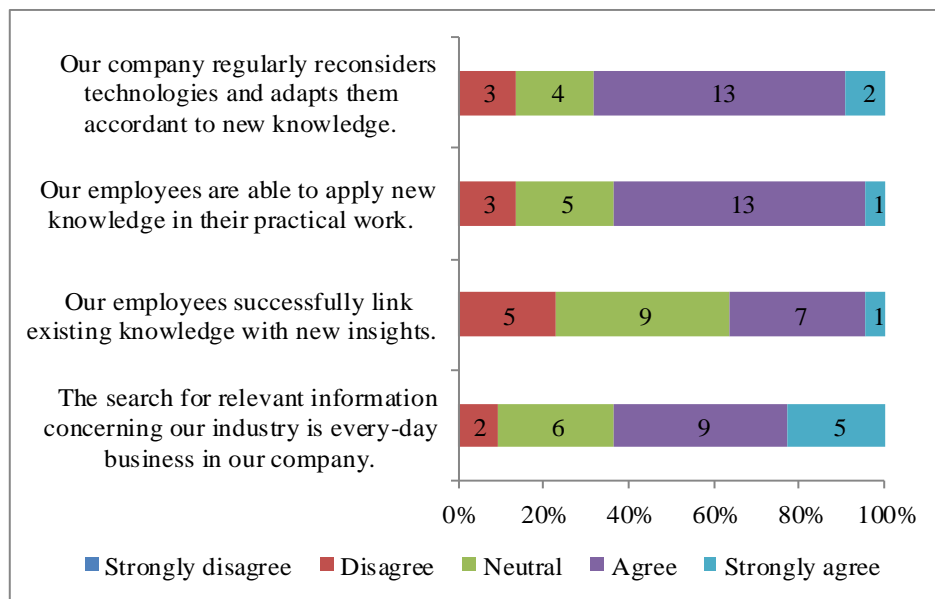
Staff being sent on training courses occurs infrequently with most firms saying none and some saying half yearly or yearly. All firms said that training is funded by themselves so this may be the reason for the low frequency levels. Training location is specified as being local for all except 3 who said it occurs both locally and internationally.

Figure 15. Local Firms' Sources of Information



Furthermore, local firms also have some definitive views of their abilities (Figure 16). The search for relevant information concerning the industry is a daily concern (5 strongly agree, 9 agree). A positive is that more than half of local firms noted that their employees are able to apply new knowledge in their practical work (1 strongly agree, 13 agree) but yet a lower proportion said their employees successfully link existing knowledge with new insights (1 strongly agree, 7 agree) with an even larger proportion being neutral. There is therefore concern regarding their employees' ability to connect prior knowledge and experience to new information. They are therefore capable of executing and implementing but it appears that they are not best able to innovate and problem solve.

Figure 16. Local Firms Views on Company Sourcing Activities and Abilities (n = 22)



Results show that more than half of firms regularly reconsiders technologies and adapts them based on new knowledge (2 strongly agree, 13 agree). But in light of the concern regarding employees' ability to connect prior and new insights, this would mean that firms are aware that they should evaluate technologies but it does not mean that their employees are able to successfully make significant adaptations. Or perhaps it just takes longer for them to do so. It is not certain whether this pertains to employee motivation or their absorptive capacity.

4.2.3.3 In-Depth Interviews on sources of information

FIRM A - About their R&D and design outcomes, Firm A has said: 'Obviously, we're not inventing the wheel but we would add innovations to that wheel to make it more attractive and that's how we capture overseas markets. If there's something out there, our engineers will in house design improve that product or if it's the manufacturing of a product, we'll improve our processes to produce a higher quality output or higher volume output than overseas processes.' To maintain that market, you constantly have to innovate and add new features; otherwise after 4 years your product is stale. So you have to constantly add new features that will make the product more attractive than the competitors.

Firm A employs 30 design engineers and has 19 patents. Design is important because Firm A believes you have to be innovative. Buyers can buy cheaper products from China, but there it's bought off a catalogue, whereas Firm A can customise because of having a huge design expertise. There is much confidence in employees as it was said that, so we will customise products and add innovative features which makes our products far more attractive. For that we can normally charge a premium, but in general we are price competitive and our third is quality. Our plant is ISO certified plant, so the quality coming out of here is better because failures cost them money.

Firm A said that staff are predominantly South Africans and there are some staff from the United Kingdom but they have been established South Africans now. Staff are sent overseas for training courses on components and technology. However, this is not frequent but it does happen. Marketers, business development managers and engineers are also sent to find out what's the latest technology. With joint ventures, we exchange staff in Malaysia. When acquiring new production equipment, we have sent the process engineers to that manufacturer to be trained on that equipment.

A big part of the information gathering is their own research whether it be through magazines or the internet and attending conferences globally. It's individual driven. Firm A has not utilised universities to assist with research projects, in fact, it has not been thought of. One particular university appeals to Firm A for their candidates, 'we're a major employer of students graduating from there because they like working for us as we are a company where they can design'. Firm A believes that in South Africa, not many companies design products and this is the appeal for university graduates.

FIRM B - Firm B engages in design and regularly reconsiders and adapts technologies to their own knowledge. So Firm B does partake in R&D but there is no department specifically focussed on it. Firm B believes that because their production operations are based around OEMs drawings, the adapting of technology occurs best on the job or learning by doing. A department specifically for R&D is expensive.

Firm B has an all South African workforce and so does not have any foreign influence in its labour force. Firm B does send staff on training courses but it is limited to courses within South Africa and is only for specific individuals as the firm views it as being costly.

Firm B is confident in employees' ability to apply new knowledge in their practical work and to formulate new insights. This is because the firm employs individuals that are highly qualified and who have a strong desire to design.

In its pursuit of product and process upgrades, Firm B utilises the internet but primarily finds trade shows to be most useful to activate their own in-house innovation. The internet does play a big role in keeping the firm up to date with what's happening globally.

Firm B has considered using universities to assist with testing and other problems but has found that university capabilities haven't matched their requirements.

FIRM C - Firm C does not have a team solely focussed on R&D but has had technology upgrades to improve efficiency and quality. The reason being that it takes too much investment to maintain and Firm C believes employees are more productive performing day to day tasks whilst simultaneously evaluating operations.

All skilled staff are South African and so there are no foreign employees. Firm C believes it's too difficult and expensive to attract foreign skilled labour. It's not possible. Training occurs ad hoc and within South Africa.

Firm C is confident that its employees can link existing knowledge with new insights. Firm C believes that its employees and their knowledge are critical components of maintaining the firm's success and so says confidence is inevitable. 'There must be confidence in employees in order for us to be successful.'

Firm C keeps up to date with changes in technology by scouring the internet, attending trade fairs and reading magazines. Knowledge about where and when trade fairs are happening is not researched. It was researched initially but now, after being in the industry for a while after all the internet searches and past trade fairs, 'all these things tend to come to you'. The firm thus expects to be made aware of these fairs by others, namely the NAACAM.

FIRM D - Firm D does not have staff whose sole focus is R&D, 'we multi-task'. The managing director says he calculated that he should attribute 10% of turnover to R&D but that is not possible. He does a large part of this development of new products after hours as it is his own company and he is a trained engineer. This is because he trusts himself and it is cheaper for him to work on the development.

Firms' employees are South African and this too is because it's too expensive to attract foreign labour.

Firm D does have confidence in employees as it was said that employees successfully link existing knowledge to new knowledge and especially considers and adapts technologies regularly. The firm has to function in different spheres and thus needs competent staff in order to perform in all spheres. Firm D therefore must have and does have confidence in employees.

The internet is listed as a source to keep up to date in the market technologically in order to see what developments are happening in the global market place. International trade fairs have been explored and do help in making the firm aware of what is out in the market. Firm D has placed some of its products on display at a fair in Las Vegas a few years ago, but didn't get much out of it because according to Firm D, 'Chinese firms were a lot cheaper than us' and subsequently the firm elected to no longer participate in fairs. This changed with the Johannesburg motor show last year where Firm D was asked to attend and had an overwhelming response that positively affected sales.

FIRM E - With regard to obtaining new technology, Firm E has joint ventures and licence agreements. There is no R&D department and so they capitalize on what is done elsewhere. With the joint venture, the overseas firm supports them to learn and adapt the technology and the firm has then been able to obtain certification fairly easy.

All engineers are local, but are aging and Firm E believes many engineers immigrate and so there may be a problem later replacing the staff because of a gap in engineering skills.

Staff training is all local and sometimes with joint ventures, there are visits to overseas plants that are facilitated by our partner.

4.2.3.4 Comparison of Sources of Information Findings

Table 17 below provides the descriptive statistics for the 2 firm types with regard to sources of information findings.

Table 17. Descriptive Statistics of Buyer Support Views

	Category	Type		
		LOCAL FIRM	MNC	Total
	N	22	23	45
The search for relevant information concerning our industry is every-day business in our company	Mean	2.23	2.04	2.13
	Std. Deviation	.922	.638	.786
	Median	2	2	2
	Std. Error	.197	.133	.117
Our employees successfully link existing knowledge with new insights	Mean	2.82	2.52	2.67
	Std. Deviation	.853	.730	.798
	Median	3	2	3
	Std. Error	.182	.152	.119
Our employees are able to apply new knowledge in their practical work	Mean	2.45	2.30	2.38
	Std. Deviation	.800	.559	.684
	Median	2	2	2
	Std. Error	.171	.117	.102
Our company regularly reconsiders technologies and adapts them accordant to new knowledge	Mean	2.36	2.17	2.27
	Std. Deviation	.848	.834	.837
	Median	2	2	2
	Std. Error	.181	.174	.125

All MNCs were found to be accessing information mainly from their parent company and this could explain the 60% of subsidiaries not having a R&D department, because ultimately they don't need one. The local firms are in a similar position with only 41% of local firms having designated departments for R&D. However, the local firms do not have a parent to depend on. This was confirmed with the interviews where Firms B, C, D and E did not have designated departments for R&D as it was viewed as being expensive and the same effects can be achieved on the job. They placed more value in learning on the job. The local firms are at a disadvantage and not doing much about it.

Local firms are relying on themselves or each other, with not much contact externally. Also their engineers are predominantly South African, and so they are not exposed to a more global influence. There appears to be no large influence from other countries that can add to local knowledge and considering that the global automotive industry is a mature one with local firms being late entrants, it would benefit them to gain from international knowledge and experience. The interviews with firms highlighted that cost was yet again a factor and that employing foreign specialists would be much too costly.

The MNCs are equipped with a capable workforce that is able to adapt and execute tasks well. The local firms really are trying to do everything alone, where they are funding training themselves which has resulted in training not being a frequent occurrence compared to MNCs. Despite this, local firms are confident that they are adapting technologies and that their employees are able to do the work. They are however not as confident about their employees ability to link existing knowledge with new insights. This is pivotal to remaining part of the value chain because of it being a technology driven industry that is constantly developing. Even if local firms are able to access new information, their employees are not necessarily able to make modifications independently. MNCs' employees are more inclined to do so.

Hypothesis 4: The distribution of scores for the two groups' perception of the search for relevant information concerning the industry being an every-day business is equal.

Altenburg et al. (2006) note that Chinese firms are engaging in purposed R&D and consequently are catching up fast with technological leaders. Knowing this, in order to prevent South African local firms from sliding into oblivion, they need to stay up to date with the continuous changes within the industry and their specialty. For this reason, there is concern as to whether firms are aware and prioritising the search for this information.

Table 18. Test for Hypothesis 4

Results	Local Firm	MNC
Sample Size	22	23
Mann-Whitney U	224	
Wilcoxon W	500	
Z	-0.738	
Asymp. Sig. (2-tailed)	0.46	

A Mann-Whitney U test was run to ascertain if there were differences in perceptions between firm types (MNCs and local firms) regarding the pursuit of acquiring industry information (Table 18). Distributions of the upgrading scores for MNCs and local firms were quite different, as assessed by visual inspection. Mean ranks and median upgrading scores were not statistically significantly different between MNCs and local firms, with $U = 224$, $z = -0.738$, $p = .46$.

Hypothesis 5: The distribution of scores for the two groups' perception of employees' ability to successfully link existing knowledge with new insights is equal.

A further strength of China and India is that they have a growing pool of skilled engineers and technicians. High emphasis is placed on skills development and so firms are well

equipped to enhance newly acquired knowledge. As Altenburg, Schmitz & Stamm (2006) have said, ‘China and India have nearly infinite reserve armies of labour and strongly invest in skills’, and foreign firms are also eager to utilise this skilled workforce. For this reason, it is important to determine whether existing employees in South African firms are able to do the same. The outcome would empower firms to evaluate how to manage their employees.

Table 19. Test for Hypothesis 5

Results	Local Firm	MNC
Sample Size	22	23
Mann-Whitney U	201.5	
Wilcoxon W	477.5	
Z	-1.255	
Asymp. Sig. (2-tailed)	0.21	

A Mann-Whitney U test was run to establish if there were differences in perceptions between firm types (MNCs and local firms) regarding their employees’ ability to integrate existing and new insights (Table 19). Distributions of the upgrading scores for MNCs and local firms were not alike, as assessed by visual inspection but mean ranks and median upgrading scores were not statistically significantly different between MNCs and local firms, $U = 201.5$, $z = -1.255$, $p = .21$.

4.2.4 Firm’s role as buyer findings

4.2.4.1 MNC Subsidiaries

There were 15 MNCs who listed that they did utilise local suppliers for providing inputs and /or components. Of the 15 who listed having local suppliers, only 5 acknowledged that they have helped the lower tier local suppliers in either achieving quality, upgrading technology, speeding up response and punctual delivery or a combination of these factors. The remaining 10 firms said that their suppliers achieved this independently.

4.2.4.2 Local Firms

There were 17 firms that stated relying on local suppliers for inputs and/or components. Of the 17 using local suppliers, 7 admitted that they have helped their suppliers in either achieving quality, upgrading technology, speeding up response and punctual delivery or a combination of these factors. Achieving quality was the most common objective of assistance provided.

4.2.4.3 In-Depth Interviews on role as buyer

FIRM A - About the relationship with suppliers, Firm A has said that they are long term relationships. Because of the technology involved, Firm A views the supplier as a technology partner but does not assist, only collaborates. In most cases, Firm A does not change suppliers often, they are long standing relationships that are acquired and nurtured. These are not with local firms though.

FIRM B - Firm B does not really build relationships with their suppliers and does not have many local suppliers. The ones that are local are just used to source materials. Firm B does not assist their suppliers in any way. The firms' objective is to add value throughout the chain but there are many foreign competitors within South Africa and so that is where their concern lies. Firm B says they cannot fend for everyone and so cannot help suppliers too.

FIRM C - This is the same situation for Firm C as it was for Firm B because only raw materials are sourced locally and in turn no support is afforded the supplier. Firm C does not believe it is necessary as their suppliers' function is straightforward and so does not need assistance. It is also believed that the firm is not in a position to assist others when it needs to be focussed on its own pursuit of longevity.

FIRM D - Firm D says that suppliers are 'hunted' to supply suitable inputs, then Firm D makes suggestions and together they come up with something usable. Firm D thus has quite collaborative relationships with some suppliers but generally uses off the shelf products because it's easier. The suppliers with whom they have collaborative relationships are local. Firm D does not provide explicit assistance to suppliers with regard to skills development. However, Firm D does help with skills development by providing machinery and training to universities, colleges and technical schools.

FIRM E - Firm E does source locally but is not providing support to those suppliers. Firm E feels that they have enough to be concerned about with their own operations and can't be fixing other firms' problems too. Instead Firm E will just switch to another supplier or mention switching and the supplier will be a lot more inclined to change and adapt to expectations.

4.2.4.4 Comparison of Findings

Of the 32 total firms who source from local suppliers, only 12 assist their suppliers with achieving quality, upgrading technology, speeding up response and punctual delivery or a combination of these factors. The interviews confirmed that despite firms wanting help from their buyers, they are not assisting the tiers below them either. Essentially, there is a mind-set of 'it is every man for himself and that was quite aptly communicated with interviews.

CONCLUSION

The research set out to determine if component manufacturers are upgrading and whether they are receiving support, as this is the situation in other developing countries like China and India. Further, to evaluate both MNC and local firms in order to see who is faring better. The literature within this field is not overly optimistic and does not foresee upgrading as being a simple process for firms in developing countries.

This study attempted to determine the conditions collectively and then to gain further insights with the use of individual interviews. From this, it has been found that upgrading is taking place, but not on a large scale. Subsidiaries of MNCs are in a better position than local firms and these local firms seem content with taking the easy route of maintaining their current status as opposed to developing consistently. Findings in this study are in line with the reviewed literature concerning upgrading in developing countries.

The South African firms participating in the study mainly formed part of the 2nd tier and the MNCs that participated were 1st tier component manufacturers. This was consistent with literature as depicted by Wad (2010) on developing countries. Gereffi, Humphrey, Kaplinsky & Sturgeon (2001) has said that linking into global chains facilitates and accelerates the acquisition of capabilities and encourages upgrading. In light of this, local firms were evaluated against MNCs.

MNCs were found to lack in design capacity and were mere stewards of their parent firms' interests. There were some MNCs that functionally upgraded, but the number was slightly less than local firms that upgraded functionally. The study found that despite upgrading not being prevalent amongst component manufacturers, when it occurred, it was in the form of process upgrading mainly. From the interviews it was seen that the functional upgrades were as a result of acquisitions. Literature has said that functional upgrading is generally inhibited and thus process upgrading, along with product upgrading is common typically in developing countries (Schmitz, 2004).

A trend for China and India has been for firms to gain and build innovation capabilities (Altenburg et.al., 2006) and their technology gap with industrialised countries has narrowed considerably. Surprisingly, in South Africa, despite Grota (2010) discovering innovation to be present, this trend does not appear to be prevalent in South Africa over the period 2008 - 2012 based on the findings of this study. Interviews with firms have shown that there is not much learning occurring and the opportunities to learn from international players are sparse. South Africa does not have the strong, growing industrial production capabilities like that of China and India so they are at an even further disadvantage and firms appear to not be gearing up to change it.

Moreover, the exporting of products was not common where instead firms were predominantly supplying locally to assemblers, suppliers and the aftermarket. This was just like Schmitz and Knorringa (2000) stated, that even when trade is liberalised, developing

countries' access to international markets is not automatically gained. This is important because participation in global chains is crucial for industrial upgrading as it places firms on potentially dynamic learning curves (Gereffi, 1999; Schmitz and Knorringa, 2000). This was true, as 71% of all those that upgraded attributed some of its revenue as being from global sales.

The plight of both groups (MNC and local firms) is generally unsupported by buyers and the task of upgrading is a daunting one that typically would be best achieved with the support of others. The results for South Africa were found to be worse than countries like China and India where support is common but this was expected because of the power of those countries and their abundance of intellectual resources which enables them to leverage outside support (Altenburg et al., 2006). As for collaborations, the local firms seem to be compounding their problem by relying on each other but yet they are not engaging in in-house R&D.

Buyer and MNC relationships seem more communicative unlike those of the local firm where a larger number of firms do not receive any performance feedback from their buyers. This feedback seems to have a positive impact for both MNC and local firms as it resulted in upgrading. For MNCs, in addition to the good communicative relationship, MNC subsidiaries rely a lot on their parent company. MNCs are quite confident that they meet their buyers' expectations and the levels of engagement is slightly better between them compared to local firms' views.

Humphrey & Memedovic (2003) has said that buyers impose precise standards but they do not wish to be involved in aiding their suppliers to meet those standards. Therefore those firms wanting to ensure involvement in the industry must invest in engineering skills as the provision of skilled labour in these areas is essential. The South African situation seems worrisome as it was found that 9% of local firms employed no engineers at their operations. Also, local firms are not as confident in their employees' abilities as MNCs are in theirs. It is not certain whether this is as a result of employee motivation or their absorptive capacity. The low skill levels within firms echoed the situation with education statistics pertaining to the country and the difficulty of attracting foreign skilled labour (SAccess, 2011). It was found that there is no real foreign influence in the labour force as firms are mainly utilising South African engineers.

The search for information was acknowledged as being important but the purposeful pursuit of development evades many. The majority of both MNC and local firms do not have R&D departments, but the MNC subsidiary is still able to and does rely on the parent company. The way forward needs to involve diligent efforts at achieving new positions along the chain but it is critical for it to be as a result of development and not mere consolidations of existing businesses. From the interviews we were able to see that having global sales linkages was common amongst those that upgraded. In order for more fruitful

upgrading to occur, increasing these global sales linkages and investment in R&D must be encouraged.

This study highlights that the South African market is evaluated by the global market as not warranting investment in order for firms and the market to grow. For this reason, firms must think strategically and make calculated choices and investments in their own development.

Recommendations

1. From the data, it appears that the theory about MNC functions in developing countries is true to South Africa's situation. The tendency is for 1st tier MNC subsidiaries to be mainly assembly plants and not manufacture components. They assemble their products by using components which they import or purchase locally. If wanting to create employment in South Africa and to increase local content, there should be more focus on the tier 2 and tier 3 suppliers. Those are typically the indigenous suppliers. A focus in aiding them to be more efficient, more aggressive and subsequently then to supply more to tier 1 which in South Africa is usually mainly assembly plants.
2. Increased support from government that equips component manufacturers to be more competitive. Korea's government implemented various policies to protect the domestic market and preserve local content (Lautier, 2001). Policy focus should be on strengthening the supply-side capabilities of local firms, as well as creating an investment climate that will encourage further upgrading activities. Credit at affordable rates of interest is also important for firm level investment, otherwise investments must be financed out of profits. If financed out of profits, this makes investment more unlikely to happen as may be the case in South Africa based on this study.
3. Government can really aid firms by ensuring that work permit and visa regulations should not obstruct the employment of highly skilled foreign employees. In order to upgrade, local firms may need specialist knowledge to facilitate learning (Humphrey, 2004).
4. Policies that encourage trade must not be the only focus. They must be complemented by policies aimed at skill development. At present, multinationals are drawn to the establishing of low-cost production facilities. Policies need to be implemented that encourage the transfer, development and harnessing of design and engineering skills to their subsidiaries in South Africa.
5. The industry itself is a mature one and the mind-sets of local suppliers need to change; they need to be more pro-active because upgrading will only occur with active efforts on their part. It is not automatic from merely being part of a global value chain but

rather demands actions and plans to upgrade and stay part of the global value chain (Humphrey, 2004). They need to make investments in capital equipment, learning and technological capability. They need to make training a priority too. “Learning by doing” is not enough.

6. Firms need to engage in more R&D and to make more such investments, perhaps by entering into more joint ventures but they do need to take advantage of these opportunities to stimulate connecting what they already know to new insights. They need to build more communicative relationships with buyers so that they can be more ready to meet buyers’ needs and in turn have more supportive buyers as is the case with the MNCs.
7. Based on Korea’s successful example, South Africa too should focus on developing engineers and perhaps promoting the profession to a younger age group who are still in a position to focus and improve their math and science skills (Lautier, 2001). Humphrey (2004) also notes that attracting and using specialist foreign skills should be encouraged as this will help support the learning process for other engineers and for the advancement of the firm.
8. Instead of competing against the BRIC countries, firms should attempt to forge supply relationships with the BRIC countries’ suppliers and BRIC indigenous OEMs by supplying components to them seeing as automotive sales are on the rise in countries like China and India. China and India do have their own indigenous automobile brands and so supplier relationships with them can be pursued.
9. Local firms should be more strategic in their relationships. Local firms should perhaps consider that there are more opportunities for small firms to supply to small buyers and where these buyers are more inclined to increase supplier responsibility. This allows for a more dynamic learning curve.

The research was purposed at establishing whether upgrading was occurring in the South African automotive component manufacturers, to discover a pattern identifying commonalities of upgrading firms and whether buyers are supporting upgrading or what means were firms using in order to pursue upgrading. As much as it is desirable to have MNCs invest in design capacity within South Africa, based on the data, it is not the case. South Africa’s best hope is to develop their local firms and to build competences that would allow for purposive, fruitful collaborations with other countries.

Further research should be done relating to local firms’ willingness to learn from foreign partners, their motivation to pursue upgrading and their confidence in their employees. In particular, if local firms employ more skilled and motivated workers, how this relates to their ambition to pursue upgrading.

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APPENDIXES

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Appendix A: Questionnaire 1

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Appendix A: Questionnaire

SA Automotive Components Industry

Good Day,

Thank you for participating in this study. The research focus is on component manufacturers within South Africa and whether upgrading is happening for both local and multinational firms.

The questionnaire requires you to mark the appropriate answer in relation to your firm. The information will only be used for the Masters thesis research and identities will be recorded as anonymous in the written work.

Thank you again for participating in this study.

Q1 - This is a one page multiple choice survey and should take 3 to 5 minutes to complete

Q2 - Please indicate your current position in the company

- ☐ Middle Management
- ☐ Senior Management
- ☐ MD
- ☐ CEO

Q3 - Is this unit...

- ☐ A single plant firm
- ☐ Part of a foreign enterprise group
- ☐ Part of a local enterprise group

IF (1) Q3 = [3, 2]

Q4 - If part of an enterprise group, this unit is:

- ☐ The head office
- ☐ A subsidiary

Q5 - The destination of your sales is:

- ☐ Local only
- ☐ Global only
- ☐ Both Local and Global

IF (2) Q5 = [3]

Q6 - Your sales are primarily:

- ☐ Local
- ☐ Global

Q7 - Please indicate to which segments in the automotive industry you supply your main product:

Multiple answers are possible

- ☐ Passenger cars
- ☐ Commercial vehicles
- ☐ Medium-heavy commercial vehicles
- ☐ Heavy trucks
- ☐ Buses and coaches

Q8 - Who is your customer?

Multiple answers are possible

- ☐ OEM
- ☐ 1st tier component manufacturer
- ☐ Aftermarket
- ☐ Other:

Q9 - Number of employees (average or can list exact number)

- ☐ 1 - 9
- ☐ 10 - 49
- ☐ 50 - 99
- ☐ 100 - 249
- ☐ 250 - 499
- ☐ 500 - 999
- ☐ 1000 - 2499
- ☐ More than 2500
- ☐ Exact number:

Q10 - How many of your employees are tertiary educated? This includes any Technical education/training or university degree.

Q11 - Are your engineers South African or foreigners?

- ☐ South African
- ☐ Foreign
- ☐ Predominantly South African, some foreign
- ☐ Predominantly Foreign, some South African
- ☐ No engineers

Q12 - Please indicate the estimated percentage of your company's sales according to the following categories relevant to your operations:

Irrelevant categories please mark with a 0 (zero)

Products manufactured by your unit according to design specifications provided by external buyers

Products developed and designed by your unit according to performance requirements of buyers

Products developed and designed by your unit and sold under your own brand

Other (please describe below):

Total %

IF (3) Q12d

Q13 - If Other, please briefly describe:

Q15 - The remaining questions pertain to the functioning of your operations

Q16 - In the automotive component industry, which of these activities in the value chain did your unit perform?

Multiple answers are possible

- ☐ Material supplier (e.g. glue, steel)
- ☐ Component supplier (of general use)
- ☐ Component manufacturer
- ☐ Module assembly (interior/assembled wheel/door module)
- ☐ Marketing & distribution (for own product only)
- ☐ Post production (for own product only)

Q17 - Of these activities, have any been newly added only over the last 5 years?

Multiple answers are possible

- ☐ Material supplier (e.g. glue, steel)
- ☐ Component supplier (of general use)
- ☐ Component manufacturer
- ☐ Module assembly (interior/assembled wheel/door module)
- ☐ Marketing & distribution (for own product only)
- ☐ Post production (for own product only)
- ☐ None

Q18 - Have your core competences & activities changed since inception to now?

- ☐ Yes
- ☐ No

Q19 - Do you have an R&D department?

- ☐ Yes
- ☐ No

Q20 – Which of these have you upgraded?

Multiple answers are possible

- ☐ Manufacturing and Logistics Processes
- ☐ Product
- ☐ None

Q21 - What is your innovation focus?

Multiple answers are possible

- ☐ Manufacturing and Logistics Processes
- ☐ Product
- ☐ Materials
- ☐ None
- ☐ Other:

Q22 - Do you receive performance feedback from buyers? and do they offer assistance to better equip you to meet their standards?

- ☐ No
- ☐ Yes feedback, No assistance
- ☐ Yes feedback, Yes assistance

IF (4) Q22 = [3]

Q23 - Have they helped you in:

Multiple answers are possible

- ☐ Achieving quality
- ☐ Upgrading technology
- ☐ Punctual delivery
- ☐ Speeding up response
- ☐ Testing and measurement facilities
- ☐ Skilled labour to assist in process engineering
- ☐ Other:

Q24 - Do you have products, functions or services exclusively for one customer?

- ☐ Yes
- ☐ No

Q25 - What are your sources for Information, Technology & Learning to enhance your product offering and services?

Please list additional sources not included in list. Multiple answers are possible

- ☐ Assembler
- ☐ Buyer
- ☐ Parent of subsidiary
- ☐ Universities
- ☐ Own efforts/research
- ☐ Associations
- ☐ Foreign Direct Investment
- ☐ Learn by doing
- ☐ Workshops
- ☐ Roadshows
- ☐ Internet
- ☐ Other:
- ☐ Q24m

Q26 - If as a result of own efforts, how is it funded?

Multiple answers are possible

- ☐ Loan
- ☐ Foreign investment
- ☐ Research Institution
- ☐ Government
- ☐ Public Agencies
- ☐ Other:

Q27 - Do you have collaborative relationships with any of the following with regard to innovation and research:

Multiple answers are possible

- ☐ Associations
- ☐ Universities
- ☐ Other component manufacturers (your peers)
- ☐ Assemblers
- ☐ Suppliers
- ☐ Research center
- ☐ Consultant
- ☐ Government
- ☐ Other:
- ☐ None

Q28 - How often do you send your staff on training courses?

Multiple answers are possible

- ☐ Monthly
- ☐ Half-yearly
- ☐ Yearly
- ☐ Other:

Q29 - Who funds these training courses?

Multiple answers are possible

- ☐ Own company
- ☐ Buyer
- ☐ Other:

Q30 - The training location is:

- ☐ Local
- ☐ International
- ☐ Local and International

Q31 - Do you have local suppliers providing inputs/components for your products?

- ☐ Yes
- ☐ No

IF (5) Q31 = [1]

Q32 - Have you helped them in:

Multiple answers are possible

- ☐ No, they've done this independently
- ☐ Achieving quality
- ☐ Upgrading technology
- ☐ Speeding up response
- ☐ Punctual delivery

Q33 - Have you considered the prospect of collaborating with other manufacturers to develop a South African designed vehicle?

- ☐ Yes
- ☐ No

Q - This final section is to establish your opinion in regard to upgrading

Q34 - Buyers pursue a joint-problem solving relationship

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q34a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Q35 - Innovation is supported by your buyers.

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q35a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Q36 - Buyers willingly provide access to information, technology and learning in order for suppliers to upgrade

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q36a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Q37 - Buyers have confidence in suppliers and therefore have increased supplier responsibility

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q37a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Q38 - The search for relevant information concerning our industry is every-day business in our company.

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q38a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/>

Q39 - Our employees successfully link existing knowledge with new insights.

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q39a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/>

Q40 - Our employees are able to apply new knowledge in their practical work.

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q40a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/>

Q41 - Our company regularly reconsiders technologies and adapts them accordant to new knowledge.

Strongly Disagree	Neutral	Agree	Strongly agree
disagree			
Q41a		<input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/>

Q42 - Company Name (and division, if applicable)

This will be anonymous in results but required to keep track of how many responses received

Appendix B: Interview Guide

Good Afternoon,

Thank you for completing the questionnaire and for agreeing to do this interview. These questions have been formulated to elaborate on your questionnaire answers. Additional information on the state of upgrading within your firm is the main objective. All answers will be recorded as anonymous and your firms' name will not be reflected within this research report.

These questions are just a guide so feel free to explain in more detail.

UPGRADING

1. **Product & Functional upgrading:** is it as a result of merger/acquisition or own developed capability?
2. **Product upgrading:** Have you increased your product offering? Has it been a lengthy process? How did you go about acquiring knowledge?
3. Process and product upgrades: how is this pursued? Which sources? Workshops, roadshows, internet, subscriptions? With products made specifically to designs, has the customers helped equip you to meet their expectations or standards? Provide skilled labour to assist in process engineering? Do they provide testing and measurement facilities?

BUYER SUPPORT

1. Who is your customer?
2. With regard to certifications, how has it been achieved? Financing?
3. How have you secured global contracts? They found you, or are you hard-selling?
4. Are your buyer relationships long-standing or not? Do you have any functions or services that are exclusively for one customer? Have they helped you develop it?
5. In which way or area would you welcome help?

SOURCES OF INFORMATION

1. Are there staff whose sole focus is R&D?
2. Estimated spending on R&D? percentage of turnover
3. The search for relevant info is every-day occurrence how?
4. Why your parts over brazil, india or china? Or why brazil, India or china over south africa?
5. Do you exhibit at local or international trade fairs? Has this proven fruitful?
6. Consultants, how do you utilise them? restructuring? Market evaluation? Process engineering?

YOUR ROLE AS A BUYER

1. Do you have suppliers? That you source components from? Are they south African or imported? Predominantly SA or international (where)?
2. Have your suppliers always met your quality requirements? Have you helped them in achieving quality, upgrading technology, speeding up response, punctual delivery? Provide training to their employees?
3. Have you increased their responsibility, product load/offering?
4. Do you engage in joint product development with your suppliers or do you provide a final design?
5. Do you have SA suppliers who work exclusively for you?
6. Do your suppliers exhibit at local or international trade fairs?
7. Do you expect that in 5 years the percentage you buy from SA will increase or decrease? Why?
8. On which dimensions do you feel your SA suppliers need to improve most over the next 5 years? Improving regular and reliable product quality was India